VIM 5
Reference Guide

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Conventions:

:marks	denotes **VIM** command typed in ***Ex*** mode
visual	denotes **VIM** command typed in Visual mode
[..]	denotes an optional part of the command
file	denotes command argument(s)
{..}	denotes a set of characters
Space	means pressed key/combination of keys
☺	this command/feature is **VIM** specific (not found in Vi)

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1 Movement Commands

1.1 Left-right motions

[*n*] **h** left (also: CTRL-H, BS, or ← key)
[*n*] **l** right (also: Space or → key)
0 to first character in the line (also: Home key)
^ to first non-blank character in the line
[*n*] **$** to the last character in the line (*n*-1 lines lower) (also: End key)
[*n*] **g0** to first character in screen line (differs from **0** when lines wrap)
[*n*] **g^** to first non-blank character in screen line (differs from **^** when lines wrap)
[*n*] **g$** to last character in screen line (differs from **$** when lines wrap)
[*n*] **|** to column *n* (default: 1)
[*n*] **f** ***char*** to the *n*-th occurrence of *char* to the right
[*n*] **F** ***char*** to the *n*-th occurrence of *char* to the left
[*n*] **t** ***char*** till before the *n*-th occurrence of *char* to the right
[*n*] **T** ***char*** till before the *n*-th occurrence of *char* to the left
[*n*] **;** repeat the last **f**, **F**, **t**, or **T** *n* times
[*n*] **,** repeat the last **f**, **F**, **t**, or **T** *n* times in opposite direction

1.2 Up-down motions

[*n*] **k** up *n* lines (also: CTRL-P and ↑)
[*n*] **j** down *n* lines (also: CTRL-J, CTRL-N, NL, and ↓)
[*n*] **-** up *n* lines, on the first non-blank character
[*n*] **+** down *n* lines, on the first non-blank character (also: CTRL-M and Ret)
[*n*] **_** down *n*-1 lines, on the first non-blank character
[*n*] **G** goto line *n* (default: last line), on the first non-blank character
[*n*] **gg** goto line *n* (default: first line), on the first non-blank character
n **%** goto line *n* percentage down in the file. *n* must be given, otherwise it is the % command
[*n*] **gk or g↑** up *n* screen lines (differs from **k** when line wraps, and when used with an operator, because it's not linewise.)
[*n*] **gj or g↓** down *n* screen lines (differs from **j** when line wraps, and when used with an operator, because it's not linewise.)

1.3 Text object motions

[*n*] **w** *n* `words`[1]
[*n*] **W** *n* blank-separated `WORDS` forward
[*n*] **e** forward to the end of the *n*-th `word`
[*n*] **E** forward to the end of the *n*-th blank-separated `WORD`
[*n*] **b** *n* `words` backward
[*n*] **B** *n* blank-separated `WORDS` backward
[*n*] **ge** backward to the end of the *n*-th `word`
[*n*] **gE** backward to the end of the *n*-th blank-separated `WORD`
[*n*] **)** *n* `sentences` forward
[*n*] **(** *n* `sentences` backward
[*n*] **}** *n* `paragraphs` forward
[*n*] **{** *n* `paragraphs` backward
[*n*] **]]** *n* `sections` forward, at start of `section`
[*n*] **[[** *n* `sections` backward, at start of `section`
[*n*] **][** *n* `sections` forward, at end of `section`
[*n*] **[]** *n* `sections` backward, at end of `section`
[*n*] **[(** *n* times back to unclosed (
[*n*] **[{** *n* times back to unclosed {
[*n*] **])** *n* times forward to unclosed)
[*n*] **]}** *n* times forward to unclosed }
[*n*] **[#** *n* times back to unclosed #if or #else

[1] For definition of `word, WORD, sentence, paragraph` and `section` see Section 2.11

[*n*] **]#** *n* times forward to unclosed #else or #endif
[*n*] **[*** *n* times back to start of comment /*
[*n*] **]*** *n* times forward to end of comment */

1.4 Scrolling

[*n*] CTRL-E window *n* lines downwards (default: 1)
[*n*] CTRL-D window *n* lines Downwards (default: 1/2 window)
[*n*] CTRL-F window *n* pages Forwards (downwards)
[*n*] CTRL-Y window *n* lines upwards (default: 1)
[*n*] CTRL-U window *n* lines Upwards (default: 1/2 window)
[*n*] CTRL-B window *n* pages Backwards (upwards)
z Ret **or zt** redraw, current line at top of window
z. **or zz** redraw, current line at center of window
z– **or zb** redraw, current line at bottom of window
[*n*] **zh** scroll screen *n* characters to the right
[*n*] **zl** scroll screen *n* characters to the left

1.5 Various motions

% find the next brace, bracket, comment, or #if/#else/#endif in this line and go to its match
[*n*] **H** go to the *n*-th line in the window, on the first non-blank
M go to the middle line in the window, on the first non-blank
[*n*] **L** go to the *n*-th line from the bottom, on the first non-blank

1.6 Marks and motions

m{**a-zA-Z**} mark current position with mark {a-zA-Z}
‘{**a-z**} go to mark {a-z} within current file
‘{**A-Z**} go to mark {A-Z} in any file
‘{**0-9**} go to the position where VIM was last exited
‘‘ go to the position before the last jump
‘” go to the position when last editing this file
‘[go to the start of the previously operated or put text
‘] go to the end of the previously operated or put text
‘< go to the start of the (previous) Visual area
‘> go to the end of the (previous) Visual area
’{**a-zA-Z0-9[]’”**<>} same as ‘, but on the first non-blank in the line
:marks display the active marks
[*n*] CTRL-O go to *n*-th older position in jump list
[*n*] CTRL-I go to *n*-th newer position in jump list
:ju[mps] display the jump list

1.7 Using tags

:ta[g][!] ***tag*** jump to *tag*
:[*n*] **ta[g][!]** jump to *n*-th newer tag in tag list
CTRL-] jump to the tag under cursor, unless changes have been made
[*n*] CTRL-T jump back from *n*-th older tag in tag list
:ts[elect][!] [***tag***] list matching tags and select one to jump to
:[*n*] **tn[ext][!]** jump to *n*-th next matching tag
:[*n*] **tp[revious][!]** jump to *n*-th previous matching tag
:[*n*] **tr[ewind][!]** jump to *n*-th matching tag
:[*n*] **po[p][!]** jump back from *n*-th older tag in tag list
:tags print tag list

2 Editing Commands

2.1 Inserting text

[*n*] **a** append text after the cursor (*n* times)
[*n*] **A** append text at the end of the line (*n* times)
[*n*] **i** insert text before the cursor (*n* times) (also: Ins)
[*n*] **I** insert text before the first non-blank in the line (*n* times)
[*n*] **gI** insert text in column 1 (*n* times)
[*n*] **o** open a new line below the current line, append text (*n* times)
[*n*] **O** open a new line above the current line, append text (*n* times)

2.2 Keys in Insert mode

char action in Insert mode
Esc end Insert mode, back to Normal mode
CTRL-C like Esc, but do not complete an abbreviation begun
CTRL-A insert previously inserted text
CTRL-@ insert previously inserted text and stop insert
CTRL-R {**0-9a-z%#:.-="***} insert the contents of a register[2] ☺
NL **or** Ret **or** CTRL-M **or** CTRL-J begin new line
CTRL-E insert the character from below the cursor
CTRL-Y insert the character from above the cursor
CTRL-V ***char*** insert character literally, or enter decimal byte value
CTRL-N insert next match of identifier before the cursor
CTRL-P insert previous match of identifier before the cursor
CTRL-X ... complete the word before the cursor in various ways:

- CTRL-X CTRL-D complete the definition or macro
- CTRL-X CTRL-F complete the file name
- CTRL-X CTRL-I complete the word searching the current and *included* files.
- CTRL-X CTRL-K complete the word using *dictionary* files.
- CTRL-X CTRL-L complete the whole line searching the current file
- CTRL-X CTRL-N complete the word searching the current file
- CTRL-X CTRL-] complete the tag

BS **or** CTRL-H delete the character before the cursor
Del delete the character under the cursor
CTRL-W delete word before the cursor
CTRL-U delete all entered characters in the current line
CTRL-T insert one *shiftwidth* of indent in front of the current line
CTRL-D delete one *shiftwidth* of indent in front of the current line
0 CTRL-D delete all indent in the current line
^ CTRL-D delete all indent in the current line, restore indent in next line
CTRL-K ***char1*** [***char2***] enter digraph
char1 BS ***char2*** enter digraph if *digraph* option set

2.3 Special keys in Insert mode

cursor keys move cursor left/right/up/down
SHIFT-← / SHIFT-→ one word left/right
SHIFT-↑ / SHIFT-↓ one screenful backward/forward
CTRL-O ***command*** execute *command*
End cursor after last character in the line
Home cursor to first character in the line

[2] See Section 13.1 for description of **VIM** registers

2.4 Digraphs ☺

Digraphs are used to enter characters that normally cannot be entered by an ordinary keyboard. These are mostly accented characters which have the eighth bit set.

:dig[**raphs**] show current list of digraphs
:dig[**raphs**] ***char1 char2 number ...*** add digraph(s) to the list

2.5 Special inserts

:r ***file*** insert the contents of *file* below the cursor
:r! ***command*** insert the standard output of *command* below the cursor

2.6 Deleting text

[*"x*] [*n*] **x** delete *n* [into register *"x*] characters under and after the cursor
[*"x*] [*n*] Del delete *n* [into register *"x*] characters under and after the cursor
[*"x*] [*n*] **X** delete *n* [into register *"x*] characters before the cursor
[*"x*] [*n*] **d** ***motion*** delete [into register *"x*] the text that is moved over with *motion*[3]
visual [*"x*] **d** delete [into register *"x*] the highlighted text
[*"x*] [*n*] **dd** delete *n* [into register *"x*] lines
[*"x*] [*n*] **D** delete [into register *"x*] to ⟨EOL⟩ (and *n*-1 more lines)
[*n*] **J** join *n*-1 lines (delete ⟨EOL⟩)
[*n*] **:j[oin][!]** same as J, except with [!] the join does not insert or delete any spaces.
visual **J** join the highlighted lines
[*n*] **gJ** like J, but without inserting spaces
visual **gJ** like *visual* J, but without inserting spaces
:[***range***] **d** [*x*] delete *range* lines [into register *x*]

2.7 Copying and moving text

:reg show the contents of all registers
:reg ***arg*** show the contents of registers mentioned in *arg*
[*n*] [*"x*] **y** ***motion*** yank the text moved over with *motion* into a register [*"x*]
visual **["x] y** yank the highlighted text into a register [*"x*]
[*"x*] [*n*] **yy** yank *n* lines into a register [*"x*]
[*"x*] [*n*] **Y** yank *n* lines into a register [*"x*]
[*"x*] [*n*] **p** put a register [*"x*] after the cursor position (*n* times)
[*"x*] **gp** like p but leave the cursor just after the new text. ☺the cursor position (*n* times)
[*"x*] [*n*] **P** put a register [*"x*] before the cursor position (*n* times)
[*"x*] **gP** like P but leave the cursor just after the new text. ☺
[*"x*] **]** ⟨MiddleMouse⟩ like p, but adjust indent to current line
[*"x*] [*n*] **]p** like p, but adjust indent to current line
[*"x*] [*n*] **[p** like P, but adjust indent to current line

2.8 Changing text

[*n*] **R** enter Replace mode (repeat the entered text *n* times)
[*n*] **c** ***motion*** delete *motion* text [into register "x"] and start insert.
visual **c** change the highlighted text
[*n*] **cc** change *n* lines
[*n*] **S** change *n* lines
[*n*] **C** change to the end of the line (and *n*-1 more lines)
[*n*] **s** change *n* characters
[*n*] **r** ***char*** replace *n* characters with *char*
[*n*] ~ switch case for *n* characters and advance cursor
visual ~ switch case for highlighted text
visual **u** make highlighted text lowercase
visual **U** make highlighted text uppercase
g~ ***motion*** switch case for the text that is moved over with *motion*
[*n*] **g~~ or g~g~** switch case of current line. ☺

[3] for definition of *motion* see Section 1.3

gu *motion* make the text that is moved over with *motion* lowercase
gU *motion* make the text that is moved over with *motion* uppercase
[*n*] **gugu or guu** make current line uppercase. ☺.
[*n*] **gUU or gUgU** make current line uppercase. ☺
[*n*] CTRL-A add *n* to the number at or after the cursor
[*n*] CTRL-X subtract *n* from the number at or after the cursor
[*n*] **< *motion*** move the lines that are moved over with *motion* one *shiftwidth* left
[*n*] << move *n* lines one *shiftwidth* left
[*n*] **> *motion*** move the lines that are moved over with *motion* one *shiftwidth* right
[*n*] >> move *n* lines one *shiftwidth* right
gqq format the current line. ☺
[*n*] **gq *motion*** format the lines that are moved over with *motion* to *textwidth* length
:[*range*] **ce[nter]** [*width*] center the lines in *range*
:[*range*] **le[ft]** [*indent*] left-align the lines in *range* with *indent*
:[*range*] **ri[ght]** [*width*] right-align the lines in *range*

2.9 Complex changes

[*n*] **! *motion command*** Ret filter the lines that are moved over through *command*
[*n*] **!! *command*** Ret filter *n* lines through *command*
visual **! *command*** Ret filter the highlighted lines through *command*
:[*range*] **!*command*** Ret filter *range* lines through *command*
[*n*] **= *motion*** filter the lines that are moved over through *indent*
[*n*] **==** filter *n* lines through *indent*
visual **=** filter the highlighted lines through *indent*
:[*range*] **s[ubstitute]/*pattern*/*string*/[c e g p r i l]** [*n*] substitute *pattern* by *string* in *range* lines [*n* times]; with

- `c` confirm each replacement
- `e` when the search pattern fails, do not issue an error message and, in particular, continue in maps as if no error occurred
- `g` replace all occurrences of *pattern*
- `i` Ignore case for the pattern.
- `I` Don't ignore case for the pattern.
- `p` print the line containing the last substitute
- `r` Only useful in combination with :& or :s without arguments. :&r works the same way as :~.

:[*range*] **sno[magic] ...** same as :substitute, but always use *nomagic*.
:[*range*] **sm[agic] ...** same as :substitute, but always use *magic*.

