## **Emacs Support for LFE — Lisp Flavoured Erlang**

| Description   | <u>Keystroke</u>   | Function   | Note   |
|---|--|--|--|
| LFE - Lisp<br>Flavoured Erlang  | This table describes Emacs   |  | L activates it when the <b>pel-use-lfe</b> user-option is turned on (t).   |
| File associations See also: Seedbar   | The Ife-mode is activated  | an be useful when editing LFE files. for files with .lfe, .lfes and .lfesh file or support for the LFE files when <b>pel</b>   |  |
| Open this PDF file.<br>See also: <u>∑ Help/Info</u>   | <f11> SPC C-1 <f1><f12> <f1></f1></f12></f1></f11>   | (pel-help-pdf &optional OPEN-<br>WEB-PAGE)   | Open the local copy of the $\mathfrak{P}\mathfrak{l}$ - $\mathbf{LFE}$ PDF file unless a command prefix (like $\mathbf{C}-\mathbf{u}$ ) was used. In that case it opens the Github-hosted file instead.  |
| Customize PEL LFE Support   | <f11> SPC C-1 <f2></f2></f11>  | (pel-customize-pel &optional<br>OTHER-WINDOW)  | Customize PEL LFE support.  • If OTHER-WINDOW is non-nil (use <b>C-u</b> ), display in another window.   |
| Customize Emacs   | <f12> <f2><br/><f11> SPC C-1 <f3></f3></f11></f2></f12>  | (pel-customize-library &optional   | Customize Emacs LFE support: the <b>Ife</b> customization group, which controls the setting  |
| _FE support   | <f12> <f3></f3></f12>  | OTHER-WINDOW)  | of the lfe-mode.  • If OTHER-WINDOW is non-nil (use <b>C-u</b> ), display in another window.   |
| Major mode:<br>fe-mode  | The life-mode is the major   | mode used to edit LFE files and  | buffers.   |
| Turn Ife-mode on  | M-x lfe-mode   | (lfe-mode)   | Turn on the lfe-mode, the major mode for LFE buffers.  • Automatically activated for LFE files (see the list in the first row above).  |
| Useful Minor<br>Modes to use in<br>Ife-mode   | Several minor modes can be used to activate various features when editing LFE files.  • PEL provides key binding for toggling several of those minor modes, as shown below.  • With PEL, activate a minor mode for LFE files by adding its function name to the pel-lfe-activates-minor-modes user-option.  • Built-in show-paren-mode highlights the parens that matches the one before or after point.  • Lispy for short & sweet semantically aware Lisp editing.  • ParInfer mode (with either ParInfer Indent Mode or Parinfer Paren Mode) to infer parentheses and indentation.  • rainbow delimiters mode, to highlight nested parens with a colour identifying the nesting level.  The following commands can be used to toggle useful minor modes for Common Lisp files manually: |  |  |
| Toggle semantic parser<br>mode on/off   | • <f12> M-s<br/>• <m-f12> M-s</m-f12></f12>  | (semantic-mode &optional ARG)  | Toggle parser features (Semantic mode).  • With a prefix argument ARG, enable Semantic mode if ARG is positive, and disable in otherwise. If called from Lisp, enable Semantic mode if ARG is omitted or nil.  |
| Toggle <u>Lispy</u> mode  | <f11> SPC L M-S<br/><f12> M-L</f12></f11>  | (pel-lispy-mode &optional ARG)   | In Semantic mode, Emacs parses the buffers you visit for their semantic content.  Toggle lispy-mode on/off. Lispy is a minor mode for navigating and editing LISP dialect.  Toggle lispy-mode on/off. Lispy is a minor mode for navigating and editing LISP dialect.   |
| See also: <u>ֆքչվ- <b>Lispy</b></u>   | <f11> SPC L M-L</f11>  |  | Requires lispy external package. PEL downloads, installs and configure it where pel-use-lispy user option is set to t. Please read the information on lispy web site.  pel-lispy-mode calls lispy-mode but also prepares hydra, loaded dynamically in PEL.   |
| Toggle show-paren<br>mode on/off  | • <f12> M-9<br/>• <m-f12> M-9</m-f12></f12>  | (show-paren-mode &optional ARG)  | Toggle visualization of matching parens (Show Paren mode).  • With a prefix argument ARG, enable Show Paren mode if ARG is positive, and disable the provide.  |
| See also: <u><b>y Highlight</b></u>   | • <f11> SPC L M-9<br/>• <f11> h (</f11></f11>  |  | <ul> <li>it otherwise.</li> <li>Show Paren mode is a global minor mode. When enabled, any matching parenthesi is highlighted in 'show-paren-style' after 'show-paren-delay' seconds of Emacs idle time.</li> </ul>   |
| Enable/Disable coloured highlight of nested blocks (),{},[]   | • <f12> M-r<br/>• <m-f12> M-r<br/>• <f11> SPC L m R</f11></m-f12></f12>  | (rainbow-delimiters-mode<br>&optional ARG)   | Highlight nested parentheses, brackets, and braces with different colours according to their depth.  • Customize the depth and colours with M-x customize-group rainbow-   |
| See also: <u>N Highlight</u>  | • <f11> h R</f11>  |  | delimiters  Requires: rainbow-delimiters.el  PEL activates this when the pel-use-rainbow-delimiters user option is set to t.   |
| Toggle ParInfer mode on/off   | • <f12> M-i<br/>• <m-f12> M-i</m-f12></f12>  | (parinfer-mode &optional ARG)  | Toggle use of the ParInfer mode. In this mode parenthesis depth or indentation is automatically inferred.  |
|   | <f11> SPC L M-i</f11>  |  | <ul> <li>⚠ Current implementation of ParInfer does not support hard tabs for indentation. It untabifies and replace them by spaces.</li> <li>➡ Requires the <u>parinfer</u> package.</li> <li>➡ PEL activates this when the <u>pel-use-parinfer</u> user option is set to t.</li> </ul>  |
