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Emacs support for Unix Shell Scripting

Description	Keystroke	Function	Note
UNIX-like Shell Script Editing See: • **comparison of command shells** • **ShellCheck Wiki** • **ShellCheck on-line** • **PEL sh support activation** ☛ Activate sh-mode on files ☛ • Make script executable ☛ • Distinguish script from sourced scripts ☛ • Script extensions ☛ • Σ **Indentation** control ☛ • shellcheck syntax check ☛ • Specialized templates ☛ • superword-mode on ☛	Emacs provides the built-in **sh-mode** to support UNIX-style shell script programming. See **UNIX shell scripting with ksh/bash** • It supports several shell variants including: • **bash** - see **Bash Reference Manual** • **csh** - see **An Introduction to C shell** , **csh OpenBSD man page**, **csh NetBSD Man page**, • **ksh**, **sh** (the Bourne shell), **zsh** - see **zsh Manual** and **The Z Shell** page Several other shell types are supported . Use the **sh-set-shell** command to force the use of a specific shell type, with **C-c :** PEL activates Unix shell-script support with the **pel-use-sh** user-options. • When **pel-use-sh** on: the **<f11> SPC H** prefix is made available. In a shell script buffer these commands are accessible via the **<f12>** key. The **auto-mode-alist** user-option identifies path patterns files that must use the **sh-mode** or **shell-script-mode** (which is an alias for sh-mode). • **pel-auto-mode-alist**: identifies extra entries that PEL automatically adds to the auto-mode-alist. • Add `/bin/[^.]+\'` to sh-mode to automatically activate sh-mode for your shell scripts stored inside your ~/bin directory. • PEL also activate extra minor modes in shell-script-mode through the PEL **pel-sh-activates-minor-modes** user-option. • **pel-make-script-executable** : when turned on (set to **t**), Emacs makes the saved shell script file executable. • PEL provides the ability to automatically identify shell scripts that must be sourced and are therefore not executables: • **pel-shell-sourced-script-file-name-prefix**: use a regexp to identify the base name of files that are meant to be sourced. For example, if all shell files that are sourced have a file name that begins with an underscore, use the following regexp: **\`_** • **pel-shell-script-extensions**: identifies file extensions of files that PEL must **not** identify as sourced files. • Use of hard tab for indentation is set by **pel-sh-use-tabs**. The number of columns used for indentation is controlled by **pel-sh-tab-width**. • Set **pel-use-shellcheck** to activate shellcheck-based syntax checking. Values allow activating flycheck or flymake manually or automatically. Recommendation: select 'use flycheck automatically': it will activate it and will provide key bindings automatically. • PEL also provide specialized code templates that are taking the above user-options into account. The commands distinguish a shell script file that must be executable from one that must be sourced and generates different text. • PEL activates the **superword-mode** automatically in shell script buffers. See Σ **Text Modes** for more info.	
Open this PDF file. See also: Σ **Help/Info**	**<f11> SPC Z <f1>** **<f12> <f1>**	(**pel-help-pdf** &optional OPEN-WEB-PAGE)	Open the **PEL - UNIX Shell** 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.
Σ **Customize** PEL UNIX Shell support	**<f11> SPC Z <f2>** **<f12> <f2>**	(**pel-customize-pel** &optional OTHER-WINDOW)	Customize PEL UNIX Shell support. • If OTHER-WINDOW is non-nil (use **C-u**), display in another window.
Σ **Customize** Emacs UNIX Shell support	**<f11> SPC Z <f3>** **<f12> <f3>**	(**pel-customize-library** &optional OTHER-WINDOW)	Customize Emacs UNIX Shell support: sh, sh-script, sh-indentation. • If OTHER-WINDOW is non-nil (use **C-u**), display in another window.
Specialized Execution	The following commands can be used to change the scripting dialect and to execute a portion of the code in the buffer.		