Some characters in *string* have a special meaning:

magic	nomagic	action
&	\&	replaced with the whole matched pattern
\&	&	replaced with &
\0	\0	replaced with the whole matched pattern
\1	\1	replaced with the matched pattern in the first pair of ()
\2	\2	replaced with the matched pattern in the second pair of ()
⋮	⋮	
\9	\9	replaced with the matched pattern in the ninth pair of ()
~	\~	replaced with the string of the previous substitute
\~	~	replaced with ~
\u	\u	next character made uppercase
\U	\U	following characters made uppercase
\l	\l	next character made lowercase
\L	\L	following characters made lowercase
\e	\e	end of /u, /U, /l and /L (NOTE: not ⟨Esc⟩!)
\E	\E	end of /u, /U, /l and /L
⟨CR⟩	⟨CR⟩	split line in two at this point
\r	\r	idem
CTRL-V ⟨CR⟩	CTRL-V ⟨CR⟩	insert a carriage-return ⟨CTRL-M⟩

magic	nomagic	action
\n	\n	⟨NL⟩
\b	\b	⟨BS⟩
\t	\t	⟨Tab⟩

:[*range*] **&[c e g r i l]** [*n*]
:[*range*] [*range*] **s[ubstitute] [c e g r i l]** [*n*] repeat previous :s [*n* times] with new range and options
:[*range*] **~[c e g r i l]** [*n*] repeat last substitute [*n* times] with same substitute string but with last used search pattern.
& repeat previous :s on current line without options
:[*range*] **ret[ab][!]** [***tabstop***] set *tabstop* to new value and adjust white space accordingly

2.10 Visual mode ☺

v start or stop highlighting characters
V start or stop highlighting linewise
CTRL-V start or stop highlighting blockwise
o exchange cursor position with start of highlighting
gv start highlighting on previous visual area

2.11 Text objects ☺ (only in Visual mode or after an operator)

word a word consists of a sequence of letters, digits and underscores, or a sequence of other non-blank characters, separated with white space (spaces, tabs, ⟨EOL⟩). This can be changed with the *iskeyword* option.

WORD a WORD consists of a sequence of non-blank characters, separated with white space. An empty line is also considered to be a word and a WORD.

sentence a sentence is defined as ending at a ".", "!" or "?" followed by either the end of a line, or by a space. Any number of closing ")", "]", "" and "'" characters may appear after the ".", "!" or "?" before the spaces or end of line. A paragraph and section boundary is also a sentence boundary. The definition of a sentence cannot be changed.

paragraph a paragraph begins after each empty line, and also at each of a set of paragraph macros, specified by the pairs of characters in the *paragraphs* option. The default is "IPLPPPQPP LIpplpipbp", which corresponds to the macros ".IP", ".LP", etc. (These are nroff macros, so the dot must be in the first column). A section boundary is also a paragraph boundary. Note that this does not include a "{" or "}" in the first column.

section a section begins after a form-feed (⟨C-L⟩) in the first column and at each of a set of section macros, specified by the pairs of characters in the *sections* option. The default is "SHNHH HUnhsh", which defines a section to start at the nroff macros ".SH", ".NH", ".H", ".HU", ".nh" and ".sh".

[*n*] **aw** select a word
[*n*] **iw** select inner[4] word
[*n*] **aW** select a WORD
[*n*] **iW** select inner WORD
[*n*] **as** select a sentence
[*n*] **is** select inner sentence
[*n*] **ap** select a paragraph
[*n*] **ip** select inner paragraph
[*n*] **a[or a]** select [*n*] "[" "]" blocks.
[*n*] **i[or i]** select [*n*] inner "[" "]" blocks.
[*n*] **a), a(or ab** select a block (from (to))
[*n*] **i), i(or ib** select inner block(from (to))
[*n*] **a< or a>** select [*n*] <> blocks.
[*n*] **i< or i>** select [*n*] <>inner blocks
[*n*] **a}, a{ or aB** select a Block (from { to })
[*n*] **i}, i{ or iB** select inner Block (from { to })

[4] "inner" means that white spaces between words are included in count *n*

2.12 Repeating Commands

[*n*] **.** repeat last change (with n replaced with *n*)
q{**a-z**} ☺ record typed characters into register {a-z}
q{**A-Z**} ☺ record typed characters, appended to register {a-z}
q ☺ stop recording
[*n*] **@**{**a-z**} execute the contents of register {a-z} (*n* times)
[*n*] **@@** ☺ repeat previous @{a-z} (*n* times)
:@{**a-z**} ☺ execute the contents of register {a-z} as an ***Ex*** command
:@@ repeat previous :@{a-z}
:[***range***] **g[lobal]/*pattern*/**[***cmd***] execute ***Ex*** command *cmd* (default: :p) on the lines within [*range*] where *pattern* matches
:[***range***] **g[lobal]!/*pattern*/**[***cmd***] execute ***Ex*** command *cmd* (default: :p) on the lines within [*range*] where *pattern* does NOT match
:so[urce] ***file*** read ***Ex*** commands from *file*
:so[urce]! ***file*** read **VIM** commands from *file*
:[*n*] **sl[eep]** *n* [*m*] don't do anything for *n* seconds. If *m* is included, sleep for *n* milliseconds.
[*n*] **gs** goto Sleep for *n* seconds

2.13 Undo/Redo Commands

[*n*] **u** ☺ undo last *n* changes
[*n*] CTRL-R ☺ redo last *n* undone changes
U restore last changed line

2.14 Command-line editing

Esc abandon command-line (if wildchar is Esc, type it twice)
CTRL-V ***char*** insert *char* literally
CTRL-V ***number*** enter decimal value of character (up to three digits)
CTRL-K ***char1 char2*** ☺ enter digraph
CTRL-R {**0-9a-z"%#:-=***} insert the contents of a register[5]
CTRL-R CTRL-R {**0-9a-z"%#:-=***} insert the contents of a register. Works like using a single CTRL-R, but the text is inserted literally, not as if typed. This differs when the register contains characters like ⟨BS⟩.
←/→ cursor left/right
SHIFT-←/SHIFT-→ cursor one word left/right
CTRL-B/CTRL-E cursor to beginning/end of command-line
BS delete the character in front of the cursor
Del delete the character under the cursor
CTRL-W delete the word in front of the cursor
CTRL-U remove all characters
↑/↓ recall older/newer command-line that starts with current command
SHIFT-↑/SHIFT-↓ recall older/newer command-line from history

Context-sensitive completion on the command-line: ☺
wildchar (default: Tab) do completion on the pattern in front of the cursor. If there are multiple matches, beep and show the first one; further *wildchar* will show the next ones
CTRL-D list all names that match the pattern in front of the cursor
CTRL-A insert all names that match pattern in front of cursor
CTRL-L insert longest common part of names that match pattern
CTRL-N after *wildchar* with multiple matches: go to next match
CTRL-P after *wildchar* with multiple matches: go to previous match

[5] See Section 13.1 for description of **VIM** registers

3 Key Mappings Abbreviations

3.1 Key mapping

These commands are used to map a key or key sequence to a string of characters. There are five sets of mappings:

Normal mode: when typing commands. (e.g. `:map <F3> o#include`)
Visual mode: when typing commands while the Visual area is highlighted.
Operator-pending mode: when an operator is pending (after "d", "y", "c", etc.).
Insert mode: these are also used in Replace mode.
Command-line mode: when entering a ":" or "/" command.

Everything from the first non-blank after *lhs* up to the end of the line ⟨EOL⟩ (or "|") is considered to be part of *rhs*. Inclusion of *lhs* in *rhs* results in a *recursive mapping*. Recursion depth is controlled by *maxmapdepth* option. Use "nore" versions of mapping commands to avoid recursion.

:ma[p] ***lhs rhs*** map *lhs* to *rhs* in Normal and Visual mode
:ma[p]! ***lhs rhs*** map *lhs* to *rhs* in Insert and Command-line mode
:no[remap][!] ***lhs rhs*** same as :map, no remapping for is *rhs*
:unm[ap] ***lhs*** remove the mapping of *lhs* for Normal and Visual mode
:unm[ap]! ***lhs*** remove the mapping of *lhs* for Insert and Command-line mode
:ma[p] [***lhs***] list mappings (starting with *lhs*) for Normal and Visual mode
:ma[p]! [***lhs***] list mappings (starting with *lhs*) for Insert and Command-line mode
:cmap/:cunmap/:cnoremap like :map!/:unmap!/:noremap! but for Command-line mode only
:imap/:iunmap/:inoremap like :map!/:unmap!/:noremap! but for Insert mode only
:nmap/:nunmap/:nnoremap like :map/:unmap/:noremap but for Normal mode only
:vmap/:vunmap/:vnoremap like :map/:unmap/:noremap but for Visual mode only
:omap/:ounmap/:onoremap like :map/:unmap/:noremap but only for when an operator is pending
:mk[exrc][!] ***file*** ☺ write current mappings, abbreviations, and settings to *file*
(default: .exrc; use ! to overwrite)
:mkv[imrc][!] ***file*** ☺ same as :mkexrc, but with default .vimrc
:mks[ession][!] [***file***] like :mkvimrc, but store current files and directory too
:mapc[lear] remove mappings for Normal and Visual mode
:mapc[lear]! remove mappings for Insert and Cmdline mode
:imapc[lear] remove mappings for Insert mode
:vmapc[lear] remove mappings for Visual mode
:omapc[lear] remove mappings for Operator-pending mode
:nmapc[lear] remove mappings for Normal mode
:cmapc[lear] remove mappings for Cmdline mode

3.2 Abbreviations

Abbreviations are used in Insert, Replace and Command-line modes. Abbreviations are never recursive. There are three types of abbreviations:

full-id this type consists entirely of keyword characters (letters and characters from *iskeyword* option). (e.g. `foo, g3, -1`)
end-id this type ends in a keyword character, but all the other characters are not keyword characters.(e.g. `#i, ..f, $/7`)
non-id ☺ this type ends in a non-keyword character, the other characters may be of any type, excluding ⟨Space⟩ and ⟨Tab⟩. (e.g. `def#, 4/7$`)

:ab[breviate] ***lhs rhs*** add abbreviation for *lhs* to *rhs*
:ab[breviate] ***lhs*** show abbreviations that start with *lhs*
:ab[breviate] show all abbreviations
:una[bbreviate] ***lhs*** remove abbreviation for *lhs*
:norea[bbrev] [***lhs***] [***rhs***] like :ab, but don't remap *rhs*
:iab/:iunab/:inoreab like :ab, but only for Insert mode
:cab/:cunab/:cnoreab like :ab, but only for Command-line mode
:abc[lear] remove all abbreviations
:cabc[lear] remove all abbreviations for Cmdline mode
:iabc[lear] remove all abbreviations for Insert mode

3.3 User-defined commands ☺

It is possible to define your own ***Ex*** commands. A user-defined command can act just like a built-in command, except that when the command is executed, it is transformed into a normal ***Ex*** command and then executed. All user defined commands must start with an uppercase letter, to avoid confusion with builtin commands. User-defined commands can have arguments, which are subject to completion as filenames, buffers, etc. Exactly how this works depends upon the command's attributes, which are specified when the command is defined.

:com[mand] list all user-defined commands. When listing commands, the characters in the first two columns are

- ! Command has the `-bang` attribute
- " Command has the `-register` attribute

:com[mand] ⟨*cmd*⟩ list the user-defined commands that start with ⟨*cmd*⟩

:com[mand][!] [⟨*attr*⟩ ...] ⟨*cmd*⟩ ⟨*rep*⟩ define a user command. The name of the command is *cmd* and its replacement text is *rep*. The command's attributes (see below) are *attr*. If the command already exists, an error is reported, unless a ! is specified, when the command is redefined.

:delc[ommand] ⟨*cmd*⟩ delete the user-defined command ⟨*cmd*⟩.

:comc[lear] delete all user-defined commands.

Command attributes

Command attributes split into four categories:

1. **argument handling:** `-nargs=`*char*, where *char* can be 0,1, *, ? or +
2. **completion behaviour:** `-complete=`*word*, where *word* can be any of the following: `augroup buffer command dir event file help highlight menu option tag`
3. **range handling:** `-range=`*n*`,%` or `-count=`*n*
4. **special cases:** `-bang` – the command can take a ! modifier, `-register` – the first argument to the command can be an optional register name

Replacement text

The replacement text for a user-defined command is scanned for special escape sequences, using <...> notation. Escape sequences are replaced with values from the entered command line, and all other text is copied unchanged. The resulting string is executed as an Ex command. The valid escape sequences are

`<line1>`	The starting line of the command range
`<line2>`	The final line of the command range
`<count>`	Any count supplied
`<bang>`	Expands to a !, if specified
`<reg>`	The optional register, if specified
`<args>`	The command arguments, exactly as supplied
`<lt>`	A single < character

Example

```
" Rename the current buffer
:com -nargs=1 -bang -complete=file Ren f <args>|w<bang>

" Replace a range with the contents of a file
" (Enter this all as one line)
:com -range -nargs=1 -complete=file
         Replace <line1>-pu_|<line1>,<line2>d|r <args>|<line1>d
```

4 Options

4.1 Setting Options

:se[t] show all modified options

:se[t] all ☺ show all options

:se[t] ***option*** toggle *option* on, show string or number option

:se[t] no*option* toggle *option* off
:se[t] inv*option* ☺ invert *option*
:se[t] *option*= *value* set string or number *option* to *value*
:se[t] *option*? show *value* of *option*
:se[t] *option*+=*value* Add the *value* to a number option, or concatenate the *value* to a string option.
:se[t] *option*^=*value* Multiply the *value* to a number option, or prepend the *value* to a string option.
:se[t] *option*-=*value* Subtract the *value* from a number option, or remove the *value* from a string option, if it is there.
:se[t] *option*& reset *option* to its default *value* ☺
:fix[del] ☺ set *value* of "t_kD" according to *value* of " t_kb"

