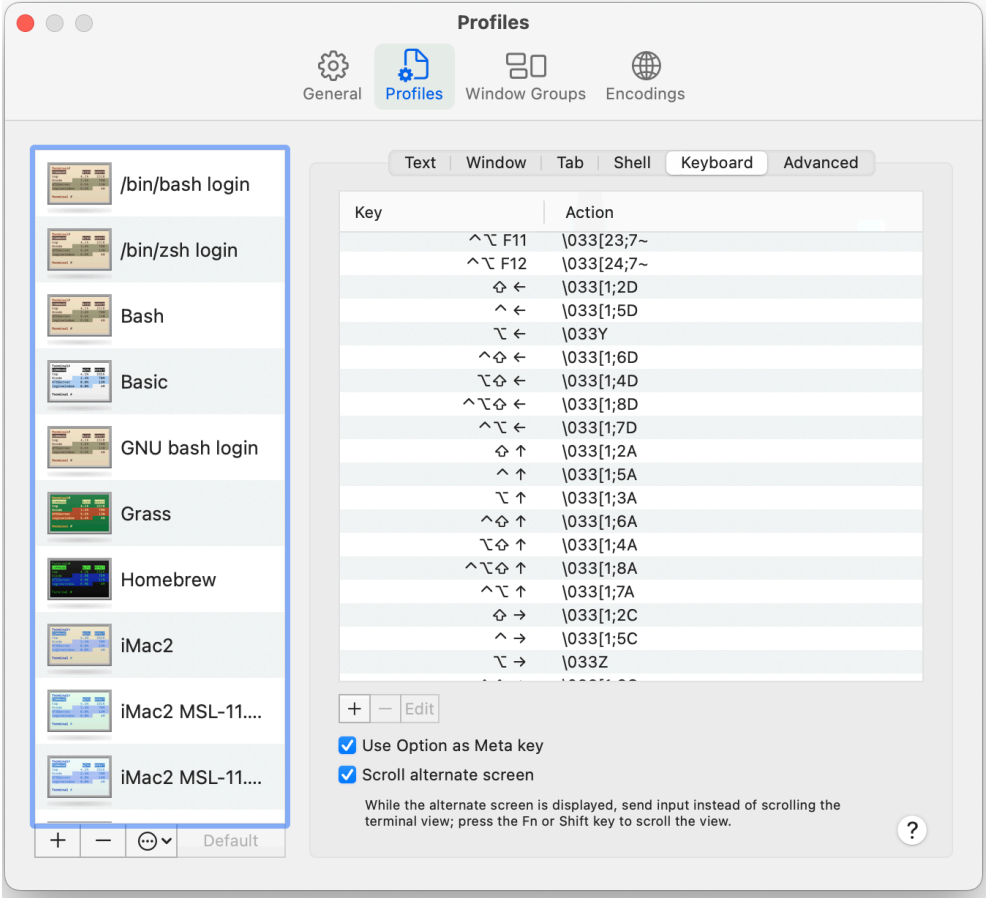


# Terminal Key Sequence Settings & Tools For investigation

| Application                      | Type                                                                                                                                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Last updated on:                 | 2025-12-26                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| macOS Tools                      | The following tools to investigate the keyboard behaviour in macOS terminal emulators and the OS in general are listed in this table. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <a href="#">Character Viewer</a> | Builtin macOS Application                                                                                                             | Used to get printable symbols that represent keys. Also see this <b><a href="#">Penn State site about Symbols and Characters</a></b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <a href="#">Key Codes</a>        | Third party macOS Application                                                                                                         | Used to get Unicode key codes for the keyboard key pressed. Accessible via App Store Developer Tools.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <a href="#">macOS Terminal</a>   | Builtin macOS Application                                                                                                             | <ul style="list-style-type: none"><li>Type <b>^V followed by the key</b> in terminal to display the character sequence sent to the application for this key.</li><li>Use the Terminal Profiles, section Keyboard to add key mappings. The new mappings are available in the current terminal.<ul style="list-style-type: none"><li>If the mapping exists in Emacs it takes affect in Emacs as well.</li><li>Both profiles are available as different bash shells in Terminal.app</li></ul></li><li>Note that in Terminal, you can use <b>⌘-o</b> to toggle the meaning of the <b>⌘</b> (Alt) key between Meta and ‘alternate character’.</li></ul> |
| <a href="#">iTerm2</a>           | Third party macOS Application                                                                                                         | <ul style="list-style-type: none"><li>Type <b>^V followed by the key</b> in terminal to display the character sequence sent to the application for this key. Used to check for codes that are not sent in terminal, so we can add them to <a href="#">iTerm2</a> Profiles Keyboard mapping.</li><li>In iTerm2, the left <b>⌘</b> (Alt) key can be configured as Meta, the right <b>⌘</b> (Alt) key can be used as ‘alternate character’.</li></ul>                                                                                                                                                                                                 |

Use the Terminal Preference dialog, in the Profiles section, then in terminal, to identify extra key codes for missing keys in the Terminal.App terminal emulator.

The following screenshot is an example of the dialog.



