Manage and Launch Shells, REPLs & Applications

	Manag	e and Launch S	hells, REPLs & Applications	
Description	<u>Keystroke</u>	Function	<u>Note</u>	
Emacs Shells Last updated on:	Emacs provides multiple ways of executing shell commands or running programming language specialized shells and programming language REPL. • It provides multiple terminal emulators and shells. There's also several external packages that provide more. This page describe the commands available to start these shells, terminal emulators and REPLs inside Emacs buffer windows.			
			keys are not always available: these major modes operate in to input modes:	
2025-10-23	 shell input (char) mode: where the shell gets the keys Emacs input (line) mode: where Emacs key bindings are available. See Shells/Terminals Comparisons for more information. 			
Open this PDF file. See also: <u>∑ Help/Info</u>	<f11> z <f1></f1></f11>	(pel-help-pdf &optional OPEN-WEB-PAGE)	Open this <u>Shells</u> local PDF. If the prefix argument (like C-u or M) is used, then it opens the remote GitHub hosted raw PDF instead. If the pel-flip-help-pdf-arg user-option is set it's the other way around.	
© Customize PEL shell management control	<f11> z <f2></f2></f11>	(pel-customize-pel &optional OTHER-WINDOW)	Customize PEL shell support • If OTHER-WINDOW is non-nil (like C-u or M), open customize buffer in other window.	
© Customize Emacs shell & term control	<f11> z <f3></f3></f11>	(pel-customize-library &optional OTHER-WINDOW)	Customize Emacs shell group. • If OTHER-WINDOW is non-nil (like C-u or M) , open customize buffer in other window.	
∑ Customize Emacs shell control	<f11> SPC SPC s <f3></f3></f11>	(pel-customize-library &optional OTHER-WINDOW)	Customize Emacs shell-mode support. • If OTHER-WINDOW is non-nil (use C - u), display in another window.	
	<f12> <f3></f3></f12>	()	In shell-mode the < f12 > < f3 > key opens the shell customization group.	
<u>See also:</u>	<f11> SPC SPC t <f3> <f12> <f3></f3></f12></f3></f11>	(pel-customize-library &optional OTHER-WINDOW)	Customize Emacs term-mode support. If OTHER-WINDOW is non-nil (use C-u), display in another window. In term-mode the <f12> <f3> key opens the term customization group.</f3></f12>	
Shells/Terminals Comparisons	(112) (13)		 A The key sequence is only available in term and ansi-term buffers when the buffer is operating in Emacs (line) input mode. Toggle to line input mode by typing C-c C-j. 	
Launch OS	With the following command you	can launch an operating system	application that will run independently of Emacs.	
Application from Emacs	<f11> A</f11>	(counsel-linux-app &optional ARG)	Launch a Linux desktop application, similar to Alt- <f2>. • When ARG is non-nil, ignore NoDisplay property in *.desktop files.</f2>	
		On Linux, requires the coun	sel external package. 🕢 PEL activates it when the pel-use-counsel user option is set to t.	
		(counsel-osx-app)	Launch a macOS application via ivy interface.	
		On macOS, requires the col	unselx-osx-app external package.	
List Emacs	Emacs can run several synchron	ous and asynchronous processes	s as child processes.	
Child Processes	• <f11> z ?</f11>	(list-processes &optional	Display a list of all processes that are Emacs sub-processes.	
See also: <u>∑ Help/Info</u>	• <f11> ? e C-p</f11>	QUERY-ONLY BUFFER)	With optional argument (C-u): only processes with the query-on-exit flag set are listed. Any process listed as exited or signalled is actually eliminated after the listing is made. and command inside a system shell process and display the result inside an Emacs buffer.	
Run Commands in system shell	Use these commands from but		Also see: Executing Shell Commands in Emacs from Mastering Emacs.	
Run a shell command	• M-! • %-L	(shell-command COMMAND &optional OUTPUT-BUFFER ERROR-BUFFER)	Prompts for the command in the minibuffer, show the command output in the next window in the *Shell Command Output* buffer in Fundamental mode. Both stdout and stderr are shown. To send stderr to another buffer set shell-command-default-error-buffer user-option. With C-u prefix, insert output in the current buffer.	