4.2 Short explanation of each option:

in () – an abbreviated version

***aleph* (*al*)** ☺ ASCII code of the letter Aleph (Hebrew)
***allowrevins* (*ari*)** ☺ Allow CTRL-_ in Insert and Command-line mode. See *revins*.
***altkeymap* (*akm*)** ☺ for default second language (Farsi/Hebrew)
***autoindent* (*ai*)** take indent for new line from previous line
***autowrite* (*aw*)** automatically write file if changed
***background* (*bg*)** ☺ "dark" or "light", used for highlight colors
***backspace* (*bs*)** ☺ how backspace works at start of line
***backup* (*bk*)** ☺ keep backup file after overwriting a file
***backupdir* (*bdir*)** ☺ list of directories for the backup file
***backupext* (*bex*)** ☺ extension used for the backup file
***binary* (*bin*)** ☺ edit binary file mode
***bioskey* (*biosk*)** ☺ MS-DOS: use bios calls for input characters
***breakat* (*brk*)** ☺ characters that may cause a line break
***browsedir* (*bsdir*)** ☺ (only for Motif and Win32 GUI) which directory to start browsing in.
***cindent* (*cin*)** ☺ do C program indenting
***cinkeys* (*cink*)** ☺ keys that trigger indent when *cindent* is set
***cinoptions* (*cino*)** ☺ how to do indenting when *cindent* is set
***cinwords* (*cinw*)** ☺ words where *si* and *cin* add an indent
***cmdheight* (*ch*)** ☺ number of lines to use for the command-line
***columns* (*co*)** ☺ number of columns in the display
***comments* (*com*)** ☺ patterns that can start a comment line
***compatible* (*cp*)** ☺ behave Vi-compatible as much as possible
***complete* (*cpt*)** ☺ specify how Insert mode completion works
***confirm* (*cf*)** ☺ confirm certain operations that would normally fail because of unsaved changes to a buffer.
***cpoptions* (*cpo*)** ☺ flags for Vi-compatible behaviour
cscopeprg csprg ☺ command to execute cscope.
cscopetag cst ☺ use cscope for tag commands.
cscopetagorder csto ☺ determines :cstag search order.
cscopeverbose csverb ☺ give messages when adding a cscope database.
***define* (*def*)** ☺ pattern to be used to find a macro definition
***dictionary* (*dict*)** ☺ list of file names used for keyword completion
***digraph* (*dg*)** ☺ enable the entering of digraphs in Insert mode
***directory* (*dir*)** list of directory names for the swap file
***edcompatible* (*ed*)** ☺ toggle flags of :substitute command
***endofline* (*eol*)** ☺ write ⟨EOL⟩ for last line in file
***equalalways* (*ea*)** ☺ windows are automatically made the same size
***equalprg* (*ep*)** ☺ external program to use for = command
***errorbells* (*eb*)** ring the bell for error messages
***errorfile* (*ef*)** ☺ name of the "errorfile" for the QuickFix mode
***errorformat* (*efm*)** ☺ description of the lines in the error file
***esckeys* (*ek*)** ☺ recognize function keys in Insert mode
***eventignore* (*ei*)** ☺ a list of autocommand event names, which are to be ignored.
***expandtab* (*et*)** ☺ use spaces when Tab is inserted
***exrc* (*ex*)** ☺ read .vimrc and .exrc in the current directory
***fileformat* (*ff*)** ☺ file format used for file I/O

fileformats **(*ffs*)** ☺ automatically detected values for *fileformat*
filetype **(*ft*)** ☺ system-specific filetype information
fkmap **(*fk*)** ☺ Farsi keyboard mapping
formatoptions **(*fo*)** ☺ how automatic formatting is to be done
formatprg **(*fp*)** ☺ name of external program used with gq command
gdefault **(*gd*)** ☺ the :substitute flag g is default on
grepformat **(*gfm*)** ☺ format of *grepprg* output
grepprg **(*gp*)** ☺ program to use for :grep
guicursor **(*gcr*)** ☺ GUI: settings for cursor shape and blinking
guifont **(*gfn*)** ☺ GUI: Name(s) of font(s) to be used
guioptions **(*go*)** ☺ GUI: Which components and options are used
guipty ☺ GUI: try to use a pseudo-tty for :! commands
helpfile **(*hf*)** ☺ name of this help file
helpheight **(*hh*)** ☺ minimum height of a new help window
hidden **(*hid*)** ☺ don't unload buffer when it is abandoned
highlight **(*hl*)** ☺ sets highlighting mode for various occasions
hlsearch **(*hls*)** ☺ highlight matches with last search pattern
history **(*hi*)** ☺ number of command-lines that are remembered
hkmap **(*hk*)** ☺ Hebrew keyboard mapping
icon ☺ set icon of the window to the name of the file
iconstring ☺ string to use for the **VIM** icon
ignorecase **(*ic*)** ignore case in search patterns
include **(*inc*)** ☺ pattern to be used to find an include file
incsearch **(*is*)** ☺ highlight match while typing search pattern
infercase **(*inf*)** ☺ adjust case of match for keyword completion
insertmode **(*im*)** ☺ start the edit of a file in Insert mode
isfname **(*isf*)** ☺ characters included in file names and pathnames
isident **(*isi*)** ☺ characters included in identifiers
isprint **(*isp*)** ☺ printable characters
iskeyword **(*isk*)** ☺ characters included in keywords
joinspaces **(*js*)** ☺ two spaces after a period with a join command
keymodel **(*km*)** ☺ enable starting/stopping selection with keys
keywordprg **(*kp*)** ☺ program to use for the K command
langmap **(*lmap*)** ☺ alphabetic characters for other language mode
laststatus **(*ls*)** ☺ tells when last window has status lines
lazyredraw **(*lz*)** ☺ don't redraw while executing macros
linebreak **(*lbr*)** ☺ wrap long lines at a blank
lines number of lines in the display
lisp automatic indenting for Lisp
list show Tab and ⟨EOL⟩
listchars **(*lcs*)** ☺ characters for displaying in list mode
magic changes special characters in search patterns
makeef **(*mef*)** ☺ name of the *errorfile* for :make
makeprg **(*mp*)** ☺ program to use for the :make command
matchtime **(*mat*)** ☺ tenths of a second to show the matching parenthesis, when *showmatch* is set
maxfuncdepth **(*mfd*)** ☺ maximum recursive depth for user functions
maxmapdepth **(*mmd*)** ☺ maximum recursive depth for mapping
maxmem **(*mm*)** ☺ maximum memory (in Kbyte) used for one buffer
maxmemtot **(*mmt*)** ☺ maximum memory (in Kbyte) used for all buffers
modeline **(*ml*)** recognize modelines at start or end of file
modelines **(*mls*)** ☺ number of lines checked for modelines
modified **(*mod*)** ☺ buffer has been modified
more ☺ pause listings when the whole screen is filled
mouse ☺ enable the use of mouse clicks
mousefocus **(*mousef*)** ☺ keyboard focus follows the mouse
mousehide **(*mh*)** ☺ hide mouse pointer while typing
mousemodel **(*mousem*)** ☺ changes meaning of mouse buttons
mousetime **(*mouset*)** ☺ max time between mouse double-click
nrformats **(*nf*)** ☺ number formats recognized for CTRL-A command
number **(*nu*)** print the line number in front of each line

***paragraphs* (*para*)** nroff macros that separate paragraphs
paste ☺ allow pasting text
***patchmode* (*pm*)** ☺ keep the oldest version of a file
***path* (*pa*)** ☺ list of directories searched with gf *et al*
***readonly* (*ro*)** ☺ disallow writing the buffer
remap allow mappings to work recursively
report threshold for reporting number of lines changed
***restorescreen* (*rs*)** ☺ Win32: restore screen when exiting
***revins* (*ri*)** ☺ inserting characters will work backwards
***rightleft*(*rl*)** ☺ window is right-to-left oriented
***ruler* (*ru*)** ☺ show cursor line and column in the status line
***scroll* (*scr*)** lines to scroll with CTRL-U and CTRL-D
***scrolljump* (*sj*)** ☺ minimum number of lines to scroll
***scrolloff* (*so*)** ☺ minimum number of lines above and below cursor
***sections* (*sect*)** nroff macros that separate sections
secure ☺ secure mode for reading .vimrc in current dir
***selection* (*sel*)** ☺ what type of selection to use
***selectmode* (*slm*)** ☺ when to use Select mode instead of Visual mode
***sessionoptions* (*ssop*)** ☺ options for :mksession
***shell* (*sh*)** name of shell to use for external commands
***shellcmdflag* (*shcf*)** ☺ flag to shell to execute one command
***shellpipe* (*sp*)** ☺ string to put output of :make in error file
***shellquote* (*shq*)** ☺ quote character(s) for around shell command
***shellredir* (*srr*)** ☺ string to put output of filter in a temp file
***shelltype* (*st*)** ☺ Amiga: influences how to use a shell
***shellxquote* (*sxq*)** ☺ like *shellquote*, but include redirection
***shiftround* (*sr*)** ☺ round indent to multiple of *shiftwidth*
***shiftwidth* (*sw*)** number of spaces to use for (auto)indent step
***shortmess* (*shm*)** ☺ list of flags, reduce length of messages
***shortname* (*sn*)** non-MS-DOS: Filenames assumed to be 8.3 chars
***showbreak* (*sbr*)** ☺ string to use at the start of wrapped lines
***showcmd* (*sc*)** show (partial) command in status line
***showfulltag* (*sft*)** ☺ show full tag pattern when completing tag
***showmatch* (*sm*)** briefly jump to matching bracket if insert one
***showmode* (*smd*)** message on status line to show current mode
***sidescroll* (*ss*)** ☺ minimum number of columns to scroll horizontal
***smartcase* (*scs*)** ☺ no ignore case when pattern has uppercase
***smartindent* (*si*)** ☺ smart autoindenting for C programs
***smarttab* (*sta*)** ☺ use *shiftwidth* when inserting Tab
***softtabstop* (*sts*)** ☺ number of spaces that Tab uses while editing
***splitbelow* (*sb*)** ☺ new window from split is below the current one
***startofline* (*sol*)** ☺ commands move cursor to first blank in line
***suffixes* (*su*)** ☺ suffixes that are ignored with multiple match
***swapfile* (*swf*)** ☺ whether to use a swapfile for a buffer
***swapsync* (*sws*)** ☺ how to sync the swap file
***syntax* (*syn*)** ☺ syntax to be loaded for current buffer
***tabstop* (*ts*)** number of spaces that Tab in file uses
***taglength* (*tl*)** number of significant characters for a tag
***tagrelative* (*tr*)** ☺ file names in tag file are relative
***tags* (*tag*)** list of file names used by the tag command
term name of the terminal
terse ☺ shorten some messages
***textauto* (*ta*)** ☺ obsolete, use *fileformats*
***textmode* (*tx*)** ☺ obsolete, use *fileformat*
***textwidth* (*tw*)** ☺ maximum width of text that is being inserted
***tildeop* (*top*)** ☺ tilde command ~ behaves like an operator
***timeout* (*to*)** time-out on mappings and key codes
ttimeout ☺ time-out on mappings
***timeoutlen* (*tm*)** time-out time in milliseconds
***ttimeoutlen* (*ttm*)** ☺ time-out time for key codes in milliseconds

title ☺ set title of window to the name of the file
***titlelen* (*tm*)** ☺ gives the percentage of "columns" to use for the length of the window title.
titlestring ☺ title to use for the **VIM** window
***ttybuiltin* (*tbi*)** ☺ use built-in termcap before external termcap
***ttyfast* (*tf*)** ☺ indicates a fast terminal connection
***ttymouse* (*ttym*)** ☺ type of mouse codes generated
***ttyscroll* (*tsl*)** maximum number of lines for a scroll
***ttytype* (*tty*)** alias for term
***undolevels* (*ul*)** ☺ maximum number of changes that can be undone
***updatecount* (*uc*)** ☺ after this many characters flush swap file
***updatetime* (*ut*)** ☺ after this many milliseconds flush swap file
***verbose* (*vbs*)** ☺ give informative messages
***viminfo* (*vi*)** ☺ use .viminfo file upon startup and exiting
***visualbell* (*vb*)** ☺ use visual bell instead of beeping
warn warn for shell command when buffer was changed
***weirdinvert* (*wi*)** ☺ for terminals that have weird inversion method
***whichwrap* (*ww*)** ☺ allow specified keys to cross line boundaries
***wildchar* (*wc*)** ☺ command-line character for wildcard expansion
***winheight* (*wh*)** ☺ minimum number of lines for
***wildignore* (*wig*)** ☺ files matching these patterns are not completed
***wildmode* (*wim*)** ☺ mode for 'wilchar' command-line expansion
***winaltkeys* (*wak*)** ☺ when the windows system handles ALT keys the current window
***winminheight* (*wmh*)** ☺ minimum number of lines for any window
wrap ☺ long lines wrap and continue on the next line
***wrapmargin* (*wm*)** chars from the right where wrapping starts
***wrapscan* (*ws*)** searches wrap around the end of the file
***writeany* (*wa*)** write to file with no need for ! override
***writebackup* (*wb*)** ☺ make a backup before overwriting a file
***writedelay* (*wd*)** ☺ delay this many msec for each char (for debug)

5 Other Commands

5.1 Shell Commands

:sh[ell] start a shell
:! ***command*** execute *command* with a shell
K lookup *keyword* under the cursor with keywordprg program (default: "man")

5.2 QuickFix Commands ☺

VIM has a special mode to speedup the *edit-compile-edit* cycle. The idea is to save the error messages from the compiler in a file and use **VIM** to jump to the errors one by one. The *errorformat* option should be set to match the error messages from your compiler (see below).

:cc [***num***] display error *num* (default is the same again)
:cn display the next error
:cp display the previous error
:cl list all errors
:cf read errors from the file "errorfile"
:cr[ewind][!] [***nr***] display error [*nr*]. If *nr* is omitted, the FIRST error is displayed.
:cla[st][!] [***nr***] display error [*nr*]. If *nr* is omitted, the LAST error is displayed.
:cq quit without writing and return error code (to the compiler)
:make [***args***] start make, read errors, and jump to first error
:col[der] [***n***] go to older error list [*n* times].
:cnew[er] [***n***] go to newer error list [*n* times].

***Errorformat* option syntax**

Spec	Description	Spec	Description
%f	file name (a string)	%l	line number (a number)
%c	column number (a number)	%t	error type (single character)
%n	error number (a number)	%m	error message (a string)
%*<conv>	any scanf non-assignable conversion	%%	the single "%" character

5.3 Viminfo Commands ☺

The *viminfo_file* is used to store:
- The command line history.
- The search string history.
- Contents of registers.
- Marks for several files.
- File marks, pointing to locations in files.
- Last search/substitute pattern (for "n" and "&").

viminfo_file read registers, marks, history at startup, save when exiting
:rv[iminfo] ***file*** read info from viminfo file *file*
:rv[iminfo]! ***file*** idem, overwrite existing info
:wv[iminfo] ***file*** add info to viminfo file *file*
:wv[iminfo]! ***file*** write info to viminfo file *file*

***Viminfo* option syntax**

The format of "viminfo" string: *char string* or *char number*, where *char* can be:

' – maximum number of previously edited files for which the marks are remembered.
f – whether file marks need to be stored. If zero, file marks ('0 to '9, 'A to 'Z) are not stored. When not present or when non-zero, they are all stored.
r – removable media. The argument is a string (up to the next ","). This parameter can be given several times. Each specifies the start of a path for which no marks will be stored. Maximum length of each "r" argument is 50 characters.
" – maximum number of lines saved for each register. If zero then registers are not saved. When not included, all lines are saved.
: – maximum number of items in the command line history to be saved. When not included, the value of *history* is used.
/ – maximum number of items in the search pattern history to be saved. If non-zero, then the previous search and substitute patterns are also saved. When not included, the value of *history* is used.
n – name of the *viminfo* file. The name must immediately follow the "n". Must be the last one! If the "-i" argument was given when starting Vim, that file name overrides the one given here with *viminfo*. Environment variables are expanded when opening the file, not when setting the option.
% – save and restore the buffer list. If Vim is started with a file name argument, the buffer list is not restored. If Vim is started without a file name argument, the buffer list is restored from the *viminfo* file. Buffers without a file name and buffers for help files are not written to the *viminfo* file.

Automatic option setting when editing a file
vim:*set-arg*: .. in the first and last lines of the file (see *ml* option), *set-arg* is given as an argument to :set

5.4 Various Commands

☺

:h[elp] split the window and display the help file in read-only mode. If there is a help window open already, use that one.
:h[elp] ***subject*** Like :help, additionally jump to the tag *subject*. *subject* can include wildcards like "*", "?" and "[a-z]".