To activate the **⌘** key as Meta, set the "Use Option as Meta key" checkbox. ➡➡

The table below shows all codes I was able to configure for the macOS Terminal.app in macOS 10.14.6 (Mojave) that continue to work in the latest macOS versions.  
↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓

## macOS Terminal.app & iTerm2 Keys — Profile Mappings

| Key Label         | Modifier / Unicode (hex)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Terminal.app Profile mapping | Sequence shown in Terminal after ^V | Add inside the Keyboard list of macOS Terminal Preferences | Sequence Shown in iTerm2 after ^V | Add to iTerm2 Profile Key Mapping | Value string extracted in xml file | Notes - all related to Emacs running inside a Terminal/shell window.<br><br>See: <ul style="list-style-type: none"><li><a href="#">macOS Terminal</a></li><li><a href="#">iTerm2</a></li></ul> |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------------|------------------------------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Terminal.app Keys | <p>The following table mainly contains the <a href="#">Terminal input ANSI Escape Sequence</a> key codes I was able to configure for Terminal.app on macOS 10.14.6 (Mojave), and it still works under macOS 14.7.4 (Sonoma) and the latest macOS version as of 2025.</p> <ul style="list-style-type: none"><li>This is stored inside a .terminal file, an XML <a href="#">PropertyList-1.0.dtd</a> file.</li></ul> <p>• The Terminal.app supports a large set of key built-in, but not all. For example it supports all the ASCII codes for keys. It also support the cursor keys. For example the &lt;right&gt; key corresponds to the sequence <b>ESC [ C</b>. This is a built-in sequence. Terminal.app supports a limited number of built in sequences.</p> <p>• Other sequences must be identified inside the Terminal.app Profile and Apple configures several of them, as we can see above in the screenshot of the Basic profile of Terminal.app. But again, that does not include all combination of keys we would need to use Emacs effectively.</p> <p>• It is possible to manually enter more sequences in Terminal.app via the dialog shown above. I have entered several key combinations by learning what sequence the terminal generates by using Terminal.app feature of displaying the sequence by first typing Control-V followed by the key sequence. This trick unfortunately does not work for all key sequences; for instance I could not find a way to distinguish the numeric keypad / from the main / key. This table list the key sequences that are not already part of the Basic Terminal.app profile that I was able to identify and added inside a new profile file.</p> <p>• Several people are annoyed by the current state of terminal emulators and their limitations in identifying all key combinations. Some have written description of the problem, some made proposals and some have implemented packages that try to circumvent the problem, proposing something often called “<i>lossless keyboard input</i>”. See the references at the bottom of this page.</p> <p>Notes:</p> <ul style="list-style-type: none"><li><b>\033</b> is the octal notation for decimal 27 which is the ASCII value for the <b>&lt;Esc&gt;</b> key.</li><li><b>^[</b> is the terminal notation to describe Control-[, which also identifies the decimal value 27: the ASCII ASCII value for the <b>&lt;Esc&gt;</b> key.</li></ul> <p>The <b>key names</b> have the following color codes:</p> <ul style="list-style-type: none"><li><b>BLACK</b>: key available on most keyboards</li><li><b>PINK</b>: key available on large desktop keyboards, not available on laptops</li><li><b>RED</b>: key only available on specialized keyboards.</li></ul> <p>The Modifier/Unicode(hex) column identifies the main key Unicode value, prefixed with zero, one or several modifier identifier characters. The characters are:</p> <ul style="list-style-type: none"><li><b>\$</b>: Shift key (⇧)</li><li><b>^</b>: Control key (^)</li><li><b>~</b>: Option key (⌘)</li><li><b>#</b>: Numpad</li></ul> <p>The Profile mapping is the escape sequence identified.</p> <ul style="list-style-type: none"><li>Sequences in bold are identifiable from the Terminal.app shell by pressing <b>Control-V</b> on macOS 10.14.6 (Mojave) and can therefore be entered manually inside the Terminal.app Profile. Note that this also works in some Line terminals.</li><li>It is also possible to see the values by executing <b>sed -n 1</b> followed by the key. The last character in the command is a lower-case L.</li></ul> |                              |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                |

