## Input Completion (Emacs default, Helm, Ido, Ivy, Ivy/Counsel) 🚧

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Operation	Con Emacs, input complete	Function tion is available when Emacs prompts	Note
Input Completion  Default  Ido Ivy Helm  See also: Navigation Input Completion	On Emacs, input completion is available when Emacs prompts for the name of a file, buffer, variable, function, command (and more). The input completion offers a way to complete your input. Several methods are supported, some are built-in or use a package that comes with Emacs, other require external packages. The available input completion methods are:  • Emacs default completion method: use the <tab> key to get a list of potential candidates.  • Ido (Interactive Do), a much more powerful completion method. Ido is distributed with Emacs. It supports what the default completion supports and mode.  • With ido activated, it is used in file (C-x C-f), buffer name (C-x b), command (M-x), help for objects (<f1> o) and several other commands.  • PEL provides completion for searching symbols defined in the source code file visited by the current buffer with M-g h. See Navigation  • Ivy  • Helm  • Ido/Helm</f1></tab>		
Mode Selection	<ul> <li>Identification of available modes:         <ol> <li>Identification of available modes:</li> <li>Identification of available modes:</li> <li>Ivy mode completion</li> <li>Ivy mode completion</li> <li>Ivy mode completion with Counsel mode</li> <li>Ivy mode completion with Counsel mode</li> <li>Identification of the mode, implemented by PEL, where Identification of the mode used when Emacs starts: pel-initial-completion-mode</li> <li>Identification of the mode used when Emacs starts: pel-initial-completion-mode</li> <li>Use <f11> <f2> P M-c 1 to customize the PEL completion group user options above.</f2></f11></li> </ol> </li> <li>PEL makes the following commands available to change the completion mode and to see which one is currently active.</li> </ul>		
Customize PEL Input Completion control See also: <u>▼ Customize</u>	Some of the available loaded and will attempt t	o load it if its installed. If it is not instal	Customize Input Completion support. Prompts for one of the following customization buffers that control input completion:  1: PEL configuration control: activate features here.  2: helm  3: ido  4: ivy  5: counsel  6: minibuffer: where the completion-style user-variable is defined.  Indow.  orresponding feature is installed and loaded. PEL will prompt if a required feature is not liled, it will request it to be installed. Note that Emacs will simply refuse to load a group won't know about it. PEL simplifies this.
Select the completion mode	<f11> M-c</f11>	(pel-select-completion-mode)	Prompt user for completion mode to activate. The available modes depend on what is currently activated by customization. See the list above.
Show what completion mode is currently used.	<f11> ? M-c</f11>	(pel-show-active-completion- mode)	Display the completion mode currently used.
Default Input Completion	Emacs default input completion is available when no other completion mechanism is active.  • The keys available to expand or act on the completed name (or symbol) are listed below.  • See Emacs Completion Example for a simple example of how to use completion keys.  The completion-style user-option variable from the ido group controls the types of matching styles supported:  • basic: complete with the same beginning  • partial-completion: agressive completion: em-l-m matches emacs-lisp-mode.  • emacs22: same as basic but ignores text in minibuffer after point  • substring: must contain text in minibuffer and point position controls matching extension added to beginning, end and where point is located.  • initials: a very aggressive completion style: attempt to complete acronyms and initialisms: for example: lch matches list-command-history.  The first 3 are available in the default value of completion-style. They can be added by customization:  • M-x customize-option RET completion-style RET to customize this variable,  • M-x customize-group RET minibuffer RET access its group or  • the PEL <f11> <f2> P M-c 6 key sequence.</f2></f11>		
Complete word	SPC	(minibuffer-complete-word)	Complete the minibuffer contents at most a single word.  • After one word is completed as much as possible, a space or hyphen is added, provided that matches some possible completion.  • Return nil if there is no valid completion, else t.
Complete input	Tab	(minibuffer-complete)	Complete the minibuffer contents as far as possible. Type it twice if no input to list all choices.  Return nil if there is no valid completion, else t.  If no characters can be completed, display a list of possible completions.  If you repeat this command after it displayed such a list, scroll the window of possible completions.
