Vim Recipes

A cookbook for the Vim text editor

by *Run Paint Run Run* / *Run Paint Press*

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INTRODUCTION

The Vim text editor is perhaps as famous for its learning curve as it is for its contributions to productivity. Vim isn't "intuitive" in the way other applications claim to be—you cannot use it by simply replicating the actions you perform with a word processor, by clicking on menu items aimlessly until you achieve your desired effect. But this is by design. The major strength of Vim is that it does things differently *to magnificent effect*. It permanently alters the way in which you regard text editors and software in general. And that is why, in 2009, I am putting the finishing touches to a free book about a text editor whose ancestry can be traced back to 1976.

This book is written to be consulted when you're looking for a better way to perform a task. It does not replace Vim's excellent built-in documentation, but complements it by focussing on tasks rather than commands. It will always be incomplete by virtue of Vim having more features and extensions than I have years alive, but will hopefully still serve as an indispensable reference.

In addition to being free, this book is open source. The files from which it is compiled are freely available, for you to examine and, hopefully, improve. In any case, I would enjoy hearing any feedback you have. Contact details are in the *Contributing* section, and you can e-mail me at the address below.

Happy Viming!

—*Run Paint Run Run* (runrun@runpaint.org), 2009, U.K.

Conventions

The following typographical conventions are used in this book:

Key Presses

`<Esc>` - Indicates that the named key should be pressed.

`<Ctrl>-p` - Keys joined with a – should be pressed simultaneously. In this example the `<Ctrl>` should be held down while the `p` key is pressed.

Normal Mode Commands

`gqap` - The named characters should be entered in order while in *Normal* mode.

Command-Line Commands

`:set spell` - The command should be typed in *Command-Line* mode. (If you're in a different mode, press `<Esc>` before you type the command).

`:!`*`command`* - As above, but *`command`* is a variable which should be substituted for its value.

Monospaced Font

A `fixed width` font is used for filenames, code, and variable names.

Contributing

This book is released under a Creative Commons Attribution-Share Alike 3.0 Unported License, and its complete text is available in a Git repository. All contributions are welcomed. Patches are preferred, but if you're not comfortable with Git you can use the issue tracker as described below.

Issue Tracker

You may report typographical errors, factual mistakes, or unclear passages via the web-based issues tool at github.com/runpaint/vim-recipes/issues.

E-mail

You can send patches and bug reports to runrun@runpaint.org.

Patches

The source for this book is available in a Git repository. If you have Git installed on your system you may clone the repository using the URL git://github.com/runpaint/vim-recipes.git. (For an introduction to Git see the Git Community Book).

You'll probably want to do something like this:

```
$ git clone git://github.com/runpaint/vim-recipes.git
Initialized empty Git repository in /tmp/vim-recipes/.git/
 remote: Counting objects: 666, done.
 remote: Compressing objects: 100% (610/610), done.
```

```
  remote: Total 666 (delta 350), reused 0 (delta 0)
  Receiving objects: 100% (666/666), 407.52 KiB | 35 KiB/s,
done.
  Resolving deltas: 100% (350/350), done.

$ cd vim-recipes
$ vim text/04_basics/09_configuring_vim.html
$ git commit -a
```

Then either send me a patch (`runrun@runpaint.org`), or post it to the issue tracker.

Alternatively, if you already use GitHub, fork the repository, make your changes, then send me a *pull request*.

LICENSE

Credits

Cover Image

The cover photograph of Bram Moolenaar, the creator of Vim, was taken by Sebastian Bergmann and kindly released under a Creative Commons Attribution-Share Alike 2.0 Generic License. The original photograph can be viewed at Flickr.

CSS

The Cascading Style Sheets used in the production of the book were derived significantly from the work of others. Mark Pilgrim's stylesheet from *Dive Into Python 3* was the main inspiration. In conjunction, the CSS created by Håkon Wium Lie and Bert Bos for their book entitled *Cascading Style Sheets: Designing for the Web, 3rd Edition*, and graciously made available via A List Apart, was particularly helpful. Lastly, Nando Vieira's kitabu project offered ideas on how to tie it all together.

Contributors

The following people have kindly contributed ideas, corrections, and advice: Rizal Almashoor, Raúl Núñez de Arenas Coronado, Adam Blinkinsop, coderpunk, dm3, Kjetil Dynnamittt, Ihar Filipau, Michael Houghton, Javier Rojas, and others who I'm bound to have omitted. Thank you!

BASICS

Choosing the Right Mode

Problem

You know that Vim has multiple modes of operation but aren't sure when to use which one.

Solution

For practical purposes there are four modes:

Insert mode

Use only for typing; not moving around or editing. Stay in this mode for as short a time as possible.

Normal mode

Use this for editing: moving around the file, changing text, and rearranging structure. Dip in and out of Insert mode when needed.

Visual mode

Use this for visually selecting text so that you can cut, copy, or format it.

Command-Line mode

Use this for entering commands, e.g. `:set number`

Discussion

Vim's modal approach to editing can seem confusing, but it really is the key to understanding Vim.

It's tempting to spend much of your time in Insert mode, and navigate with the arrow keys. However, this is slow and requires an awful lot of key presses.

Normal mode is the default mode because it makes it so easy to move around the file to either edit existing text or position the cursor where you want to insert text.

 Use `<Ctrl>+o` in Insert mode to switch to Normal mode for one command, then return to Insert mode. For example, `<Ctrl>+o gqas` enters Normal mode, reformats the current sentence,[1] then returns you to Insert mode.

If you create a new file, and just want to type, by all means go straight into Insert mode and do so. All other times, though, stay in Normal mode.

For example, you want to find a paragraph you've written previously, and reword it. In Normal mode you can either search for it (e.g. `/Hobson argued`), or simply page through the file (e.g. `<Ctrl>+F` to scroll downwards) to find it. Once there, you can move to the section you're interested in using either the basic movement commands or text objects. You can now use *text objects* again to select something and change it. For example `caw` deletes the current word and puts you into Insert mode to change it. Once you have done so, hit `<Esc>` again to return to Normal mode.

1. For an explanation of `gqas` refer to the Selecting Text with Motions recipe.

Basic Navigation

Problem

You want to move around inside a file.

Solution

The traditional approach is to use the arrow keys to move up, down, left, and right. Vim supports that style of navigation but also offers a more efficient alternative:

Key	Movement
`h`	Left
`l`	Right
`k`	Up a line
`j`	Down a line
`0`	Start of line
`^`	First character of line
`$`	End of line

Discussion

It is tempting to rely on old habits for something as basic as moving around in a file. Once you're used to The Vim Way, however, you'll find yourself much more efficient. One reason for this is that these keys are all located on the main keyboard, so you don't need to stretch to the arrow keys, hence breaking your flow.

Another benefit is that you can prefix these shortcuts with *counts* (as you can with many Vim commands) which specify how many times they should be executed. For instance, `2k` moves up two lines.

Once you've become used to these keys, take a look at *motions* and *text objects* in Selecting Text with Motions to make the humble combination of `h`, `l`, `k`, and `j` more powerful still.

Opening Files

Problem

You want to open a file in Vim.

If you want to edit or view an existing file you need to open it first. For example, if your world-changing novel is saved as `novel.txt`, you want to open `novel.txt` in Vim.

Solution

To open a file from the command line invoke Vim with the filename as an argument. For example: `vim docs/novel.txt` (on Windows: `vim.exe docs\novel.txt`).

To open a file from inside Vim you can use `:e` *`file`* (mnemonic: edit). This closes the current file and opens a new buffer containing the given file.

If you use Andy Lester's `ack` utility you can create a shell script to open files without having to specify their path. For example, using `bash`:

```
#!/bin/sh
vim $(ack -g $@)
```

Name it `vack`, then `vack shapes.rb` will search recursively downwards from the current directory to find `shapes.rb`, then open it in Vim.

DISCUSSION

You may prefix the filename with `+linenumber` to instruct Vim to jump to the given line after opening. For example, `vim +7 todo.list` or `:e +100 treatise.txt`. If you omit *linenumber*, i.e. you prefix the filename with +, Vim will jump to the end of the file.

Similarly, prefixing the filename with `+/pattern` positions the cursor at the first occurrence of the pattern *pattern*. For example, `vim +/^References btrees.textile` instructs Vim to open `btrees.textile`, find the first line that starts with *References*, then position the cursor there.

> The `:cd directory` command lets you change the directory Vim resolves relative paths to. So if you're working with multiple files in the same directory tree you can use this command to set your working directory so it's easier to open files. For example, instead of opening `/home/julie/recipes/pasta/cabonara.txt` then `/home/julie/recipes/pasta/peperonata.txt` you can `:cd /home/julie/recipes/pasta` then `:e carbonara.txt`. If you forget which directory you're in `:pwd` (print working directory) will tell you.

If you supply multiple filenames, Vim opens them all, one in each buffer. The first file named is opened in the current buffer. If you provide a line number or pattern to jump to, this only affects the first named file. Typing `:next` advances you to the next file in the list.

When working with multiple files you may prefer to view them in tabs or split windows, instead of buffers.

Tabs display a single file at a time, but, by default, provide a list of opened tabs across the top of the screen. You can switch to an open tab by clicking on its name in the GUI or referring

to its number. From within Vim `:tabedit` *`file`* opens the named file in a new tab. Or, from the command line `vim -p` *`files`* opens each named file in its own tab.

Split windows display multiple files on screen simultenously. By default the screen is divided horizontally, putting each file beneath the previous, but you may also split it vertically so that each file is displayed next to each other. From Vim `:split` *`file`* splits the screen horizontally between the current file and the named file. `:vsplit` *`file`* effects a vertical division. These operations can be conducted from the command line with `vim -o` *`files`* and `vim -O` *`files`*, respectively.

So far we have specified filenames literally by naming each file to open. However, at other times this is impractical. For example, suppose you want to edit all files whose names end with `.txt`, or a file that you can only remember has the word `lethargy` in it. In cases such as these we would rather describe a group of files by using wildcards.

If you're opening a file from the command line (i.e. `vim resume.tex`), your shell expands any wildcards. Windows is notoriously weak at command-line work, but other operating systems will probably do the right thing here. For example, using the *bash* shell I can open `.txt` files whose names start with `1`, `2`, or `3` with `vim [123]*.txt`.

Vim commands that accept filenames support a *similar* set of wildcards with one caveat: some commands only accept a single filename, while others accept a list. The implication is that if you use wildcards with a command like `:edit`, which only takes a single filename, they cannot expand to multiple files. So if your current directory contained only one `.html` file, `:edit *.html` would save you typing and work how you expect. However, if the directory contained multiple `.html` files, that same wildcard would imply a list of files, and `:edit *.html` would complain: `E77: Too many file names`.