| Key Label      | Modifier / Unicode (hex) | Terminal.app Profile mapping | Sequence shown in Terminal after ^V | Add inside the Keyboard list of macOS Terminal Preferences | Sequence Shown in iTerm2 after ^V | Add to iTerm2 Profile Key Mapping                                                 | Value string extracted in xml file | Notes - all related to Emacs running inside a Terminal/shell window.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------|--------------------------|------------------------------|-------------------------------------|------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                          |                              |                                     |                                                            |                                   |                                                                                   |                                    | See: <ul style="list-style-type: none"> <li><a href="#">macOS Terminal</a></li> <li><a href="#">iTerm2</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Clear (keypad) | F739                     | Num Lock                     |                                     | Yes                                                        |                                   |  |                                    | I did not find a way to map the <clear> key to NumLock for <a href="#">iTerm2</a> , as it can be done for <a href="#">macOS Terminal.app</a> . <ul style="list-style-type: none"> <li>With Terminal.app I can use that to provide the PEL Emacs features described in <a href="#">👉 Numkeypad</a> .</li> <li>With <a href="#">iTerm2</a> it is possible to map each numeric keypad key to something, but not provide dual meaning based on the state of what would be the NumLock state as can be done in macOS Terminal.app. At least I did not fond a way to do it and I posted a <a href="#">question in StackExchange</a> about this.</li> </ul> |
| F1             | F704                     | \033OP                       | ^[OP                                | Yes                                                        | ^[OP                              | No need                                                                           |                                    | Note: 'No need' means that key sequence was already in profile                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| F2             | F705                     | \033OQ                       | ^[OQ                                | Yes                                                        | ^[OQ                              | No need                                                                           |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F3             | F706                     | \033OR                       | ^[OR                                | Yes                                                        | ^[OR                              | No need                                                                           |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F4             | F707                     | \033OS                       | ^[OS                                | Yes                                                        | ^[OS                              | No need                                                                           |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F5             | F708                     | \033[15~                     | ^[[15~                              | Yes                                                        | ^[[15~                            | No need                                                                           |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F6             | F709                     | \033[17~                     | ^[[17~                              | Yes                                                        | ^[[17~                            | No need                                                                           |                                    | Note that this has the same code as `F1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| F7             | F70A                     | \033[18~                     | ^[[18~                              | Yes                                                        | ^[[18~                            | No need                                                                           |                                    | Note that this has the same code as `F2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| F8             | F70B                     | \033[19~                     | ^[[19~                              | Yes                                                        | ^[[19~                            | No need                                                                           |                                    | Note that this has the same code as `F3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| F9             | F70C                     | \033[20~                     | ^[[20~                              | Yes                                                        | ^[[20~                            | No need                                                                           |                                    | Note that this has the same code as `F4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| F10            | F70D                     | \033[21~                     | ^[[21~                              | Yes                                                        | ^[[21~                            | No need                                                                           |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F11            | F70E                     | \033[23~                     | ^[[23~                              | Yes                                                        | ^[[23~                            | No need                                                                           |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F12            | F70F                     | \033[24~                     | ^[[24~                              | Yes                                                        | ^[[24~                            | No need                                                                           |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F13            | F710                     | \033[25~                     | ^[[25~                              | Yes                                                        | ^[[1;2P                           | No                                                                                |                                    | Nothing found to allow Emacs to recognize these keys directly.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| F14            | F711                     | \033[26~                     | ^[[26~                              | Yes                                                        | ^[[1;2Q                           | No                                                                                |                                    | Terminal.app and iTerm2 do not generate the same sequences for these keys. <ul style="list-style-type: none"> <li>Since I use Terminal.app most of the time, I am able to access these keys from Terminal.app, but not from iTerm2.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                       |
| F15            | F712                     | \033[28~                     | ^[[28~                              | Yes                                                        | ^[[1;2R                           | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F16            | F713                     | \033[29~                     | ^[[29~                              | Yes                                                        | ^[[1;2S                           | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F17            | F714                     | \033[31~                     | ^[[31~                              | Yes                                                        | ^[[15;2~                          | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F18            | F715                     | \033[32~                     | ^[[32~                              | Yes                                                        | ^[[17;2~                          | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F19            | F716                     | \033[33~                     | ^[[33~                              | Yes                                                        | ^[[18;2~                          | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F20            | F717                     | \033[34~                     | ^[[34~                              | Yes                                                        |                                   | No                                                                                |                                    | Key not available on standard keyboards.