Introduction to Vim

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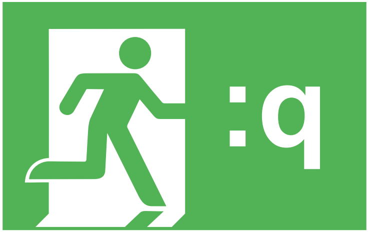
The Most Important Command

Before we start, let's settle down the age-old question:



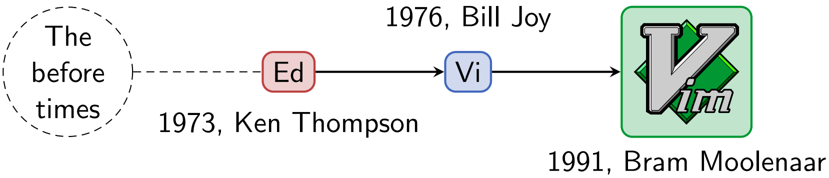
The Most Important Command

The most common exit and save commands:

Command	**Keys**
Simple exit	`:` `q` `↵`
Save	`:` `w` `↵`
Save and exit	`:` `w` `q` `↵`
Exit without save	`:` `q` `!` `↵`
Save and override	`:` `w` `!` `↵`
Command history	`q` `:` `↵`

Just to confuse ;)

Brief History



Vim Modes

Vim has three **modes**:

Name	**Function**	**Key(s)**
Normal	navigation and text editing	Default/Esc
Insert	inserting text	i
Normal	highlighting text/rows/blocks	v/V/Ctrl+v

Vim Grammer

Generaly speaking, Vim commands can be structure in different forms (here refered to as "rules"[1]).

The most simple rule is

$$\boxed{\text{command}} = \boxed{\text{operator}}\ \boxed{\text{motion(s)}}$$

Example

Command	**Syntax**	**Keys**
Delete word	del word	d w
Copy until 'A'	copy until 'A'	y f A

Vim Grammer

Operators and motions can be preceded by repetitions, i.e.

$$\boxed{\text{command}} = \boxed{\text{n}}\boxed{\text{operator}}\ \boxed{\text{m}}\boxed{\text{motion(s)}}$$

Example

Command	**Syntax**			**Keys**
3× delete word	$\boxed{3}$	$\boxed{\text{del}}$	$\boxed{\text{word}}$	$\boxed{3}\boxed{d}\boxed{w}$
Delete 3 words	$\boxed{\text{del}}$	$\boxed{3}$	$\boxed{\text{word}}$	$\boxed{d}\boxed{3}\boxed{w}$

List of Operators

Main Vim operator keys:

Key	Func.	Key	Func.
y	copy	c	change (delete + insert)
d	delete	x	delete single
p	paste	P	paste before
u	undo	Ctrl + r	redo
.	repeat action	;	repat motion

List of Motions

Main Vim motion (navigation) keys:

Key	**Func.**	**Key**	**Func.**
w	next word	b	beginning of word
e / g e	end of word / prev	n	next find
n	next find	N	prev find
f α	next α	F α	prev α
t α	before next α	T α	after prev α

Operators without Motions

Some operators don't need motions:

Key	Func.	Key	Func.
Visual mode			
U	make uppercase	u	make lowercase
~	switch case		
Normal mode			
ctrl + a	increment int	ctrl + x	decrement int
g U · · ·	make uppercase	g u · · ·	make lowercase
g,~,· · ·	switch case		

Operators without Motions

Some more operators without motions:

Key	**Func.**	**Key**	**Func.**
Normal mode			
u	undo	Ctrl+r	redo
d d	delete line	c c	replace line

Motions without Operators

Some motions aren't actually relevant to operators and repetitions:

Key	Func.	Key	Func.
h / ←	left	j / ↓	down
k / ↑	up	l / →	right
0	start of line	$	end of line
^	start of line (text)	%	matched paranthesis
H	top of view	L	bottom of view
M	middle of view	L	bottom of view
Ctrl + y	scroll screen up	Ctrl + e	scroll screen down

Modifiers

The following two keys are **Modifiers**:

Key	**Meaning**
i	Inside an object
a	Around an object

Example

Command	**Keys**
Copy around '[]'	y a [
Delete inside '{}'	d i {

The Vim Command Line

Pressing `:` in normal mode summons the internal Vim command line (here referred to as *vcl*). Many, many different thigs can be done using this buffer - some of which will be shown later.

Any shell command can be executed via the vcl, by prepending it with '!', e.g. `:!ls` will run `ls` in the shell that executed Vim.

Marks

Points in a file can be marked for later use. There are 52 possible custom marks: all lowercase letters + all uppercase letters.

Adding a mark `a` is done by

$$\boxed{\text{m}}\ \boxed{\text{a}}$$

Navigating to a mark `a` is done by $\boxed{\text{`}}\ \boxed{\text{a}}$.

The combination $\boxed{\text{'}}\ \boxed{\text{a}}$ will jump to the start of the line where the mark is.