Set the buffer shell type. ☝ Use **<f12> t** to insert the file-local variable at the end of the file. **Example of Emacs file-local major mode setting and local variable setting for a shell script file.**	**C-c :**	(**sh-set-shell** SHELL &optional NO-QUERY-FLAG INSERT-FLAG)	Set this buffer's shell to SHELL (a string). Prompts, support tab-completion. • When used interactively, insert the proper starting #!-line, and make the visited file executable via 'executable-set-magic', perhaps querying depending on the value of 'executable-query'. • ☝ If given a prefix (i.e., '**C-u**') don't insert any starting #! line. • Calls the value of 'sh-set-shell-hook' if set.

	Shell script files can cause this function be called automatically when the file is visited by having a 'sh-shell' file-local variable whose value is the shell name (don't quote it). Example of extension-less file that must be edited in sh-mode and as a **sh** (Bourne shell) script:
	`# Sourced script: envfor-pel  -*- mode: sh; -*-`
	`# …`
	`#  Local Variables:`
	`#  sh-shell: sh`
	`#  End:`		

Toggle acceptance of hyper and polio characters in shell function names.	**<f12> -**	(**pel-toggle-accept-hyphen**)	Toggle acceptance of hyphen and period in shell function names. • Prints a message in the mini-buffer stating if hyphen and period characters are accepted or not in function names. • This affects the behaviour of the iMenu commands (see Σ **Menus**) and Σ **Speedbar** . By default, hyphens and periods are **not** accepted in shell function names to comply with the POSIX rule. However, the Bash and zsh shells do accept them so it is useful to have the ability to include them and support them. Use this command to explicitly activate them. Having to activate this explicitly will be a reminder that it's not POSIX behaviour.
Execute region in a sub-shell	**C-M-x**	(**sh-execute-region** START END &optional FLAG)	Pass optional header and region to a subshell for noninteractive execution. • The working directory is that of the buffer, and only environment variables are already set which is why you can mark a header within the script. • With a positive prefix ARG, instead of sending region, define header from beginning of buffer to point. With a negative prefix ARG, instead of sending region, clear header. • Print result on the echo area if it fits, otherwise into the *Shell Command Output* buffer.
Specialized Navigation	The following commands override normal key bindings and provide specialized navigation key bindings in shell scripts buffers.		
Move point to the next function definition	**<f12> <down>**	(**pel-sh-next-function**)	Move point to the beginning of next function definition. • By default does not accept hyphen and period in function names. Execute '**pel-toggle-accept-hyphen**' (bound to **<f12> -**) to change that. • Prints a user-error if it does not find any function.
Move point to the previous function definition	**<f12> <up>**	(**pel-sh-prev-function**)	Move point to the beginning of previous function definition. • By default does not accept hyphen and period in function names. Execute '**pel-toggle-accept-hyphen**' (bound to **<f12> -**) to change that. • Prints a user-error if it does not find any function.
Go to beginning of command	**M-a**	(**sh-beginning-of-command**)	Move point to successive beginnings of commands.
Go to end of command	**M-e**	(**sh-end-of-command**)	Move point to successive ends of commands.
Backward to beginning of block: • **if*** ⇐ • **for | while | until** ⇐ • **case** ⇐ **(block backward)** See also: Σ **Navigation**	• **C-M-b** • **C-M-<left>** • **C-[C-b** • **Esc C-b** • **Esc C-<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-<left>** : ☛ Shift marking works with this command.
	• ⚠ 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. ❖ **C-M-<left>** does not work on Windows, but **H-<left>** works. 🐧 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->settings->keyboard->shortcuts to prevent it from using that key sequence.		
Forward to end of block: • ⇒ **fi** • ⇒ **done** • ⇒ **esac** **(block forward)** See also: Σ **Navigation**	• **C-M-f** • **C-M-<right>** • **C-[C-f** • **Esc C-f** • **Esc C-<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.
	• ⚠ With PEL: if you want to use **Esc C-<right>** binding you must ensure that **pel-windmove-on-esc-cursor** user option is set to nil. ❖ **C-M-<right>** does not work on Windows, but **H-<right>** does. 🐧 Several Linux distros map **C-M-<right>** to desktop workspace operation. In that case you can either use another key binding or change Linux key binding in Systems->settings->keyboard->shortcuts to prevent it from using that key sequence.		