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ⇧F1            | \$F704                   | \033[1;2P                    | ^[[1;2P                             | Yes                                                        | ^[[1;2P                           | No                                                                                |                                    | Emacs (even in graphics mode) does not support Shift-F1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ⇧F2            | \$F705                   |                              |                                     | No                                                         | ^[[1;2Q                           | No                                                                                |                                    | ^V with these keys beeps in Terminal, but displays value in iTerm2, however it does not work inside Emacs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧F3            | \$F706                   |                              |                                     | No                                                         | ^[[1;2R                           | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F4            | \$F707                   |                              |                                     | No                                                         | ^[[1;2S                           | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F5            | \$F708                   | \033[15;2~                   | ^[[15;2~                            | Yes                                                        | ^[[15;2~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F6            | \$F709                   | \033[17;2~                   | ^[[17;2~                            | Yes                                                        | ^[[17;2~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F7            | \$F70A                   | \033[18;2~                   | ^[[18;2~                            | Yes                                                        | ^[[18;2~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F8            | \$F70B                   | \033[19;2~                   | ^[[19;2~                            | Yes                                                        | ^[[19;2~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F9            | \$F70C                   | \033[20;2~                   | ^[[20;2~                            | Yes                                                        | ^[[20;2~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F10           | \$F70D                   | \033[21;2~                   | ^[[21;2~                            | Yes                                                        | ^[[21;2~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F11           | \$F70E                   | \033[23;2~                   | ^[[23;2~                            | Yes                                                        | ^[[23;2~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F12           | \$F70F                   | \033[24;2~                   | ^[[24;2~                            | Yes                                                        | ^[[24;2~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F13           | \$F710                   |                              |                                     | No                                                         | ^[[1;2P                           | No                                                                                |                                    | Nothing found to allow Emacs to recognize these keys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⇧F14           | \$F711                   |                              |                                     | No                                                         | ^[[1;2Q                           | No                                                                                |                                    | By default iTerm2 generates the same sequences as for the first set of shift function keys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ⇧F15           | \$F712                   |                              |                                     | No                                                         | ^[[1;2R                           | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F16           | \$F713                   |                              |                                     | No                                                         | ^[[1;2S                           | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F17           | \$F714                   |                              |                                     | No                                                         | ^[[15;2~                          | No                                                                                |                                    | Both Terminal.app and iTerm2 allow setting action to these key bindings. It might be possible to find a new set of character escape sequences that could be used by Emacs to identify these keys but I did not find any so far. Therefore I'm not using them.                                                                                                                                                                                                                                                                                                                                                                                        |
| ⇧F18           | \$F715                   |                              |                                     | No                                                         | ^[[17;2~                          | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⇧F19           | \$F716                   |                              |                                     | No                                                         | ^[[18;2~                          | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F1            | ^F704                    |                              |                                     | No                                                         |                                   | No                                                                                |                                    | For instance I noticed that pressing the <f13> twice in Emacs under iTerm2, I can see that it detects <f1><f13> sequence. But not when Emacs is running under Terminal.app.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ^F2            | ^F705                    |                              |                                     | No                                                         |                                   | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F3            | ^F706                    |                              |                                     | No                                                         |                                   | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F4            | ^F707                    |                              |                                     | No                                                         |                                   | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F5            | ^F708                    | \033[15;5~                   | ^[[15;5~                            | Yes                                                        | ^[[15;5~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F6            | ^F709                    | \033[17;5~                   | ^[[17;5~                            | Yes                                                        | ^[[17;5~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F7            | ^F70A                    | \033[18;5~                   | ^[[18;5~                            | Yes                                                        | ^[[18;5~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F8            | ^F70B                    | \033[19;5~                   | ^[[19;5~                            | Yes                                                        | ^[[19;5~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F9            | ^F70C                    | \033[20;5~                   | ^[[20;5~                            | Yes                                                        | ^[[20;5~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F10           | ^F70D                    | \033[21;5~                   | ^[[21;5~                            | Yes                                                        | ^[[21;5~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F11           | ^F70E                    | \033[23;5~                   | ^[[23;5~                            | Yes                                                        | ^[[23;5~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F12           | ^F70F                    | \033[24;5~                   | ^[[24;5~                            | Yes                                                        | ^[[24;5~                          | Yes                                                                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F13           | ^F710                    |                              |                                     | No                                                         |                                   | No                                                                                |                                    | Nothing found to allow Emacs to recognize these keys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^F14           | ^F711                    |                              |                                     | No                                                         |                                   | No                                                                                |                                    | By default iTerm2 generates the same sequences as for the first set of shift function keys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ^F15           | ^F712                    |                              |                                     | No                                                         |                                   | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F16           | ^F713                    |                              |                                     | No                                                         |                                   | No                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^F17           | ^F714                    |                              |                                     | No                                                         |                                   | No                                                                                |                                    | Both Terminal.app and iTerm2 allow setting action to these key bindings. It might be possible to find a new set of character escape sequences that could be used by Emacs to identify these keys but I did not find any so far. Therefore I'm not using them.                                                                                                                                                                                                                                                                                                                                                                                        |