| Toggle between<br>ParInfer Indent Mode  | • <f12> M-I<br/>• <m-f12> M-I</m-f12></f12>  | (parinfer-toggle-mode)   | Switch ParInfer mode between Indent Mode and Paren Mode.  Requires the parinfer package.   |
| and Paren Mode  | <f11> SPC L M-I</f11>  |  | PEL activates this when the <b>pel-use-parinfer</b> user option is set to <b>t</b> .   |
| Note that if the ParInfer mode is not active yet, and it enters ParInfer Indent Mode, the function checks with changing the format after prompting when it finds code that does not conform to the promoted style. The 2 ParInfer modes are:     ParInfer Indent Mode:     Gives full control of indentation, while ParInfer corrects parens.     Disables the rainbow-delimiter-mode if used, to show closing parens in light gray since they can change |  | ens.  ng parens in light gray since they can change as code indentation is changed.  ne parentheses format if the code does not corresponds to the promoted style.  ion.  atching parens in same colors. |  |
| Toggle superword- mode  See also:      ∑ Text Modes   | • <f11> t m p<br/>• <f12> M-p</f12></f11>  | (superword-mode &optional ARG)   | Toggle superword-mode: a minor mode that treats <u>snake case</u> as one word. In CommonLisp '-' and '_' are treated as part of words.  With a prefix argument ARG, enable superword mode if ARG is positive, and disable otherwise.  PEL provides the <f12> M-p key for the programming language modes where <u>snake case</u> is popular (Emacs Lisp, C, C++, Erlang, Python, etc)</f12> |
| • <u>∑ Search/Replace</u> LFE buffer  Commands  |  | lisp-mode with the addition of the focan use the lispy-mode which enhan  |  |
| Insert brackets pair  | • M-[<br>• <f12> [<br/>• <m-f12> [</m-f12></f12>   | (Ife-insert-brackets &optional ARG)  | Insert a bracket pair.  • With numeric argument, enclose as many S-expressions in brackets.  • Leave point after open-bracket.   |
|   | But it is a problematic or<br>the <b>Esc</b> [ characters.<br>The end result is that all<br>To solve that, PEL does the to<br>PEL unbinds the <b>M</b> -[ k  | When Emacs is running in terminal n<br>key prefixes using functions keys sta   | De because all function keys starting at F5 are encoded with a sequence that begins with mode M-[ is undistinguishable from Esc [ . arting with F5 no longer work properly!  |

| Description   | <u>Keystroke</u>   | Function   | Note  |  |
|---|--|--|---|--|
| Compile and evaluate  | Use the following commands to evaluate LFE source code in the inferior LFE process where you can then use it.  Each of these commands take a prefix argument. You can use any prefix argument like <b>C-u</b> or <b>M</b>  |  |   |  |
| Evaluate the complete buffer  | • <f12> M-c<br/>• <m-12> M-c</m-12></f12>  | (pel-lfe-eval-buffer &optional AND-GO)                               | Send the complete buffer to the inferior LFE process.  • Start the inferior LFE process if it's not already running.  • Switch to the LFE buffer afterwards when AND-GO argument is non-nil.  |  |
| Evaluate the S-<br>Expression before point  | С-х С-е  | (Ife-eval-last-sexp &optional AND-GO)                                | Send the previous sexp to the inferior LFE process.  • 'AND-GO' means switch to the LFE buffer afterwards.  |  |
| Evaluate the current region   | C-c C-r  | (Ife-eval-region START END & Optional AND-GO)                        | Send the current region (from 'START' to 'END') to the inferior LFE process.  • 'AND-GO' means switch to the LFE buffer afterwards.   |  |
| Navigation in LFE code  | This current list below describe the specialized commands only. See the others inside Navigation You can also use the lispy mode for extra single key commands for navigation across Lisp source code. See NIM- Lispy  Several emacs lisp specific commands will also work in a LFE buffer. These will soon be specialized for LFE as to make them independent from the  |  |   |  |
| To next/previous top-<br>level forms  | Emacs Lisp commands. Update pending.  Move to beginning /end of S-expression forms. Jump over comments. Can be defun, defer, defconst, defmacros, free-from S-exp, etc  The following 'beginning-of-defun' and 'end-of-defun' are standard Emacs commands. They have limitations:  They only navigate across any top-level form.  They do not discriminate between a defun, a defmacro or even an unless form or any other top-level form.  They do not skip doc-strings unless you set open-paren-in-column-0-is-defun-start user option to ignore '(' in strings.)  PEL provides an additional commands, complementing the standard Emacs commands:  pel-beginning-of-next-defun which moves forward to the beginning of the next form  pel-end-of-previous-defun which moves backward to the end of the previous top-level form   |  |   |  |
| Change defun navigation functions   | • <f12> M-N<br/>• <m-f12> M-N</m-f12></f12>  | (pel-toggle-paren-in-column-0-is-defun-start)                        | Toggle interpretation of a paren in column 0 and display new behaviour.  • It toggles standard Emacs `open-paren-in-column-0-is-defun-start' user option,   |  |