CTRL-L clear and redraw the screen
CTRL-G show current file name (with path) and cursor position
ga show ASCII value of character under cursor in decimal, hex, and octal
g CTRL-G show cursor column, line, and character position
CTRL-C during searches: interrupt the search
CTRL-B break MS-DOS: during searches: interrupt the search
n Del while entering count *n*: delete last character
:ve[rsion] show version information
:mode *n* MS-DOS: set screen mode to *n* (number, C80, C4350, etc.)
:norm[al][!] ***commands*** execute Normal mode *commands*
Q switch to ***Ex*** mode
:redir >***file*** redirect messages to *file*
:[***range***] **p[rint]** [*n*] print *n* lines, starting with *range*
:[***range***] **l[ist]** [*n*] same as :print, but display unprintable characters

6 *Ex* ranges and search patterns

6.1 Ranges

, separates two line numbers
; idem, set cursor to the first line number before interpreting the second one
number an absolute line *number*
. the current line
$ the last line in the file
% equal to 1,$ (the entire file)
***** equal to '<,'> (visual area)
'*t* position of mark *t*
/***pattern***[/] the next line where *pattern* matches
?***pattern***[?] the previous line where *pattern* matches
+[***num***] add *num* to the preceding line number (default: 1)
-[***num***] subtract *num* from the preceding line number (default: 1)

6.2 Special *Ex* characters

| separates two commands (not for :global and :!)
" begins comment
% current file name (only where a file name is expected)
#[***number***] alternate file name *number* (only where a file name is expected)

Note: *The next six are typed literally; these are not special keys!*
<cword> word under the cursor (only where a file name is expected)
<cWORD> WORD under the cursor (only where a file name is expected)
<cfile> filename under the cursor (only where a file name is expected)
<afile> filename for autocommand (only where a file name is expected)
<abuf> when executing autocommands, is replaced with the currently effective buffer number.
<sfile> filename of a :source'd file, within that file (only where a file name is expected)

After %, #, <cfile>, <sfile> *or* <afile>

:p	full path	:h	head (file name removed)
:t	tail (file name only)	:r	root (extension removed)
:e	extension	:.	reduce file name to be relative to current directory, if possible
:~	reduce file name to be relative to the home directory, if possible	:s?pat?sub?	replace the first occurrence of pat with sub
:gs?pat?sub?	replace all occurrences of path with sub		

6.3 Pattern searches

[*n*] /***pattern***[/***offset***]Ret search forward for the *n*-th occurrence of *pattern*
[*n*] ?***pattern***[?***offset***]Ret search backward for the *n*-th occurrence of *pattern*

[*n*] /Ret repeat last search, in the forward direction
[*n*] ?Ret repeat last search, in the backward direction
[*n*] **n** repeat last search
[*n*] **N** repeat last search, in opposite direction
[*n*] ***** ☺ search forward for the identifier under the cursor
[*n*] **#** ☺ search backward for the identifier under the cursor
[*n*] **g*** ☺ like *, but also find partial matches
[*n*] **g#** ☺ like #, but also find partial matches
gd ☺ goto local declaration of identifier under the cursor
gD ☺ goto global declaration of identifier under the cursor

6.4 Special characters in search patterns

magic[6]	**nomagic**	**meaning**
.	\.	matches any single character
^	^	matches start of line
$	$	matches ⟨EOL⟩
\<	\<	matches start of word
\>	\>	matches end of word
[a-z]	\[a-z]	matches a single char from the range
[^a-z]	\[^a-z]	matches a single char not in the range
\i	\i	matches an identifier char ☺
\I	\I	idem but excluding digits ☺
\k	\k	matches a keyword character ☺
\K	\K	idem but excluding digits ☺
\f	\f	matches a file name character ☺
\F	\F	idem but excluding digits ☺
\p	\p	matches a printable character ☺
\P	\P	idem but excluding digits ☺
\s	\s	matches a white space character ☺
\S	\S	matches a non-white space character ☺
\d	\d	digit: [0-9] ☺
\D	\D	non-digit: [^0-9] ☺
\x	\x	hex digit: [0-9A-Fa-f] ☺
\X	\X	non-hex digit: [^0-9A-Fa-f] ☺
\o	\o	octal digit: [0-7] ☺
\O	\O	non-octal digit: [^0-7] ☺
\w	\w	word character: [0-9A-Za-z_] ☺
\W	\W	non-word character: [^0-9A-Za-z_] ☺
\h	\h	head-of-word character: [A-Za-z_] ☺
\H	\H	non-head-of-word character: [^A-Za-z_] ☺
\a	\a	alphabetic character: [A-Za-z] ☺
\A	\A	non-alphabetic character: [^A-Za-z] ☺
\l	\l	lowercase character: [a-z] ☺
\L	\L	non-lowercase character: [^a-z] ☺
\u	\u	uppercase character: [A-Z] ☺
\U	\U	non-uppercase character: [^A-Z] ☺ **Note:** using the atom is faster than the [] form
\e	\e	matches ⟨Esc⟩
\t	\t	matches ⟨Tab⟩
\r	\r	matches ⟨Ret⟩
\b	\b	matches ⟨BS⟩
|	|	separates two branches
\(\)	\(\)	group a pattern into an atom
~	\~	matches the last given substitute string
\1,\2,..,\9	\1,\2,..,\9	Matches the same string that was matched by the first, second .. ninth sub-expression in \(and \).

magic	nomagic	meaning
	Quantifiers	
*	*	matches 0 or more of the preceding atom
\+	\+	matches 1 or more of the preceding atom ☺
\=	\=	matches 0 or 1 of the preceding atom ☺
\{*n,m*}	\{*n,m*}	matches *n* to *m* of the preceding atom, as much as possible ☺
\{*n*}	\{*n*}	matches *n* of the preceding atom ☺
\{*n,*}	\{*n,*}	matches at least *n* of the preceding atom, as much as possible ☺
\{*,m*}	\{*,m*}	matches 0 to *m* of the preceding atom, as much as possible ☺
\{}	\{}	the same as * ☺
\{*−n,m*}	\{*−n,m*}	matches *n* to *m* of the preceding atom, as few as possible ☺
\{*−n*}	\{*−n*}	matches *n* of the preceding atom ☺
\{*−n,*}	\{*−n,*}	matches at least *n* of the preceding atom, as few as possible ☺
\{*−,m*}	\{*−,m*}	matches 0 to *m* of the preceding atom, as few as possible ☺
\{−}	\{−}	matches 0 or more of the preceding atom, as few as possible ☺

Character class expression

A character class expression is evaluated to the set of characters belonging to that character class. The brackets in character class expressions are additional to the brackets delimiting a range. The following character classes are supported:

Name	Contents	Name	Contents
[:alnum:]	letters and digits	[:alpha:]	letters
[:ascii:]	ASCII characters	[:blank:]	space and tab characters
[:cntrl:]	control characters	[:digit:]	decimal digits
[:graph:]	printable characters excluding space	[:lower:]	lowercase letters
[:print:]	printable characters including space	[:punct:]	punctuation characters
[:space:]	whitespace characters	[:upper:]	uppercase letters
[:xdigit:]	hexadecimal digits		

6.5 Offsets allowed after search command

[***num***] *num* lines downwards, in column 1
+[***num***] *num* lines downwards, in column 1
−[***num***] *num* lines upwards, in column 1
e[***+num***] *num* characters to the right of the end of the match
e[***−num***] *num* characters to the left of the end of the match
s[***+num***] *num* characters to the right of the start of the match
s[***−num***] *num* characters to the left of the start of the match
b[***+num***] *num* characters to the right of the start (begin) of the match
b[***−num***] *num* characters to the left of the start (begin) of the match
;*search command* execute *search command* next

7 Starting, Writing and Quitting Commands

7.1 Starting VIM

vim *options* start editing with an empty buffer
vim *options file ...* start editing one or more files
vim *options* − read file from stdin
vim *options* −t *tag* edit the file associated with *tag*
vim *options* −q [***file***] start editing in QuickFix mode, display the first error

VIM arguments:

+/*pattern file ...* ☺ put the cursor at the first occurrence of *pattern*
+ *command* execute *command* after loading the file
+[***num***] put the cursor at line [*num*] (default: last line)

[6] see option *magic*, page 14

– – end of options, other arguments are file names
–b ☺ binary mode
–C ☺ compatible, set the compatible option
–d *device* ☺ Amiga: open *device* to be used as a console
–e ☺ ***Ex*** mode, start **VIM** in ***Ex*** mode
–F ☺ Farsi mode (*fkmap* and *rightleft* are set)
–f ☺ GUI: foreground process, don't fork; Amiga: do not restart **VIM** to open a window
–g ☺ start GUI (also allows other options)
–H ☺ Hebrew mode (*hkmap* and *rightleft* are set)
–i *viminfo* ☺ read info from *viminfo* instead of other files
–l Lisp mode
–n ☺ do not create a swap file
–N ☺ nocompatible, reset the compatible option
–o *n* ☺ open *n* windows (default: one for each file)
–r *file ..* recover aborted edit session
–r give list of swap files
–R ☺ read-only mode, implies -n
–s *scriptin* ☺ first read commands from the file *scriptin*
–T *terminal* ☺ set terminal name
–U *gvimrc* ☺ idem, for when starting the GUI
–u *vimrc* ☺ read inits from *vimrc* instead of other inits
–V ☺ verbose, give informative messages
–v Vi mode, start ***Ex*** in Normal mode
–w *scriptout* ☺ write typed chars to file *scriptout* (append)
–W *scriptout* ☺ write typed chars to file *scriptout* (overwrite)
– read file from stdin

7.2 Editing a file

:e[dit] edit the current file, unless changes have been made
:e[dit]! edit the current file always. Discard any changes
:e[dit] *file* edit *file*, unless changes have been made
:e[dit]! *file* edit *file* always. Discard any changes
:ex [*+cmd*] [***file***] same as :edit, but also switch to Ex mode.
:vi[sual][!] [*+cmd*] [***file***] when entered in Ex mode: Leave Ex mode, go back to Normal mode.
:vie[w] [*+cmd*] ***file*** when entered in Ex mode: Leave Ex mode, go back to Normal mode.
[*n*] CTRL-^ edit alternate file *n* (equivalent to :e *n*)
gf or]f edit the file whose name is under the cursor
:pwd print the current directory name
:cd [***path***] change the current directory to *path*
:f[ile] print the current file name and the cursor position
:f[ile] *name* set the current file name to *name*
:files show alternate file names

7.3 Using the argument list

:ar[gs] print the argument list, with the current *file* in [ ]
:all or :sall open a window for every *file* in the arg list
:wn[ext][!] write *file* and edit next *file*
:wn[ext][!] *file* write to *file* and edit next *file*, unless *file* exists. With !, overwrite existing *file*
:wN[ext][!] *file* write *file* and edit previous *file*

in current window:	in new window:	description
:argu[ment] [*n*]	**:sar[gument]** *n*	edit *file n*
:n[ext]	**:sn[ext]**	edit next *file*
:n[ext] *arglist*	**:sn[ext]** *arglist*	define new *arglist* and edit first *file*
:N[ext]	**:sN[ext]**	edit previous *file*
:rew[ind][!]	**:srew[ind]**	edit first *file*

in current window:	in new window:	description
:last	**:slast**	edit last *file*

7.4 Writing and quitting

:[range]w[rite][!] write to the current file
:[range]w[rite] ***file*** write to *file*, unless it already exists
:[range]w[rite]! ***file*** write to *file*. Overwrite an existing file
:[range]w[rite][!] >> append to the current file
:[range]w[rite][!] >> ***file*** append to *file*
:[range]w[rite] **!*cmd*** execute *cmd* with *range* lines as standard input
:wall[!] write all changed buffers
:q[uit] quit current buffer, unless changes have been made. Exit **VIM** when there are no other non-help buffers
:q[uit]! quit current buffer always, discard any changes. Exit **VIM** when there are no other non-help buffers
:conf[irm] qa[ll] exit Vim. Bring up a prompt when some buffers have been changed.
:qa[ll] exit **VIM**, unless changes have been made
:qa[ll]! exit **VIM** always, discard any changes
:cq quit without writing and return error code
:wq[!] write the current file and exit
:wq[!] ***file*** write to *file* and exit
:x[it][!] ***file*** like :wq but write only when changes have been made
ZZ same as :x
ZQ same as :q!
:conf[irm] wqa[ll] or :conf[irm] xa[ll] write all changed buffers and exit Vim. Bring up a prompt when some buffers are readonly or cannot be written for another reason.
:xa[ll][!] or :wqa[ll][!] write all changed buffers and exit
:st[op][!] suspend **VIM** or start new shell. If *aw* option is set and [!] not given write the buffer
CTRL-Z same as :stop!

8 Windows and Buffers functions

8.1 Multi-window functions ☺

CTRL-W **s or :split** split window into two parts
:*n* sp[lit] or new [+***cmd***] ***file*** split window and edit *file* in one of them. Execute the command *+cmd* when the file has been loaded. Make new window *n* high.
CTRL-W **]** split window and jump to tag under cursor
CTRL-W **g]** split current window in two. Use identifier under cursor as a tag and perform :tselect on it in the new upper window. Make new window N high.
CTRL-W **g** CTRL-] split current window in two. Use identifier under cursor as a tag and perform :tjump on it in the new upper window. Make new window N high.
CTRL-W **f** split window and edit file name under the cursor
CTRL-W CTRL-^ split window and edit alternate file
CTRL-W **n or :new** create new empty window
CTRL-W **q or :q[uit]** quit editing and close window
CTRL-W **c or :cl[ose]** make buffer hidden and close window
CTRL-W **o or :on[ly][!]** make current window only one on the screen
CTRL-W **j** move cursor to window below
CTRL-W **k** move cursor to window above
CTRL-W CTRL-W move cursor to window below (wrap)
CTRL-W **W** move cursor to window above (wrap)
CTRL-W **t** move cursor to top window
CTRL-W **b** move cursor to bottom window
CTRL-W **p** move cursor to previous active window
CTRL-W **r** rotate windows downwards
CTRL-W **R** rotate windows upwards

CTRL-W **x** exchange current window with next one
CTRL-W **=** make all windows equal height
CTRL-W **-** decrease current window height
CTRL-W **+ or :res[ize]** *+n* increase current window height [by *n*]
CTRL-W **_** set current window height (default: very high)

8.2 Buffer list functions

:buffers or :files list all known buffer and file names
:ball or :sball edit all args/buffers
:unhide or :sunhide edit all loaded buffers
:bad[d] [*+lnum*] *fname* add file name *fname* to the list, without loading it. If "lnum" is specified, the cursor will be positioned at that line when the buffer is first entered.
:bunload[!] [*n*] unload buffer *n* from memory
:bd[elete][!] [*n*] **or** [*n*]**:bd[delete]** unload buffer *n* and delete it from the buffer list

in current window:	in new window:	description
:[*n*] **buffer** [*n*]	:[*n*] **sbuffer** [*n*]	to arg/buf *n*
:[*n*] **bnext** [*n*]	:[*n*] **sbnext** [*n*]	to *n*-th next arg/buf
:[*n*] **bNext** [*n*]	:[*n*] **sbNext** [*n*]	to *n*-th previous arg/buf
:[*n*] **bprevious** [*n*]	:[*n*] **sbprevious** [*n*]	to *n*-th previous arg/buf
:brewind	**:sbrewind**	to first arg/buf
:blast	**:sblast**	to last arg/buf
:[*n*] **bmod** [*n*]	:[*n*] **sbmod** [*n*]	to *n*-th modified buf

9 Script Language ☺

9.1 Variables

VIM supports two types of variables: `Number`–a 32 bit signed number and `String`–a NULL terminated string of 8-bit unsigned characters. They are converted automatically, depending on how they are used. For boolean operators `Numbers` are used. Zero is FALSE, non-zero is TRUE.