Run a shell command as sudo	<f11> z !</f11>	(pel-shell-as-sudo)	Prompt for command, then sudo password and execute the command in a shell with sudo credentials. Print the results in the *Shell Command Output* buffer in Fundamental mode.	
Run a shell command asynchronously	M-&	(async-shell-command COMMAND &optional OUTPUT-BUFFER ERROR- BUFFER)	Execute string COMMAND asynchronously in background. Like 'shell-command', but adds '&' at end of COMMAND to execute it asynchronously. The output appears in the buffer "Async Shell Command". That buffer is in shell mode.	
Run a command on a marked region • C-u : replace region with cmd output	M-	(shell-command-on-region START END COMMAND &optional OUTPUT-BUFFER REPLACE ERROR-BUFFER DISPLAY-ERROR-BUFFER)	Execute string COMMAND in inferior shell with region as input. Normally display output (if any) in temp buffer "Shell Command Output"; Prefix arg means replace the region with it. Return the exit code of COMMAND. Mark the region first. Then type M-I. Emacs prompts for the command to run. To replace the region with the command output: type C-u M-I.	
Open a shell or terminal buffer See Shells/ Terminals Comparisons	Several terminal-like shells are available. They can be grouped in 3 categories: 1. <u>eshell</u> . Pure Emacs shell with all commands implemented in Emacs Lisp. Supports Unix style commands in any Operating System. Also support evaluation of Lisp expressions. If you know Emacs Lisp this can be extremely useful. 2. The other classical terminal and shells: shell , ansi-term and term . These all have pros and cons. They run slower than vterm but they are built-in. Of those, the ansi-term has more capabilities. 3. There are others such as term and eat. See below.			
Open an eshell	<f11> z e</f11>	(eshell &optional ARG)	Open an eshell buffer. To open another eshell instance: use the C-u prefix To open a numbered eshell: use the C-u number prefix	
Eshell manual Mastering Eshell	Implementation: • eshell is implemented in Emacs Lisp and implements several Unix commands, making them available to OS that do not natively have them (like Windows). If command is not implemented it runs the one found in PATH. Extra Features • Can redirect output into a buffer. The grep command output goes to a grep result buffer which can be used to open the various files. • Support lisp commands. Supports • Cursor lateral cursor line beginning/end, kill, yank. • command tab expansion, command line re-direction. • Command history (and shows history item # in mini-buffer). • Can run Python scripts. Limitations: • Meta-cursor word-move keys (which start inside separate buffer) • Clear screen does not work • No bash alias, however eshell can remember its own aliases and will prompt for commands often ran & unfound.			
Open a shell in shell-mode	<f11> z s</f11>	(pel-shell)	Opens an inferior shell in the <i>current window</i> or moves point to the *shell* buffer already showing in	
In shell-mode See: ∑ shell-mode	On Emacs prior to 29.1, E process commands and the • The Emacs shell command is	macs built-in shell commands cr PEL implementation fixes that. C	one of the windows. hell command and ensures it opens inside the current window, like term , ansi-term , ielm and vterm . teates a window in the <i>other</i> window. This is a surprising behaviour compared to the other inferior on Emacs 29.1 and later the shell command behaves properly (and so does pel-shell) t-mode , which makes it quite versatile. Emacs keys are possible, however the sub-process does not a that directly read the input.	
	Supports Can run multiple shell, each in Meta-cursor word-move keys. Command history (but with Co Can run Python scripts. Can ri Can run Common-Lisp (clisp) Limitations:	ontrol Up/Down). un Python REPL, REPL is OK, ec	Cursor lateral cursor line beginning/end, kill, yank. bash, zsh alias ho is OK, no Python colouring, but each command is colored.	

<u>Description</u>	<u>Keystroke</u>	Function	<u>Note</u>		
Open an ANSI term shell See: <u>∑ term-mode</u>	<f11> z a</f11>	(ansi-term PROGRAM &optional NEW-BUFFER- NAME)	 Normally operates in character mode, in which up/down navigation and kill/yank is not possible. Change to line mode to do that: Use C-x C-j to change to line mode an allow movement, mark, saving. When done use C-c C-k to switch to character mode. 		