| (toggle between Emacs default and PEL's)  | <f11> SPC 1 M-N</f11>  |  | between: • Interpret '(' in column 0 as always stating a defun (even in strings) - the default. • Ignore '(' in strings. A '(' in column 0 is not automatically interpreted as starting a defun.  |  |
| Backward to beginning of defun  See also:   Navigation                                      | • C-M-a<br>• C-M- <home><br/>• <f6> p<br/>• <f6> <up></up></f6></f6></home>  | (beginning-of-defun &optional ARG)                                   | Move backward to the beginning of a top-level form: function definition, macros, etc  • With ARG, do it that many times. Negative ARG means move forward to the ARGth following beginning of defun.  ► Shift marking is available in graphics mode, not in terminal mode (for C-M-a and C-M- <home>). However <f6> p and <f6> <up> handle Shift-marking fine in terminal mode.</up></f6></f6></home>    |  |
|   | By default Emacs treats all opening parenthesis character in the first column as a defun.  This causes this function to stop at function definition inside strings.  The behaviour can be changed by setting the open-paren-in-column-0-is-defun-start user option to nil.  PEL provides pel-toggle-paren-in-column-0-is-defun-start to toggle that user option. You can also change it dynamically with <f12> M-N.  Moves to beginning of next function of the same nesting level of the current location. It skips the functions and methods that are more deeply nested.</f12>  |  |   |  |
| Forward to end of defun   | <pre>• <f12> <right> • <m-f12> <right></right></m-f12></right></f12></pre>   | (end-of-defun &optional ARG)   | Move forward to next end of defun.  With argument, do it that many times. Negative argument -N means move back to Nth   |  |
| See also: <u><b>∑ Navigation</b></u>  | • C-M-e<br>• C-M- <end><br/>• <f6> <right></right></f6></end>  |  | preceding end of defun.  ►Shift marking is available in graphics mode, not in terminal mode (for C-M-e and C-M- <end>). <f6> <right> and <f12> <right> support Shift-marking in terminal mode.  ↑ This command moves to the end of the next top-level function or class.</right></f12></right></f6></end>   |  |
| Forward to start of next top-level form   | • <f6> n<br/>• <f6> <down></down></f6></f6>  | (pel-beginning-of-next-defun<br>&optional SILENT DONT-<br>PUSH_MARK) | Move forward to the beginning of the next top-level form: function definition, macros, etc  • Beeps if does not find beginning of next function unless SILENT is non-nil.  • If the beginning of next function is found, push the start location to the mark ring unless DONT-PUSH_MARK is non-nil. Move back to previous position with M−ˆ.   ►Shift marking is available with <f6> <down></down></f6> |  |
|   | This command is generic and for Emacs Lisp, moves to the beginning of the next top-level form.  It also complements what end-of-defun does. It moves forward but to the beginning of the function definition, which is often what users expect.  By default Emacs treats all opening parenthesis character in the first column as a defun.  This causes this function to stop at function definition inside strings.  The behaviour can be changed by setting the open-paren-in-column-0-is-defun-start user option to nil.  PEL provides pel-toggle-paren-in-column-0-is-defun-start to toggle that user option. You can also change it dynamically with <f12> M-N.</f12>   |  |   |  |
| Backward to end of previous defun   | • <f12> <left><br/>• <m-f12> <left></left></m-f12></left></f12>  | (pel-end-of-previous-defun<br>&optional SILENT DONT-                 | Move backwards to the end of the previous top-level form.  • Beeps if does not find end of previous function unless SILENT is non-nil.  |  |
|   | <f6> <left></left></f6>  | PUSH_MARK)   | If the end of previous function is found, push the start location to the mark ring unless DONT-PUSH_MARK is non-nil. Move back to previous position with M−ˆ.      ★Shift marking is available.   |  |
| To next/previous selected S-expression form or defun or  **  **  **  **  **  **  **  **  ** | Move to beginning /end of specified S-expression forms. Jump over comments and docstrings. Can be defun, defer, defconst, defmacros, free-from S-exp, groups of them, etc  PEL provides the following powerful commands: pel-elisp-beginning-of-next-form and pel-elisp-beginning-of-previous-forms.  Their behaviour depends on the value of the pel-elisp-target-forms, pel-elisp-user-specified-targets and pel-elisp-user-specified-targets2 user-options, as well as their corresponding global or buffer-local values if they exist.  The user options give you the ability to select the type of targets. You can either select the standard behaviour (target the top level forms), or use one of the other 7 types of targets. These include moving to top-level defun form, to any defun form, to defun, defmacro, defsubst, defalias, defadvice forms, to include the eieio forms, the variable definition forms or specify you own set of forms (and those can include the require and provide forms).  More information is available in the docstring of these user options.  More information is available in the docstring of these user options.  When your buffer is using the Emacs-Lisp major mode, use the <f12> <f2> key sequence to open the relevant customization buffer which will allow you to see and change the persistent or current session settings.  PEL also provides specialized versions of these commands:  pel-elisp-beginning-of-next-defun which moves to the beginning of next defun, pel-elisp-to-name-of-previous-defun to the previous one.  pel-elisp-to-name-of-next-defun which moves to the name of the next defun, pel-elisp-to-name-of-previous-defun to the previous one.</f2></f12> |  |   |  |