List all possible choices	?	(minibuffer-completion-help &optional START END)	Display a list of possible completions of the current minibuffer contents.
Complete and exit	• RET • C-j	(minibuffer-complete-and-exit)	Exit if the minibuffer contains a valid completion.  Otherwise, try to complete the minibuffer contents. If completion leads to a valid completion, a repetition of this command will exit.  If 'minibuffer-completion-confirm' is 'confirm', do not try to complete; instead, ask for confirmation and accept any input if confirmed.  If 'minibuffer-completion-confirm' is 'confirm-after-completion', do not try to complete; instead, ask for confirmation if the preceding minibuffer command was a member of  'minibuffer-confirm-exit-commands', and accept the input otherwise.
Escape	C-g	(abort-recursive-edit)	Abort the command that requested this recursive edit or minibuffer input.
Select completion list window	• M-v • <pgup></pgup>	(switch-to-completions)	Select the completion list window: move point to the window listing all possible completions.
In Completion Window	The following commands	are available inside the completion wi	indow listing all possible completions.
From completion window: • Select a completion	• RET • <mouse-2></mouse-2>	(choose-completion &optional EVENT)	Choose the completion at point.  • If EVENT, use EVENT's position to determine the starting position.
Move to next completion	• Tab • <right></right>	(next-completion N)	Move to the next item in the completion list.  • With prefix argument N, move N items (negative N means move backward).
Move to previous completion	• S-Tab • <left></left>	(previous-completion N)	Move to the previous item in the completion list.
Quit completion window	q	(quit-window &optional KILL WINDOW)	Quit the window showing it and selects the window showing the minibuffer.
Kill completion buffer	z	(kill-current-buffer)	Kill completion buffer it and delete the window showing it.

<u>Operation</u>	<u>Keystroke</u>	Function	<u>Note</u>
Ido Input Completion	Emacs also provides the Ido (Interactive Do) completion mechanism in a separate package, part of Emacs distribution but not activated by default.  PEL activates the following extra Ido features when Ido mode is selected:  Ido mode used everywhere, which for Ido mode means for both file and buffer prompts. It does: (ido-everywhere 1)  Flex matching is enabled.  It does: (setq ido-enable-flex-matching t)  Disable need for confirmation when creating new buffers with C-x b It does: (setq ido-create-new-buffer 'always)		s selected: ns for both file and buffer prompts. It does: (ido-everywhere 1) It does: (setq ido-enable-flex-matching t)
	Ido mode supports different prompts and has different keys valid for these prompts. There are several key sequences valid for all prompts and some valid for each prompt. The prompt types are listed following the key sequence that opens it:  • C-x C-b Prompt for buffers  • C-x C-f Prompt for files.  • C-x C-d Prompt for directory.  • C-x d Prompt for directory.  • For file prompting, Ido propose files in the current directory but can propose others. The prompt in Ido mode remembers directories that have been visited in the past (even in previous Emacs sessions) so it is able to propose files in different directories than the one holding the file visited in the current buffer.  • When trying to open a new file and want to avoid ido from proposing matches, type C-f to exit Ido mode, then type your new file name.  • However, if you want to open a file in a directory previously visited use completion: ido will be able to find it!  Ido has a large number of key bindings, listed in the next 4 sections.		
all prompts	Commands available in all Ido prompts		
Toggle inclusion of ignored files.	С-а	(ido-toggle-ignore)	Toggle ignoring files specified with 'ido-ignore-files', a list of regexps or functions matching file names to ignore.  • For example, traditional behavior is not to list files whose names begin with a #, for which the regexp is '\'#'. You can customize this user-option variable in the ido customization group.
Toggle case sensitivity in the search	• C-c • M-c	(ido-toggle-case)	Toggle the value of 'ido-case-fold' which controls whether searching for buffer or file name should ignore case.  The C-c binding is often hidden by the C-c key prefix used by various packages. PEL adds the M-c key binding to the common ido key map for that purpose.  This is quite useful in OS that treat their file names are can sensitive names (like Unix and Linux, but unfortunately not MacOS!) or just if you want to quickly access names that have specific upper or lower case letters in it. For example using case sensitive matching will help select a Makefile.