	Newer implementation than te Specificities: C-x is mapped to term-escape Supports: Scroll up/down with M- <up>, bash alias, bash tab expansio clear screen, Command histor Can run Python scripts. Rulimitations: Natively runs in character models.</up>	rm. You can even rue-char M- <down> Is col comn y unning Python shell: REPL is OK</down>			
			file does not seem to be used).		
Open a term shell	<f11> z t</f11>	(term PROGRAM)	Prompts for shell to use. Default is /bin/bash. Can use others. Opens in current window.		
See: <u>▼ term-mode</u>	Same access as normal shell: caterminal editors like vim, synapti Supports Cursor lateral cursor line begir Is colouring, columns are aligr bash alias, bash tab expansio Can run Python scripts. Runi Limitations:	un use the bash alias, tab-autocc c, etc nning/end, kill, yank. ned n ning Python shell: REPL is OK, ed			
	 In GUI Emacs: Meta-left/right cursor word move do not work. Use Esc-b and Esc-f here instead. Normal Emacs keystrokes does not always work, it depends on the programs that are executed from the shell. When it stops working, either use C-c b to switch to another buffer or exit the shell to gain control to Emacs keys in this buffer. Vertical cursor history works only with Control-Up and Control-Down Emacs keys with Meta do not work. The ones with Control do work. Can run top in the buffer, but then C-c does not stop it. To stop it split the buffer in 2, kill the buffer with C-x k, confirm, close the buffer. 				
Open a <u>vterm shell</u>	<f11> z v</f11>	(vterm &optional BUFFER-	Create a new vterm shell. A fast & full-featured *nix-compliant shell.		
See <u>vterm-mode</u>		NAME)	d Although vterm is relatively new this is the fastest shell. Highly recommended.		
	While the buffer is in Vterm month in Vterm-Copy the function ke Avterm maximum scroll back user option which	m-Copy mode which allows navi ode you cannot use the PEL fund ys are interpreted by Emacs so t ck size (the maximum number of	gation and text copy in the buffer. ction keys as they are interpreted by the program running in the vterm shell. All other Emacs keys work. the PEL function key mappings do work. lines the buffer can retain) is limited to 100000 lines. The value used is set by the vterm-max- use commands that print a long number of lines, you may want to change this value.		
Open a eat terminal emulator	<f11> z f</f11>	(eat &optional PROGRAM ARG)	Start a new Eat terminal emulator in a buffer. • Start a new Eat session, or switch to an already active session. Return the buffer selected (or created).		
See <u>∑ eat-mode</u>			 With a non-numeric prefix ARG, create a new session. With a numeric prefix ARG (like C-u 42 <f11> z f), switch to the session with that number, or create it if it doesn't already exist.</f11> With double prefix argument ARG, ask for the program to run and run itin a newly created session. PROGRAM can be a shell command. 		
	Requires the emacs-eat ext	ernal package. 🔼 PEL activates	s it when the pel-use-emacs-eat user-option is set to t .		
Specialized <u>REPL</u>	You can run several read eval run loop programming shells in Emacs. Several of those REPLs, like ielm and run-python are part of Emacs. PEL makes the other available or adds some functionality to others when the corresponding pel-use- user option variable for the respective programming language is turned on (set to t). It is also possible to use shells to run other REPL programs directly from an embedded terminal shell like vterm (see above). The command for the Emacs Lisp REPL, ielm, is accessible via the pel:execute key prefix (<f11> z). The REPL for the other programming languages are accessible via the pel:repl key prefix (<f11> z r). All REPL commands are accessible via the <f12> z key binding of their respective major mode.</f12></f11></f11>				
Start Shell See also: <u>ֆն - Arc</u>	<f11> z r C-a</f11>	(run-arc CMD)	Run an inferior Arc process, input and output via buffer '*arc*'. • If there is a process already running in '*arc*', switch to that buffer. • With argument, allows you to edit the command line (default is value of 'arc-program-name'). • Runs the hook 'inferior-arc-mode-hook' (after the 'comint-mode-hook' is run). • (Type h in the process buffer for a list of commands.) Requires the arc-mode external package.		