| Change target form for commands:  • <f12> <up> • <f12> <down></down></f12></up></f12>       | • <f12> M-n<br/>• <m-f12> M-n</m-f12></f12>  | (pel-elisp-set-navigate-target-<br>form &optional GLOBALLY)          | Select form navigation behaviour.  Select the behaviour of the following navigation functions:  'pel-elisp-beginning-of-next-form' and  'pel-elisp-beginning-of-previous-form'.   |  |
| • <f12> <c-up> • <f12> <c-down></c-down></f12></c-up></f12>                                 | <f11> SPC 1 M-n</f11>  | nil, in which case it modifies the • For persistent change, open the | target-forms' user-option only for the current buffer unless the GLOBALLY argument is non-behaviour for all buffers. The change in behaviour does not persist across Emacs sessions. customization buffer with <f12> <f2>, modify the value of the pel-elisp-target-forms, s and pel-elisp-user-specified-targets2 user-options and save the customize buffer.</f2></f12>                               |  |

| Section of the color of the c   | Description  | <u>Keystroke</u>  | Function   | <u>Note</u>  |  |  |
|--|--|---|--|--|--|--|
| Configuration temporary  - In the surrour of size and to present the support  - In the surrour of size and to present the surround of the surr |  | 7 7 77  |  |  |  |  |
| the command feel electron-square careging from 1, board or 4.11.9 4-b. it can also the command feel by the Million white and the profession of the professio | definition form  |   |  | specified-targets and pel-elisp-user-specified-targets2 user options. That value |  |  |
| Segmental by the striper against spect of the spectral spectrum.  ***The control of the control of the spectral spectrum of the s | **   | <f11> SPC 1 <down></down></f11>   |  |  |  |  |
| of the same of the name of the same of the | all top-level forms  |   | be specified by the TARGET argument: specify one of the symbols valid for 'pel-elisp-  |  |  |  |
| **Monasta to provision profition with IR-1 discoverance in an extraction of the control of the c | <ul><li> all defun</li><li> all defun, defsubst,</li></ul> | If no valid form is found, do<br>and non-nil on success.  | • If no valid form is found, don't move point, issue an error describing the failure unless SILENT is non-nil, in which case the function returns nil on error |  |  |  |
| defended, defeation of the command of the road facility and and configurate to rance like the rest of command.  The command is the road facility and the command of the road facility and the command of the road facility and the command of the road facility of the road facility of the command of the road facility of the road facility of the command of the road facility of th |  | Move back to previous position with M—`.  Shift marking is available with <f12> <down></down></f12> |  |  |  |  |
| Because to the name of the n   | defconst, defcustom,                                       |   |  |  |  |  |
| **Count of target the behaviorant for example, to more to rest define or any group of top-west or indepted definition from the defaults, defination, offered and the production of the produc    |  | _   | •  |  |  |  |
| define and the provision of control and the provision of the policy of the provision of control and the |  | , ,   |  |  |  |  |
| ### Toward to the name of high response of the control of the cont |  | defvar, etc   | •  |  |  |  |
| **Out can also control the values of these 2 user-options for all buffers or on each buffer sequentially:  **You can also control the values of these 2 user-options from the control part of  |  | target-forms', 'pel-elis  | sp-user-specified-targets' and 'pel  |  |  |  |
| In passible to stup a buffer to use the  |  |   |  |  |  |  |

| Description   | <u>Keystroke</u>   | Function  | <u>Note</u>   |
|---|--|---|---|
| Move block backward  See also:  •   | • C-M-b • C-M- <left> • C-[ C-b • Esc C-b • Esc C-<left> 1</left></left>   | (backward-sexp &optional ARG)   | Move backward across one balanced expression (sexp).  • With ARG, do it that many times. Negative arg -N means move forward across N balanced expressions. This command assumes point is not in a string or comment.  • C-M-b : ► Shift marking is available in graphics mode, not in terminal mode.  • C-M-<1eft> : ► Shift marking works with this command.   |