Instead of using `:edit`, you can use `:next` *`files`* which happily accepts a list of files, and opens each one in a new buffer. The `:args` *`files`* command is similar, but instead of appending the list of files to the current list of open files, it uses them to replace the current list.

Saving a File

Problem

You want to save the file you've been working on.

After you've made changes to a file you typically want to save them. For example, if you've written up a turkey recipe to send to your daughter, you'd open Vim, type the recipe, save it to `turkey-recipe.txt`, then e-mail `turkey-recipe.txt` to your hungry child.

Solution

The `:up[date]` command saves the current buffer if it has been modified[2]. If your file doesn't have a name yet, you'll need to follow `:up` with a filename. This is conceptually similar to most word processors' *Save* function.

To change the name of an existing file, use `:saveas` *`file`*. If *`file`* already exists and you want to overwrite it, use `:saveas!` *`file`*. This is conceptually the same as most word processors' *Save As* function.

Discussion

There are a number of situations where it can be useful to have Vim save your file for you automatically. One is when you're working with files in multiple buffers and cycling between them. By default, every time you switch to a buffer Vim prompts you to save the current one first. Another is when you execute an external command on the current file. The command is passed the file's name, so if your buffer contains unsaved changes, the command won't see

2. The more common command to save a file is `:w`, however this always saves the file, even if it hasn't been changed. `:up` preserves timestamps and saves needless disk access.

them. The solution is to `:set autowrite`. This causes files to be automatically saved when you switch buffers and execute external commands. If you also want files automatically saved when you quit Vim, use `:set autowriteall`.

The `:autowrite` functionality is not related to some word processor's concept of auto-saving a file periodically in case of a crash. Vim does this automatically.

You can also "write" a specific portion of a file to a new filename. By prefixing the `:up` command with a line range only the specified lines are written to the named file. For example, `:20,30up 20-30.txt` saves lines twenty to thirty of the current buffer to a file named `20-30.txt`. Alternatively, select a portion of a file visually then execute `:up` *`filename`* and the text you selected will be written to a file named `filename`.

QUITTING VIM

PROBLEM

You've finished using Vim and now you want to close the program.

SOLUTION

To save the changes in the current file then quit use `:x`[3]. In Normal mode you use `ZZ`.

DISCUSSION

The way you quit Vim depends on what you want to quit (the whole program, or just the current window) and what you want to do with your unsaved changes.

As mentioned above, if you're using a single window either `:x` or `ZZ` will save any unsaved changes, and exit Vim.

To exit and discard your changes you use `:q!` (mnemonic: **q**uit in a possibly dangerous (exclamatory) manner).

You can also quit on the condition that there are no unsaved changes with `:q`; if you do need to save Vim warns you `E37: No write since last change (add ! to override)`.

If you're using multiple windows the above commands will act upon the current window. To quit all windows use `:qa` (mnemonic: **q**uit **a**ll). Vim will prompt you to save any changes. To

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3. The more usual suggestion for saving then quiting is `:wq`. We use `:x` here because it only saves the file if it has been changed, thus preserving its timestamp and saving needless disk access.

quit all windows without saving use `:qa!` (mnemonic: **q**uit **a**ll in a possibly dangerous manner).

Deleting Text

Problem

You wish to remove some text from a file. For example, you've typed a paragraph which is no longer needed.

Solution

In Normal mode, move your cursor over the character to banish and hit `x` (mnemonic: e*x*punge). This deletes characters under and after the cursor; to delete characters before the cursor use `X`. This is fine for single characters, but to delete words and other text objects you can use `d`*`motion`*. The difference, then, is that `x` deletes characters, whereas `d` deletes text described by a given motion.

If you'd rather nuke entire lines at a time use `dd`. So, to delete the current line and the one following it: `2dd`. Use a *range* prefix to delete the specified lines, e.g. `:17,20d` deletes lines seventeen through to twenty.

A compromise is to delete the remainder of a line, which can be achieved with `D`. If your cursor was positioned after *compromise* in the above sentence, and you then hit `D`, the line would be changed to just *A compromise*.

If you've selected a block of text visually, you can delete it all with `x`.

Discussion

Vim doesn't just *delete* text; it saves it to a *register* first. If you delete a small amount of text (less than a line), it's stored in a register named `"-`. Otherwise, it's stored in `"0`, whose

existing contents are moved to "1, whose existing…right up to "9. This allows you easy access to previously deleted text inasmuch as you can recall, say, the 3rd most recently deleted line with "2p. Even more usefully, you can use :registers to view your recent deletions. The Undoing Mistakes recipe explains how to revert these deletions.

Visually Selecting Text

Problem

You want to interactively select some text by drawing a box around it, thus enabling you to perform a command that affects it. In other words, you want to select a text like you would in a GUI word processor using either the keyboard or, in *Gvim*, the mouse.

Solution

To select text character by character change to *Visual* mode with `v`, then move the cursor as normal using the `h`,`j`,`k`,`l` keys. For example, to select the current character and the three that follow hit `v`, then `3l`. To select the current paragraph: `v`, then `ap`.

To select text by lines switch to *Visual Line* mode with `V`, then move upwards and downwards with `k` and `j` as normal. For example, to select the current line and the 2 following it hit `V`, then `2j`.

To select text in vertical blocks, or 'columns' to the rest of us, you use *Visual Block* mode with `<Ctrl>-v`[4]. For example, if you wanted to select the first two characters of the current line and the 20 following, you'd position your cursor on the first character of the first line you're interested in, hit `<Ctrl>-v`, move one character to the right (`l`), then move down 20 lines with `20j`.

If you want to switch selection mode mid-selection hit `v`, `V`, or `<Ctrl>-v`, as appropriate.

4. Windows® defines this shortcut for pasting text, so `<Ctrl>-q` exists as an alias.

Discussion

As you get used to Vim's movement command, you'll have less of a need for the various visual modes. Regardless, they can still be convenient when you're making complex selections or aren't really sure what you're doing. ;-)

Having selected text, o can be used to toggle the cursor between the beginning and end of the selection.

The point of selecting text is to operate on it. Here are some common actions:

- Copy/cut it.
- Format it, e.g. gq.
- Indent/unindent it.

Copying, Cutting, and Pasting

Problem

You want to duplicate text from one place to another. For example, you may want to move the paragraph you've just typed above the previous one. Or maybe you want to copy some text from a web page into Vim.

Solution

To copy/cut text from Vim you must first select it. You can do so visually, or provide a *motion* to the relevant command.

Vim calls *copying yanking*, so to copy visually selected text use the `y` (mnemonic: *y*ank) command. The syntax `y`*`motion`* yanks the text defined by *`motion`*. For example, `y2w` would copy the current and following words. `yy` works on lines instead, so `4yy` would copy the current line and the three following it. (`Y` is a synonym, thus saving you that extra keystroke ;-)).

Cutting is much the same, only it uses `d` (mnemonic: *d*elete) and `dd`, respectively. To cut the visually selected text, hit `d`. To cut the current line, `dd`. To cut the current word, `dw`.

The text is now in one of Vim's *registers*. To paste the contents of a register into a file, position your cursor appropriately, then use the `p` (mnemonic: *p*aste or *p*ut) key in *Normal* mode. `p` inserts text after the cursor. To insert the text before use `P`. As with many Vim commands, `p` and `P` can be prefixed with a repetition count, so `2p` pastes the clipboard contents twice.

To paste text from the system clipboard use `Shift+Ins` in Insert mode or `"*p` in Normal mode. Conversely, `"+y` yanks the current selection to the system clipboard.

DISCUSSION

The solution above uses the concept of a single clipboard, much like some operating systems do. Vim can work this way, as you can see, but also supports 'named registers'. These are, effectively, multiple, independent clipboards. [5] Registers are named with a " character followed by a single lowercase letter, e.g. `"a`[6].

To yank/delete/put using a named register, simply prefix the command with the register name. So, to yank the current line to register `"b` use `"byy`. To paste it use `"bp`.

To view the contents of the registers (both user-set and Vim-set), issue the `:registers` command.

When pasting text from external applications into a Vim instance Vim may clobber the text by attempting to be too clever. This happens when it cannot distinguish between entered text and pasted text. The most common symptom is that the pasted text is indented bizarrely.

To fix this, consider using `:set paste` before you paste, then `:set nopaste` afterwards. Alternatively, use `:set pastetoggle=`*`key`* to map a key to toggle paste mode. With this setup on Linux, for example, users could paste with `F11+Shift-Ins+F11`.

5. Registers are actually far more powerful than this; `:help registers` for details.
6. Again, this is a vast simplification.

Configuring Vim

Problem

You want your Vim preferences to persist over sessions.

For example, you want Vim to show line numbers all the time. Displaying Line Numbers explains how, but when you restart Vim you find that your preferences have been forgotten.

Solution

Throughout this book I will discuss how to configure Vim options using the `:set` *`option`* or `:set` *`option=value`* syntax. This works, but only for the current instance of Vim. If you specify these options in your `vimrc` file they'll be set permanently.

Location of `vimrc`

The default location of the `vimrc` file depends on your operating system. Identify your operating system, then note the corresponding path. All references in this book to `vimrc` refer to this path.

Gvim reads `vimrc` then a `gvimrc` file located in the same place as `vimrc`. In this book `vimrc` and `gvimrc` are treated as synonyms.

Unix/Linux

```
$HOME/.vimrc
```

OS/2

`$HOME/.vimrc` or `$VIM/.vimrc` (or `_vimrc`)

MS-DOS and Windows

`$HOME/_vimrc` or `$VIM/_vimrc`

Amiga

`s:.vimrc` or `$VIM/.vimrc`

The `vimrc` is a simple plain text file. Open the filename specified in the sidebar and add one option per line using the *option=value* syntax (the ':' prefix is unnecessary). Indeed, this is the general principle for adding any *Command-Line* command in this book to your `vimrc`. For example:

```
" Set the boolean number option to true
set number
" Set the textwidth option to '78'
set textwidth=78
" Set the expandtab option to false
set noexpandtab
```

A single quotation mark (") introduces comments. They are ignored by Vim, but particularly useful for remembering what all of your preferences mean.

Even if you don't want to specify any options in `vimrc` you should still create it. On some systems Vim will act like the Vi editor in the absence of this file, which is unlikely to be what you want.