From Arc buffer	<f12> z</f12>		☑ PEL activates this when the pel-use-arc user-options is set to t .		
Emacs Lisp shell See also:	• <f11> z 1</f11>	(ielm)	Open the Interactive Emacs Lisp Mode buffer where you can interactively evaluate Emacs Lisp expressions, a REPL for Emacs Lisp.		
⊈βί - Emacs Lisp	• <f12> z</f12>		 Switches to the buffer '*ielm*', or creates it if it does not exist. <f12> z is only available in buffer in emacs-lisp-mode.</f12> 		
Open a Common Lisp REPL pel-use-common-lisp must be on. See also: pt - Common Lisp	• <f11> z r L</f11>	(pel-cl-repl &optional N)	Open or switch to Common-Lisp REPL buffer window. Use the Common Lisp REPL selected by the PEL user-options: SLY when `pel-used-sly' is on and `pel-clisp-ide' is set to sly, Slime when `pel-use-slime'is on and `pel-clisp-ide' is set to slime, the inferior lisp mode otherwise. The behaviour of the command is affected by the optional argument N: with no buffers running REPL: N is nil or absent: open REPL in current window N is positive: open REPL in other window N is negative: create new REPL in current window with 1 or more REPL already running (if more than 1, prompt for one) if selected buffer is inside an opened window: switch to that window if selected buffer is not in an opened window:		
• From lien mode:			 N is nil or absent: open REPL in current window N is positive: open REPL in other window 		
From lisp-mode:	• <f12> z</f12>		N is negative: create new REPL in current window.		

<u>Description</u>	Keystroke	Function	Note
Elixir Shell :IEx	<f11> z r x</f11>	(alchemist-iex-run &optional	Start an IEx process.
See also: <u>\$\mathbb{9}\tau\$ - Elixir</u>		ARG)	 Show the IEx buffer if an IEx process is already run. Requires the <u>alchemist</u> package and the <u>Elixir programming language</u> for your OS. PEL activates it when <u>pel-use-elixir</u> and <u>pel-use-alchemist</u> user-options are both set to t.
Start Erlang Shell	• <f11> z r e</f11>	(erlang-shell)	Start a new Erlang shell.
See also: <u>PI - Erlang</u>	• C-c C-z • <f12> z</f12>		 The variable 'erlang-shell-function' decides which method to use, default is to start a new Erlang host. It is possible that, in the future, a new shell on an already running host will be started. C-c C-z starts the Erlang Shell from the Erlang Mode. <f11> z r starts it anytime, as long as it was installed.</f11> Under PEL this command is available only when the pel-use-erlang user option is set to t.
Open a Forth shell	<f11> z r f</f11>	(run-forth)	Start an interactive forth session.
See also: <u>\$\text{\$\sigma} \cdot - Forth</u>			 Prompt for a Forth executable. gforth is a good free implementation. On macOS, you can install it with brew install gforth in a terminal shell. A Notice that it is integrated with the Home-brew Emacs installation and it will upgrade your Homebre-based Emacs unless its pinned (in which case Homebrew won't install gforth).
From Forth buffer:	<f12> z</f12>		Requires the forth-mode external package 2 PEL installs and activates when the pel-use-forth user option is t. It also requires a Forth interpreter (which must be installed separately)
Start Haskell Shell See also: <u>\$\mathbb{Y}\tilde{\text{L}}\tilde{\text{- Haskell}}\tilde{\text{Haskell}}\tilde{\text{B}}\tilde{\text{L}}\tilde{\text{- Haskell}}\tilde{\text{B}}\tilde{\text{L}}\tilde{\text{- Haskell}}\tilde{\text{B}}\tilde{\text{B}}\tilde{\text{L}}\tilde{\text{- Haskell}}\tilde{\text{B}}\tilde{\text{B}}\tilde{\text{L}}\tilde{\text{B}}\tilde{\text{L}}\tilde{\text{B}}\text{B</u>	<f11> z r h</f11>	(run-haskell)	Show the inferior-haskell buffer. Start the process if needed. Requires the haskell-mode and Haskel installed.