A **VIM** variable name can be made up of letters, digits and underscore ("_"), but it cannot start with a digit. An internal variable is created with the :let and destroyed with the :unlet command. A variable name that is preceded with `b:` and `w:` is local to the current buffer and window, respectively. Inside functions global variables are accessed with `g:`.

Built-in variables

count The count given for the last Normal mode command. Can be used to get the count before a mapping. Read-only.
errmsg Last given error message. This variable may be set.
shell_error Result of the last shell command. When non-zero, the last shell command had an error. When zero, there was no problem.
this_session Full filename of the last loaded or saved session file. See :mksession.
version Version number of **VIM**. Major version number times 100 plus minor version number. Version 5.01 is 501. Read-only.

9.2 Expression syntax

Operators:[7]

#	Operator	Description	#	Operator	Description
1	|| [...][8]	logical OR	9	=~	regexp matches

[7] numbered in order of increasing precedence
[8] [...] indicates that the operations in this level can be concatenated.

#	Operator	Description	#	Operator	Description
2	&& [...]	logical AND	10	!~	regexp doesn't match
3	==	equal	11	+ [...]	number addition
4	!=	not equal	12	- [...]	number subtraction
5	>	greater than	13	. [...]	string concatenation
6	>=	greater than or equal	14	* [...]	number multiplication
7	<	smaller than	15	/ [...]	number division
8	<=	smaller than or equal	16	% [...]	number modulo
17	! *expr*	logical NOT	18	- *expr*	unary minus

Description:

- All expressions within one level are parsed from left to right.
- The arguments of *, +, -, %, /, || and && operations are (converted to) `Numbers`. When comparing a `String` with a `Number`, the `String` is converted to a `Number`, and the comparison is done on `Numbers`.
- Comparing two `Strings` is done with `strcmp()`. This results in the mathematical difference, not necessarily the alphabetical difference in the local language.
- The =~ and !~ operators match the left hand argument with the right hand argument, which is used as a pattern. This matching is always done like magic was set, no matter what the actual value of magic is. The value of ignorecase does matter though. To avoid backslashes in the regexp pattern to be doubled, use a single-quote string.

Operands:

Operand	Description	Operand	Description
expr1[*expr2*]	index in `String`	*number*	number constant
"*string*"	string constant	'*string*'	literal string constant
&option	option value	(*expr1*)	nested expression
variable	internal variable	*$VAR*	environment variable
@r	contents of register "r"		
function(expr1, ...)			function call

Description:

***expr1*[*expr2*]**
This results in a `String` that contains the *expr2*'th single character from *expr1*. *expr1* is used as a `String`, *expr2* as a `Number`. The index starts with 0 (like in C).

Careful: column numbers start with one!

If the length of the `String` is less than the index, the result is an empty `String`.

"string"
A string constant may contain these special characters:

Character	Description	Character	Description
\...	3-digit octal number	\..	2-digit octal number[9]
\.	1-digit octal number [10]	\x..	2-character hex number
\x.	1-character hex number[11]	\X..	same as \x..
\X.	same as \x.	\b	backspace
\e	escape	\f	formfeed
\n	newline	\r	return

[9] must be followed by non-digit
[11] must be followed by non-hex

Character	Description	Character	Description
\t	tab	\\	backslash
\"	double quote	\<xxx>	Special key name "xxx"

Note that \000 and \x00 force the end of the string.

'string'
This string is taken literally. No backslashes are removed or have a special meaning. A literal string cannot contain a single quote. Use a normal string for that.

@r The result is the contents of the named register, as a single string. Newlines are inserted where required. To get the contents of the unnamed register use "@@". The "=" register can not be used here.

9.3 Functions

argc() The result is the number of files in the argument list. See *arglist*.

argv(*n*) The result is the *n*-th file in the argument list.

browse(*save*, *title*, *initdir*, *default*) Put up a file requester. This only works only in some GUI versions. The input fields are:

save	when non-zero, select file to write	*title*	title for the requester
initdir	directory to start browsing in	*default*	default file name

bufexists(*var*) The result is a Number, which is non-zero if a buffer called *var* exists. If the *var* argument is a string, it must match a buffer name exactly. If the *var* argument is a number, buffer numbers are used. Use buffer_exists(0) to test for the existence of an alternate file name.

bufname(*expr*) The result is the name of a buffer, as it is displayed by the :ls command. If *expr* is a Number, that buffer number's name is given. If *expr* is a String, it is used as a regexp pattern to match with the buffer names.

bufnr(*expr*) The result is the number of a buffer, as it is displayed by the :ls command.

char2nr(*expr*) Return ASCII value of the first char in *expr*.

col(*expr*) The result is a Number, which is the column of the file position given with *expr*. The accepted positions are:

.	the cursor position
'x	position of mark "x" (if the mark is not set, 0 is returned).

Only marks in the current file can be used. The first column is 1. 0 is returned for an error.

confirm(*msg*, *choices*[, *default* [, *type*])] *msg* is displayed in a dialog with *choices* as the alternatives. *default* is the number of the choice that is made if the user hits ¡CR¿. If *default* is omitted, 0 is used. The optional *type* argument gives the type of dialog.

delete(*fname*) Deletes the file by the name *fname*. The result is a Number, which is 0 if the file was deleted successfully, and non-zero when the deletion failed.

escape(*string*, *chars*) Escape the characters in *chars* that occur in *string* with a backslash.

exists(*expr*) The result is a Number, which is 1 if *var* is defined, zero otherwise. The *expr* argument is a string, which contains one of these:

&option-name	**VIM** option
$ENVNAME	environment variable
varname	internal variable.

expand(*expr*) Expand the file wildcards in *expr*. The result is a String. When the result of *expr* starts with %, # or <, the expansion is done like for the cmdline-special variables with their associated modifiers. There cannot be a white space between the variables and the following modifier. When the current or alternate file name is not defined, % or # use an empty string. Using %:p in a buffer with no name results in the current directory, with a "/" added.

filereadable(*fname*) The result is a Number, which is TRUE when a file with the name *fname* exists, and can be read. If *fname* doesn't exist, or is a directory, the result is FALSE. *fname* is any expression, which is used as a String.

fnamemodify(*fname*, *mods*) Modify file name *fname* according to *mods*. *mods* is a string of characters like it is used for file names on the command line.

getcwd() The result is a String, which is the name of the current working directory.

getline(*lnum*) The result is a String, which is line *lnum* from the current buffer.

has(*feature*) The result is a Number, which is 1 if the *feature* is supported, zero otherwise. The *feature* argument is a string. See **Feature-list** below.

hostname() The result is a String, which is the name of the machine on which **VIM** is currently running. Machine names greater than 256 characters long are truncated.

hlexists(*name*) The result is a `Number`, which is non-zero if a highlight group called *name* exists. The group may have been defined as a highlight group or as a syntax item or both. Not necessarily when highlighting has been defined for it, it may also have been used for a syntax item.

hlID(*name*) The result is a `Number`, which is the ID of the highlight group with name name. When the highlight group doesn't exist, zero is returned.

input(*prompt*) The result is a String, which is whatever the user typed on the command-line. The parameter is either a prompt string, or a blank string (for no prompt). A
`n` can be used in the prompt to start a new line.

isdirectory(*directory*) The result is a `Number`, which is TRUE when a directory with the name *directory* exists. If *directory* doesn't exist, or isn't a directory, the result is FALSE. *directory* is any expression used as a `String`.

line(*expr*) The result is a `Number`, which is the line number of the file position given with *expr*. The accepted positions are:

`.`	the cursor position
`$`	the last line in the current buffer
`'x`	position of mark "`x`" (if the mark is not set, 0 is returned)

Only marks in the current file can be used.

match(*expr*, *pat*) The result is a `Number`, which gives the index in *expr* where *pat* matches. If there is no match, `-1` is returned. See pattern for the patterns that are accepted.

matchend(*expr*, *pat*) Same as match(), but return the index of first character after the match.

matchstr(*expr*, *pat*) Same as match(), but return the matched string.

nr2char(*expr*) Return a string consisting of a single character with the `ASCII` value *expr*.

setline(*lnum*, *line*) Set line *lnum* of the current buffer to *line*. If this succeeds, 0 is returned. If this fails (most likely *lnum* is invalid) 1 is returned.

strftime(*format*) The result is a `String`, which is the current date and time, as specified by the *format* string. See the manual page of the C function `strftime()` for the format. The maximum length of the result is 80 characters.

strlen(*expr*) The result is a `Number`, which is the length of the `String` *expr*.

strpart(*src*, *start*, *len*) The result is a `String`, which is part of *src*, starting from character *start*, with the length *len*. When characters beyond the length of the string are implied, this doesn't result in an error, the characters are simply omitted.

substitute(*expr*, *pat*, *sub*, *flags*) The result is a `String`, which is a copy of *expr*, in which the first match of *pat* is replaced with *sub*. This works like the :substitute command (without any flags). But the *magic* option is ignored, the *pat* is always processed as if *magic* is set. When *pat* does not match in *expr*, *expr* is returned unmodified. When *flags* is `g`, all matches of *pat* in *expr* are replaced. Otherwise *flags* should be "".

synID(*line*, *col*, *trans*) The result is a `Number`, which is the syntax ID at the position *line* and *col* in the current window. The syntax ID can be used with synIDattr() and synIDtrans() to obtain syntax information about text. *col* is 1 for the leftmost column, *line* is 1 for the first line.

When *trans* is non-zero, `transparent` items are reduced to the item that they reveal. This is useful when wanting to know the effective color. When *trans* is zero, the `transparent` item is returned. This is useful when wanting to know which syntax item is effective (e.g. inside parentheses).

synIDattr(*synID*, *what*) [, *mode*] The result is a `String`, which is the *what* attribute of syntax ID *synID*. This can be used to obtain information about a syntax item. *mode* can be gui, cterm or term, to get the attributes for that mode.

synIDtrans(*synID*) The result is a `Number`, which is the translated syntax ID of *synID*. This is the syntax group ID of what is being used to highlight the character. Highlight links are followed.

tempname() The result is a `String`, which is the name of a file that doesn't exist. It can be used for a temporary file. The name is different for each least 26 consecutive calls.a unique file.

virtcol(*expr*) The result is a `Number`, which is the screen column of the file position given by *expr*. The column number is return as if the screen were of infinite width. If there is a ⟨`Tab`⟩ at that position, the returned `Number` is the last column occupied by the ⟨`Tab`⟩. For example, for a ⟨`Tab`⟩ in column 1, with *ts* set to 8, it returns 8; The accepted positions are:

`.`	the cursor position
`'x`	position of mark "`x`" (if the mark is not set, 0 is returned)

Only marks in the current file can be used.

winbufnr(*n*) The result is a `Number`, which is the number of the buffer associated with window *n*. When *n* is zero, the number of the buffer in the current window is returned. When window *n* doesn't exist, -1 is returned.

winheight(*n*) The result is a `Number`, which is the height of window nr. When *n* is zero, the height of the current window is returned. When window *n* doesn't exist, -1 is returned. An existing window always has a height of zero or more.

winnr() The result is a `Number`, which is the number of the current window. The top window has number 1.

Feature-list:

Feature	Description
all_builtin_terms	Compiled with all builtin terminals enabled.
amiga	Amiga version of **VIM**.
arp	Compiled with ARP support (Amiga).
autocmd	Complied with *autocommands* support.
beos	BeOS version of **VIM**.
browse	Compiled with :browse support, and browse() will work.
builtin_terms	Compiled with some builtin terminals.
cindent	Compiled with *cindent* support.
cscope	Compiled with :cscope support.
compatible	Compiled to be very Vi compatible.
debug	Compiled with `DEBUG` defined.
dialog_con	Compiled with console dialog support.
dialog_gui	Compiled with GUI dialog support.
digraphs	Compiled with support for digraphs.
dos32	32 bits DOS (DJGPP) version of **VIM**.
dos16	16 bits DOS version of **VIM**.
emacs-tags	Compiled with support for Emacs tags.
eval	Compiled with expression evaluation support.
ex_extra	Compiled with extra ***Ex*** commands.
extra_search	Compiled with support for *incsearch* and *hlsearch*
farsi	Compiled with Farsi support (*farsi*).
file_in_path	Compiled with support for gf and `<cfile>`
filetype	Compiled with support for filetypes
find_in_path	Compiled with support for include file searches
fname_case	Case in file names matters (Unix only).
fork	Compiled to use `fork()/exec()` instead of `system()`.
gui	Compiled with GUI enabled.
gui_athena	Compiled with Athena GUI.
gui_beos	Compiled with BeOs GUI.
gui_mac	Compiled with Macintosh GUI.
gui_motif	Compiled with Motif GUI.
gui_win32	Compiled with MS Windows Win32 GUI.
gui_win32s	ibid, and Win32s system being used (Windows 3.1)
gui_running	**VIM** is running in the GUI, or it will start soon.
insert_expand	Compiled with support for `CTRL-X` expansion commands in Insert mode.
langmap	Compiled with *langmap* support.
lispindent	Compiled with support for lisp indenting.
mac	Macintosh version of **VIM**.
modify_fname	Compiled with file name modifiers.
mouse	Compiled with support mouse.
mouse_dec	Compiled with support for Dec terminal mouse.
mouse_netterm	Compiled with support for netterm mouse.
mouse_xterm	Compiled with support for xterm mouse.
multi_byte	Compiled with support for Korean et al.
multi_byte_ime	Compiled with support for IME input method
ole	Compiled with OLE automation support for Win32.
perl	Compiled with Perl interface.
python	Compiled with Python interface.
quickfix	Compiled with *quickfix* support.
rightleft	Compiled with *rightleft* support.

Feature	Description
smartindent	Compiled with *smartindent* support.
sniff	Compiled with SniFF interface support.
syntax	Compiled with syntax highlighting support.
syntax_items	There are active syntax highlighting items for the current buffer.
system	Compiled to use `system()` instead of `fork()/exec()`.
tag_binary	Compiled with binary searching in tags files.
tag_old_static	Compiled with support for old static tags.
tag_any_white	Compiled with support for any white characters in tags files.
tcl	Compiled with Tcl interface.
terminfo	Compiled with *terminfo* instead of *termcap*.
textobjects	Compiled with support for *text-objects*.
tgetent	Compiled with *tgetent* support, able to use a *termcap* or *terminfo* file.
unix	Unix version of **VIM**.
user-commands	User-defined commands.
viminfo	Compiled with *viminfo* support.
vms	VMS version of Vim.
wildignore	Compiled with *wildignore* option
win32	Win32 version of **VIM** (Windows 95/NT)
writebackup	Compiled with *writebackup* default on.
xterm_save	Compiled with support for saving and restoring the xterm screen.
x11	Compiled with X11 support.