Toggle <u>prefix matching</u> <u>method</u>	С-р	(ido-toggle-prefix)	Toggle the value of user-option variable 'ido-enable-prefix'. It's nil by default.  Non-nil means only match if the entered text is a prefix of file name.  This behavior is like the standard Emacs completion.  If nil, match if the entered text is an arbitrary substring. For example: "base" will match pel—base.el if ido-enable-prefix is nil, but no it is is t.
Toggle regular expression matching See also: <u>∑ Search/</u> Replace	C-t	(ido-toggle-regexp)	Toggle the value of 'ido-enable-regexp' to enable Ido to perform matching using regular expressions. This is nil (off) by default. You can customize this user-option variable.  Segular expression matching is useful to select file with specific extensions.  See <u>Search/Replace</u> for Emacs regular expression meta characters.
Edit absolute name	С-е	(ido-edit-input)	Edit absolute buffer/file/directory name entered so far with Ido; terminate by RET to return to matching mode.  • If cursor is not at the end of the user input, move to end of input.  • When this is selected the matching mechanism is paused. It restarts with <b>RET</b> .  • Use this to edit a match, to make a selection of a choice then edit the name, for example to create a file that has almost the same name as another existing file. Then type <b>C-j</b> to force Ido to use that name and open a new file.
Complete current selection	Tab	(ido-complete)	Try and complete the current pattern amongst the item names.
Complete current selection or insert space	SPC	(ido-complete-space)	Try completion unless inserting the space makes sense.
Select match, create buffer/file if none	с-ј	(ido-select-text)	Select the buffer or file named by the prompt.  • If no buffer or file exactly matching the prompt exists, maybe create a new one.
Select first match	• C-m • RET	(ido-exit-minibuffer)	Exit minibuffer, but make sure we have a match if one is needed.  • Select the first element in the list of possible match.
Select next match	• C • C-s • <right></right>	(ido-next-match)	Move to next match element. Put first element of 'ido-matches' at the end of the list.
Select previous match	• C-, • C-r • <left></left>	(ido-prev-match)	Move to last match element. Put last element of 'ido-matches' at the front of the list.
Undo Ido directory merge	C-z	(ido-undo-merge-work-directory &optional TEXT TRY REFRESH)	Undo or redo last Ido directory merge operation.  • If no merge has yet taken place, toggle automatic merging option.
	• C-SPC • C-@	(ido-restrict-to-matches &optional REMOVEP)	Set current item list to the currently matched items.  • When argument REMOVEP is non-nil, the currently matched items are instead removed from the current item list.
Take/edit first match	M-SPC	(ido-take-first-match)	Use first matching item as input text. Leave the cursor at the end of input text.  Useful, like <b>C-e</b> to edit a match and create a new file with similar name. Then type <b>C-j</b> to force Ido to use that name and open a new file.
Show all possible completions	?	(ido-completion-help)	Show possible completions in a "*File Completions*" buffer.
Move backward in user- input or change to buffer prompt	С-Б	(ido-magic-backward-char ARG)	Move backward in user input. When reaching the left-most character switch to a buffer prompt.
Move forward in user input or change to non- Ido find-file	C-f	(ido-magic-forward-char ARG	Move forward on user-input up to the end and then fallback to non-Ido operation:  • C-x C-b C-f switch to 'ido-find-file'.  • C-x C-f C-f fallback to non-Ido 'find-file'.  • C-x C-d C-f fallback to non-Ido brief 'dired'.  • C-x d C-f fallback to non-Ido 'dired'.
Delete next char of enter Dired	C-d	(ido-magic-delete-char ARG)	Delete following char in user input or perform magic action.  • If at end of user input, perform magic actions:  C-x C-f C-d enter 'dired' on current directory.