Discussion

The `vimrc` locations given in the sidebar are used for user preferences; there are also system wide `vimrc` files. User preferences take precedence over system preferences. This means that if you change an option set in the system `vimrc`, your preferences will be respected. However, if the system `vimrc` sets an option differently from the Vim defaults, and you don't include it in your `vimrc`, the system preference will be used.

The example `vimrc` above is very basic. They can also include functions, conditionals, and anything else Vim's scripting engine supports. For a simple example look at the usage of `:autocmd` in the Using Templates recipe.

If your configuration becomes complex you may want to split it over multiple files. You can instruct Vim to include these files in your configuration by adding a `source` *`file`* line to `vimrc` for each config file. See Abbreviating Common Strings for an example.

If you want a different configuration for a specific project you can `:set exrc` then include a `.vimrc` (or `vimrc` on DOS and MS Windows) in the project's directory. This takes precedence over your `vimrc`, and will be used when you edit files in that directory.

Warning: There's the potential for security problems when using `exrc`. If a *vimrc* was placed in your project directory without you knowing -- as a result of unpacking an archive, for example -- it could be used to execute arbitrary commands under your user account. For this reason it's strongly recommended that you use `:set secure` in conjunction with `exrc`. This prevents the directory-specific `vimrc` files from executing potentially dangerous commands. The Vim documentation suggests adding `set secure` as the last line in your `vimrc`.

Debugging Configuration

- Start Vim without loading your `vimrc`: `vim -u NORC`. (Use `-U` for Gvim).
- Start Vim with a different `vimrc`: `vim -u` *`file`*.
- Start Vim in verbose mode: `vim -V`. (Describes each file being sourced).
- Check the system wide `vimrc` to see whether its interacting badly with yours.

PRINTING

PROBLEM

You want to print something from Vim.

SOLUTION

In GVim there's a *Print* entry on the *File* menu, and a printer icon on the toolbar. In Vim execute `:hardcopy`.

DISCUSSION

`:hardcopy` converts the current file to Postscript and sends it to the default printer. You can specify that a different printer is used with `:set pdev=`*`printer`*. For example, `:set pdev=usblp1`.

If you have a PDF printer installed[7], you can use this technique to print a file to PDF. For example, assuming your PDF printer is called `pdf`:

```
set pdev=pdf
set printoptions=paper:A4,syntax:y,wrap:y
```

The `printoptions` line is a comma separated list of values that affect how Vim formats the document before it sends it to the printer. A list of options is at `:help popt`.

The `paper` option sets the paper size. It accepts values such as `A3`, `letter`, and `legal`.

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7. Linux/Mac users can install the *CUPS PDF* package to get a PDF printer, e.g. on Debian/Ubuntu: `apt-get install cups-pdf`.

The `syntax` option determines whether the document is printed with syntax highlighting. By default it has the value `a` which means that Vim only uses highlighting for colour printers. A value of `y` forces highlighting.

Lines are wrapped when `wrap:y`, which is the default. If `wrap` has the value `n`, long lines are truncated.

Other useful options are `header:0` to stop a header from being printed, `number:y` to number lines, `duplex:off` to print on only one side of the page.

On Linux the `lpr` utility is used for printing. To use a different program add a stanza such as the following to your `vimrc`:

```
set printexpr=PrintFile(v:fname_in)
function PrintFile(fname)
  call system("a2ps " . a:fname)
  call delete(a:fname)
  return v:shell_error
endfunc
```

The above example specifies that the GNU *Anything to Postscript* (`a2ps`) utility is used for printing. `a2ps` can print two pages per physical page and custom headers, for example; see `man a2ps` for a complete list of features.

GETTING HELP

PROBLEM

You want help with Vim but don't know where to look. Or, you've found help but find the output of the online help confusing.

SOLUTION

Look up a topic in the online help with `:help` *`topic`*. Search it with the `:helpgrep` *`pattern`* command.

When requesting help for a subject use `<Ctrl>+d` to auto complete what you've typed. For example, `:help :h<Ctrl>+d` shows a list of help topics for commands starting with `:h`.

DISCUSSION

The `:help` *`topic`* displays documentation for the tag named *`topic`* in the Vim documentation. The tags are named with the following convention:

Type of Topic	Prepend	Example
Normal mode command	(nothing)	`:help x`
Visual mode command	v	`:help v_u`
Insert mode command	i	`:help i_<Esc>`
Command-line command	:	`:help :quit`
Command-line editing	c	`:help c_<Del>`

Vim command argument -	:help -r
Option '	:help 'textwidth'

(The table above is excerpted from the Vim online help).

The documentation itself also uses several conventions that may not be immediately obvious. For example, `:help help` displays the following[8]:

```
                                help    <Help>    :h    :help    <F1>    i_<F1>    i_<Help>
<Help>          or
:h[elp]                 Open a window and display the help file in read-only
                        mode.  If there is a help window open already, use
                        that one.  Otherwise, if the current window uses the
                        full width of the screen or is at least 80 characters
                        wide, the help window will appear just above the
                        current window.  Otherwise the new window is put at
                        the very top.
                        The 'helplang' option is used to select a language, if
                        the main help file is available in several languages.
                        {not in Vi}
```

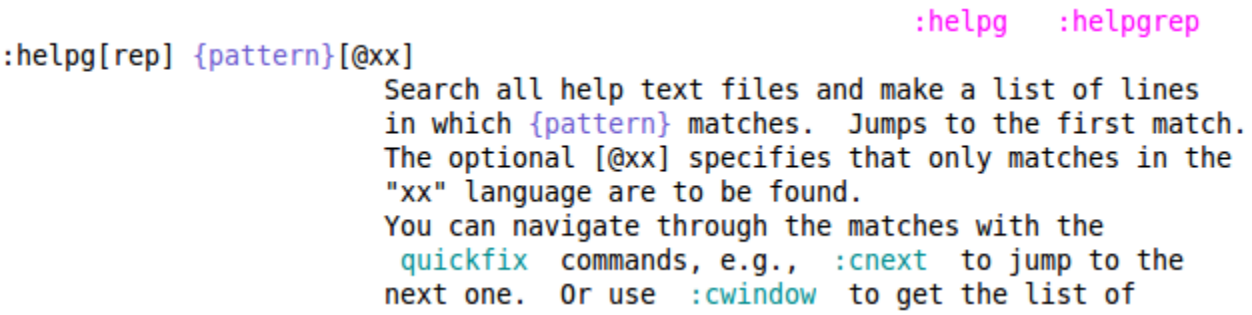
The strings in pink are synonymous tags for the current entry. For example, `:help <F1>` locates the same entry as `:help help`.

The blue `<Help>` label indicates that in GVim the *Help* menu is the GUI equivalent of this command.

The `:h[elp]` notation uses square brackets to indicate the optional portion of the command. Command-line commands can be shortened to the point that they are still unambiguous. In this case, `:help` can be shortened to `:h` or `:hel`.

8. If you're using a different colour scheme the colours may be different.

The green text (`'helplang'`) indicates an option. It's also a hyperlink to an explanation of the option, so if your cursor is over it you can use `<Ctrl>+]` to follow it.



The screenshot above identifies some further conventions to be aware of.

The `{pattern}` notation describes a variable, i.e. it's a placeholder for text that you must supply.

Again square brackets are denote optional text. In this example, `[@xx]` means that you can follow the pattern by a two-letter language code.

Lastly, the light green text are also hyperlinks. For example, `:cwindow` links to documentation for that command.

`helpgrep` takes a pattern and matches it against the locally installed documentation in much the same way as `vimgrep` did in Searching Over Multiple Files. If it finds any matches, it adds them to the *quick fix list*[9], and jumps to the first one.

9. See the *Quick Fix List* sidebar in Searching Over Multiple Files for more information

Once you've followed a hyperlink (with `<Ctrl>+]`), you can return to your previous location with `<Ctrl>+o`. This works in a similar fashion to a web browser's *Back* button, so using this key combination *n* times will take you to the place you were at *n* links previously.

If you've installed a Vim addon, you'll need to run `:helptags` *`docs-path`* before `helpgrep` will see its documentation.

EDITING

Indenting Lines

Problem

You want to use whitespace (spaces or tabs) to indent lines from the left margin.

For example, you may want to start your paragraphs with an indented first line. Or, if you're writing program source code, you may want to visually represent the structure of your program by using indentation to show nesting.

Solution

To start a line indented, just press the tab key once for each level of indentation.

To indent existing lines, highlight them visually and press `>` to indent or `<` to unindent.

If you're in *Insert* or *Replace* mode you can use `<Ctrl>-<Shift>-t` to indent (mnemonic: tab), and `<Ctrl>-<Shift>-d` to unident (mnemonic: de-tab/indent).

More powerful are motions combined with indent/unident commands. The syntax is `>`*`motion`* to indent the text described by *`motion`*, and `<`*`motion`* to unident it. For example, `>ap` indents the current paragraph.

Description

For many users, this solution will be sufficient. However, programmers regularly need more control over indentation because it's so important to their work.

The `:set list` command makes literal tabs visible. It displays them as `^I`, and uses a similar notation for other non-printable characters. The `$` symbol is used to show the end of lines.

A contentious issue among programmers involves how the tab key should work. There are two main schools of thought:

- Literal tabs - Each press of the tab key should insert a literal tab character (padding with spaces if necessary). To achieve this: `:set tabstop=8` (the default), `:set softtabstop=8`, `:set shiftwidth=8`, and `:set noexpandtab`. Tabs are now eight columns wide; each indentation level is a single tab.
- Convert tabs to spaces - Each press of the tab key should insert a certain number of spaces. The settings you need are `:set tabstop=8`, `:set shiftwidth=4`, and `:set expandtab`. Tabs are now replaced with 4 spaces. Real tabs are displayed 8 character wide, spaced tabs 4 characters wide.

`shiftwidth` controls how many spaces are inserted when using the >>/<< technique described above, or the automatic indenting used with source code.

`softtabstop` specifies how many columns Vim uses when `Tab` is hit in Insert mode. If it's less than `tabstop`, and Vim's not expanding tabs (`:set noexpandtab`), Vim indents with tabs, padding with spaces where necessary.

(It can be seen, then, that you'll typically want to make `softtabstop` and `shiftwidth` equal, for reasons of consistency and sanity.)

The boolean `expandtab` option replaces tabs with spaces if true; leaves them alone if false.

These settings are not retroactive. To make an existing file honour your indentation preferences use the `:retab!` command.

See Also

- Tabs versus Spaces: An Eternal Holy War by Jamie Zawinski.
- Secrets of Tabs in Vim by Ted Logan.