| Key Label | Modifier / Unicode (hex) | Terminal.app Profile mapping | Sequence shown in Terminal after ^V | Add inside the Keyboard list of macOS Terminal Preferences | Sequence Shown in iTerm2 after ^V | Add to iTerm2 Profile Key Mapping | Value string extracted in xml file | Notes - all related to Emacs running inside a Terminal/shell window.                                                                                                                                                                                                                                                    |
|-----------|--------------------------|------------------------------|-------------------------------------|------------------------------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |                          |                              |                                     |                                                            |                                   |                                   |                                    | See: <ul style="list-style-type: none"> <li><a href="#">macOS Terminal</a></li> <li><a href="#">iTerm2</a></li> </ul>                                                                                                                                                                                                   |
| ^F18      | ^F715                    |                              |                                     | No                                                         |                                   | No                                |                                    | keys but I did not find any so far. Therefore I'm not using them.                                                                                                                                                                                                                                                       |
| ^F19      | ^F716                    |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F1       | ~F704                    | \033[17~                     | ^[ [ 17~                            | Yes                                                        |                                   | No                                |                                    | This has the same code as F6. Emacs see F6                                                                                                                                                                                                                                                                              |
| ⌘F2       | ~F705                    | \033[18~                     | ^[ [ 18~                            | Yes                                                        |                                   | No                                |                                    | This has the same code as F7. Emacs see F7.                                                                                                                                                                                                                                                                             |
| ⌘F3       | ~F706                    | \033[19~                     | ^[ [ 19~                            | Yes                                                        |                                   | No                                |                                    | This has the same code as F8. Emacs see F8.                                                                                                                                                                                                                                                                             |
| ⌘F4       | ~F707                    | \033[20~                     | ^[ [ 20~                            | Yes                                                        |                                   | No                                |                                    | This has the same code as F9. Emacs see F9.                                                                                                                                                                                                                                                                             |
| ⌘F5       | ~F708                    | \033[15;3~                   | ^[ [ 15;3~                          | Yes                                                        | ^[ [ 15;3~                        | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F6       | ~F709                    | \033[17;3~                   | ^[ [ 17;3~                          | Yes                                                        | ^[ [ 17;3~                        | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F7       | ~F70A                    | \033[18;3~                   | ^[ [ 18;3~                          | Yes                                                        | ^[ [ 18;3~                        | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F8       | ~F70B                    | \033[19;3~                   | ^[ [ 19;3~                          | Yes                                                        | ^[ [ 19;3~                        | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F9       | ~F70C                    | \033[20;3~                   | ^[ [ 20;3~                          | Yes                                                        | ^[ [ 20;3~                        | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F10      | ~F70D                    | \033[21;3~                   | ^[ [ 21;3~                          | Yes                                                        | ^[ [ 21;3~                        | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F11      | ~F70E                    | \033[23;3~                   | ^[ [ 23;3~                          | Yes                                                        | ^[ [ 23;3~                        | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F12      | ~F70F                    | \033[24;3~                   | ^[ [ 24;3~                          | Yes                                                        | ^[ [ 24;3~                        | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F13      | ~F710                    | \033[32~                     | ^[ [ 32~                            | Yes                                                        |                                   | No                                |                                    | Nothing found to allow Emacs to recognize these keys.                                                                                                                                                                                                                                                                   |
| ⌘F14      | ~F711                    | \033[33~                     | ^[ [ 33~                            | Yes                                                        |                                   | No                                |                                    | By default iTerm2 generates the same sequences as for the first set of shift function keys.                                                                                                                                                                                                                             |
| ⌘F15      | ~F712                    | \033[34~                     | ^[ [ 34~                            | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F16      | ~F713                    |                              |                                     | No                                                         |                                   | No                                |                                    | Both Terminal.app and iTerm2 allow setting action to these key bindings. It might be possible to find a new set of character escape sequences that could be used by Emacs to identify these keys but I did not find any so far. Therefore I'm not using them.                                                           |
| ⌘F17      | ~F714                    |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F18      | ~F715                    |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ⌘F19      | ~F716                    |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F1      |                          |                              |                                     | No                                                         |                                   | No                                |                                    | Nothing found to allow Emacs to recognize these keys.                                                                                                                                                                                                                                                                   |
| ^⌘F2      |                          |                              |                                     | No                                                         |                                   | No                                |                                    | Both Terminal.app and iTerm2 allow setting action to these key bindings. It might be possible to find a new set of character escape sequences that could be used by Emacs to identify these keys but I did not find any so far that do not also mean another sequence already used. More investigation might be needed. |
| ^⌘F3      |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F4      |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F5      |                          | \033[15;7~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F6      |                          | \033[17;7~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F7      |                          | \033[18;7~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F8      |                          | \033[19;7~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F9      |                          | \033[20;7~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F10     |                          | \033[21;7~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F11     |                          | \033[23;7~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F12     |                          | \033[24;7~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F13     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F14     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F15     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F16     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F17     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F18     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘F19     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F1     |                          |                              |                                     | No                                                         |                                   | No                                |                                    | Nothing found to allow Emacs to recognize these keys.                                                                                                                                                                                                                                                                   |
| ^⌘⇧F2     |                          |                              |                                     | No                                                         |                                   | No                                |                                    | Both Terminal.app and iTerm2 allow setting action to these key bindings. It might be possible to find a new set of character escape sequences that could be used by Emacs to identify these keys but I did not find any so far that do not also mean another sequence already used. More investigation might be needed. |
| ^⌘⇧F3     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F4     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F5     |                          | \033[15;8~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F6     |                          | \033[17;8~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F7     |                          | \033[18;8~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F8     |                          | \033[19;8~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F9     |                          | \033[20;8~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F10    |                          | \033[21;8~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F11    |                          | \033[23;8~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F12    |                          | \033[24;8~                   |                                     | Yes                                                        |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F13    |                          |                              |                                     | No                                                         |                                   | No                                |                                    | Nothing found to allow Emacs to recognize these keys.                                                                                                                                                                                                                                                                   |
| ^⌘⇧F14    |                          |                              |                                     | No                                                         |                                   | No                                |                                    | Both Terminal.app and iTerm2 allow setting action to these key bindings. It might be possible to find a new set of character escape sequences that could be used by Emacs to identify these keys but I did not find any so far that do not also mean another sequence already used. More investigation might be needed. |
| ^⌘⇧F15    |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F16    |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F17    |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F18    |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                         |
| ^⌘⇧F19    |                          |                              |                                     | No                                                         |                                   | No                                |                                    | Therefore, at this point, PEL does not use them.                                                                                                                                                                                                                                                                        |
| ⌘⇧F1      |                          |                              |                                     | No                                                         |                                   | No                                |                                    | Nothing found to allow Emacs to recognize these keys.                                                                                                                                                                                                                                                                   |
| ⌘⇧F2      |                          |                              |                                     | No                                                         |                                   | No                                |                                    | It is possible to set key sequences to these keys inside the                                                                                                                                                                                                                                                            |