Escape prompt	C-g	(minibuffer-keyboard-quit)	Abort the command that requested this recursive edit or minibuffer input.
buffer prompts	In C-x b buffer prompts	,	plus the commands listed below. See <u><b>∑ Buffers</b></u>
Change to file prompt	C-x C-f	(ido-enter-find-file)	Drop into 'find-file' from buffer switching.

<u>Operation</u>	<u>Keystroke</u>	Function	<u>Note</u>
Change to iBuffer window	C-x C-b	(ibuffer &optional OTHER-	Open an <b>iBuffer</b> window.
See also: <u><b>∑</b> Buffers</u>		WINDOW-P NAME QUALIFIERS NOSELECT SHRINK FILTER-GROUPS FORMATS)	See <u><b>Suffers</b></u> for more information on ibuffer command.
Bury buffer	C-S-b	(ido-bury-buffer-at-head)	Bury the buffer at the head of the Ido matches, moving it a the end of the list of matching buffers. before the name of current buffer.
Kill buffer identified as the first match	C-k	(ido-kill-buffer-at-head)	Kill the buffer at the head of 'ido-matches'.  • If cursor is not at the end of the user input, delete to end of inpu
Toggle use of virtual buffers	C-0	(ido-toggle-virtual-buffers)	Toggle the use of virtual buffers.  • With virtual buffers on, you see names of buffers that have been opened recently even if they have been closed since then. This includes files recently opened.
dir prompts	In C-x d or C-x C-d o	lirectory related prompts, all common o	commands are available plus the commands listed below. See <b>File-mngt</b>
Change to buffer prompt	C-x C-b	(ido-enter-switch-buffer)	Drop into 'ido-switch-buffer' from file switching.
Change to non-ido listing directory	C-x C-f	(ido-fallback-command &optional FALLBACK-COMMAND)	Drop into a non-ido directory listing command: no interpretation, no proposal, accept input as typed.
Enter Dired buffer	C-x C-d	(ido-enter-dired)	Drop into 'dired' from file switching: open the Dired buffer with current directory name.
Next directory in search	<down></down>	(ido-next-match-dir)	Find next directory in match list.  If work directories have been merged, cycle through directories for first matching file.
Previous directory in search	<up></up>	(ido-prev-match-dir)	Find previous directory in match list.  • If work directories have been merged, cycle through directories for first matching file.
To next directory in list	• <m-up> • M-p</m-up>	(ido-prev-work-directory)	Change to next working directory in list.
To previous directory in list	• <m-down> • M-n</m-down>	(ido-next-work-directory)	Change to previous working directory in list.
Delete char backwards to go up 1 directory level	DEL  backspace>	(ido-delete-backward-updir COUNT)	Delete char backwards, or at beginning of buffer, go up one level.
Delete chars backwards to go up 1 directory level	M-≪	(ido-delete-backward-word-updir COUNT)	Delete all chars backwards, or at beginning of buffer, go up one level.
Go up 1 directory level	c- <b>⊠</b>	(ido-up-directory &optional CLEAR)	Go up one directory level.
Re-read directory	C-1	(ido-reread-directory)	Read current directory again.  May be useful if cached version is no longer valid, but directory timestamp has not changed (e.g. with FTP or on Windows).
Wide directory	M-d	(ido-wide-find-dir-or-delete-dir &optional DIR)	Prompt for DIR to search for using 'find', starting from current directory.  • If input stack is non-empty, delete current directory component.
Move to previous directory, push it in list of choices.	М-в	(ido-push-dir)	Move to previous directory in file name, push current input on stack.
Previous directory in search	M-v	(ido-push-dir-first)	Move to previous directory in file name, push first match on stack.
	M-f	(ido-wide-find-file-or-pop-dir ARG)	Expand absolute path of the directory and leave Ido prompting mode.
Remove directory from history	M-k	(ido-forget-work-directory)	Remove current directory from the history
	м-т	(ido-make-directory &optional DIR)	Prompt for DIR to create in current directory.