Selecting Text with Motions

Problem

You want to define an area of text for a command to operate on without leaving *Normal* mode.

For example, you want to delete next two words, or reformat the current paragraph.

Solution

In *Normal* and *Visual* mode operator commands can be followed by *motions* which describe what text they should operate on. They can be thought of as a set of directions the operator should use to select text.

For example, you can delete the character under the cursor with `x`. If you wanted to delete the word *fandangle* you'd need to press `x` nine times: once for each character. You could simplify the process by prefixing `x` with a *count*: `9x`. However, that requires you to know how many characters are in the word, and would be totally impractical if you wanted to delete multiple words at once. Instead you can use the `d`*`motion`* command which deletes the text selected by *`motion`*, as opposed to the character-by-character approach of `x`. The motion for a word is `w`, so you can delete the word more easily with `dw`.

The following table shows some common operators which understand motions.

Operator	Action	Description
c	change	Deletes then enters insert mode.
d	delete	Deletes.
y	yank	Copies to a register.

gq	format	Reformats.
>	indent	Shifts text left.
<	unindent	Shifts text right.

Here are some common motions:

Command	Moves
*count*h	Left *count* characters.
*count*l	Right *count* characters.
*count*j	Down *count* characters.
*count*k	Up *count* characters.
$	To end of the line.
count$	To end of the line *count*-1 lines downward.
0	To the first character of the line.
*count*f*char*	To the *count*th occurrence of *char* to the right.

We can combine operators and motions to select text then operate upon it. Let's look at some examples:

`y10h`

Copy the previous 10 characters to a register.

`d$`

Delete from the current character until the end of the line.

`c2j`

Delete the current line and the one below it, then enter Insert mode.

DISCUSSION

Motions aren't very intelligent. Say you wanted to delete the word *This* with `dw`. That works as long as your cursor is over *T*; if you were on the *h*, you'd only delete that.

Vim supports additional motions for operating on text objects. One of these is `aw` (mnemonic: *a w*ord) which would do the right thing in both examples above because it considers what *object*, not character, the cursor over.

Text object commands are very similar to motions, and can be used with the same operators. They're frequently just a motion command prefixed with either *a* or *i*. The *a* prefix indicates that the whole object will be selected, including white space; the *i* prefix selects the *inner* object without white space, or just the white space. A few of the available commands follow:

Command	Selects
count`aw` *count*`iw`	*count* words
count`aW` *count*`iW`	*count* non-blank characters
count`as` *count*`is`	*count* sentences
count`aB` *count*`iB`	*count* [...] or {...} blocks
count`a"` *count*`i"`	*count* quoted strings

So, to delete a paragraph, position your cursor anywhere inside it then hit `dap`. *D*elete *a* *p*aragraph - it even sounds sensible[10].

10. No, this is not a bug.

A motion can also be a regular expression, in which case it describes the text matched: extending from the current cursor position to the penultimate character matched by the pattern. The syntax is `/`*`pattern`*: a solidus followed by a regular expression. For example, `d/\d` deletes from the current character to the first digit, excluding the digit itself.

Repeating Commands

Problem

You've entered a command and want to repeat it without re-typing it.

Solution

The period `.` repeats the last command entered in *Normal* mode. For example, `dd` deletes the current line; `dd..` deletes the current line, then deletes the new current line, then deletes the new current line. In other words, it repeats the command twice.

To repeat a command entered in *Command* mode hit `:`, then ↑ to scroll back through your command history. If you type the first few letters of the command before using ↑, the history will be limited appropriately.

Discussion

The period command helps automating repetitive tasks with the fewest keypresses. It lets you say "do that again", but in only one character.

If you know you want to execute a command *n* times, you can prefix it with the integer *n*. The above example rewritten in this way is `3dd`.

The second approach requires fewer keystrokes so is clearly preferable if you know in advance how many times you want to repeat a command. However, the period command lets you make that decision incrementally, after executing the command.

You can combine these approaches by prefixing the period command with an integer to say "do that *n* times again": *n*`.`. Be aware that having done this, if you use the period command again it will repeat your previous repetitions, i.e. *command*, followed by *n*`.`, followed by `.` will result in *command* being executed 2*n* + 1 times.

The discussion above assumes that the last command needs to be repeated exactly. Instead, you may wish to execute a different command on the same text. Jump to the line of the last change with the *Normal* mode command `'.`, then make that change.

Changing the Case of Text

Problem

You want to change the case of a character or block of text. For example, you may want to change *bob* to *Bob*.

Solution

`~`

Toggles the case of the current character in Normal mode, or the selection in *Visual* mode.

`u`

Lowercases highlighted text. (Note: This only works in *Visual* mode; otherwise `u` will undo your last change).

`U`

Uppercases highlighted text. (Note: This only works in *Visual* mode; otherwise `U` will undo the changes made on the current line).

Discussion

As normal, these commands accept *motions*. For example:

`VU`

Uppercase current line.

`guw`

Lowercases current word.

To convert a string to *title case*, i.e. initial capitals, you can use the following regular expression: `s/\<\(\w\)\(\w*\)\>/\u\1\L\2/g`. Select the text you want to convert, hit `:`, then enter the regular expression. If you use this regularly, consider remapping a key to execute this command. For example:

```
nnoremap <F7> :s/\<\(\w\)\(\w*\)\>/\u\1\L\2/g<CR>
vnoremap <F7> :s/\%V\(\w\)\(\w*\)\%V/\u\1\L\2/g<CR>
```

Alternatively, you can install the titlecase plugin.

Sorting Text

Problem

You want to sort a selection of text or an entire whole file.

For example, if you've made a list of your books with one title per line, you'd like to organise it alphabetically.

Solution

Vim version 7 introduced a `:sort` command. So if you're using v7 or later you can sort an entire file using `:sort`.

You can find your Vim version number with the `:version` command. The first line of output contains the version number, e.g. `VIM - Vi IMproved 7.2 (2008 Aug 9, compiled Mar 19 2009 15:27:51)`, which indicates version 7.2.

If you're using an older version of Vim you'll need an external sort utility. Linux/UNIX users should already have `sort` installed. You can sort the entire file by executing `:!%sort`, which filters the file through the external `sort` utility.

To sort part of a file:

1. Select the area you're interested in.
2. Hit `:` and Vim will display `:'<,'>` which refers to your selection.
3. Type `!sort` (i.e. execute `:'<,'>!sort`).

DISCUSSION

Both methods above sort *lines* alphabetically. If you require a different type of sorting you need to pass options to the command.

If you're using Vim 7+:

`:sort!`

Reverses the sort order, i.e. sorts in descending order: z-a, 100-0.

`:sort` *`flags`*

The sort command can be followed by a series of flags which can be combined in any order:

`n`

Sorts by the first decimal number in the line.

`i`

Ignores case while sorting.

`u`

Deletes duplicate lines (keeps *u*nique lines).

`:sort` *`/pattern/`*

Ignore text matching *`pattern`* when sorting.

For example, the following table describes how the set of data in the *Original* column is transformed for the given invocations of `:sort`.

Original	**`:sort!`**	**`:sort in`**	**`:sort i /^./}`**
ant 1 zebra 12	ant 1 zebra 12	Dog 7 frog 11	Dog 7 frog 11
Dog 7 frog 11	fish 6 fish 6	fish 6	fish 6

cow	8	fish	6	Dog	7	ant	1
fish	6	cow	8	cow	8	Dog	7
frog	11	ant	1	frog	11	cow	8
zebra	12	Dog	7	zebra	12	frog	11

If you're using the external `sort` utility the options are similar. See `man sort` for the details. Common invocations are:

`%!sort -u`

Delete duplicate lines.

`%!sort -f`

Ignore case when sorting.

`%!sort -r`

Reverse sort order.

Executing External Commands

Problem

You want to run a program from within Vim, possibly having it operate on the current file.

For example, you want to view a list of the other files in your project by getting a listing of the current directory. Or you want to find mistakes in the essay you're working on by passing its filename to the `diction` utility.

Solution

Invoke the program using the `:!`*`program`* syntax. For example, to view a directory listing on a POSIX system: `:!ls`.

If you need to pass the current filename to the command as an argument, use the `%` wildcard. For example, executing `:!wc %` from `aristotle-essay.txt` executes `wc aristotle-essay.txt`.

⇨ Filename Modifiers

You can alter the filename represented by `%` by following the wildcard with a modifier. For example:

`%:p`

Makes the filename a full path.

`%:.`

Makes the filename relative to the current directory.

`%:t`

Removes any directories before the actual file name. For example `~/work/foo.txt` ⇒ `foo.txt`.

`%:e`

Removes everything except the filename extension. For example `~/work/foo.txt` ⇒ `txt`.

DISCUSSION

The concept is that Vim suspends itself, asks your system to execute the command, shows you its output, then, once the user presses `<Enter>`, returns you to Vim.

If you don't want to see the output of the command, you can execute it like this: `:silent` *`command`*. (To also hide any error output: `:silent!` *`command`*).

You can use `:redir >` *`file`* if you want to save the output of a command to a file. You first execute, say, `:redir > /tmp/output`, then `:!`*`command`*. The output for *`command`* will be saved in the file `/tmp/output`, and displayed on the screen. (You can combine `:silent` *`command`* and `:redir` *`file`* to redirect a command's output to a file without seeing it on screen). To stop output redirection execute `:redir END`.

You can use `:r!`*`command`* to execute *`command`* and read in its output to the current file. For example, if you're using a POSIX system, you can insert your kernel version with `:r!uname -v`.

MANAGING SESSIONS

PROBLEM

Every time you work on a project you need to manually open all of the files it comprises, readjust the window size, etc. You'd like Vim to do all this automatically.

SOLUTION

Use *sessions*.

To save a session: `:mksession`. Vim saves the session information as 'Session.vim' in the working directory; to specify your own filename execute `:mksession` *`file`* instead. To overwrite an existing session follow the command with an exclamation mark: `:mksession!`.

To restore a session invoke Vim with the `-S` flag from the same directory you saved `Session.vim` in: `vim -S`. If you used a different filename for your session: `vim -S` *`file`*. If you're already inside Vim, you can load a session by sourcing the session file, e.g. `:source Session.vim`.