From buffer	<f12> z</f12>		PEL activates this when the pel-use-haskell and the pel-use-haskell-mode user-options are set to t .
Start Javascript REPL	<f11> z r i</f11>	(js-comint-repl &optional CMD)	Start a NodeJS REPL process. • Optional CMD will override 'js-comint-program-command' and 'js-comint-program-arguments', as
See also: §[- Javascript	<f12> z</f12>		well as any nvm setting. • When called interactively use a universal prefix to set CMD. • Requires the <u>is-comint</u> Emacs package and node installed. • PEL activates this when pel-use-js is activated and pel-use-js-comint user option is set to t.
Start Julia Shell	<f11> z r j</f11>	(julia-snail)	Start a Julia REPL and connect to it, or switch if one already exists.
See also: <u>\$1 - Julia</u>			The following buffer-local variables control it: 'julia-snail-repl-buffer' (default: *julia*) 'julia-snail-port' (default: 10011) To create multiple REPLs, give these variables distinct values (e.g.: *julia my-project-1* and 10012). Requires the julia-snail Emacs package and the Julia programming language installed. It also
From Julia buffer:	<f12> z</f12>		requires vterm (see above). PEL activates this when the pel-use-julia user option is set to t .
LFE Shell (<u>Lisp Flavoured</u> <u>Erlang</u>)	<f11> z r C-1</f11>	(run-lfe 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: 'inferior-lfe-program' 'inferior-lfe-program-options' -env TERM vt100. Requires the Ife-mode package and LFE (Lisp Flavoured Erland) installed.
From LFE buffer:	<f12> z</f12>		PEL activates this when the pel-use-life user option is set to t .
Lua Shell See also: <u>⊉〔-Lua</u> • From Lua buffer:	<f11> z u <f12> z</f12></f11>	(pel-lua-repl) • (lua-start-process &optional NAME PROGRAM STARTFILE &rest SWITCHES) • (lua-ts-inferior-lua)	Run a Lua interpreter in an inferior process. The actual command used depends on whether peluse-tree-sitter is on and the value of pel-lua-repl-used user-option. The command provided by the lua-mode is used when pel-use-tree-sitter is nil or when pel-lua-repl-used value is always-use-lua-mode-repl: lua-start-process This provide the most control: Start a Lua process named NAME, running PROGRAM. PROGRAM defaults to NAME, which defaults to 'lua-default-application'. The real command provided by lua-ts-mode is used otherwise.
Start OCaml Shell See also:	<f11> z r o</f11>	(run-ocaml)	Run an OCaml REPL process. I/O via buffer '*OCaml*'. Requires the tuareg external package.
From OCaml buffer	<f12> z</f12>		PEL activates this when the pel-use-ocaml and the pel-use-tuareg user-options are set to t. Run a Perl REPL in a *Perl-REPL* buffer.
Start Perl REPL	<f11> z r P</f11>	(perl-repl)	
See: <u>\$1 - Perl</u>	45105		 Requires the perl-repl external package activated by perl-use-perl-repl user-option. The perl-repl-file-path user option specifies the name of the Perl REPL program, which may optionally specify the explicit file path.
	<f12> z</f12>		PEL provides the <u>peri-repl</u> shell script which uses the Perl command line.
Start Python Shell See also: Pi Python	<f11> z r p</f11>	(run-python &optional CMD DEDICATED SHOW)	
From Python buffer:	<f12> z</f12>		 For a given buffer and same values of DEDICATED, if a process is already running for it, it will do nothing. This means that if the current buffer is using a global process, the user is still able to switch it to use a dedicated one.
Start Chez Scheme Shell See also:	<f11> z r C-z</f11>	(pel-chez-repl &optional N)	Run the Chez REPL in window specified by N. • By default use the other window. If a numeric argument is specified, its value correspond to the direction of a numeric keypad: 8
From Chez buffer	<f12> z</f12>		That is: • 8: up • 4: left • 6: right • 2: down • 0 and 5 identify the current window. Requires the Chez Scheme installed. PEL activates it when the pel-use-chez is set to t.