|   | ♦ C-M- <left> does not work on Windows, but H-<left> works.         ⚠ With PEL: if you want to use Esc C-<left> binding you must ensure that pel-windmove-on-esc-cursor user option is set to nil.         ♠ Several Linux distros map C-M-<left> to desktop workspace operation. In that case you can either use another key binding or change Linux key binding in Systems-&gt;settings-&gt;keyboard-&gt;shortcuts to prevent it from using that key sequence.</left></left></left></left> |   |   |
| Forward block/list See also:   Navigation                                 | C-M-n  | (forward-list &optional ARG)  | Move forward across one balanced group of parentheses.  This command will also work on other parentheses-like expressions defined by the current language mode.  With ARG, do it that many times.  Negative arg - N means move backward across N groups of parentheses.  This command assumes point is not in a string or comment.  C-M-n : ► Shift marking is available in graphics mode, not in terminal mode.  |
| Move block forward  See also:  •   Navigation  • (CLCB s1.lisp)           | • C-M-f • C-M- <right> • C-[ C-f • Esc C-f • Esc C-<right></right></right>   | (forward-sexp &optional ARG)  | Move forward across one balanced expression (sexp).  • With ARG, do it that many times. Negative arg -N means move backward across N balanced expressions. This command assumes point is not in a string or comment.  • C-M-f : Shift marking is available in graphics mode, not in terminal mode.  • C-M- <right> : Shift marking works with this command.  • C-M-<right> does not work on Windows, but H-<right> does.</right></right></right>  |
|   | Several Linux distros map  | •   | I must ensure that <b>pel-windmove-on-esc-cursor</b> user option is set to nil.  Space operation. In that case you can either use another key binding or change Linux key from using that key sequence.   |
| in/out of lists   | Move in and out of list nes  | ted levels.   |   |
| Backward Up/outside sexp hierarchy  See also:  Navigation  (CLCB s1.lisp) | • C-M-u • C-M- <up> • C-[ C-u • Esc C-u • Esc C-<up></up></up>   | (backward-up-list &optional ARG<br>ESCAPE-STRINGS NO-SYNTAX-<br>CROSSING) | Move backward out of one level of parentheses.  This command will also work on other parentheses-like expressions defined by the current language mode. With ARG, do this that many times. A negative argument means move forward but still to a less deep spot.  Mith PEL: if you want to use Esc C- <up> binding you must ensure that pelwindmove-on-esc-cursor user option is set to nil.  C-M-u : Shift marking is available in graphics mode, not in terminal mode.  C-M-<up> is Shift marking works with this command.  C-M-<up> does not work on Windows, but H-<up> does.</up></up></up></up>                                 |
| Forward Up/outside sexp hierarchy See also: Navigation                    | C-M-]  | (up-list &optional ARG ESCAPE-<br>STRINGS NO-SYNTAX-<br>CROSSING)         | <ul> <li>Move forward out of one level of parentheses.</li> <li>This also works on other parentheses-like expressions defined by the current language mode.</li> <li>With ARG, do this that many times. A negative argument means move backward but still to a less deep spot.</li> <li>If ESCAPE-STRINGS is non-nil (as it is interactively), move out of enclosing strings as well.</li> <li>If NO-SYNTAX-CROSSING is non-nil (as it is interactively), prefer to break out of any enclosing string instead of moving to the start of a list broken across multiple strings. On error, location of point is unspecified.</li> </ul> |
| Forward Down/inside sexp/block  See also:  Navigation  (CLCB s1.lisp)     | • C-M-d • C-M- <down> • C-[ C-d • Esc C-d • Esc C-<down></down></down>   | (down-list &optional ARG)   | Move forward down one level of parentheses.  This also works on other parentheses-like expressions defined by the current language mode.  With ARG, do this that many times. A negative argument means move backward but still go down a level.  This command assumes point is not in a string or comment.  Muth PEL: if you want to use Esc C- <down> binding you must ensure that pelwindmove-on-esc-cursor user option is set to nil.  C-M-d: Shift marking is available in graphics mode, not in terminal mode.  C-M-<down> does not work on Windows, but n-<down> does.</down></down></down>                                     |
| By sentences  | Move to beginning /end of statement of comment sentence.  • The variable 'sentence-end' is a regular expression that matches ends of sentences. Useful in comments. In code it moves to the beginning or end of a definition form (defun, defmacro, etc)   |   |   |
| Move to beginning of sentence or form                                     | M-a  | (backward-sentence &optional ARG)   | Move backward to start of sentence. With arg, do it arg times.  Shift marking works with this command.  |
| Move forward to end of sentence or form                                   | М-е  | (forward-sentence &optional ARG)  | Move forward to next end of sentence. With argument, repeat. With negative argument, move backward repeatedly to start of sentence.  Shift marking works with this command.   |
| LFE Shell (Lisp Flavoured Erlang)   | <f12> z</f12>  | (run-ife CMD)   | Run an inferior LFE process, input and output via a buffer '*inferior-lfe*'.  • If 'CMD' is given, use it to start the shell, otherwise:  |