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Syntax checking with shellcheck	Emacs shell script buffer syntax checking is done by **shellcheck**. It can be provided by the built-in **flymake** or the **flycheck** external package. 🎛️ With PEL, the **pel-use-shellcheck** user-option determines which one is supported, if any. Defaults to no support.		
Flycheck **pel-use-shellcheck** := • flycheck-manual • flycheck-automatic	Flycheck is a minor mode for on-the-fly syntax checking. 📦 The **flycheck** external package 🔜 is activated by PEL when **pel-use-shellcheck** is set to either flycheck-manual or flycheck-automatic. • It is also activated when the **pel-use-flycheck** user-option is turned on when another major mode specific user-option requires it. 🎛️ Aside from the following 2 key bindings that PEL provides to toggle the flycheck mode, flycheck key prefix is **C-c !** as set by its **flycheck-keymap-prefix** user-option. You can change it for a different key prefix.		
Toggle flycheck mode for current buffer	**<f11> ! !**	(**flycheck-mode** &optional ARG)	Toggle flycheck minor-mode for the current buffer.
Toggle flycheck mode for all buffers	**<f11> ! M-!**	(**global-flycheck-mode** &optional ARG)	Toggle Flycheck mode in all buffers. • Flycheck mode is enabled in all buffers where 'flycheck-mode-on-safe' would do it.
• **Info about Flycheck**	The following extra key bindings are available when flycheck is active.		
Open Flycheck manual	**C-c ! i**	(**flycheck-manual**)	Open the Flycheck manual.
Display Flycheck version	**C-c ! V**	(**flycheck-version** &optional SHOW-VERSION)	Get the Flycheck version as string. • If called interactively or if SHOW-VERSION is non-nil, show the version in the echo area and the messages buffer. • The returned string includes both, the version from package.el and the library version, if both a present and different. • If the version number could not be determined, signal an error, if called interactively, or if SHOW-VERSION is non-nil, otherwise just return nil.
• **Flycheck setup**	The following extra key bindings are available when flycheck is active.		
Display documentation about syntax checker	**C-c ! ?**	(**flycheck-describe-checker** CHECKER)	Display the documentation of CHECKER. • CHECKER is a checker symbol. • Pop up a help buffer with the documentation of CHECKER.
Select Flycheck Checker for current buffer	**C-c ! s**	(**flycheck-select-checker** CHECKER)	Select CHECKER for the current buffer. • CHECKER is a syntax checker symbol (see 'flycheck-checkers') or nil. In the former case, use CHECKER for the current buffer, otherwise deselect the current syntax checker (if any) and use automatic checker selection via 'flycheck-checkers'. • If called interactively prompt for CHECKER. With prefix arg deselect the current syntax checker and enable automatic selection again. • Set 'flycheck-checker' to CHECKER and automatically start a new syntax check if the syntax checker changed. • CHECKER will be used, even if it is not contained in 'flycheck-checkers', or if it is disabled via 'flycheck-disabled-checkers'.
Verify Flycheck setup	**C-c ! v**	(**flycheck-verify-setup**)	Check whether Flycheck can be used in this buffer. • Display a new buffer listing all syntax checkers that could be applicable in the current buffer. For each syntax checkers, possible problems are shown.
Disable Flycheck checker	**C-c ! x**	(**flycheck-disable-checker** CHECKER &optional ENABLE)	Interactively disable CHECKER for the current buffer. • Prompt for a syntax checker to disable, and add the syntax checker to the buffer-local value of 'flycheck-disabled-checkers'. • With non-nil ENABLE or with prefix arg, prompt for a disabled syntax checker and re-enable it by removing it from the buffer-local value of 'flycheck-disabled-checkers'.
• **Flycheck buffer/file**	The following extra key bindings are available when flycheck is active.		
Syntax Check current buffer	**C-c ! c**	(**flycheck-buffer**)	Start checking syntax in the current buffer. • Use syntax checker for the current buffer from '**flycheck-get-checker-for-buffer**'.