Marks

The lowercase marks a - z exist only in currently open files (buffers), while the uppercase marks A - Z can be jumped to even in a closed file.

The command `:marks` gives a list of all marks.

Example motions and operations using marks:

Key	**Function**	**Key**	**Function**
m a	set a		
' a	go to line of a	`` ` `` a	go to a
d ' a	del until line of a	d `` ` `` a	del until a

Marks

Deleting the mark `a` is done via `:delmarks a`. One can delete a range of marks by `:delmarks a-d`, or a list of marks by e.g. `:delmarks afgv` (for the marks `a`, `f`, `g` and `v`). `:delmarks!` will delete all lowercase marks `a` - `z`.

There are several special marks:

- `.` : last change in current buffer.
- `"` : last exited current buffer.
- `0` : edited position in last edited file.
- `1` - `9` : edited position in previous `n` -th file.

Macros

A **macro** is a recording of a set of operations, which can be repeated as many times as needed.

A macro *a* is recorded by typing `q` `a` [set of operations] `q` .

A macro *a* is called by `@` `a` .

Registers

Registers hold yanked (copied) text. Similar to marks, they can be named `a` - `z` , but only using lowercase letters.

" a y will copy the selected text to the register `a` , while " a p will paste the content of `a` . All other relevant actions are possible too.

To display the content of registers `a` , `b` and `c` , use the commad `:reg a b c` .

The unnamed register `"` holds the last copied/yanked text, i.e. " " p = p .

Registers

There are several special registers:

- `.` : last inserted text.
- `\%` : current file name.
- `:` : most recently executed command.
- `\#` : name of last (alternate) file (try `:h alternate-file` for more info).
- `=` : result of given expression (example: in insert mode try: ctrl + r + =, then type `system('ls')` and press ⏎).
- `/` : content of last search.

Find, Search & Replace, Regex

Searching for a string is done by pressing $\boxed{/}$ ($\boxed{?}$ for backwards search), and entering a regex-like search query.

Moving between matches can be done via $\boxed{n}$ for forward search, and $\boxed{N}$ for back search.

The word currently under the cursor can be searched by $\boxed{*}$ for a forward search, and $\boxed{\#}$ for backwards search.

As with commands, the search history is searchable via $\boxed{\uparrow}$ and $\boxed{\downarrow}$.

Find, Search & Replace, Regex

Replacing an expression is done by `:s` :

- `:s/foo/bar/g` changes each `foo` to `bar` in current line
- `:\%s/foo/bar/g` change globally
- `:'<,'>s/foo/bar/g` in visual mode: change in selected lines
- `:'<,'>s/foo/bar/g` in visual mode: change in selected lines
- `:,\$s/foo/bar/g` change from here to end of file
- `:,+Ns/foo/bar/g` change current line + `N` more lines

Find, Search & Replace, Regex

continuing:

- `:\%s/foo/bar/gc` change with confirmation per each change
- `:\%s/foo/bar/gci` change case insensitive
- `:g/^baz/s/foo/bar/g` change in lines starting with `baz`
- `:s//bar/g` use last searched pattern
- `:\%s/foo/<c-r><c-w>/g` replace with the word under the cursor (Ctrl+r Ctrl+w)
- `:\%s/foo/<c-r>a/g` replace with the content of register `a`
- `:\%/foo/\\=ae/g` replace using arithmetic expression `ae`

Splits

A Vim buffer can be split horizontally by `:sp` , and vertically by `:vsp` . Adding a file name opens that file in the split.

Navigating between splits is done by $\boxed{\text{ctrl}}+\boxed{\text{w}}+$arrow.

The order of splits can be changed by $\boxed{\text{ctrl}}+\boxed{\text{w}}$ $\boxed{\text{ctrl}}+\boxed{\text{r}}$.

Increasing a split size is done by $\boxed{\text{ctrl}}+\boxed{\text{w}}+$ $\boxed{\alpha}$ $\boxed{+}$, decreasing by $\boxed{\text{-}}$ instead of $\boxed{+}$.

To make a horizontal split full width: $\boxed{\text{ctrl}}+\boxed{\text{w}}+\boxed{\text{\_}}$ ($\boxed{|}$ for vertical split). To make splits equal size: $\boxed{\text{ctrl}}+\boxed{\text{w}}+\boxed{=}$.

Advanced Usage

More advance topics, such as: plugins, `.vimrc` config, vim scripts, custom syntax highlighting and colors, context-aware typing and more - in a future presentation.

Useful Sources for Further Reading

Useful Sources:

- Vim tutor: `:!vimtutor` - follow it!
- Vim tips wiki: https://vim.fandom.com/wiki/Vim_Tips_Wikitext.
- Vim homepage: https://www.vim.orgtext.

Cited source:

Tom Cammann. *Vim Grammar*. Jan. 30, 2013. URL: https://takac.github.io/2013/01/30/vim-grammar/.