|   | <f11> z C-1</f11>  |   | Requires the <u>Ife-mode package</u> and LFE (Lisp Flavoured Erlang) installed.  PEL activates this when the <b>pel-use-Ife</b> user option is set to <b>t</b> .  |
| LFE Shell   |  |   | comization buffers are available in the LFE shell buffer.  unction name to the pel-inferior-lfe-activates-minor-modes user-option.  |
| Open this PDF file. See also: <u>Nelp/Info</u>                            | <f12> <f1></f1></f12>  | (pel-help-pdf &optional OPEN-WEB-PAGE)                                    | Open the local copy of the <u><math>\mathfrak{P}I</math> - LFE</u> PDF file unless a command prefix (like $\mathbf{C} - \mathbf{u}$ ) was used. In that case it opens the Github-hosted file instead.   |
| ∑ Customize PEL LFE support   | <f12> <f2></f2></f12>  | (pel-customize-pel &optional OTHER-WINDOW)                                | Customize PEL LFE support.  • If OTHER-WINDOW is non-nil (use <b>C-u</b> ), display in another window.  |
| ∑ Customize Emacs LFE support   | <f12> <f3></f3></f12>  | (pel-customize-library &optional OTHER-WINDOW)                            | Customize Emacs LFE support: the <b>Ife</b> customization group, which controls the settings of the Ife-mode.  • If OTHER-WINDOW is non-nil (use <b>C-u</b> ), display in another window.   |
| Shell Commands  | The following commands are   | available in the LFE shell.   | /   |
| text input  |  | ntrol the input text prepared to send                                     | to the LFE process.   |
| Delete character forward  | C-d  | (comint-delchar-or-maybe-eof ARG)   | Delete ARG characters forward or send an EOF to subprocess.  • Sends an EOF only if point is at the end of the buffer and there is no input.  |
| Delete character<br>backward  | <delete></delete>  | (backward-delete-char-untabify<br>ARG &optional KILLP)                    | , ,   |
|   |  |   |   |

| Description   | <u>Keystroke</u>           | Function   | <u>Note</u>  |
|---|----------------------------|--|--|
| Delete current input text                                   | C-c C-u                    | (comint-kill-input)  | Kill all text from last stuff output by interpreter to point.  Squick way to delete the complete input line after the prompt.  |
| Delete previous word  | C-c C-w                    | (backward-kill-word ARG)                                     | Kill characters backward until encountering the beginning of a word.  • With argument ARG, do this that many times.  |
| Prompt history: next  | <c-down></c-down>          | (comint-next-input ARG)                                      | Cycle forwards through input history.  |
| Prompt history: previous                                    | <c-up></c-up>              | (comint-previous-input ARG)                                  | Cycle backwards through input history, saving input.   |
| Format typed input  |                            |  |  |
| Continue entry on new line without sending to LFE           | C-c SPC                    | (comint-accumulate)  | Accumulate a line to send as input along with more lines.  This inserts a newline so that you can enter more text to be sent along with this line. Use RET to send all the accumulated input, at once. The entire accumulated text becomes one item in the input history when you send it.   |
| Indent all lines of a list<br>starting just after point     | С-м-q                      | (indent-sexp &optional ENDPOS)                               | Indent each line of the list starting just after point.  If optional arg ENDPOS is given, indent each line, stopping when ENDPOS is encountered.  In the LFE shell use this with C−c SPC to build a list with its elements on multiple lines and indent it. When at the end of the list, terminate the S-expression, return to the top of the input with C−c C−a and then type C−M−q   |
| Indent the current line of the LFE shell input              | <tab></tab>                | (indent-for-tab-command<br>&optional ARG)                    | Indent the current line or region, or insert a tab, as appropriate.  This function either inserts a tab, or indents the current line, or performs symbol completion, depending on 'tab-always-indent'. The function called to actually indent the line or insert a tab is given by the variable 'indent-line-function'.  If a prefix argument is given, after this function indents the current line or inserts a tab, it also rigidly indents the entire balanced expression which starts at the beginning of the current line, to reflect the current line's indentation.  In most major modes, if point was in the current line's indentation, it is moved to the first non-whitespace character after indenting; otherwise it stays at the same position relative to the text.  If 'transient-mark-mode' is turned on and the region is active, this function instead calls 'indent-region'. In this case, any prefix argument is ignored. |
| send to LFE process   | Use the following commands | s to send text or signal to the LFE pro                      | ocess.   |
| Send input  | RET                        | (comint-send-input &optional NO-NEWLINE ARTIFICIAL)          | Send input to process.   |