| Key Label | Modifier / Unicode (hex) | Terminal.app Profile mapping | Sequence shown in Terminal after ^V | Add inside the Keyboard list of macOS Terminal Preferences | Sequence Shown in iTerm2 after ^V | Add to iTerm2 Profile Key Mapping | Value string extracted in xml file | Notes - all related to Emacs running inside a Terminal/shell window.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------|--------------------------|------------------------------|-------------------------------------|------------------------------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |                          |                              |                                     |                                                            |                                   |                                   |                                    | See: <ul style="list-style-type: none"> <li><a href="#">macOS Terminal</a></li> <li><a href="#">iTerm2</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ⇧F3       |                          |                              |                                     | No                                                         |                                   | No                                |                                    | preference of both applications. However, I did not yet find an other unique escape key sequence that I could assign to those keys to provide support in Emacs.<br>iTerm2 behaves a little better than Terminal when the keys are not defined: it passes the function key. But it could also be configured to ignore the sequence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ⇧F4       |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧F5       |                          | \033[15;4~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧F6       |                          | \033[17;4~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧F7       |                          | \033[18;4~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧F8       |                          | \033[19;4~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧F9       |                          | \033[20;4~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧F10      |                          | \033[21;4~                   |                                     | Yes                                                        |                                   | Yes                               |                                    | Emacs does not seem to be able to distinguish this from ⇧F10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ⇧F11      |                          | \033[23;4~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧F12      |                          | \033[24;4~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧⇧F13     |                          |                              |                                     | No                                                         |                                   | No                                |                                    | Nothing found to allow Emacs to recognize these keys.<br><br>It is possible to set key sequences to these keys inside the preference of both applications. However, I did not yet find an other unique escape key sequence that I could assign to those keys to provide support in Emacs.<br>iTerm2 behaves a little better than Terminal when the keys are not defined: it passes the function key. But it could also be configured to ignore the sequence.                                                                                                                                                                                                                                                                                                                                                                                                              |
| ⇧⇧F14     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧⇧F15     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧⇧F16     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧⇧F17     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧⇧F18     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧⇧F19     |                          |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^F1       | \$^F704                  |                              |                                     | No                                                         |                                   | No                                |                                    | Nothing found to allow Emacs to recognize these keys.<br><br>It is possible to set key sequences to these keys inside the preference of both applications. However, I did not yet find an other unique escape key sequence that I could assign to those keys to provide support in Emacs.<br>iTerm2 behaves a little better than Terminal when the keys are not defined: it passes the function key. But it could also be configured to ignore the sequence.                                                                                                                                                                                                                                                                                                                                                                                                              |
| ^F2       | \$^F705                  |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^F3       | \$^F706                  |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^F4       | \$^F707                  |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧F5      | \$^F708                  | \033[15;6~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧F6      | \$^F709                  | \033[17;6~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧F7      | \$^F70A                  | \033[18;6~                   |                                     | Yes                                                        |                                   | Yes                               |                                    | Emacs in either terminal application does not seem to detect.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ^⇧F8      | \$^F70B                  | \033[19;6~                   |                                     | Yes                                                        |                                   | Yes                               |                                    | Emacs in either terminal application does not seem to detect.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ^⇧F9      | \$^F70C                  | \033[20;6~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧F10     | \$^F70D                  | \033[21;6~                   |                                     | Yes                                                        |                                   | Yes                               |                                    | Emacs in either terminal application does not seem to detect.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ^⇧F11     | \$^F70E                  | \033[23;6~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧F12     | \$^F70F                  | \033[24;6~                   |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧⇧F13    | \$^F710                  |                              |                                     | No                                                         |                                   | No                                |                                    | Nothing found to allow Emacs to recognize these keys.<br><br>Both Terminal.app and iTerm2 allow setting action to these key bindings. It might be possible to find a new set of character escape sequences that could be used by Emacs to identify these keys but I did not find any so far that do not also mean another sequence already used. More investigation might be needed.<br><br>Therefore, at this point, PEL does not use them.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ^⇧⇧F14    | \$^F711                  |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧⇧F15    | \$^F712                  |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧⇧F16    | \$^F713                  |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧⇧F17    | \$^F714                  |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧⇧F18    | \$^F715                  |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧⇧F19    | \$^F716                  |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧⇧F20    | \$^F717                  |                              |                                     | No                                                         |                                   | No                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧←        |                          | <del>\033b</del><br>\033Y    |                                     | Replace                                                    |                                   | Replace                           |                                    | This original key sequence here is <b>\033b</b><br>However this keys sequence is problematic: <b>\033b</b> corresponds to “ <b>Esc b</b> ” which is translated to M-b by Emacs. <ul style="list-style-type: none"> <li>The consequence is that it becomes impossible to distinguish <b>M-b</b> from <b>M-⟨left⟩</b>.</li> <li>PEL provides a work-around to allow terminal to distinguish <b>M-b</b> from <b>M-⟨left⟩</b>: set the <b>pel-map-meta-left-right-to-Y-Z</b> user-option on so that PEL expects <b>M-Y</b> for the commands that are supposed to be mapped to <b>M-⟨left⟩</b>. Then setup the terminal profile to generate \033Y. <ul style="list-style-type: none"> <li>The <b>M-Y</b> key sequence was selected because it is not normally used and also because the <b>M-y</b> key sequence does not use the Shift marking concept.</li> </ul> </li> </ul> |
| ^←        |                          | \033[1;5D                    | ^[ [1;5D                            | Yes                                                        |                                   | No need                           |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧←        |                          | \033[1;2D                    |                                     | Yes                                                        |                                   | No need                           |                                    | Supported: does shift-select on corresponding unshifted keys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ^⇧←       |                          | \033[1;7D                    |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ^⇧⇧←      |                          | \033[1;8D                    |                                     | Yes                                                        |                                   | Yes                               |                                    | Supported: does shift-select on corresponding unshifted keys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ⇧⇧←       |                          | \033[1;4D                    |                                     | Yes                                                        |                                   | Yes                               |                                    | Supported: does shift-select on corresponding unshifted keys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ^⇧⇧←      |                          | \033[1;6D                    |                                     | Yes                                                        |                                   | No need                           |                                    | Supported: does shift-select on corresponding unshifted keys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ⇧↑        |                          | \033[1;3A                    |                                     | Yes                                                        |                                   | Replace                           |                                    | iTerm2 default profile maps ⇧↑ to sending 0x1b 0x1b 0x5b 0x41 with corresponds to Esc Up. In PEL we want to distinguish Esc Up from Meta Up. Therefore PEL changes the mapping here.