Show next element in search history	<pgdn></pgdn>	(next-history-element N)	Puts next element of the minibuffer history in the minibuffer. With argument N, it uses the Nth following element.
Previous file name	М-о	(ido-prev-work-file)	Change to previous working file name in list.  These 2 commands seem to have invalid docstrings, I assume the function names are correct. They move from file to file but i's not obvious what the direction is. More investigation is needed.
Next fil entame	M-C-o	(ido-next-work-file)	Change tonext working file name in list.
Show previous element in search history	<pgup></pgup>	(previous-history-element N)	Puts previous element of the minibuffer history in the minibuffer. With argument N, it uses the Nth previous element.
Search for file matching input	M-s	(ido-merge-work-directories)	Search (and merge) work directories for files matching the current input string.  • This searches in all Ido remembered directories, supporting the match mechanisms.  • For example, if you want to open the file std_base_type.h while editing some Python file but you know you visited a C directory that had that file, type "_base" followed by M-s
file prompts	In C-x C-f file prompt	s, all common commands, dired comm	nands and the following commands are available. See <u>File-mngt</u>
Delete disk file at head	C-k	(ido-delete-file-at-head)	Delete disk file identified at the head of the matches. Prompt for deleting the file. Then return to the prompt.
Insert word at point in file-name prompt	C-0	(ido-copy-current-word ALL)	Append the word located at the location of the currently edited buffer (used just before the prompt stated) to the file name used in the prompt.  This is a way to quickly build a file name using the current directory and the new word (which will include the file extension if there is any in the word at point).
Insert file name of current buffer to prompt	С-w	(ido-copy-current-file-name ALL)	Insert file name of current buffer.  • If repeated, insert text from buffer instead.  • Use this to create or search for file with the same name as but with a different extension than current one.
Toggle literal reading fo file	M-1	(ido-toggle-literal)	Toggle literal reading of this file.  • When reading a file literally, Emacs visit it in Fundamental mode and does not interpret the type of file and does not use the major mode normally associated with the file.
Ivy/Counsel/Swiper	See the Ivy, Counsel, Sw	viper Tutorial	

<u>Operation</u>	<u>Keystroke</u>	Function	Note	
Helm Input     Completion	The Helm external package is very powerful and comes with a large set of features.  • It does not use the minibuffer and does not use the <tab> key for completion; you just need to type some part of the text you search for and Helm we pattern match it. Once you enter a command with Helm input completion a Helm buffer shows a list of potential match with the most probable on to the list is updated as you type and refine your search pattern.  • You can resize the Helm window when it is opened.  • You can navigate the pattern match list, select one or several matches (for some of the commands that open the Helm buffer like when you type C-to switch/open other buffer or when you type C-to find/open file(s).  • You can also perform other actions on the selections such as opening a file as root. And you can perform a Helm action and keep the Helm window open (as it normally closes right after you made your selection for the command you were executing.</tab>			
	<ul> <li>And Helm comes with extensions of other commands, like running top and allowing pattern match to filter the list of processes you want to see.</li> <li>See the document title "A package in a league of its own: Helm" for a more comprehensive overview with screen shots.</li> </ul> PEL provides a basic configuration for Helm that is similar to the extended config described in that document. But it does not set Helm values that can be			
	customized. Customize	Helm with M-x customize-group	p helm or with <f11> <f2> g helm. (See also: ∑Customize)  e is active (or ido/helm mode) you can execute global Helm commands via that prefix key.</f2></f11>	
Operation inside Helm buffer	Helm buffer windows opens up as soon as you launch a Helm session. The following sections describe the commands available inside Helm buffer window.			
Resize Helm Window	Use the following comma	and to reposition the Helm buffer windo	ow from horizontal to vertical, going through the 4 possible quadrants of the frame.	
Resize Helm window	C-t	(helm-toggle-resplit-and-swap-windows)	Multi key command to re-split and swap helm window.  • First call runs 'helm-toggle-resplit-window', and second call within 1s runs 'helm-swap-windows'.	