DISCUSSION

Applications such as *Mozilla Firefox* use the concept of a global session file which is overwritten every time you use the program. To make Vim work this way you simply use a fixed name for the session variable. For example, you could save it to `$VIMHOME/Session.vim`. You could add a mapping something like this to your `vimrc`.

```
nmap SQ <ESC>:mksession! ~/vim/Session.vim<CR>:wqa<CR>
```

(SQ for *S*ession *Q*uit). To automatically restore this session when Vim is called without arguments add the following:

```
function! RestoreSession()
  if argc() == 0 "vim called without arguments
    execute 'source ~/.vim/Session.vim'
  end
endfunction
autocmd VimEnter * call RestoreSession()
```

You can extend this in arbitrary ways to suit your working environment. One approach is to only restore a session if it exists in the current file's directory. Another is to simply hardcode a list of directories whereby if they are the file's current directory or parent directory, their session file is used. This is useful for one-project-per-directory organisation.

If you don't just want one global session file, as described above, a more granular approach is suggested below:

```
nmap SSA :wa<CR>:mksession! ~/sessions/
nmap SO :wa<CR>:so ~/sessions/
```

*S*ession *S*ave *A*s saves the open files and prefills the command line with the command to save the current session in a `~/sessions/` directory. All you need to do is enter a name and hit `<Enter>`.

*S*ession *O*pen also saves the open files, then prefills the command line with the command to load a session file. Just type the name of the session you want to load and hit `<Enter>`.

You can use `<Tab>` completion in both cases. For example, you could save a session with `SSAwork<Enter>`. Later, when you want to restore the session but can't recall its name, just hit `SO<Tab>` to cycle through the saved sessions.

(Both mappings assume the `~/sessions/` directory already exists; create it if it doesn't).

Yuri Klubakov's `sessionman` plugin provides a more polished approach for session management, subsuming the functionality described above.

Formatting with an External Program

Problem

You want to reformat text with a program other than Vim. For example, you want to use the W3C's 'tidy' utility to format HTML.

Solution

Set the `equalprg` option to the name of the program you want to use, along with any arguments it should be passed. For example:

```
:set equalprg=tidy\ -indent\ -q
```

You can now select the text you want to format, then hit =. You can reformat the entire file with 1G=G.

Discussion

The formatter that you use depends on the type of content you are producing. Here are a couple of suggestions of programs to use for specific file types:

Text

If you want to format normal text using an external program, `par` is a popular choice. It can wrap, align, justify, and quote text in every conceivable way, and many more aside.

HTML/XHTML

Use *HTML Tidy*. You can specify options on the command line, as shown in the example above. If you want to specify a lot of options, put them into a config file, and point `tidy` to it: `tidy --config file`. At a minimum you probably want to use:

```
:setlocal equalprg=tidy\ -utf8\ -indent\ -q\ -f\ /tmp/err
```

Then you can reformat your file with 1G=G. One caveat is that this won't work correctly for reformatting a specific section of the file. You can use the `--show-body-only true` option if you want to be able to do this, but like many formatters of markup languages, Tidy doesn't perform as well on fragments because of lack of context.

XML

HTML Tidy can be used to format XML as well by passing it the `-xml` option. Alternatively, you can use `xmllint`:

```
:set equalprg=xmllint\ --format\ -
```

Working with Different File Formats

Problem

You're editing a file created on a different operating system, so need to change its line endings. Or, you wish to convert a file to use different line endings, perhaps because a tool expects them that way.

Solution

Specify the desired file format with `:set ff=`*`format`*, where *`format`* is *dos* for Microsoft Windows/DOS files, *unix* for Unix/Linux, or *mac* for Apple Mac. As usual, you must then save the file to make the changes permanent: `:up`.

Discussion

Different operating systems have different notions of what constitutes a line in a text file. Specifically, they disagree on the control character that terminates a line. Unix/Linux uses a line feed (LF), Microsoft Windows uses a carriage return followed by a line feed (CRLF), and the Mac uses a carriage return (CR). This would be a matter of pedantry were it not for users of different operating systems sharing files.

Luckily, Vim handles this situation transparently most of the time. When a file is loaded, its format is guessed, and `&ff` is set appropriately. If Vim guesses incorrectly, you can insist on a specific file format with `:e ++ff=`*`format`*, thus forcing the file to convert to the given format.

The above assumes that a file's line endings are at least consistent. That is, each line ends with the same character(s). If your file is mangled (some lines ending with CR, some with LF, for

example) you will likely see stray control characters such as `^J` or `^M` peppered throughout. This can be fixed with search and replace: `:%s/\r//`. Lastly, if you have some Mac line endings with `dos`/`unix` or Unix/Linux line endings with `mac`, use `:%s/\r/\r/g`.

TYPING

Spell Checking

Problem

You want Vim to highlight misspelled words and suggest alternatives.

Solution

To enable spell checking you first need to ensure that Vim knows which language you're typing in. If you execute `:echo &spelllang` you'll see the language code that Vim thinks applies. For instance *en*. To change this use `:set spelllang=`*`code`*. For example, I use `:set spelllang=en_GB.UTF-8`.

If you're spell checking in American English, you should already have the dictionary installed. Otherwise, Vim should prompt you to download it. If you're not and it doesn't, see the *Getting Dictionaries* sidebar of Auto-Completing Text.

To highlight spelling errors just execute `:set spell`. To remove the highlighting: `:set nospell`.

Discussion

Spelling errors are highlighted in one of four colours depending on the type of error:

- Word is not in the dictionary.
- Word is in the dictionary but not capitalised.
- Word is classed as 'rare'.
- Word is spelled incorrectly for this region. For instance, *color* in British English.

You can jump to the next spelling error after the cursor `]s` and jump backwards with `[s`. Similarly, you can use `]S` and `[S` to only jump between words not in the dictionary (i.e. rare, and region-specific misspellings are skipped).

Once the spelling errors are highlighted, you presumably want to correct them. If you hit `z=` over a misspelled word you'll be presented with a list of suggested spellings. Enter the number corresponding to the correct spelling and hit `<Enter>`.

If a correctly spelled word is highlighted as an error, you can add it to your personal dictionary with `zg`. This prevents it from being marked as an error in the future.

Conversely, if an incorrectly spelled word isn't highlighted, you can add it to the *bad word* list with `zw`.

USING TEMPLATES

PROBLEM

You create documents containing boilerplate text and would like to avoid typing it.

For instance, you write HTML documents and don't want to type the standard preamble every time.

SOLUTION

Use templates and associate them with a file extension. When a new file is created with an extension for which a template is available, the template contents will be inserted.

You must first create a skeleton document, e.g.:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
    "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://www.w3.org/MarkUp/SCHEMA/xhtml11.xsd"
    xml:lang="en">
    <head>
      <title>Document Title</title>
    </head>
    <body></body>
</html>
```

Save this document in your Vim directory with the corresponding file extension, e.g. `~/.vim/skel/tmpl.html`. (You may also want to make this file read only so you don't modify it by mistake).

Add the following to your `.vimrc`:

```
autocmd! BufNewFile * silent! 0r ~/.vim/skel/tmpl.%:e
```

Now, every time you open a new file Vim checks `~/.vim/skel/` for a file whose name starts with `tmpl.` and ends with the extension of the file you're creating. It then reads the template file into your new file's buffer.

For example, if you added the template above then invoked Vim with `vim page.html`, the XHTML above would be inserted into the `page.html` file automatically.

Discussion

Once you have created a document from a template you have to insert text at various predefined positions. For instance, for the XHTML template, you have to change the contents of `<title>…</title>`, then start typing between the `<body>…</body>` tags. Navigating between these points in the document, which are the same every time you use the template, is cumbersome.

The traditional solution is to use placeholders. This involves including some notation in the template file that indicates where your input is required, then providing a method to jump between them.

Here's the previous template with placeholders added:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
```

```
    "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://www.w3.org/MarkUp/SCHEMA/xhtml11.xsd"
    xml:lang="en">
    <head>
      <title>%TITLE%</title>
    </head>
    <body>%BODY%</body>
</html>
```

The placeholder notation is arbitrary, but let's stick with `%VARIABLE%` for the sake of example. Now we need a way to jump between them, and `<Ctrl>-p` (menmonic: *p*laceholder) seems reasonable. While we're at it, we'll define a function (`LoadTemplate()`) to replace the `autocmd` line we added earlier. Add the following to your `vimrc`:

```
function! LoadTemplate()
  silent! 0r ~/.vim/skel/tmpl.%:e
  " Highlight %VAR% placeholders with the Todo colour group
  syn match Todo "%\u\+%" containedIn=ALL
endfunction
autocmd! BufNewFile * call LoadTemplate()
"Jump between %VAR% placeholders in Normal mode with
" <Ctrl-p>
nnoremap <c-p> /%\u.\{-1,}%<cr>c/%/e<cr>
"Jump between %VAR% placeholders in Insert mode with
" <Ctrl-p>
inoremap <c-p> <ESC>/%\u.\{-1,}%<cr>c/%/e<cr>
```

If we create a new HTML file now this is what we see:

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4 <html xmlns="http://www.w3.org/1999/xhtml"
5     xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
6     xsi:schemaLocation="http://www.w3.org/MarkUp/SCHEMA/xhtml11.xsd"
7     xml:lang="en">
8     <head>
9       <title>%TITLE%</title>
10    </head>
11    <body>%BODY%</body>
12 </html>
```

See below for ways to automatically jump to the placeholders and for inserting smaller code fragments by using snippets.

UNDOING MISTAKES

PROBLEM

You've made a mistake while editing and you'd like to revert it. Or, worse, you've made a mistake while reverting a mistake, and you'd like to revert that.

For example, you've just deleted the paragraphs containing, subject to peer review, the cure for cancer. You'd kinda' like to retrieve it, and pretend the whole situation had never occurred.

SOLUTION

Use the *undo* feature. Hit `u` in *Normal* mode or `:u` in *Command* mode. You can undo all recent changes on the current line with `U`. To undo multiple times either repeat the command or prefix it with a digit indicating the number of times. For example, to undo the previous change and the one before that: `uu`.

To redo a change that was undone use `<Ctrl>+R` or `:redo`.

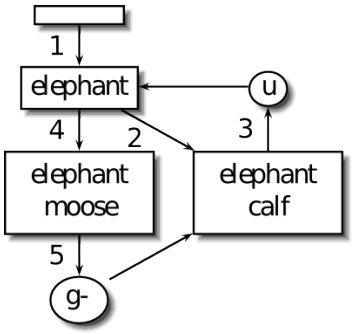
You can also jump backwards and forwards through your edits by time. To return to how your file looked 1 hour ago use `:earlier 1h`, then travel forward 20 minutes with `:later 20m`.

DISCUSSION

The undo/redo behaviour described above should be familiar to most users as it mirrors that of many other applications. Vim, however, extends this concept into the idea of *undo branches*.

Imagine you opened a new file and entered *elephant*. You then entered *calf* on a new line and hit u. This undid the addition of *calf* so now your file just contains the word *elephant*. Next you entered *moose*. If you hit u again you'd undo *moose* and get back to *elephant*. No matter how many times you do this you'd never get the *calf* back (which is unacceptable; elephant calves are particularly photogenic) because you made an edit after undoing (by adding *moose*).

Undo branches to the rescue. Hit g- and your file will now contain *elephant* then *calf*. Here are the events represented diagramatically:



Vim implicitly created an undo branch each time you hit u. The branch represents the state of the file before you undid. g- (and g+ to move forwards) moves between these branches.

AUTO-COMPLETING TEXT

PROBLEM

You want to be able to type the start of a word and then have Vim complete it. For example, you want to type *multip*, be offered suggestions for words that start that way, then pick one.

SOLUTION

To auto-complete a word Vim needs a list of possible words. An obvious source is the current file(s). If your file already contains the word *multiplicand*, then Vim can use it to auto-complete *multip*. Simply hit `<Ctrl>+n` after the *p* to complete the word. If multiple matches are found you'll be presented with a list from which to choose from.

Another source of words is a dictionary. Get one, using the sidebar for reference, then point Vim to it with `:set dictionary=`*`file`*. Then add the dictionary to list of places Vim looks for words: `:set complete+=k`. The `'complete'` options controls where Vim looks for possible matches.

⇨ Getting Dictionaries

If you specify your language with `:set spelllang=`*`lang-code`*, e.g. `:set spelllang=it` for Italian, Vim *should* automatically download the correct dictionary for you and set it up. If this doesn't work for you see `:help spell` and `vim/runtime/spell/README.txt`.

Auto-complete can also be used to lookup synonyms for the current word. Get a thesaurus file, then instruct Vim to use it with `:set thesaurus=file`, `:set complete+=s`.

`<Ctrl>-x <Ctrl>-f` searches for the filename that starts with the text before the cursor. If one is found, it is inserted before the cursor. If multiple filenames are found, a drop down list is displayed to choose between them.

 Eric Van Dewoestine's `SuperTab` plugin lets you use the `<Tab>` key to auto-complete text. You select the type of completion that you want using `:SuperTabHelp`, then just hit `<Tab>` after a word to see a drop-down menu of completion choices.

DISCUSSION

Vim can use pretty much any word source imaginable. Consult `:help ins-completion` for more details.

Vim version 7 and above supports *Omni-Completion*, which allows custom functions to generate possible completions dynamically. Even better, for programmers at least, is that some popular programming languages already have Omni-Completion functions which are enabled automatically. These typically allow context-sensitive completion of method names, objects, and reserved words. For example, using Ruby I can type an integer, a period, then invoke Omni-Completion to find that *Fixnum* objects support methods such as `%`, `*`, and `+`.

Languages that don't have *Omni-Complete* functions available can use their syntax highlighting definitions to achieve a similar affect. The Vim documentation suggests adding the following stanza to your `vimrc`, after any `:filetype` command, to enable *Omni-Completion* using the best available method:

```
if has("autocmd") && exists("+omnifunc")
  autocmd Filetype *
    \   if &omnifunc == "" |
    \     setlocal omnifunc=syntaxcomplete#Complete |
    \   endif
endif
```

To use Omni-Completion hit `Ctrl+x Ctrl+o` to be presented with a list of choices for the text behind the cursor.

Apart from programming languages, Omni-Completion also works for HTML and CSS. For example, you can type `<p cl`, `Ctrlx Ctrl+o`, then be shown `class=" CDATA`, `onclick=" Script`, and `ondblclick=" Script`.

Abbreviating Common Strings

Problem

You regularly have to enter the same text, but don't want to.

For instance, if you use Vim to write e-mail you may often mention the URL of your website. Instead of typing `http://example.com/` every time, which is both annoying and error prone, you want to enter, say, *myUrl* and have it replaced with the address.

Solution

Use Vim's abbreviations feature to map concise abbreviations to frequently entered text.

To create the aforementioned abbreviation we use the `:iabbrev` command: `:iabbrev myUrl http://example.com/`. To use it, type the name of the abbreviation (*myUrl* in this case) and then hit `<Space>` or `<Enter>`. The name of the abbreviation is replaced with its payload.

The syntax for defining abbreviations is `:iabbrev` *`name payload`*, where *`name`* is the text you want replaced, and *`payload`* is what it should be replaced with.

Discussion

The abbreviation feature is smart enough not to expand abbreviation names that occur as part of another word, but its telepathic functionality is suboptimal. Useful abbreviation names are easy to type, but will not appear in normal text. The convention I use is to prefix them with *my*, then uppercase the first letter. (If you use a programming language that prefers

"camelCased" variable names, you may see clashes. Either stop using Java®, or disable abbreviations for the source code.)

You can also abbreviate commands. For instance, if you wanted to type `:docs` instead of `:help` you could map one to the other with `:cabbr docs help`.

I suggest keeping your abbreviations in an *abbreviations* file in `$VIM`. You can then source it from your *vimrc*. For example, you can create the file by running `vim $VIM/abbreviations`, then populate it with your abbreviations:

```
iabbrev myUrl http://example.com/
iabbrev myEmail user@example.com
```

Then in `vimrc` just write `source $VIM/abbreviations`.

Inserting Accented or "Foreign" Characters

Problem

You want to type characters which don't exist on your keyboard.

For example, you want to type some words in another language, so need to insert accented characters. Or you want to type a symbol such as ±.

Solution

If you haven't already, set up Vim to use UTF-8 by following the sidebar. It makes this process far easier.

⇨ Enabling UTF-8 Support

Vim uses the encoding specified by the user's environment. On Linux this is set with the `$LANG` variable. To override this use `:set encoding=utf-8`.

If you're using Vim from a terminal your terminal software must also be configured to use UTF-8. Instructions for that are outside the scope of this recipe.

When editing files their current encoding is maintained, so if you opened a file in *ISO-8859-2*, your changes would be written in that encoding. To force UTF-8 for all files use `:set encoding=utf-8 fileencodings=`.

To insert an accented character you press <Ctrl>-K, the unadorned character, then another character indicating the accent type. This method can also be used to produce translations of characters in a given script.

For example, to insert an e acute (the last letter in *café*) you hold down <Ctrl>-K, type *e*, then type an apostrophe (').

The following table shows the different types of characters you can produce:

Character	Meaning
!	Grave
'	Acute accent
>	Circumflex accent
?	Tilde
-	Macron
(	Breve
.	Dot above
:	Diaeresis
,	Cedilla
_	Underline
/	Stroke
"	Double acute (Hungarumlaut)
;	Ogonek
<	Caron
0	Ring above
2	Hook
9	Horn
=	Cyrillic

*	Greek
%	Greek/Cyrillic special
+	Smalls: Arabic, caps: Hebrew
3	Some Latin/Greek/Cyrillic
4	Bopomofo
5	Hiragana
6	Katakana

Discussion

This method of input is most suitable for occasionally typing unusual characters. For regular use, Vim supports most input methods. See `:help keymap` and `:help termencoding` for more details.

Vim refers to printable, non-ASCII characters as *digraphs*. A list of digraphs available on your system can be obtained with the command `:digraphs`. The output may appear chaotic, but that's mainly because it's so dense. It lists, in columns, the character's internal name, the literal character, and the character code in decimal.

You can also insert characters using their character code. If you're one of the slackers who haven't memorised the Unicode specification yet, you can use the `:digraphs` command, or any other reference, to lookup the code. Hit `<Ctrl>-V`, then type the code in either hexadecimal or decimal. Continuing the above example of producing *é*, you could enter either `<Ctrl>-V xe9` or `<Ctrl>-V 233`.

The internal name `:digraphs` lists corresponds with the shortcut table above. That is to say, the internal name for *é* is *e'*. Thus, we can generalise the `<Ctrl>-K` approach for any character we know the name of. For example, to produce the *±* sign you hit `<Ctrl>-K-+-`.

Opening the File Name Beneath the Cursor

Problem

You have a file name under your cursor and would like Vim to open it.

For example, program source code often references other files from which it includes functionality. You want to quickly open such a file.

Solution

Position your cursor over a file name then hit `gf` (mnemonic: *g*o to *f*ile or *g*et *f*ile) in *Normal* mode. For example, consider a file like the following:

```
Edit your ~/.vimrc by opening it with Vim, then...
```

If your cursor was anywhere over `~/.vimrc`, `gf` would try to open your Vim configuration file. (This assumes that you're using Linux where `~` is shorthand for the user's home directory).

Vim doesn't care if the word under the cursor looks like a filename, so if your cursor was over the word *your*, instead, it would try to open a file named `your` in your path.

Your *path* is a list of directories in which Vim searches for the named file. To see what it's currently set to execute `:echo &path`. The path is a comma-separated list of directories, some of which have special significance:

`.`

The directory containing the current file.

`;`

A path that ends with a semicolon is searched recursively, up the directory hierarchy. For example `/usr/share/doc;` means to first search in `/usr/share/doc`, then `/usr/share/`, then `/usr/`, then `/`.

`*`

A path that ends in an asterisk is searched recursively downwards. For example, `/home/kate/*` would search all of user *kate*'s home directory.

I like `gf` to search recursively downwards from the current directory so I append `./**` to my path like so: `:set path+=./**`.

DISCUSSION

This feature has a surprising amount of uses for something so basic. I use it when:

- Log files are referenced in e-mail alerts.
- To open files referenced in my version control system's commit e-mails.
- When outlining[11] a project that consists of multiple files. Each level of outline links to the relevant file.
- To view source code for external modules when writing source code.

Vim also lets you follow URLs in this way, so you can `gf` on `http://example.com/`, to open the HTML in Vim, or `sftp://example.com/README` to connect to *example.com* via SFTP, fetch `README`, then open it for editing in Vim.

11. The *Indentation Folding* sidebar in Manually Creating Folds describes one approach to outlining in Vim

By default `gf` opens the file in the same window. To open it in a new tab use `<Ctrl>w+gf`. To make this behaviour the default consider a key remap: `:nnoremap gf <C-W>gf`.

If your filename is followed by a line number, e.g. *foo.txt:10* you can jump to the given line with `gF`.

If the filename you use `gf` on doesn't exist, Vim complains. I don't use `gF` so I have remapped it to create the given file: `:nnoremap gF :view <cfile><cr>`.

Inserting the Date

Problem

You're typing a document and want to insert the current date.

For example, you're composing a letter and want to include today's date at the top.

Solution

Use `!!date` in Normal mode.

Discussion

The `!!`*command* syntax executes *command* and replaces the current line with the output.[12]. To control where the date is inserted see the following paragraphs.

A similar same effect can be achieved with `:r!date`. The advantage is that it inserts the output of `date` on the next line, rather than replacing the current one.

The solutions above assume that you have a `date` executable in your `PATH`, as all UNIX-based systems should. I understand that Windows users have to use `!!date /t`.

Alternatively, you can call Vim's `strftime()` function, e.g. `strftime("%c")`. This will work on all systems which support the `strftime` system call, which I believe is the majority.

---

12. This is in fact an oversimplification. *count*`!!`*command* actually filters *count* lines through *command* and returns the result, but when *count* is omitted, it has the effect I've described. This is why the text on the current line is *replaced* with the date.

You can map this function to a function key. For example, the following commands map <F7> to insert a date stamp after the cursor.