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ^↑        |                          | \033[1;5A                    | ^[ [1;5A                            | Yes                                                        |                                   | No need                           |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ⇧↑        | \$F700                   | \033[1;2A                    |                                     | Yes                                                        |                                   | No need                           | ^[ [1;2A                           | Supported: does shift-select on corresponding unshifted keys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ^⇧↑       |                          | \033[1;7A                    |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Key Label | Modifier / Unicode (hex) | Terminal.app Profile mapping  | Sequence shown in Terminal after ^V | Add inside the Keyboard list of macOS Terminal Preferences | Sequence Shown in iTerm2 after ^V | Add to iTerm2 Profile Key Mapping | Value string extracted in xml file | Notes - all related to Emacs running inside a Terminal/shell window.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------|--------------------------|-------------------------------|-------------------------------------|------------------------------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |                          |                               |                                     |                                                            |                                   |                                   |                                    | See: <ul style="list-style-type: none"> <li><a href="#">macOS Terminal</a></li> <li><a href="#">iTerm2</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ^⌘↑       |                          | \033[1;8A                     |                                     | Yes                                                        |                                   | Replace                           |                                    | <ul style="list-style-type: none"> <li>iTerm2 default profile has ^⌘⌘↑ sending this code.</li> <li>PEL uses ^⌘⌘↑ instead for consistency.</li> </ul> Supported: does shift-select on corresponding unshifted keys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ⌘↑        |                          | \033[1;4A                     |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^↑        |                          | \033[1;6A                     |                                     | Yes                                                        |                                   | No need                           |                                    | Supported: does shift-select on corresponding unshifted keys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ⌘→        |                          | <del>\033f</del><br><br>\033Z |                                     | Replace                                                    |                                   | Replace                           |                                    | <p>This original key sequence here is <b>\033f</b></p> <p>However this keys sequence is problematic: <b>\033f</b> corresponds to “<b>Esc f</b>” which is translated to M-f by Emacs.</p> <ul style="list-style-type: none"> <li>The consequence is that it becomes impossible to distinguish <b>M-f</b> from <b>M-&lt;right&gt;</b>.</li> <li>PEL provides a work-around to allow terminal to distinguish <b>M-f</b> from <b>M-&lt;right&gt;</b>: set the <b>pel-map-meta-left-right-to-Y-Z</b> user-option on so that PEL expects <b>M-z</b> for the commands that are supposed to be mapped to <b>M-&lt;right&gt;</b>. Then setup the terminal profile to generate <b>\033Z</b>. <ul style="list-style-type: none"> <li>The <b>M-z</b> key sequence was selected because it is not normally used and also because the <b>M-z</b> key sequence does not use the Shift marking concept.</li> </ul> </li> </ul> |
| ^→        |                          | \033[1;5C                     | ^[ [1;5C                            | Yes                                                        |                                   | No need                           |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘→        |                          | \033[1;2C                     |                                     | Yes                                                        |                                   | No need                           |                                    | Supported: does shift-select on corresponding unshifted keys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ^⌘→       |                          | \033[1;7C                     |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^⌘⌘→      |                          | \033[1;8C                     |                                     | Yes                                                        |                                   | Yes                               |                                    | Supported: does shift-select on corresponding unshifted keys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ⌘⌘→       |                          | \033[1;4C                     |                                     | Yes                                                        |                                   | Yes                               |                                    | Supported: does shift-select on corresponding unshifted keys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| ^⌘→       |                          | \033[1;6C                     |                                     | Yes                                                        |                                   | No need                           |                                    | Supported: does shift-select on corresponding unshifted keys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ⌘↓        |                          | \033[1;3B                     |                                     | Yes                                                        |                                   | Replace                           |                                    | iTerm2 default profile maps ⌘↓ to sending 0x1b 0x1b 0x5b 0x42 with corresponds to Esc Down. In PEL we want to distinguish Esc Down from Meta Down. Therefore PEL changes the mapping here.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ^↓        |                          | \033[1;5B                     | ^[ [1;5B                            | Yes                                                        |                                   | No need                           |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘↓        |                          | \033[1;2B                     |                                     | Yes                                                        |                                   | No need                           |                                    | Supported: does shift-select on corresponding unshifted keys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ^⌘↓       |                          | \033[1;7B                     |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^⌘⌘↓      |                          | \033[1;8B                     |                                     | Yes                                                        |                                   | Replace                           |                                    | <ul style="list-style-type: none"> <li>iTerm2 default profile binds it to \033[1;5B (the escape sequence for ^↓)</li> </ul> Supported: does shift-select on corresponding unshifted keys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ⌘⌘↓       |                          | \033[1;4B                     |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^⌘↓       |                          | \033[1;6B                     |                                     | Yes                                                        |                                   | No need                           |                                    | Supported: does shift-select on corresponding unshifted keys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|           |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^⌘        |                          | \033[3;5~                     |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘⌘        |                          | \033[3;2~                     |                                     | Yes                                                        |                                   | Yes                               |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘         |                          | \033[3~                       |                                     | Yes                                                        |                                   | No need                           |                                    | Note: ⌘ is the delete key.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ^⌘⌘       |                          | \033\033[3;5~                 |                                     | Yes                                                        |                                   | Yes: hex                          |                                    | iTerm2: Send hex code: 0x1b 0x1b 0x5b 0x33 0x3b 0x35 0x7e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|           |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘End      |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| End       |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^End      |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^⌘End     |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘End      |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘⌘End     |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^⌘End     |                          |                               |                                     |                                                            |                                   |                                   |                                    | Does not work in either                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ^⌘⌘End    |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|           |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Home      |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘Home     |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^Home     |                          |                               |                                     |                                                            |                                   |                                   |                                    | Work in iTerm2, but not in Terminal.app                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ^⌘Home    |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘Home     |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘⌘Home    |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^⌘Home    |                          |                               |                                     |                                                            |                                   |                                   |                                    | Work in Terminal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ^⌘⌘Home   |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|           |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^         | ^0060                    | ^[ ^_*b^_                     |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘^        | \$\$^0060                | ^[ ^_*c^_                     |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ^⌘        | ^~0060                   |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ⌘^⌘       | \$\$^~0060               |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|           |                          |                               |                                     |                                                            |                                   |                                   |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |



Mappings available in iTerm2 not available in Terminal 🚧

| Key Label | Mapping    | iTerm2 Emacs | Note |
|-----------|------------|--------------|------|
| End       | \033[F     | <end>        |      |
| ⇧End      | \033[1;2F  |              |      |
| ^End      | \033[1;5F  | C-<end>      |      |
| ^⇧End     | \033[1;6F  |              |      |
| ⌘End      | \033[1;9F  |              |      |
| ⌘⇧End     | \033[1;10F |              |      |
| ^⌘End     | \033[1;13F |              |      |
| ^⌘⇧End    | \033[1;14F |              |      |
|           |            |              |      |
| Home      | \033[H     | <home>       |      |
| ⇧Home     | \033[1;2H  |              |      |
| ^Home     | \033[1;5H  | C-<home>     |      |
| ^⇧Home    | \033[1;6H  |              |      |
| ⌘Home     | \033[1;9H  |              |      |
| ⌘⇧Home    | \033[1;10H |              |      |
| ^⌘Home    | \033[1;13H |              |      |
| ^⌘⇧Home   | \033[1;14H |              |      |

Terminal Emulator Concepts — References

| Topic & Link                                                 | Description and Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Background Information                                       | The first list of references provide the knowledge on character encoding and escape sequence used by terminal emulators required to understand the way keys are encoded and the limitations of terminal emulators. Understanding this is required if one which to understand the various proposals for “lossless keyboard input” for terminal emulators.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Wikipedia - ASCII simple                                     | A quick overview of what ASCII standard is. The ASCII table shows the control codes in the first column. Those control codes are called Control- <i>x</i> where <i>x</i> is the character shown in the third column of the table. Which makes <b>Ctrl-@</b> , <b>CTRL-A</b> up to <b>Ctrl-_</b> . Note that has historically been type by holding the <b>Control</b> key and the key <b>A</b> , without holding the Shift key.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Wikipedia - ASCII                                            | More complete description of the ASCII standard and its history.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Wikipedia - ANSI escape code                                 | The basis of terminal emulator software taking information from typed keys is the ANSI <u>escape sequence</u> codes, more specifically the CSI sequences. This page explains the overall concepts and their history.<br>Note the following: <ul style="list-style-type: none"><li>The <b>ESC</b> ASCII character is value 27 (base 10), which is 033 octal and 0x1B hexadecimal.</li><li>All <b>escape sequences</b> start with ESC followed by a second byte in the range 0x40-0x5F (ASCII <b>@A-Z [ \ ] ^ _</b>).<ul style="list-style-type: none"><li>This is the same range of characters selected to represent control characters.</li><li>That represent a total of 32 escape sequences.</li><li>This 2 byte sequence can be replaced by a single byte, but we can’t use that now: it clashes with UTF-8 values.</li></ul></li><li>The <b>CSI</b> (Control Sequence Introducer) is a sequence of several bytes:<ul style="list-style-type: none"><li>starting with <b>ESC [</b></li><li>followed by any number (could be none) of parameter bytes in the range 0x30-0x3F (ASCII <b>0-9 : ; &lt;=&gt; ?</b>)<ul style="list-style-type: none"><li>sequences containing the parameter bytes <b>&lt;=&gt; ?</b> are considered “private” to the manufacturer.</li></ul></li><li>followed by any number of <i>intermediate bytes</i> in the range of 0x20-0x2F (ASCII <b>&lt;space&gt;</b> and <b>! " # \$ % &amp; ' ( ) * + , - . /</b>)</li><li>ending with a <i>final byte</i> in the range 0x40-0x7E (ASCII <b>@A-Z [ \ ] ^ _ ` a-z {   } ~</b>)<ul style="list-style-type: none"><li>final byte in the range 0x70-0x7E (<b>p-z {   } ~</b>) are private.</li></ul></li></ul></li></ul> |
| Wikipedia - Unicode range 0000-0FFF                          | The Unicode range 0000-0FFF holds all letters, numbers and punctuation available on US and most European keyboards. Those values, augmented with modifier keys can be used to represent values normally not supported by terminal emulators, such as <b>C-S-a</b> and <b>C-`</b> (which do not correspond to ASCII control characters).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Wikipedia - Unicode range E000-F8FF used as private use area | The macOS Unicode value for the cursor and function keys are in 0xF700 - 0xF72F range, which makes them part of the “private use area”.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Limitations of Terminal Emulators and improvement proposals  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 🚧                                                            | TODO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Packages providing Lossless Keyboard Input                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Editing Property Lists with plutil                           | macOS provides the <b>plutil</b> command line utility to test, read, convert and modify macOS Property list files, like the file <b>~/Library/Preferences/com.apple.Terminal.plist</b> which contains all Terminal.app preferences.<br><br>This is the file that needs to be modified to add key bindings, you can use the instructions in term-keys.el package (see below) to do so.<br><br>⚠ Before modifying the file with plutil, <b>make a backup copy</b> , in case something goes wrong! ⚠                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Github - term-keys - lossless keyboard input for Emacs       | This package allows creating binding to several keys that are not available to Emacs running inside a text (termcap) terminal emulator process. For example, the <b>C-`</b> and <b>C-/</b> key-chords are normally not accessible in terminal mode, simply because these do not correspond to ASCII control character values. <ul style="list-style-type: none"><li>The term-key package can build the list of translation codes to make these key-chords accessible in terminal-base Emacs. The mechanism used is specific to the terminal emulator software, and several terminal emulators are supported, including the macOS Terminal.app.</li><li>Term-key uses a byte sequence prefix that is used for all the extra key definitions. To be able to bind the new keys in Emacs <b>the prefix used by term-key must not be already used in any Emacs binding</b>.<ul style="list-style-type: none"><li>The default (but customizable) prefix is “\033\037” which corresponds to <b>ESC C-_</b> which is <b>C-M-_</b> binding in Emacs, that used to not be bound to anything until Emacs 28 with bounds it to undo-redo.</li></ul></li></ul><br>The term-keys.el readme describes how to make modifications to the Terminal.app Property to support new keys for Emacs. See the <u>macOS Terminal section</u> of the file (⚠ make a backup of the file first!). <ul style="list-style-type: none"><li>To edit a macOS plist file, use the open command from the shell. It will open the plist file inside Xcode.</li></ul>                                                                                                                                                               |