9.4 User-Defined Functions

New functions can be defined. They can be called with "`Name()`", just like built-in functions. The name must start with an uppercase letter, to avoid confusion with builtin functions.

:fu[nction] List all functions and their arguments.
:fu[nction] ***name*** List function *name*.
:fu[nction][!] ***name*** **(**[***arguments***]**)** [***range***] [**abort**] Define a new function by the name *name*. The name must be made of alphanumeric characters and underscore, and must start with a capital. An argument can be defined by giving its name. In the function this can then be used as "`a:name`" ("`a:`" for argument). Several arguments can be given, separated by commas. An argument "..." can be specified, which means that more arguments may be following. In the function they can be used as "`a:1`", "`a:2`", etc. "`a:0`" is set to the number of extra arguments (which can be 0). When not using "...", the number of arguments in a function call must be equal the number of named arguments. When using "...", the number of arguments may be larger. The body of the function follows in the next lines, until "`:endfunction`". When a function by this name already exists and `[!]` is not used an error message is given. When `[!]` is used, an existing function is silently replaced. When the *range* argument is added, the function is expected to take care of a range itself. The range is passed as "`a:firstline`" and "`a:lastline`". If *range* is excluded, a "`:call`" with a range will call the function for each line, with the cursor on the start of each line. When the `[abort]` argument is added, the function will abort as soon as an error is detected.
:endf[unction] The end of a function definition.
:delf[unction] ***name*** Delete function *name*.
:retu[rn] [***expr***] Return from a function. When *expr* is given, it is evaluated and returned as the result of the function. If *expr* is not given, the number 0 is returned. When a function ends without an explicit "`:return`", the number 0 is returned.

Inside a function variables can be used. These are local variables, which will disappear when the function returns. Global variables need to be accessed with `g:`.

9.5 Commands

:let ***var-name*** **=** ***expr*** Set internal variable *var-name* to the result of the expression *expr*. The variable will get the type from the *expr*. If *var-name* didn't exist yet, it is created.
:let ***$env-name*** **=** ***expr*** Set environment variable *env-name* to the result of the expression *expr*. The type is always `String`.

:let *@reg-name* = *expr* Write the result of the expression *expr* in register *reg-name*. *reg-name* must be a single letter, and must be the name of a writable register. "@@" can be used for the unnamed register. If the result of *expr* ends in a ⟨CR⟩ or ⟨NL⟩, the register will be linewise, otherwise it will be set to characterwise.

:let *&option-name* = *expr* Set option *option-name* to the result of the expression *expr*. The type of the option is always used.

:unl[et][!] *var-name* Remove the internal variable *var-name*. Several variable names can be given, they are all removed. With [!] no error message is given for non-existing variables.

:if *expr* ... :en[dif] Execute the commands until the next matching :else or :endif if *expr* evaluates to non-zero.

Note: *From VIM version 4.5 until 5.0, every Ex command between the :if and :endif is ignored.*

:el[se] Execute the commands until the next matching :else or :endif if they were not already being executed.

:elsei[f] *expr* Short for :else :if, with the addition that there is no extra :endif.

:wh[ile] *expr* ... :endw[hile] Repeat the commands between :while and :endwhile, as long as *expr* evaluates to non-zero. When an error is detected from a command inside the loop, execution continues after the :endwhile.

Note: *The :append and :insert commands don't work properly inside a :while loop.*

:con[tinue] When used inside a :while, jumps back to the :while.

:brea[k] When used inside a :while, skips to the command after the matching :endwhile.

:ec[ho] *expr* ... Echoes each *expr*, with a space in between and a terminating ⟨EOL⟩. See also :comment.

:echon *expr* ... Echoes each *expr*, without anything added. Also see :comment.

:echoh[l] *name* Use the highlight group *name* for the following :echo[n] commands.

:exe[cute] *expr* ... Executes the string that results from the evaluation of *expr* as an *Ex* command. Multiple arguments are concatenated, with a space in between.

Note: *:execute, :echo and :echon cannot be followed by a comment directly, because they see the " as the start of a string. But, you, however, can use "\|" followed by a comment.*

10 GUI ☺

10.1 Mouse Control

The mouse only works if the appropriate flag in the *mouse* option is set. When the GUI is switched on, the *mouse* option is set to *a*, enabling it for all modes except for the "hit return to continue" message. This can be changed from the *gvimrc* file. A quick way to set these is with the ":behave" command.

:be[have] *model*
set behavior for mouse and selection. Valid arguments are: mswin (MS-Windows behavior) and xterm (Xterm behavior)

Using ":behave" changes these options:

option	mswin	xterm	option	mswin	xterm
selectmode	mouse,key	–	*mousemodel*	popup	extend
keymodel	startsel,stopsel	–	*selection*	exclusive	inclusive

Visual Selection with Mouse

The mouse can be used to start a selection. How depends on the *mousemodel* option: If *selectmode* contains mouse, then the selection will be in Select mode. This means that typing normal text will replace the selection. Otherwise, the selection will be in Visual mode.

Right button:
Click the right button to extend the visual selection to the position pointed to with the mouse. In Visual mode the closest end will be extended, otherwise Visual mode is started and extends from the old cursor position to the new one.

Left button:
Double clicking may be done to make the selection word-wise, triple clicking makes it line-wise, and quadruple clicking makes it rectangular block-wise.

X11 vs. Win32 GUI

X11 GUI:
In Visual mode, the highlighted text may be pasted into other windows. Likewise, the selected text from other windows may be pasted into **VIM** in Normal mode, Insert mode, or on the Command line by clicking the middle mouse button.

Win32 GUI:
Visually selected text is only copied to the clipboard when using a `y` command, or another operator when the "`*`" register is used.

Other Text Selection with Mouse

In Command-line mode, at the `hit-return` prompt or if the `mouse` option is turned off, a different kind of selection is used: the left button selects, the right button extends the selection and the middle one pastes the text back.

Various Mouse Clicks

Left or right click on the status line makes that window current. Drag the status line to resize the windows above and below.

`S-LeftMouse`	`Search forward for the word under the mouse click.`
`S-RightMouse`	`Search backward for the word under the mouse click.`
`C-LeftMouse`	`Jump to the tag name under the mouse click.`
`C-RightMouse`	`Jump back to position before the previous tag jump`

GUI Selections

A special register "`*`" is used for storing GUI selection. Nothing is put in there unless the information about what text is selected is about to change, or when another application wants to paste the selected text. Similarly, when we want to paste a selection from another application, the selection is put in the "`*`" register first, and then `put` like any other register.

Note: *when pasting text from one **VIM** into another separate **VIM**, the type of selection (character, line, or block) will also be copied.*

Mouse Mappings

The mouse events, complete with modifiers, may be mapped.

Example

```
:map <S-LeftMouse> <RightMouse>
:map <S-LeftDrag>  <RightDrag>
```

Note: *Mouse mapping with modifiers does not work for xterm-like selection.*

10.2 Menus

The default menus are read from the file "`$VIM/menu.vim`". Motif and Win32 GUIs support Tear-off menus.

Creating New Menus

:me	:menu	:noreme	:noremenu	:am	:amenu	:an	:anoremenu
:nme	:nmenu	:nnoreme	:nnoremenu	:ome	:omenu	:onoreme	:onoremenu
:vme	:vmenu	:vnoreme	:vnoremenu	:ime	:imenu	:inoreme	:inoremenu
:cme	:cmenu	:cnoreme	:cnoremenu				

To create a new menu item, use the `:menu` commands. They work exactly like the `:map` set of commands but the first argument is a menu item name, given as a path of menus and sub-menus with a "." between them.

The `:amenu` command can be used to define menu entries for all modes at once. To make the command work correctly, a character is automatically inserted for modes: Normal ⇒ nothing, Insert ⇒ ⟨`CTRL-O`⟩, Cmdline ⇒ ⟨`CTRL-C`⟩, Visual ⇒ ⟨`Esc`⟩, Op-pending ⇒ ⟨`Esc`⟩.

Careful: *In Insert mode this only works for a SINGLE Normal mode command, because of the* CTRL-O. *If you have two or more commands, you will need to use the :imenu command.*

Special characters in a menu name:

& The next character is the shortcut key. Make sure each shortcut key is only used once in a (sub)menu.
⟨Tab⟩ Separates the menu name from right-aligned text. This can be used to show the equivalent typed command.

Menu-priority

The position of a menu item on the menu bar is determined by its "priority". The priority is given as a number before the :menu command. Menus with a higher priority go more to the right. When no priority is given, 500 is used. The highest possible priority is about 32000. Currently, you can only give a priority for the location of the menu in the menu bar, not for the location of a menu item in a menu. The default menus have these priorities: File ↦ 10; Edit ↦ 20; Syntax ↦ 50; Help ↦ 9999; The same mechanism can be used to position a submenu. The priority is then given as a dot-separated list of priorities, before the menu name.

Toolbar

Currently, the toolbar is only available in the Win32 GUI. It should turn up in other GUIs in due course. The display of the toolbar is controlled by the *guioptions* letter **T**. The toolbar is defined as a special menu called ToolBar, which only has one level.

Tooltips & Menu tips

These are currently only supported for the Win32 GUI.

:tm[enu] ***menupath rhs***
Define a tip for a menu or tool. When a tip is defined for a menu item, it appears in the command-line area when the mouse is over that item. When a tip is defined for a toolbar item, it appears as a tooltip when the mouse pauses over that button.

:tu[nmenu] ***menupath***
Remove a tip for a menu or tool.

Showing What Menus Are Mapped To

To see what an existing menu is mapped to, use just one argument after the menu commands (similar to the :map commands). If the menu specified is a submenu, then all menus in that hierarchy will be shown. If no argument is given after :menu at all, then ALL menu items are shown for the appropriate mode (e.g. Command-line mode for :cmenu).

Note: *while entering a menu name after a menu command,* Tab *may be used to complete the name of the menu item.*

Deleting Menus

:unme	:unmenu	:aun	:aunmenu	:nunme	:nunmenu
:ounme	:ounmenu	:vunme	:vunmenu	:iunme	:iunmenu
:cunme	:cunmenu				

To delete a menu item or a whole submenu, use the :unmenu commands, which are analogous to the :unmap commands. To remove all menus use:

```
:unmenu \* "    remove all menus in Normal and visual mode
:unmenu! \* "   remove all menus in Insert and Command-line mode
```

10.3 Miscellaneous

This section describes other features which are related to the GUI.

- Typing ^V followed by a special key in the GUI will insert ⟨Key⟩, since the internal string used is meaningless. Modifiers may also be held down to get ⟨Modifiers-Key⟩.
- In the GUI, the modifiers ⟨SHIFT⟩, ⟨CTRL⟩, and ⟨ALT⟩ (or ⟨META⟩) may be used within mappings of special keys and mouse events

- In the GUI, several normal keys may have modifiers in mappings etc, these are ⟨Space⟩, ⟨Tab⟩, ⟨NL⟩, ⟨CR⟩, ⟨Esc⟩.
- Executing an external command from the GUI will not always work. "Normal" commands like `ls`, `grep` and `make` mostly work fine. Commands that require an intelligent terminal like `less` and `ispell` won't work. Some may even hang and need to be killed from another terminal. For the X11 GUI the external commands are executed inside the gvim window. For the Win32 GUI the external commands are executed in a separate window.
- Normally, Vim takes control of all ⟨Alt⟩-⟨Key⟩ combinations, to increase the number of possible mappings. This clashes with the standard use of Alt in Win32 as the key for accessing menus. The quick way of getting standard behavior is to set the *winaltkeys* option to yes. This however prevents you from mapping ⟨Alt⟩ keys at all. Another way is to set *winaltkeys* to menu. Menu shortcut keys are then handled by windows, other ALT keys can be mapped. This doesn't allow a dependency on the current state though. To get round this, the :simalt *key* command allows Vim (when *winaltkeys* is not set to yes) to fake a Windows-style ⟨Alt⟩ keypress.

This example shows how to add and remove a menu item for the keyword under the cursor. The register `z` is used

Example

```
:nmenu  Words.Add\ Var      wb"zye:menu! Words.<C-R>z <C-R>z<CR>
:nmenu  Words.Remove\ Var   wb"zye:unmenu! Words.<C-R>z<CR>
:vmenu  Words.Add\ Var     "zy:menu! Words.<C-R>z <C-R>z <CR>
:vmenu  Words.Remove\ Var  "zy:unmenu! Words.<C-R><CR>
:imenu  Words.Add\ Var     <Esc>wb"zye:menu! Words.<C-R>z <C-R>z<CR>a
:imenu  Words.Remove\ Var  <Esc>wb"zye:unmenu! Words.<C-R>z<CR>a
```

11 Syntax highlighting ☺

Syntax highlighting provides the possibility of showing parts of the text in another font or color. To start using syntax highlighting, type this command: :sy[ntax] on. This will enable automatic syntax highlighting. The type of highlighting will be selected using the file name extension, and sometimes using the first line of the file. The name of the acitve syntax is stored in the "`current_syntax`" variable.

11.1 Syntax files

The syntax and highlighting commands for one language are normally stored in a syntax file named "*name*.vim", where *name* is the [abbreviated] name of the language. The syntax file can contain any ***Ex*** commands.

Naming Conventions

To allow each user to pick his favorite set of colors, a set of pre-defined names for highlight groups common for many languages has been chosen. These are the preferred names for different highlight groups:

Name	Used for:	Name	Used for:
*Comment	any comment	*Constant	any constant
*Error	any erroneous construct	*Identifier	any variable name
*Ignore	left blank, hidden	*PreProc	generic Preprocessor
*Special	any special symbol	*Statement	any statement
*Todo	anything that needs extra attention	*Type	`int, long, char ...`
Boolean	a boolean constant	Character	a character constant
Conditional	`if, then, else ...`	Debug	debugging statements
Define	`#define`	Delimiter	delimiting character
Exception	`try, catch, throw`	Float	a floating point constant
Function	function and class method names	Include	`#include`
Keyword	any other keyword	Label	`case, default`
Macro	same as Define	Number	a number constant

Name	Used for:	Name	Used for:
Operator	`sizeof, +, *` ...	PreCondit	`#if, #else` ...
Repeat	`for, do, while` ...	SpecialChar	special character in a constant
SpecialComment	special things inside a comment	StorageClass	`static, register` ...
String	a string constant	Structure	`struct, union, enum` ...
Tag	use CTRL-] on this	Typedef	a typedef

The names marked with "*" are the preferred groups, the other are minor groups. For the preferred groups, the "syntax.vim" file contains default highlighting. The highlight group names are not case sensitive. The following names are reserved and cannot be used as a group name: `NONE ALL ALLBUT contains contained`.