| Send EOF  | C-c C-d                    | (comint-send-eof)  | Send an EOF to the current buffer's process.   |
| Interrupt/break LFE   | C-c C-c                    | (comint-interrupt-subjob)                                    | Interrupt the current subjob.  The LFE process stops and displays the break prompt:  BREAK: (a)bort (A)bort with dump (c)ontinue (p)roc info (i)nfo (1)oaded (v)ersion (k)ill (D)b-tables (d)istribution  Depending on the state of the system, this does not always seem to work properly. If the buffer freezes type C-g to restore control.   |
| Stop current subjob   | C-c C-z                    | (comint-stop-subjob)   | Stop the current subjob.  If there is no current subjob, you can end up suspending the top-level process running in the buffer. If you accidentally do this, use M-x comint-continue-subjob to resume the process. (This is not a problem with most shells, since they ignore this signal.)  |
| Send quit signal to LFE subjob                              | C-c C-\                    | (comint-quit-subjob)   | Send quit signal to the current subjob.  |
| Navigate  | Use the following commands | to navigate across LFE prompts.                              |  |
| Move point to<br>beginning of line, then<br>to process mark | C-c C-a                    | (comint-bol-or-process-mark)                                 | Move point to beginning of line (after prompt) or to the process mark.  • The first time you use this command, it moves to the beginning of the line (but after the prompt, if any). If you repeat it again immediately, it moves point to the process mark.  • The process mark separates the process output, along with input already sent, from input that has not yet been sent. Ordinarily, the process mark is at the beginning of the current input line; but if you have used C-c SPC to send multiple lines at once, the process mark is at the beginning of the accumulated input.   |
| Move point to next prompt entry                             | C-c C-n                    | (comint-next-prompt N)                                       | Move to end of Nth next prompt in the buffer.  • If 'comint-use-prompt-regexp' is nil, then this means the beginning of the Nth next 'input' field, otherwise, it means the Nth occurrence of text matching 'comint-prompt-regexp'.  |
| Move point to previous prompt entry                         | C-c C-p                    | (comint-previous-prompt N)                                   | Move to end of Nth previous prompt in the buffer.  • If 'comint-use-prompt-regexp' is nil, then this means the beginning of the Nth previous 'input' field, otherwise, it means the Nth occurrence of text matching 'comint-prompt-regexp'.  |
| Reposition buffer   | Use the following commands | s to re-position the buffer inside its w                     | indow, operations that are similar to scrolling.   |
| Display last output at the top of the window                | C-c C-r                    | (comint-show-output)   | Display start of this batch of interpreter output at top of window.  Sets mark to the value of point when this command is run.   |
| Put end of buffer at the end of the window                  | C-c C-e                    | (comint-show-maximum-output)                                 | Put the end of the buffer at the bottom of the window.   |
|   | C-c C-m                    | (comint-copy-old-input)                                      | Insert after prompt old input at point as new input to be edited.  Calls 'comint-get-old-input' to get old input.  |
| Write interpreter output to specified file                  | C-c C-s                    | (comint-write-output FILENAME<br>&optional APPEND MUSTBENEW) | Write output from interpreter since last input to FILENAME.  Any prompt at the end of the output is not written.  If the optional argument APPEND (the prefix argument when interactive) is non-nil, the output is appended to the file instead.  If the optional argument MUSTBENEW is non-nil, check for an existing file with the same name. If MUSTBENEW is 'excl', that means to get an error if the file already exists; never overwrite. If MUSTBENEW is neither nil nor 'excl', that means ask for confirmation before overwriting, but do go ahead and overwrite the file if the user confirms. When interactive, MUSTBENEW is nil when appending, and t otherwise.   |
| Cleanup output  |                            |  |  |
| Delete last output  | C-c C-o                    | (comint-delete-output)                                       | Delete all output from interpreter since last input.  • Does not delete the prompt.  |
| Clean LFE shell buffer                                      | C-c M-o                    | (inferior-lfe-clear-buffer)                                  | Delete the output generated by the LFE process.  All lines before the current prompt are deleted from the buffer. The Emacs-maintained history is still available.   |

| Description   | <u>Keystroke</u>  | Function                                      | <u>Note</u>  |
|---|---|---|--|