```
:inoremap <F7> <C-R>=strftime("%c")<CR>
:nnoremap <F7> "=strftime("%c")<CR>p
```

I suggest the use of `!!date` because it doesn't waste a function key, and, personally, I find it more memorable. If you intend to insert dates regularly, by all means remap a key to do so.

Inserting Snippets

Problem

You repeatedly type the same constructs, so want to expedite the process by typing a few letters then have Vim produce the boilerplate text.

For example, to enter a HTML `<table>` you want to type `table<Tab>` then have Vim produce:

```
<table border=" ">
    <tr><th> </th></tr>
    <tr><h> </th></tr>
  </table>
```

Solution

Use Michael Sanders' snipMate plugin, which provides a subset of the snippets feature of the *Textmate*. editor.

Follow the installation instructions on the script page, then open a HTML document with Vim, e.g. `vim test.html`. Type `table<Tab>`. The `<table>` given above should be inserted into your document.

In the above example, *table* is the *trigger*, the text you type, and the resultant HTML is the *snippet*, the text that is inserted after typing *`trigger`*`<Tab>`.

snipMate is distributed with a collection of snippets for common file types. To see a list of snippets available for the current buffer execute `<Ctrl>-R <Tab>`. To write your own see `:help snipMate`.

Several *snipMate* users have made their snippets available on GitHub.com:

- Scala snippets by Tyler Weir.
- Ruby, Ruby on Rails, jQuery, rSpec, etc. snippets by Martin Grenfell and Travis Jeffery.
- A general collection by Ron Damen.

DISCUSSION

The power of *snipMate* comes from how it lets you navigate the snippet once inserted. Consider again the `<table>` example:

```
<table border="1">
    <tr><th>2</th></tr>
    <tr><h>3</th></tr>
  </table>4
```

The numbers, e.g. *1*, in the above output represent *tab stops*: the positions where the n^{th} <Tab> after the trigger will move the cursor to. So, the user types `table`<Tab> to insert the snippet. His cursor is placed in position *1* so he can enter the border size. He then hits <Tab> again to position his cursor in *2* so he can enter the name of the header for the first row. And so on.

Some constructs require user-entered text to appear multiple times. For instance, HTML authors may want to enter an `<option>` element like the following:

```
<option value="placeholder">placeholder</option>
```

In this example, *placeholder* is placeholder text that needs to be entered twice. *snipMate* lets you enter the text in `value="`*placeholder*`">`, and have it copied into `>`*placeholder*`<` as you type.

To learn more about *snipMate* and its features see `:help snipMate`.

There is also a similar snippet engine called XPTemplate.

⇨ Comparison of Techniques to Auto-Complete Text

We have discussed various approaches to automatically inserting text in this chapter, so let us recap[13].

Templates can be used to associate a skeleton document with a file extension, whereby opening a file whose name ends with that extension causes the skeleton document to be inserted into the buffer. The advantage of this approach is that it doesn't require the installation of any plugins, but other than that *snipMate* can be used to achieve the same effect. For example, *SnipMate* has a trigger named *docx* which inserts the XHTML 1.1 doctype:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
    "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
```

This can trivially be adapted to insert whatever boilerplate HTML you desire.

Abbreviations can be used to replace a piece of text with another piece of text after pressing <Tab>. They differ from snippets in two key respects. Abbreviations are typically defined globally, whereas snippets are defined for specific filetypes. For instance, a trigger of `for` could

13. The forthcoming is intentionally opinionated and simplified because a detailed analysis of every possibility is beyond the scope of this book. That said, if there are any factual errors, please let me know.

insert a C *for* loop when editing C source code, or a Ruby *for* loop when editing Ruby code. More importantly, snippets have the notion of placeholders that can be tabbed between. In general, snippets can do everything abbreviations can, and more.

Insert-mode auto-completion can auto-complete text based on what has already been typed or the grammar of the current file type. For instance, you can auto-complete a variable name that you have declared previously, or a language keyword. This form of auto-completion augments *snipMate*: use the former to complete unique definitions and names in the current file, and those that it includes; use the latter to complete pre-defined snippets. Where the two's functionalities overlap, *snipMate* has a simpler interface (type a trigger, hit <Tab>), and is, arguably, easier to configure.

NAVIGATION

NAVIGATING TEXT FILES

PROBLEM

You're editing a text file such an essay or e-mail, and want to exploit its structure to navigate it efficiently.

SOLUTION

In *Normal* mode you can use the following shortcuts:

Key	Move To
{	Beginning of current paragraph
}	End of current paragraph
(	Beginning of current sentence
)	End of current sentence
w	Beginning of next word
b	Beginning of the previous word
e	End of the word

DISCUSSION

The shortcuts above all rely on the fact that plain text is often very structured. A document consists of paragraphs separated by newlines. Paragraphs contain one or more sentences which begin with capital letters and end with periods. Sentences are collections of words which are separated by spaces.

After using one of these shortcuts you may want to return to where you were previously. This is particularly useful if you're writing one thing and are then reminded that you now have to change another: you use a shortcut to jump to the location of the change, then want to resume where you left of. You can use the `g,` (mnemonic: *g*o back to where I paused (commas can be used to represent pauses…)) command. Each time you execute it you'll be taken back another step. To move in the other direction (towards more recent changes), use `g;`.

All of these shortcuts can be combined. So, to move to the end of the previous word you type `be`. You can also prefix them with numbers to indicate how many times they should be executed: `3b` moves to the beginning of the 3rd previous word.

NAVIGATING SOURCE CODE

PROBLEM

You're editing the source code for a computer program, and want to navigate it efficiently.

SOLUTION

The commands below allow movement around source code in the context of typical constructs. For instance, **%** finds the end of the `if`/`elsif`/`else` block, or a comment, your cursor is over, and moves you to the end of it.

Key	Move To
%	End of construct [14]
[[	Backwards to the beginning of the current function.
] [	Forwards to the beginning of the current function.
] }	Beginning of the current block.
[{	End of the current block.
} [	Beginning of the current comment block.
}]	End of the current comment block.
gd	First usage of the current variable name [15]. (Mnemonic: *g*o to *d*efinition).
gD	Go to the first *global* [16] usage of the current variable name.

14. A construct is a bracket pair, an `if`/`elsif`/`else` block, or a comment. For example, if you hit **%** on an opening bracket you'd jump to the corresponding closing bracket. See `:help %` for more details.

15. Occurrences in comments are ignored.

16. **gd** looks for the definition closest to your current position, thus respecting the lexical scoping rules of many languages. **gD** starts searching from the first line of the file, so prefers variables with a global scope.

Discussion

The shortcuts available for text files are supported for source code, too, so review them if you haven't already.

There's a lot to remember here. Despite my best efforts, I suspect that the descriptions above are still confusing. To understand these shortcuts you really need to try them yourself. Open some source code written in your favourite language with Vim, make sure that syntax highlighting is on (`:syntax on`), and bounce back and forth between those braces.

Navigating the Viewport

Problem

You want to scroll through a document in *screenfulls*; not line by line.

Solution

Command	Scroll To
`H`	Top of the screen. (Mnemonic: *H*ome).
`L`	Bottom of the screen. (Mnemonic: *L*ower).
`M`	Middle of the screen. (Mnemonic: *M*iddle).
`gg`	Top of file.
`G`	Bottom of file.

Discussion

If your file is longer than the height of your window, you'll need a way of scrolling the portion that appears on the screen.

The area of the screen displaying a file is called the *viewport*. As we scroll down the document using `j`, the viewport updates to hide the line at the top, and show a new one at the bottom. Scrolling through a long document this way is inefficient and unhealthy for our fingers. Instead we can scroll one screenfull at a time, which severely reduces the amount of key presses involved.

Navigating Buffers

Problem

You have multiple files open and want to navigate between them.

Solution

Buffers allow you to have a collection of files open with only one displayed at a time. They are particularly useful for processing a set of files sequentially, whereby you operate on one file, then switch to the buffer containing the next. If you'd rather have the open files listed along the top of the screen, consider using *tabs* instead.

Command	Result
`:buffers`	
`:ls`	View the list of buffers along with their numbers.
`:files`	
`:buffer` *N*	Open buffer *N*.
`:bn[ext]`	Go to the next buffer. (Menmonic: *b*uffer *next*).
`:bp[revious]`	Go to the previous buffer. (Mnemonic: *b*uffer *previous*).
`:bf[irst]`	Go to the first buffer.
`:bl[ast]`	Go to the last buffer.
`:ba[ll]`	Open all the buffers in the buffer list. (Mnemonic: *b*uffer *all*, or have a *ball*, go crazy and open them all at once).

DISCUSSION

To quickly navigate between buffers its common to map `:bnext` and/or `:bprev` to a key. For example `map <F6> :bn<CR>` lets you hit <F6> to cycle through the open buffers.

You can also switch buffers very quickly by using `:buffer` (and its shortcut `:b`). It supports (partial) file matching thus if you have first.txt and second.txt loaded you can use `:b fir` (or even just `:b f`) to switch to first.txt.

Navigating Tabs

Problem

You want to group your windows into multiple, logical groups.

When you have a lot of open windows/buffers it can be tricky to navigate between them. Often it makes more sense to group them into logical *tabs*, so you can switch between them easier, and operate on them as a group.

For example, if you were using Vim to edit a website, you may have your CSS files open in one tab, the HTML files in another, and a HTML reference guide in the third.

Solution

Use *tabs*.