Check syntax of current file	**C-c ! C-c**	(**flycheck-compile** CHECKER)	Run CHECKER via 'compile'. Prompt for a syntax checker to run. • Instead of highlighting errors in the buffer, this command pops up a separate buffer with the entire output of the syntax checker tool, just like 'compile'.
• **Manage Errors**	The following extra key bindings are available when flycheck is active.		
Show error list for current buffer	• **C-c ! l** • **<f12> e**	(**flycheck-list-errors**)	Show the error list for the current buffer.
Display all errors at point	**C-c ! h**	(**flycheck-display-error-at-point**)	Display all the error messages at point.
Explain error at point	• **C-c ! e** • **<f12> /**	(**flycheck-explain-error-at-point**)	Display an explanation for the first explainable error at point. • In a shell script buffer this opens the **shellcheck wiki page** for the identified error.
Copy errors	**C-c ! C-w**	(**flycheck-copy-errors-as-kill** POS &optional FORMATTER)	Copy each error at POS into kill ring, using FORMATTER. • FORMATTER is a function to turn an error into a string, defaulting to 'flycheck-error-message'. • Interactively, use 'flycheck-error-format-message-and-id' as FORMATTER with universal prefix arg, and 'flycheck-error-id' with normal prefix arg, i.e. copy the message and the ID with universal prefix arg, and only the id with normal prefix arg.
Clear all errors	**C-c ! C**	(**flycheck-clear** &optional SHALL-INTERRUPT)	Clear all errors in the current buffer. • With prefix arg or SHALL-INTERRUPT non-nil, also interrupt the current syntax check.
Move point to next error	• **C-c ! n** • **M-n**	(**flycheck-next-error** &optional N RESET)	Visit the N-th error from the current point. N is the number of errors to advance by, negative N advances backwards. With non-nil RESET, advance from the beginning of the buffer, otherwise advance from the current position.
Move point to prior error	• **C-c ! p** • **M-p**	(**flycheck-previous-error** &optional N)	Visit the N-th previous error. • If given, N specifies the number of errors to move backwards by. • If N is negative, move forwards instead.
Using Flymake **pel-use-shellcheck** := • flymake-manual • flymake-automatic	You can also use Emacs built-in flymake to control shell-check based syntax checking. ⚠️ Note, however, than using flymake does not provide as many commands as when you use flycheck (as described above). • Several key bindings are not available when flymake is used. 🎛️ Flymake has several customizable variables, which some listed here: The following customization variables determine the exact circumstances whereupon Flymake decides to initiate a check of the buffer: • **flymake-start-on-flymake-mode** : **t** to start checking when flymake-mode is started. **nil** to prevent check. • **flymake-no-changes-timeout** : time to wait after last change to start checking. Default = 0.5 seconds. • **flymake-start-syntax-check-on-newline** : **t** to check after insertion or removal of newline char from buffer. **nil** to prevent check. The following variable control navigation to next or previous error: • **flymake-wrap-around** : If non-nil, moving to errors wraps around buffer boundaries. • **flymake-diagnostic-types-alist** : Alist ((KEY . PROPS)*) of properties of Flymake diagnostic types. See Emacs documentation for more info.		
Toggle Flymake mode on/off	M-x flymake-mode	(**flymake-mode** &optional ARG)	Toggle Flymake mode on or off. • With a prefix argument ARG, enable Flymake mode if ARG is positive, and disable it otherwise. • Flymake is an Emacs minor mode for on-the-fly syntax checking. • Flymake collects diagnostic information from multiple sources, called backends, and visually annotates the buffer with the results.
Go to next flymake diagnostic	**M-n**	(**flymake-goto-next-error** &optional N FILTER INTERACTIVE)	Move point to the next Flymake diagnostic. • With a prefix arg, skip any diagnostics with a severity less than ':warning'. • Display the error message in the echo line.
Go to previous flymake diagnostic	**M-p**	(**flymake-goto-prev-error** &optional N FILTER INTERACTIVE)	Move point to the previous Flymake diagnostic. • With a prefix arg, skip any diagnostics with a severity less than ':warning'. • Display the error message in the echo line.