| Search command history                                      | Use the following commands to retrieve a similar command from the command history |   |  |
| Display command<br>history in the *Input<br>History* buffer | C-c C-1   | (comint-dynamic-list-input-ring)              | Display a list of recent inputs entered into the current buffer.   |
| Previous matching history entry                             | C-c M-r   | (comint-previous-matching-input-from-input N) | Search backwards through input history for match for current input.  • (Previous history elements are earlier commands.)  • With prefix argument N, search for Nth previous match.  • If N is negative, search forwards for the -Nth following match.  |
| Next matching history entry                                 | C-c M-s   | (comint-next-matching-input-from-input N)     | Search forwards through input history for match for current input.  • (Following history elements are more recent commands.)  • With prefix argument N, search for Nth following match.  • If N is negative, search backwards for the -Nth previous match.   |
| Insert nth argument used in call of the previous command    | С-с .   | (comint-insert-previous-<br>argument INDEX)   | Insert the INDEXth argument from the previous Comint command-line at point.  • Spaces are added at beginning and/or end of the inserted string if necessary to ensure that it's separated from adjacent arguments.  • Interactively, if no prefix argument is given, the last argument is inserted.  • Repeated interactive invocations will cycle through the same argument from progressively earlier commands (using the value of INDEX specified with the first command).  • This command is like 'M' in bash. |

## LFE - References

| Document   | Notes   |
|--|---|
| LFE - Lisp Flavored Erlang   |   |
| LFE @ Wikipedia  | Has a quick overview of the language.   |
| LFE Home page  | LFE Home  |
| LFE - Emacs Support  |   |
| Ife-mode @ GitHub  | LFE Emacs support written by Robert Virding   |
| flycheck-rebar3 @ GitHub   | Flycheck integration for rebar3 projects  |
| LFE - Books  | Published LFE Books repository @ GitHub, , a list of published LFE books.   |
| Quick Start with rebar3_lfe  | Start by reading this book that presents how to build LFE projects and introduces LFE and rebar3.   |
| The LFE Tutorial   | Getting started with LFE  |
| Casting SPELs in LFE   | A port of <u>Casting Spells in Lisp</u> using LFE. It describes how to use LFE to write distributed, fault-tolerant, message-passing game application.  |
| Structure and Interpretation of Computer Programs -<br>The LFE Edition           | A revisit of the MIT classic SICP book using LFE. An in-going project (source at GitHub here) with the first 2 chapters completed as of May 2021.   |
| <u>LFE - References</u>  |   |
| LFE Guide  |   |
| LFE Style Guide  | The LFE Style Guide @ GitHub  |
| Data Types in LFE  |   |
| LFE REPL functions, environment, variables, etc                                  |   |
| LFE compatibility with Common Lisp   |   |
| LFE compatibility with Clojure   |   |
| LFE and Docker   |   |
| LFE - Presentation Videos  |   |
| LFE  | Robert Virding - LFE - a lisp flavour on the Erlang VM (Lambda Days 2016) - Video presentation @ YouTube where Robert Virding introduces LFE .  |
| LFE & Flavors for LFE  | Robert Virding - Lisp Machine Flavors for LFE implementing objects on Erlang OTP - EEF17 Conference @ YouTube   |
| LFE - Code Examples  |   |
| lfe / examples @ Github  | A set of examples you can use to learn LFE  |
| LFE @ RosettaCode  | More LFE code examples identified by categories   |
| LFE - Libraries  |   |
| <u>hex.pm</u> - The package manager for Erlang ecosystem                         |   |
| Ife packages registered @ hex.pm   |   |
| LFE - Libraries - <u>Flavors</u>   | Flavors is on object-oriented extension of Lisp and had a strong influence on the design CLOS (Common Lisp Object System).  |
| LFE Flavors @ GitHub   | The LFE implementation of Flavors.  |
| Introduction to Flavors  | The 1985 manual, adapted from text written by David Moon and Daniel Weinreb.  |
| Flavors 1.1.1.1 Documentation @ Franz Lisp                                       | The current Flavors manual at Franz Lisp  |
| LFE - Tools  |   |
| rebar3 — The official build tool for Erlang - @<br>rebar3.org<br>rebar3 @ Github | The rebar3 tool is required for Erlang and LFE development.  • rebar3.org  • Links to some of the main sections of the manual:  • Getting started with rebar3 - documentation - start by reading this.  • To install Erlang you may want to read Installing Erlang in my about-erlang project: it provides several links about multiple ways to install Erlang including the Adopting Erlang link included in the rebar3 manual.  • Basic usage  • Workflow  • Configuration  • Commands  • Testing |
| rebar3 Ife @ GitHub  • LFE rebar3 Plugin manual                                  | "A comprehensive LFE rebar3 plugin for all your LFE tooling needs".  Tool written by Duncan McGreggor  Extends rebar3 with LFE specific commands.  Start by reading its setup and features  There's a separate LFE rebar3 Plugin manual   |