11.2 Defining a syntax

VIM understands three types of syntax items:

keyword can only contain keyword characters, defined by to the *iskeyword* option. `Keyword` cannot contain other syntax items. It will only be recognized when there is a complete match (there are no keyword characters before or after the match), e.g. if would match in if(a=b), but not in ifdef x.

match a match with a single regexp pattern. It must be within one line.

region starts at a match of the *start* regexp pattern and ends with a match of the *end* regexp pattern. A *skip* regexp pattern can be used to avoid matching the *end* pattern.

Several syntax *item*s can be put into one syntax *group*. For a syntax group you can provide highlighting attributes. You are free to make a highlight group for one syntax item, or to put all items into one group. In case where more than one item matches at the same position, the one that was defined *last* wins. A keyword always goes before a match or region. A keyword with matching case always goes before a keyword with ignoring case.

:sy[ntax] case [match|ignore]
defines whether the following :sy[ntax] commands will work with matching case, when using match, or with ignoring case, when using ignore. Note that any items before this are not affected, and all items until the next :sy[ntax] case command are affected.

:sy[ntax] keyword *group-name* [*options*] *keyword* ... [*options*]
defines a number of keywords, where:

group-name – syntax group name, e.g. Comment.

options – See "Syntax arguments" below.

keyword ... – list of keywords which belong to this group.

The *options* can be given anywhere in the line. They will apply to all keywords given, also for options that come after a keyword. When you have a keyword with an optional tail, like ***Ex*** commands in **VIM**, you can put the optional characters inside `[ ]`, to define all the variations at once.

A keyword always has higher priority than a match or region; the keyword is used if more than one item matches. Keywords do not nest and a keyword can't contain anything else. The maximum length of a keyword is 80 characters. The same keyword can be defined multiple times, when its containment differs.

:sy[ntax] match *group-name* [*options*] *pattern* [*options*]
defines one match, where *pattern* is the search pattern that defines the match.

:sy[ntax] region *group-name* [*options*] [matchgroup=*group_name*] [keepend] start=*start_pattern* ... [skip=*skip_pattern*] end=*end_pattern* ... [*options*]
defines one region, where:

`[matchgroup=`*group-name*`]` – the syntax group to use for the following *start* or *end* pattern matches only. Not used for the text in between the matched *start* and *end* patterns. Use `NONE` to reset to not using a different group for the *start* or *end* match.

`keepend` – doesn't allow contained matches to go past a match with the *end* pattern.

`start=`*start_pattern* – the search pattern that defines the start of the region.

`skip=`*skip_pattern* – the search pattern that defines text inside the region where not to look for the *end* pattern.

`end=`*`end_pattern`* – the search pattern that defines the end of the region.

The `start/skip/end` patterns and the options can be given in any order. There can be zero or one skip pattern. There must be one or more start and end patterns.

Cleaning up

:sy[ntax] clear
switches off syntax highlighting. It's a good idea to include this command at the beginning of a syntax file.
:sy[ntax] off
disables syntax highlighting for all buffers
:sy[ntax] clear *sync-group-name ...*
removes all patterns and keywords for *group-name* in the current buffer.

Listing syntax items

:sy[ntax] [list]
lists all the syntax items
:sy[ntax] list *group-name*
shows the syntax items for one syntax group
:sy[ntax] list *grouplist-name*
shows the syntax groups for one group list

11.3 Syntax arguments

The :sy[ntax] commands that define syntax items take a number of arguments. The common ones are explained here. The arguments may be given in any order and may be mixed with the patterns.

contained when the contained argument is given, this item will not be recognized at the top level, but only when it is mentioned in the contains field of another match.
transparent if the transparent argument is given, this item will not be highlighted itself, but will take the highlighting of the item it is contained in. This is useful for syntax items that don't need any highlighting but are used only to skip over a part of the text. The same groups as the item it is contained in are used, unless a contains argument is given too.
oneline the oneline argument indicates that the region does not cross a line boundary. It must match completely in the current line. However, when the region has a contained item that does cross a line boundary, it continues on the next line anyway. A contained item can be used to recognize a line continuation pattern.
contains=*groupname*, ... the contains argument is followed by a list of syntax group names. These groups will be allowed to begin inside the item (they may extend past the containing group's end). This allows for recursive nesting of matches and regions. If there is no contains argument, no groups will be contained in this item. The group names do not need to be defined before they can be used here.
contains=ALL if the only item in the contains list is ALL, then all groups will be accepted inside the item.
contains=ALLBUT, *group-name*, ... if the first item in the contains list is ALLBUT, then all groups will be accepted inside the item, except the ones that are listed, and the contained items.

The *group-name* in the contains list can be a pattern. All group names that match the pattern will be included (or excluded, if ALLBUT is used). The pattern cannot contain white space or a comma.
nextgroup=*groupname*, ... the nextgroup argument is followed by a list of syntax group names, separated by commas (just like with contains, so you can also use patterns). If the nextgroup argument is given, the mentioned syntax groups will be tried for a match, after the match or region ends. If none of the groups match, highlighting continues normally. If there is a match, this group will be used, even when it is not mentioned in the contains field of the current group. This is like giving the mentioned group priority over all other groups
skipwhite skip over ⟨Space⟩ and ⟨Tab⟩ characters. When skipwhite is present, the white space is only skipped if there is no next group that matches the white space.
skipnl skip over the end of a line. When skipnl is present, the match with nextgroup may be found in the next line. This only happens when the current item ends at the end of the current line. When skipnl is not present, the nextgroup will only be found after the current item in the same line.
skipempty skip over empty lines (implies a skipnl)

Note: *the skipwhite, skipnl and skipempty are only used in combination with nextgroup.*

11.4 Syntax patterns

In the syntax commands, a pattern must be surrounded by two identical characters (delimiters). Syntax patterns are always interpreted as if the *magic* option is set and the "`l`" flag is not included in *cpoptions*. The pattern can be followed by a character offset, which can be used to change the highlighted part and to change the text area included in the match or region. **Note:** *no white space is allowed between the pattern and the character offset(s).*

The offset takes the form of *what=offset*, where *what* can be one of six strings:

ms	`Match Start`	offset for the start of the matched text
me	`Match End`	offset for the end of the matched text
hs	`Highlight Start`	offset for where the highlighting starts
he	`Highlight End`	offset for where the highlighting ends
rs	`Region Start`	offset for where the body of a region starts
re	`Region End`	offset for where the body of a region ends
lc	`Leading Context`	offset past "leading context" of pattern

The *offset* can be:

s	start of the matched pattern
s+*num*	start of the matched pattern plus *num* chars to the right
s-*num*	start of the matched pattern plus *num* chars to the left
e	end of the matched pattern
e+*num*	end of the matched pattern plus *num* chars to the right
e-*num*	end of the matched pattern plus *num* chars to the left
num	(for lc only): start matching *num* chars to the left

Offsets can be concatenated, separated by commas.

Leading context

The lc offset specifies a leading context: a part of the pattern that must be present, but is not considered part of the match. An offset of lc=n will cause **VIM** to step back n columns before attempting the pattern match, allowing characters which have already been matched in previous patterns to also be used as the leading context for this match.

The ms offset is automatically set to the same value as the lc offset, unless you set ms explicitly.

11.5 Synchronizing

:sy[ntax] sync [ccomment [group-name] | minlines=*N* | ...]

There are three ways to synchronize. For all three methods, the line range within which the parsing can start is limited by minlines and maxlines.

If the minlines=*N* argument is given, the parsing always starts at least that many lines backwards. This can be used if the parsing may take a few lines before it's correct, or when it's not possible to use syncing.

If the maxlines=*N* argument is given, the number of lines that are searched for a comment or syncing pattern is restricted to *N* lines backwards (after adding minlines). This is useful if you have few things to sync on and a slow machine.

First syncing method:

For the first method, only the ccomment argument needs to be given. When **VIM** finds that the line where displaying starts is inside a C-style comment, the first region syntax item with the group-name Comment will be used.

The maxlines argument can be used to restrict the search to a number of lines. The minlines argument can be used to start at least a number of lines back (e.g., for when there is some construct that only takes a few lines, but is hard to sync on).

Second syncing method:

For the second method, only the lines=*N* argument needs to be given. **VIM** will subtract *N* from the line number and start parsing there. This means *N* extra lines need to be parsed, which makes this method a bit slower.

Note: *lines and minlines are equivalent.*

Third syncing method:

The idea is to synchronize on the end of a few specific regions, called a sync pattern. The search starts in the line just above the one where redrawing starts. From there the search continues backwards in the file.

A line continuation pattern can be given here. It is used to decide which group of lines need to be searched as if they were a single line. This means that the search for a match with the specified items starts in the first of the following that contains the continuation pattern.

When a match with a sync pattern is found, the rest of the line (or group of adjacent lines) is searched for another match. The last match is used. This is used when a line can contain both the start and the end of a region (e.g., in a C-comment like `/* this */`, the last `*/` is used).

There are two ways how a match with a sync pattern can be used:

- Parsing for highlighting starts where redrawing starts (and where the search for the sync pattern started). The syntax group that is expected to be valid there must be specified. This works well when the regions that cross lines cannot contain other regions.
- Parsing for highlighting continues just after the match. The syntax group that is expected to be present just after the match must be specified. This can be used when the previous method doesn't work well. It's much slower, because more text needs to be parsed.

Both types of sync patterns can be used at the same time. Besides the sync patterns, other matches and regions can be specified, to avoid finding unwanted matches.

:sy[ntax] sync match *group-name* grouphere *sync-group-name* ...
define a match that is used for syncing. *sync-group-name* is the name of a syntax group that follows just after the match. Parsing of the text for highlighting starts just after the match. A region must exist for this sync-group-name. The first one defined will be used. NONE can be used for when there is no syntax group after the match.

:sy[ntax] sync match *group-name* groupthere *sync-group-name* ...
like grouphere, but *sync-group-name* is the name of a syntax group that is to be used at the start of the line where searching for the sync point started. The text between the match and the start of the sync pattern searching is assumed not to change the syntax highlighting.

:sy[ntax] sync match ..., :sy[ntax] sync region ...
define a region or match that is skipped while searching for a sync point.

:sy[ntax] sync linecont *pattern*
when *pattern* matches in a line, it is considered to continue in the next line. This means that the search for a sync point will consider the lines to be concatenated.

If the maxlines=*N* argument is given too, the number of lines that are searched for a match is restricted to *N*.

Clearing syntax

:sy[ntax] sync clear
clears all sync settings

:sy[ntax] sync clear group-name ...
clears specific sync patterns

11.6 Highlight command

There are two types of highlight groups:

- The groups used for specific languages. For these the name starts with the name of the language. Many of these don't have any attributes, but are linked to a group of the second type.
- The groups used for all languages. These are also used for the *highlight* option.

:hi[ghlight]
list all the current highlight groups that have attributes set.

:hi[ghlight] *group-name*
list one highlight group.

:hi[ghlight] clear *group-name*, :hi[ghlight] *group-name* NONE
disable the highlighting for one highlight group.

:hi[ghlight] *group-name key=arg* ...
add a highlight group, or change the highlighting for an existing group.

Highlight arguments for black and white terminals (vt100, xterm)

term=*attr-list*

attr-list is a comma separated list (without spaces) of the following items (in any order): `NONE` (no attributes used), `bold`, `underline`, `reverse`, `inverse` (same as `reverse`), `italic`, `standout`.

start=*term-list*, stop=*term-list*

These lists of terminal codes can be used to get non-standard attributes on a terminal.

The escape sequence specified with the start argument is written before the characters in the highlighted area. It can be anything that you want to send to the terminal to highlight this area. The escape sequence specified with the stop argument is written after the highlighted area. This should undo the start argument.

The *term-list* can have two forms:

- A string with escape sequences. This is any string of characters, except that it can't start with `t_` and blanks are not allowed. The <> notation is recognized here, so you can use things like `<Esc>` and `<Space>`.
- A list of terminal codes. Each terminal code has the form `t_xx`, where `xx` is the name of the termcap entry. The codes have to be separated with commas.

  Note: *white space is not allowed.*

Default highlight group

These are the default highlighting groups. These groups are used by the *highlight* option default.

Cursor the character under the cursor
Directory directory names (and other special names in listings)
ErrorMsg error messages
IncSearch *incsearch* highlighting
ModeMsg *showmode* message
MoreMsg more-prompt
NonText ~ and at the end of the window and characters from
Question hit-return prompt and yes/no questions
SpecialKey Meta and special keys listed with ":map"
StatusLine status line of current window
StatusLineNC status lines of not-current windows
Title titles for output from :set all, ":autocmd" etc.
Visual Visual mode selection
WarningMsg warning messages
LineNr line number for ":number" and ":#" commands, and when *number*
Normal normal text
Search last search pattern highlighting (see *hlsearch*)

Highlight arguments for color terminals (MS-DOS console, color-xterm)

cterm=*attr-list*

The cterm argument is likely to be different from term, when colors are used. For example, in a normal terminal comments could be underlined, in a color terminal they can be made Blue.

Note: *Many terminals (e.g., DOS console) can't mix these attributes with coloring. Use only one of cterm= OR ctermfg= OR ctermbg=.*

ctermfg=*color-num*, ctermbg=*color-num*

The *color-num* argument is a color number. It ranges from zero to the number given by the termcap entry "Co" (non-inclusive). The actual color with this number depends on the type of terminal and its settings. Sometimes the color also depends on the settings of cterm. For example, on some systems cterm=bold ctermfg=3 gives another color, on others you just get color 3.

The following names are recognized, with the color number used:

NR-16	NR-8	Color Name	NR-16	NR-8	Color Name
0	0	Black	8	0*	DarkGray
1	4	DarkBlue	9	4*	Blue, LightBlue

NR-16	NR-8	Color Name	NR-16	NR-8	Color Name
2	2	DarkGreen	10	2*	Green, LightGreen
3	6	DarkCyan	11	6*	Cyan, LightCyan
4	1	DarkRed	12	1*	Red, LightRed
5	5	DarkMagenta	13	5*	Magenta, LightMagenta
6	3	Brown	14	3*	Yellow
7	7	LightGray[12], Gray	15	7*	White

The number under `NR-16` is used for 16-color terminals ("`t_Co`" greater than or equal to 16). The number under `NR-8` is used for 8-color terminals ("`t_Co`" less than 16). The "`*`" indicates that the bold attribute is set for `ctermfg`. In many 8-color terminals (e.g. `linux`), this causes the bright colors to appear. This doesn't work for background colors. The case of the color names is ignored.

Highlight arguments for the GUI

gui=*attr-list*
These give the attributes to use in the GUI mode. Note that `bold` can be also sed here and by specifying a bold font. It has the same effect.

font=*font-name*
font-name is the name of a font as it is used on the system **VIM** runs on. The font-name NONE can be used to revert to the default font. When setting the font for the Normal group, this becomes the default font (until the *guifont* option is changed; the last one set is used).
Note: *all fonts used should be of the same character size as the default font!*

guifg=*color-name* guibg=*color-name*
These give the foreground (guifg) and background (guibg) color to use in the GUI. There are a few special names:

NONE	no color (transparent)
background (bg)	use normal background color
foreground (fg)	use normal foreground color

You can also specify a color in the RGB format `#rrggbb`, where `rr` is the Red value, `bb` is the Blue value and `gg` is the Green value. All values are hexadecimal, range from `00` to `ff`.