Description	Keystroke	Function	Note
Comments	Insert a comment, comment or un-comment a region with `M-;`		
Toggle display of comments in buffer or active region See also: **Comments**	`<f11> ; ;`	(**hide/show-comments-toggle** &optional START END)	Toggle hiding/showing of comments in the active region or whole buffer. • If the region is active then toggle in the region. Otherwise, in the whole buffer. 📦 This requires the **hide-comnt.el** package (see **Comments**). PEL activates it when the **pel-use-hide-comnt** user option is **t**.
Specialized Insertion			
Double quote word at point	`<f12> "`	(**pel-sh-double-quote-word**)	Surround word at point or selected area with double quotes.
Singe quote word at point	`<f12> '`	(**pel-sh-single-quote-word**)	Surround word at point or selected area with single quotes.
Backtickquote word at point	`<f12> ` `	(**pel-sh-backtick-quote-word**)	Surround word at point or selected area with back-tick characters.
Insert sh-shell file-local variable form at end of file to set Emacs major mode.	`<f12> t`	(**pel-sh-add-sh-local** SHELL-NAME)	Insert a sh-shell file-local variable to end of buffer. • Prompts for a shell name, with tab-completion of supported shell names. Defaults to the current major mode shell name.
Generic code skeletons • **tempo skeletons** See also: • **Inserting Text** • **T Templates**	Several mechanisms have been developed to allow easy insertion of predefined text in Emacs. • Emacs provides the built-in skeleton mechanism and the **tempo skeletons**. • PEL supports both. They are used a little bit differently. • PEL provides key bindings to the tempo skeletons: the generic code templates, accessible via the `<f6>` prefix key, and the language-specific code templates, accessible via the `<f12>` key prefix. PEL provides **generic** tempo skeletons the handle UNIX shell script files.		
Customize PEL Text Insertions control	`<f6> <f2>`	(**pel-customize-pel** &optional OTHER-WINDOW)	Customize PEL generic tempo skeleton customization groups that control the format of the various skeletons including the generic skeleton used by the `<f6> h` key (se below). • If OTHER-WINDOW is non-nil (use `C-u`), display in other window.
Insert generic file module header block — Language agnostic After inserting the template, navigate though areas that must be filled with: • tempo-forward-mark: **C-c .** • tempo-backward-mark: **C-c ,**	`<f6> h`	(**pel-generic-file-header**)	Insert a file header block at the top of the file. Works only for buffer visiting a file. ⚠️ The command key binding `<f6> h` is available only 1 second after Emacs has started.
	☝Specify the format of the header via the user-options in the **pel-pkg-generic-code-style** customization group accessible via `<f6> <f2>` • Inside a **sh-mode** buffer, `<f12> <f2>` provides access to the following customization groups: • **pel-pkg-for-sh** for the control of the template format and **pel-sh-script-skeleton-control** for sh-mode specific user-options. • The files that have no extensions are often used in Unix-like OS shell scripts. • These files are also supported as Emacs can recognize them if they are stored in a **bin** directory. ☝After inserting a template, use **tempo-forward-mark** and **tempo-backward-mark** to move to the beginning of each section that must be filled.		
Toggle pel-tempo-mode	`<f6> SPC`	(**pel-tempo-mode** &optional ARG)	Toggle PEL tempo mode on/off. PEL tempo mode activates `C-c .` and `C-c ,` as well as to `C-c C-.` and `C-c C-,` key bindings to navigate across tempo mark hot-spots. When pel-tempo-mode is active the pel-tempo-mode lighter (‡) is shown on the status bar. The second set of keys are only available when Emacs runs in graphics mode. ☝The pel-generic-file-header command inserts the text using a tempo skeleton: the PEL tempo mode is automatically activated by typing `<f6> h`.
Jump to next tempo mark	• `C-c M-f` • `C-c .` • `C-c C-.`	(**tempo-forward-mark**)	Jump to the next mark in 'tempo-back-mark-list': the location where code must be updated inside the inserted skeleton. • These key key bindings are only available when pel-tempo-mode is active.