Start Chibi Scheme Shell See also:	<f11> z r C-i</f11>	(pel-chibi-repl &optional N)	Run the Chibi REPL in window specified by N. • See 'pel-chez-repl' for complete description. Requires the Chibi Scheme installed. PEL activates it when the pel-use-chibi is set to t.
From Chibi buffer Stort Chicken	<f12> z</f12>	(not objective to 10 to 1	Due the Chiefen DEDI is window as selfed by N
Start Chicken Scheme Shell See also:	<f11> z r C-k</f11>	(pel-chicken-repl &optional N)	Run the Chicken REPL in window specified by N. • See 'pel-chez-repl' for complete description. Requires the Chicken Scheme installed. PEL activates it when the pel-use-chicken is set to t.
From Chicken buffer Start Combit Sabarra		(not now bit we to all the	Dura the Combit Coheme DEDI in windows and iffer the N
Start Gambit Scheme Shell		(pel-gambit-repl &optional N)	Run the Gambit Scheme REPL in window specified by N. • See 'pel-chez-repl' for complete description.
See also: Scheme From Gambit buffer	1127 2		Requires the gambit.el file and Chicken Scheme installed. PEL activates it when the peluse-gambit is set to t.
From Gambit buffer			

<u>Description</u>	<u>Keystroke</u>	Function	<u>Note</u>
Start Gerbil Scheme Shell See also: <u>\$\mathbb{P}\tau\$ - Gerbil</u> Scheme	<f11> z r C-e</f11>	(pel-gerbil-repl &optional N)	Run the Gerbil REPL in window specified by N. • See 'pel-chez-repl' for complete description. Requires the gerbil-mode external package and Gerbil Scheme installed. PEL activates it when the pel-use-gerbil is set to t.
From Gerbil buffer	<f12> z</f12>		
Start Guile Shell	<f11> z r C-g</f11>	(pel-guile-repl &optional N)	Run the Guile REPL in window specified by N. • See 'pel-chez-repl' for complete description. Requires Guile Scheme installed. PEL activates it when the pel-use-guile is set to t.
From Guile buffer	<f12> z</f12>		
Start MIT/GNU Scheme Shell	<f11> z r C-m</f11>	(pel-mit-scheme-repl &optional N)	Run the MIT/GNU Scheme REPL in window specified by N. • See 'pel-chez-repl' for complete description.
From MIT/GNU Scheme buffer	<f12> z</f12>		Requires MIT/GNU Scheme Scheme installed. PEL activates it when the pel-use-mit-scheme is set to t .
Start Racket Shell See also: §1 - Racket	<f11> z r C-r</f11>	(pel-racket-repl &optional N)	Run the Racket REPL in window specified by N. • See 'pel-chez-repi' for complete description.
From Racket buffer	<f12> z</f12>		Requires the <u>racket-mode</u> external package and Racket installed. PEL activates it when the <u>pel-use-racket</u> is set to t.
Start Scsh Scheme Shell	<f11> z r</f11>	(pel-scsh-repl &optional N)	Run the Scsh REPL in window specified by N. • See 'pel-chez-repl' for complete description. Requires Scsh Scheme Scheme installed. PEL activates it when the pel-use-scsh is set to t.
From Scsh buffer	<f12> z</f12>	Ī	

Shells - References

Topic & Link	Extra Notes
GNU Emacs - Running Shell Commands	
Eshell manual	
Difference between various emacs shells	
Difference between various emacs shells	
How to run multiple shells on Emacs	
EmacsWiki: Ansi Term	Quick overview
Emacswiki: Ansi Term Hints	Several hints
Copy/Paste in Ansi Term	Quick overview of the capability for cut/paste.
Launch GUI emacs from command line in OSX	This describes a solution on how to start the GUI emacs in OSX, but not in the background
How to launch GUI Emacs from command line in OSX?	This one describes the solution for handling it in the background
Run commands in background	Describes the & and the disown
Executing commands in background from bash scripts	
Pass command arguments to bash scripts	
<u>explainshell.com</u>	Online application where you can type a shell command: the app explains each argument. Very useful.