Navigate Helm Pattern buffer	The following commands	s move the currently selected pattern lin	ne in the Helm pattern buffer list	
Move to next pattern	• C-n • <down></down>	(helm-next-line &optional ARG)	Move selection to the next ARG line(s).  • When numeric prefix arg is > than the number of candidates, then move to the last candidate of current source (i.e. don't move to next source).	
Move to previous pattern	• C-p • <up></up>	(helm-previous-line &optional ARG)	Move selection to the ARG previous line(s).  • Same behavior as 'helm-next-line' when called with a numeric prefix arg.	
Move down 1 page	• C-v • <pgdn></pgdn>	(helm-next-page)	Move selection forward with a pageful.	
Move up 1 page	• M-v • <pgup></pgup>	(helm-previous-page)	Move selection back with a pageful.	
Move to top of list	M-<	(helm-beginning-of-buffer)	Move selection at the top of helm buffer list.	
Move to end of list	M->	(helm-end-of-buffer)	Move selection at the bottom of helm buffer list.	
Select patterns in Helm Pattern buffer	-		ow you to mark several patterns to be processed.	
Toggle line selection	• C-SPC • C-@	(helm-toggle-visible-mark ARG)	Toggle helm visible mark at point ARG times. If ARG is negative toggle backward.	
Select all	м-а	(helm-mark-all &optional ALL)	Mark all visible unmarked candidates in current source.  • With a prefix arg mark all visible unmarked candidates in all sources.	
Operate on selection	-	s are used to act on the selected items		
Copy Helm selection to current buffer	• C-c C-i • C-c <tab></tab>	(helm-copy-to-buffer)	Copy selection or marked candidates to 'helm-current-buffer'.  Note that the real values of candidates are copied and not the display values.	
Act on current selection(s)	RET	(helm-maybe-exit-minibuffer)	If Helm session has completed the search and is displaying the result, exit the helm session and act on the current selection, doing what corresponds to the command that launched the Helm session.  • The action applies to all selected candidates and is applied inside the window that was current when the Helm session started. so if point is inside window A when you issue a C-x C-f command to find a file and select several files then these files will be opened in buffers whose window will split the area of the previous window A.	
Act on current selection(s)  List possible actions First is the native action Other possible actions follow. The list depends on the original command.	• <tab> • C-i</tab>	(helm-select-action)	<ul> <li>Select an action for the currently selected candidate(s).</li> <li>If action buffer is selected, back to the helm buffer.</li> <li>If several actions are possible, display a menu of possible actions, their assigned function key (for the first 12 possible action), a short descriptive link that may include possible key binding for the action.</li> <li>The list of possible actions can be quite long. For example, the list of actions shown in a Helm session opened to visit a file can include about 50 different actions that range from just visiting the file to diffing it, making a backup, compiling it, opening in hexadecimal editing, etc</li> <li>The action applies to all selected candidates and is applied inside the window that was current when the Helm session started. so if point is inside window A when you issue a C-x C-f command to find a file and select several files then these files will be opened in buffers whose window will split the area of the previous window A.</li> </ul>	
Perform action on current pattern without quitting Helm	• C-j • C-M-i	(helm-execute-persistent-action &optional ATTR SPLIT)	Perform the associated action ATTR without quitting helm.  • The action applies to the current pattern, not lines that might have been selected.	
Helm Help	Once Helm is running the	e following command open Helms man	ual.	
Open Helm Manual (in Org mode format)	• C-h m • C-c ?	(helm-help)	Generate helm's help according to 'help-message' attribute.  • If 'helm-buffer' is empty, provide completions on 'helm-sources' to choose its local documentation.  • If source doesn't have any 'help-message' attribute, a generic message explaining this is added instead.  • The global 'helm-help-message' is always added after this local help.	
Launching Helm Search	The rest of this table	needs to be completed.		

<u>Operation</u>	<u>Keystroke</u>	Function	<u>Note</u>
Helm special commands	Helm provides the following commands that integrate with other tools.  With PEL, when Helm or Ido/Helm mode is active the <f11> h key prefix is active giving quick access to these useful helm commands.</f11>		