Jump to previous tempo mark	• `C-c M-b` • `C-c ,` • `C-c C-,`	(**tempo-backward-mark**)	Jump to the previous mark in 'tempo-back-mark-list': the location where code must be updated inside the inserted skeleton. • These key binding are only available when pel-tempo-mode is active.
Shell statement Insertion	The sh-mode provides the following commands to insert shell scripts code elements with templates defined with the **Emacs skeleton language**. All of these statement insertion command share the same extra description: • This is a skeleton command (see 'skeleton-insert'). • Normally the skeleton text is inserted at point, with nothing "inside". • If there is a highlighted region, the skeleton text is wrapped around the region text. • A prefix argument ARG says to wrap the skeleton around the next ARG words. • A prefix argument of -1 says to wrap around region, even if not highlighted. • A prefix argument of zero says to wrap around zero words---that is, nothing. • This is a way of overriding the use of a highlighted region.		
Insert a case/switch	`C-c C-c`	(**sh-case** &optional STR ARG)	Insert a case/switch statement.
Insert a for loop	`C-c C-f`	(**sh-for** &optional STR ARG)	Insert a for loop.
Insert function definition	`C-c (`	(**sh-function** &optional STR ARG)	Insert a function definition.
Insert a if statement	• `C-c <tab>` • `C-c C-i`	(**sh-if** &optional STR ARG)	Insert a if statement.
Insert an indexed loop from 1 to n.	`C-c C-l`	(**sh-indexed-loop** &optional STR ARG)	Insert an indexed loop from 1 to n.
Insert a getopt loop	`C-c C-o`	(**sh-while-getopts** &optional STR ARG)	Insert a while getopts loop. • Prompts for an options string which consists of letters for each recognized option followed by a colon ':' if the option accepts an argument.
Insert a repeat loop definition	`C-c C-r`	(**sh-repeat** &optional STR ARG)	Insert a repeat loop definition.
Insert a select statement	`C-c C-s`	(**sh-select** &optional STR ARG)	Insert a select statement.
Insert an until loop	`C-c C-u`	(**sh-until** &optional STR ARG)	Insert an until loop.
Insert a while loop	`C-c C-w`	(**sh-while** &optional STR ARG)	Insert a while loop.
Show indentation	`C-c ?`	(**sh-show-indent** ARG)	Show how the current line would be indented. • This tells you which variable, if any, controls the indentation of this line. • If optional arg ARG is non-null (called interactively with a prefix), a pop up window describes this variable. • If variable 'sh-blink' is non-nil then momentarily go to the line we are indenting relative to, if applicable.
Set indentation for current line	`C-c =`	(**sh-set-indent**)	Set the indentation for the current line. If the current line is controlled by an indentation variable, prompt for a new value for it.
Learn indentation from current line	`C-c <`	(**sh-learn-line-indent** ARG)	Learn how to indent a line as it currently is indented. • If there is an indentation variable which controls this line's indentation, then set it to a value which would indent the line the way it presently is. • If the value can be represented by one of the symbols then do so unless optional argument ARG (the prefix when interactive) is non-nil.

Description	Keystroke	Function	Note
Learn indentation from buffer	`C-c >`	(**sh-learn-buffer-indent** &optional ARG)	Learn how to indent the buffer the way it currently is. • If ‘sh-use-smie’ is non-nil, call ‘smie-config-guess’. Otherwise, run the sh-script specific indent learning command, as described below. • Output in buffer "*indent*" shows any lines which have conflicting values of a variable, and the final value of all variables learned. • When called interactively, pop to this buffer automatically if there are any discrepancies. • If no prefix ARG is given, then variables are set to numbers. • If a prefix arg is given, then variables are set to symbols when applicable -- e.g. to symbol ‘+’ if the value is that of the basic indent. • If a positive numerical prefix is given, then ‘sh-basic-offset’ is set to the prefix’s numerical value. • Otherwise, sh-basic-offset may or may not be changed, according to the value of variable ‘sh-learn-basic-offset’. • Abnormal hook ‘sh-learned-buffer-hook’ if non-nil is called when the function completes. The function is abnormal because it is called with an alist of variables learned. ⚠This command can often take a long time to run.