11.7 Linking groups

:hi[ghlight][!] link *from-group to-group*
If you want to use the same highlighting for several syntax groups, you can do this by linking these groups into one common highlight group, and give the color attributes only for that group.

Notes:

- If the *from-group* and/or *to-group* doesn't exist, it is created. You don't get an error message for a non-existent group.
- If the *to-group* is NONE, the link is removed from the *from-group*.
- As soon as you use a :highlight command for a linked group, the link is removed.
- If there are already highlight settings for the *from-group*, the link is not made, unless the ! is given. For a :highlight link command in a sourced file, you don't get an error message. This can be used to skip links for groups that already have settings.

Color xterms

Most color xterms have only eight colors. They should work with these settings:

```
1 :if has("terminfo")
2 :  set t\_Co=8
3 :  set t\_Sf=<Esc>[3\%p1\%dm
4 :  set t\_Sb=<Esc>[4\%p1\%dm
```

[12] *Gray* can be spelled as *Grey*

```
:else
:  set t\_Co=8
:  set t\_Sf=<Esc>[3\%dm
:  set t\_Sb=<Esc>[4\%dm
:endif
```

Note: <Esc> is a real escape, type CTRL-V Esc.

A file has been included in the **VIM** distribution to test your color setup. To use it, execute these commands:

```
:e \$VIM/syntax/colortest.vim
:so \%
```

12 Automatic Commands ☺

You can specify commands to be executed automatically for when reading or writing a file, when entering or leaving a buffer or window, and when exiting **VIM**.

12.1 Defining autocommands

:au[tocmd] [*group*] *event pat* [*nested*] *cmd*
Add *cmd* to the list of commands that will be automatically executed on *event* for a file matching *pat*. **VIM** always adds the *cmd* after existing autocommands, so that the autocommands execute in the order in which they were given.

The :autocmd command cannot be followed by another command, since any "|" is considered part of the command. Special characters (e.g. %, <cword>) in the :autocmd arguments are not expanded when the autocommand is defined. These will be expanded when the event is recognized, and the *cmd* is executed. When your ".vimrc" file is sourced twice, the autocommands will appear twice. To avoid this, put `:autocmd!` in your ".vimrc" file, before defining autocommands.

When the *group* argument is not given, **VIM** uses the current group (as defined with :augroup); otherwise, **VIM** uses the group defined with [group].
Note: *while testing autocommands, it might be useful to* `set verbose=9`. *This causes the executed autocommands to be echoed.*

12.2 Removing autocommands

:au[tocmd]! [*group*] *event pat* [*nested*] *cmd*
Remove all autocommands associated with *event* and *pat*, and add the command *cmd*.
:au[tocmd]! [*group*] *event pat*
Remove all autocommands associated with *event* and *pat*.
:au[tocmd]! [*group*] * *pat*
Remove all autocommands associated with *pat* for all events.
:au[tocmd]! [*group*] *event*
Remove ALL autocommands for *event*.
:au[tocmd]! [*group*]
Remove ALL autocommands.

When the *group* argument is not given, **VIM** uses the current group (as defined with :augroup); otherwise, **VIM** uses the group defined with *group*.

12.3 Listing autocommands

:au[tocmd] [*group*] *event pat*
Show the autocommands associated with *event* and *pat*.
:au[tocmd] [*group*] * *pat*
Show the autocommands associated with *pat* for all events.
:au[tocmd] [*group*] *event*
Show all autocommands for *event*.
:au[tocmd] [*group*]
Show all autocommands.

If you provide the *group* argument, **VIM** lists only the autocommands for *group*; otherwise, **VIM** lists the autocommands for `ALL` groups. Note that this argument behavior differs from that for defining and removing autocommands.

12.4 Events

The following events are recognized. Case is ignored; for example, BUFread and bufread can be used instead of BufRead.

BufFilePre Before changing the name of the current buffer with the ":file" command.

BufFilePost After changing the name of the current buffer with the ":file" command.

BufNewFile When starting to edit a file that doesn't exist. Can be used to read in a skeleton file.

BufReadPre When starting to edit a new buffer, before reading the file into the buffer. Not used if the file doesn't exist.

BufRead or BufReadPost When starting to edit a new buffer, after reading the file into the buffer, before executing the modelines. This does NOT work for :r file. Not used when the file doesn't exist. Also used after successfully recovering a file.

FileReadPre Before reading a file with a :read command.

FileReadPost After reading a file with a :read command. Note that **VIM** sets the '[and '] marks to the first and last lines of the read. This can be used to operate on the lines just read.

FilterReadPre Before reading a file from a filter command. **VIM** checks the pattern against the the name of the current buffer, not the name of the , not the name of the temporary file that is the output of the filter command.

FilterReadPost After reading a file from a filter command. **VIM** checks the pattern against the the name of the current buffer as with FilterReadPre.

StdinReadPre Before reading from `stdin` into the buffer. Only used when the "-" argument was used when **VIM** was started.

StdinReadPost After reading from `stdin` into the buffer, before executing the modelines. Only used when the "-" argument was used when **VIM** was started.

BufWrite or BufWritePre Before writing the whole buffer to a file.

BufWritePost After writing the whole buffer to a file (should undo the commands for BufWritePre).

FileWritePre Before writing to a file, when not writing the whole buffer.

FileWritePost After writing to a file, when not writing the whole buffer.

FileAppendPre Before appending to a file.

FileAppendPost After appending to a file.

FilterWritePre Before writing a file for a filter command. The file name of the current buffer is used to match with the pattern, not the name of the temporary file that is the input for the filter command.

FilterWritePost After writing a file for a filter command. Like FilterWritePre, the file name of the current buffer is used.

FileChangedShell After **VIM** runs a shell command and notices that the modification time of the current file has changed since editing started. Run in place of the "`has been changed`" message. See *timestamp*. Useful for reloading related buffers which are affected by a single command.

BufEnter After entering a buffer. Useful for setting options for a file type. Also executed when starting to edit a buffer, after the BufReadPost autocommands.

BufLeave Before leaving to another buffer. Also when leaving or closing the current window and the new current window is not for the same buffer.

BufUnload Before unloading a buffer. This is when the text in the buffer is going to be freed. This may be after a BufWritePost and before a BufDelete.

BufDelete Before deleting a buffer from the buffer list. The BufUnload may be called first (if the buffer was loaded).

WinEnter After entering another window. Not done for the first window, when **VIM** has been just started. Useful for setting the window height. If the window belongs to a different buffer from the one previously being edited, **VIM** executes the BufEnter autocommands after the WinEnter autocommands.

TermChanged After the value of `term` was changed. Useful for re-loading the syntax file to update the colors, fonts and other terminal-dependent.

WinLeave Before leaving a window. If the window to be entered next is for a different buffer, **VIM** executes the BufLeave autocommands before the WinLeave autocommands.

VimEnter After doing all the startup stuff, including loading .vimrc files, executing the "-c cmd" arguments, creating all windows and loading the buffers in them.

VimLeavePre Before exiting Vim, just before writing the *.viminfo* file. This is executed only once, if there is a match with the name of what happens to be the current buffer when exiting.

VimLeave Before exiting **VIM**, just before writing the `.viminfo` file.
User Never executed automatically. To be used for autocommands that are only executed with :doautocmd.
FileEncoding Fires off when you change the file encoding with ":set fileencoding". Allows you to set up fonts or other language sensitive settings.

12.5 Patterns

The file pattern is tested for a match against the file name in one of two ways:

- When there is no "/" in the pattern, **VIM** checks for a match against only the tail part of the file name (without its leading directory path).
- When there is a "/" in the pattern, **VIM** checks for a match against the short file name (as you typed it) and the full file name (after expanding it to a full path, resolving symbolic links).

When the pattern starts with "/", this does not mean it matches the root directory. It can match any "/" in the file name. To match the root directory, use "^/".

For all systems the "/" character is used for path separator (even on MS-DOS and OS/2). This was done because the backslash is difficult to use in a pattern, and to make the autocommands portable across different systems.

Using "~" in a file name (for home directory) doesn't work. Use a pattern that matches the full path name, for example "`*home/user/.cshrc`".

12.6 Filetypes

On systems which support filetypes you can specify that a command should only be executed if the file is of a certain type. The actual type checking depends on which platform you are running Vim on. To use filetype checking in an autocommand you should put a list of types to match in angle brackets in place of a pattern.

12.7 Groups

:aug[roup] *name*
Define the autocmd group name for the following :autocmd commands. The name "`end`" or "`END`" selects the default group.

When no specific group is selected, **VIM** uses the default group. The default group does not have a name. You cannot execute the autocommands from the default group separately; you can execute them only by executing autocommands for all groups.

Normally, when executing autocommands automatically, **VIM** uses the autocommands for all groups. The group only matters when executing autocommands with :doautocmd or :doautoall, or when defining or deleting autocommands.

The group name can contain any characters except white space. The group name end is reserved (also in uppercase).

12.8 Executing autocommands

Autocommands can also be executed manually. This can be used after adjusting the autocommands, or when the wrong autocommands have been executed (file pattern match was wrong).

Note: *there is currently no way to disable the autocommands.*

:do[autocmd] [*group*] *event* [*fname*]
Apply the autocommands matching [*fname*] (default: current file name) for *event* to the current buffer. This can be used when the current file name does not match the right pattern, after changing settings, or to execute autocommands for a certain event. It's possible to use this inside an autocommand too, so you can base the autocommands for one extension on another extension.

When the [*group*] argument is not given, **VIM** executes the autocommands for all groups. When the [*group*] argument is included, **VIM** executes only the matching autocommands for that group.

Note: *if you use an undefined group name, VIM gives you an error message.*

:doautoa[ll] [*group*] *event* [*fname*]
Like :doautocmd, but apply the autocommands to each loaded buffer.

Careful: *Don't use this for autocommands that delete a buffer, change to another buffer or change the contents of a buffer, the result is unpredictable. It is only meant to perform autocommands that set options, change highlighting, and so on.*

12.9 Using autocommands

Reading files

For **reading files** there are three possible pairs of events. **VIM** uses only one pair at a time:

BufNewFile `start editing a non-existent file`
BufReadPre BufReadPost `start editing an existing file`
FilterReadPre FilterReadPost `read the temp file with filter output`
FileReadPre FileReadPost `any other file read`

Reading compressed files

Example

```
:autocmd! BufReadPre,FileReadPre   *.gz set bin
:autocmd  BufReadPost,FileReadPost *.gz '[,']!gunzip
:autocmd  BufReadPost,FileReadPost *.gz set nobin
:autocmd  BufReadPost,FileReadPost *.gz execute ":doautocmd BufReadPost" . %:r
```

Writing Files

For **writing files** there are four possible pairs of events. **VIM** uses only one pair at a time:

BufWritePre	BufWritePost	`write the whole buffer`
FilterWritePre	FilterWritePost	`write to the temp file with filter input`
FileAppendPre	FileAppendPost	`append to a file`
FileWritePre	FileWritePost	`any other file write`

Writing compressed files

Example

```
:autocmd! BufWritePost,FileWritePost *.gz !mv <afile> <afile>:r
:autocmd  BufWritePost,FileWritePost *.gz !gzip <afile>:r
:autocmd! FileAppendPre  *.gz !gunzip <afile>
:autocmd  FileAppendPre  *.gz !mv <afile>:r <afile>
:autocmd! FileAppendPost *.gz !mv <afile> <afile>:r
:autocmd  FileAppendPost *.gz !gzip <afile>:r
```

Nesting

By default, autocommands do not nest. If you use :e or :w in an autocommand, **VIM** does not execute the BufRead and BufWrite autocommands for those commands. If you do want this, use the nested flag for those commands in which you want nesting. The nesting is limited to 10 levels to get out of recursive loops.

Order of execution

All matching autocommands will be executed in the order that they were specified. It is recommended that your first autocommand be used for all files by using "*" as the file pattern. This means that you can define defaults you like here for any settings, and if there is another matching autocommand it will override these. But if there is no other matching autocommand, then at least your default settings are recovered (if entering this file from another for which autocommands did match). Note that "*" will also match files starting with ".", unlike Unix shells.

Search Patterns

The search patterns are saved and restored, so that the autocommands do not change them. While executing autocommands, you can use search patterns normally, e.g. with the n command. After the autocommands finish, the patterns from before the autocommand execution are restored. This means that the strings highlighted with the *hlsearch* option are not affected by autocommands.

13 Miscellany

13.1 VIM registers

There are seven types of **VIM** registers:

1. Unnamed register ""

This register is used to place all text deleted with the "d", "c", "s", "x" commands or copied with the yank command, regardless of whether or not a specific register was used (e.g. "xdd). An exception is the _ register: "_dd does -not store the deleted text in any register.The contents of this register are used by any put command (p or P) which does not specify a register. It can be also accessed by the name ".

2. Numbered registers "0–"9

These are filled with yank and delete commands. Register "0" is filled with the last yank command, unless another register was specified. Register "1" is filled with the text that was deleted by each delete or change command, unless another register was specified or the text is less than one line (text deleted with "x" or "dw" will be put in the `small delete register`). The contents of register "1" are put in "2", "2" → "3", and so forth. The content of register "9" is lost.

3. Small delete register "-

This one is filled with delete commands that delete less than one line, except when another register was specified.

4. Named registers "a–"z and "A–"Z

These are only filled when you say so. They are named "a" to "z" normally. If you use an uppercase letter, the same register as with the lower case letter is used, but the text is appended to the previous content. With a lower case letter the previous content is lost.

5. Read-only registers ":, "., "% and "#

They can only be used with the commands "p", "P", ":put" and with CTRL-R.

". Contains the last inserted text (the same as what is inserted with the insert mode commands CTRL-A and CTRL-@).
Note: *this doesn't work with* CTRL-R *on the command line.*

"% Contains the name of the current file.

"# Contains the name of the alternate file.

": Contains the last command line. It can be used with "@:", this repeats the last command line.

6. Expression register "=

This is not really a register that stores text, but a way to use an expression where a register can be used. It is **read-only**, you cannot put text into the `expression register`. After the "=", the cursor moves to the command line, where you can enter any expression. All normal command line editing commands are available, including a special history for expressions. When you end the command line by typing ⟨CR⟩, the result of the expression is computed. If you end it with ⟨Esc⟩, the expression is abandoned. If the entered command line is empty, the previous expression is used.

7. Selection register "*

This is used for storing and retrieving the selected text for the GUI.

If you use a put command without specifying a register, the register that was last written to is used (this is also the content of the `unnamed register`). If you are confused, use the ":dis" command to find out what will be put.

8. Black hole register "_

When writing to this register, nothing happens. This can be used to delete text without affecting the normal registers. When reading from this register, nothing is returned.

NOTES

VIM Distribution:

VIM is Charityware. Please, read **VIM** documentation for details.

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