Command	Action
`:tabedit` *`[file]`*	Open a new tab. If the optional file is supplied, that file is opened in the new tab.
`:tabclose`	Close the current tab.
`:tabnext` *n* *n*`gt`	Go to next tab, or the n^{th}
`:tabs`	Show a list of the open tabs.
`:tabprevious` *n* *n*`gT`	Go to previous tab, or the n^{th}
`:tabdo` *cmd*	Executes *cmd* in each open tab, aborting on the first error.

DISCUSSION

You can use Vim's tabs like those in Firefox® and Opera®, by opening one file in each tab, then switching between them. Vim enables you to extend this concept, however, by allowing multiple files to be opened in the same tab.

When you open a tab, a *tabline* appears along the top of the screen, which lists the open tabs. In GVim you can switch to another tab, close existing tabs, and open new tabs, by clicking the tabline with the mouse.

You can either cycle through open tabs using `gt`, or go directly to a specific tab by prefixing `gt` with its number. Tabs are numbered starting with 1, so to switch to the 3rd tab on the tabline, say, you'd use `3gt`. If you have a lot of tabs, their numbers may not be obvious. In this case, use `:tabs` to find them.

The power of tabs comes from executing commands on the windows they contain as a logical group. Continuing the above example, this would let you perform a search and replace all HTML files. For example, if you were in the HTML tab, you could say `:tabdo s/<foo>/<bar>/g`, and all of your HTML files would have their <foo>s replaced with <bar>s.

MANUALLY CREATING FOLDS

PROBLEM

You want to *fold* a file, then navigate it in *outline* mode.

SOLUTION

Enabling Folding

Folding is very likely already enabled in your Vim. If not, check it has been compiled with the *+folding* option, and that `foldenable` is true, i.e. `:set foldenable`.

Use Vim's *folding* feature to treat a file hierarchically, expanding and collapsing its sections as necessary.

Fold commands start with *z*. Vim's help makes the spurious case that this, kinda', if you squint, looks like a *fold*ed piece of paper.

Command	Action
`zf`	Fold the selected text.
`zf#j`	Create a fold from the cursor down *#* lines.
`zf/`*`string`*	Create a fold from the cursor to *`string`*.
`zfa`*B*	Fold the current block delimited by bracket *B*[17]

17. *B* can be any of `()[]{}<>`. This feature understands nested blocks, too, so will usually do the right thing.

For instance, `zf4j` creates a fold from the current line to the forth line down. Or, if you've selected text in Visual mode, then `zf` will fold the selection.

DISCUSSION

How you use folds will depend very much on the type of file you are editing. They are particularly useful for long papers or essays, for instance, where you fold each section so as to navigate the document hierarchically. When editing program source code they can be used with function/method/class declarations.

This recipe is entitled *Manually* Creating Folds, because there are other approaches to folding which are automatic. A particularly useful method, indentation folding, is described below. In addition, most programming languages support *syntax* folding. Try it out by opening some source code in Vim then executing `:set foldmethod=syntax`.

⇨ Indentation Folding

If you're working with structured, indented text you may prefer to use indentation folding.

Enable it with `:set foldmethod=indent`. Folds are now automatically created for each level of indented text. (To indent simply start a line with a <Tab>[18] So, for example, `zM` folds all indented text.

To expand, collapse, and otherwise navigate folds see Navigating Folds.

18. Each `shiftwidth` of indent corresponds to one fold. See the Indenting Lines recipe for details.

Navigating Folds

Problem

Your document contains *folds* and you want to use them for navigation. (To create folds see *Manually Creating Folds*).

Solution

Command	Action	Mnemonic
`zc`	Close the current fold.	*c*lose fold
`zo`	Open the current fold.	*o*pen fold
`zM`	Close all folds.	fold *M*ore
`zr`	Open one level of folds.	*r*educe folding
`zR`	Open all folds.	*R*educe folding
`zj`	Move to the next fold.	`j` moves to the *next* line
`zk`	Move to the previous fold.	`k` moves to the *previous* line
`zm`	Close one level of folds.	Fold *m*ore
`zn`	Disable folding.	*n*o folds
`zN`	Re-enable folding.	*N* is *n* toggled

Discussion

You can use `zM` to achieve a birds-eye view of the file, which can be useful when you're writing a long book and forget how the recipe you're currently writing relates to…

Vim treats folds like individual lines, so `j` and `k` move over one fold at a time. Further, you can yank/delete[19] a fold as if it was a single line.

19. *yank* is Vim terminology for copying text to the clipboard; see *Copying, Cutting, and Pasting*.

By default, folds are forgotten when you edit another file. To save them use `:mkview`. Then, to restore them, use `:loadview`.

The `:set foldcolumn=`*W* command, where *W* is a integer width less than 13, displays a column along the left-hand side of the screen with information about the folds in the current file. It indicates whether the corresponding line is an open or closed fold (with `-` or *+*, respectively).

Splitting the Screen

Problem

You want to view multiple files at one time. Or, you want to view different positions in the same file at the same time.

For example, if you were editing source code in an unfamiliar programming language, you may want to have the documentation and source visible at the same time. Or, if you wanted to move text between multiple files, you could view the source and target file together.

Solution

Use Vim's *split screen* feature to divide the screen into multiple panes, each of which can display a file.

Command	Action
`:split` *`file`*	Splits the window horizontally.
`:vsplit` *`file`*	Splits the window vertically.

(If *`file`* is specified, that file is shown in the upper/left, as appropriate, pane; if not, both panes show the current file).

To move between windows you use `<Ctrl>-w` (mnemonic: *control w*indow). To move in a specific direction, add the relevant movement key. So, to move upwards: `<Ctrl>-w+k`.

To close the active window use `:q`, just as you would to close a window normally.

You can reduce/enlarge the size of the current window with `<Ctrl>-w+-` and `<Ctrl>-w++`, respectively. To specify the size of a window when you open it, prefix the `:split` command with the desired height/width in lines. For example, to show `README` in a window of 5 lines high: `:5 :split README`.

Discussion

The default behaviour of both `:split` and `:vsplit` is to show the current file twice. This is more useful than it may first sound.

When working with long documents it means that you can view the top and bottom of the file simultaneously. If you use *folding* you can use one window to display an outline of a document while editing a specific section in another. For example, when I'm working on reports I use `:30 :vsplit` to view the first and second level headings along the left of the screen, while editing the report in the main window.

By default the windows will scroll independently of each other. If you `:set scrollbind` before you split the screen the windows scroll together.

Navigating Marks

Problem

You want to *bookmark* specific points in a file so you can easily jump to them from elsewhere.

Solution

Use Vim's *marks* feature. A mark is a character in the range *a-zA-Z0-9*. It's represented in the examples below as *M*.

Command	Action
`m`*M*	Mark the current position as *M*.
`'`*M*	Jump to the first character of the line containing *M*.
`` `M ``	Jump to the position of mark *M*.

Discussion

Marks *0-9* are mainly for Vim's internal use, so ignore them. Marks *a-z* are only available in the current file, and are deleted when it is closed. Marks *A-Z* are available across multiple files. If your `.viminfo` file is available, as it usually will be, they persist across sessions.

Marks have a multitude of uses. I use them often when I have a section of a file that I need to keep referring to: I mark that section with `ma`, jump to it with `'a`, then return to where I was previously with ``` `` ```. I use them almost implicitly when formatting and filtering text to define the text that I want to edit.

The `:marks` command shows a list of marks you have set, which is useful for the kind of person who fully embraced the idea of marking anything and everything but was unable to remember the significance of all 52 marks he used.

Navigating Tags

Problem

You're working on a project where you need to jump between occurrences of significant keywords, which are possibly spread across multiple files.

For example, you're writing source code and want to be able to type a function name then quickly jump to where it was initially defined so you understand how it should be used. Then you want to return to where you were.

Solution

Use *tags*. Tags are similar to index entries in a book: significant terms are linked to the key places that they occur.

We will use a program called *Exuberant Ctags* to generate the tag list because it is compatible with popular programming languages such as C, C++, Java, Lisp, Perl, PHP, Python, and Ruby.

After you have installed Ctags you can generate a tag list for the current directory (and its sub-directories) with `ctags -R`. To only consider files in the current directory use `ctags *`. This will generate a tag list for source code in most common languages.

You can now open a source file from that directory and use the `:tag` *tag* command to jump to the definition of the tag. To look up the tag under the cursor use `<Ctrl>+]`. You can also auto-complete tag names by starting to type one then using `<Tab>` to cycle through the list of matching tags. To return to where you were before you jumped to a tag you use `<Ctrl>+t`.

DISCUSSION

So far, we have only described tags in terms of program source code, but they are by no means limited to this domain. The Vim help system uses tags extensively to allow navigation. When you use `:help` *`term`* you're actually looking up a tag in the documentation tag file. When you position your cursor over a highlighted entry in a help file, you use `<Ctrl>+]` to follow it. This is all possible because as long as you have a way of identifying significant terms in a file, you can generate a tags list for it. For example, here's an excerpt from the tags documentation:

```
                *tags-option*
The 'tags' option is a list of file names.  Each of these
files is searched for the tag.  This can be used to use a
different tags file than the default file "tags".  It can
also be used to access a common tags file.
```

The `tags-option` syntax is used for defining a tag. Elsewhere, the `|tags-option|` syntax is used for linking to a tag. You can use `:helptags` *`dir`* for generating a taglist for all `*.txt` files in the given directory which are marked up in this way.

However you generate it, the tag list is a static file, so it must be regenerated when your files change significantly. In programming projects, it is typical to update the tags file during the build process. For example, the `Makefile` could execute `ctags`.

Both invocations of `ctags` given above are very liberal in what they index. They search for all programming language source code in the specified directories, and incorporate all the tags found therein into a single tags file. To limit `ctags` to just Ruby source code, for example, you can use `ctags *.rb`. For more control over what files `ctags` considers, consult its documentation. On Linux: `man ctags`.

Once you have generated the tags file Vim needs to be able to find it. By default it looks for a file named `tags` in the current directory, but for projects which span multiple directories this is not always suitable. You can specify the location of the tags file using `:set tags=`*`file`*. Specify multiple tag files by separating the paths with commas. Instruct Vim to search for a tags file recursively with `:set tags=./tags;/`.

Using `<Ctrl>+]` to jump to a new tag takes you to a new buffer to show the results. If you'd rather see them in a new window use `<Ctrl>+W+]`, or `:stag` *`tag`*.

If you get dizzy after all this jumping around you can reacquaint yourself with where you've been by using the `:tags` command. This shows you which tags you've jumped to, and where you jumped to them from.

BOOKMARKING LINES WITH VISIBLE MARKERS (*SIGNS*)

PROBLEM

You want to assign visible marks to the margins of certain lines.

For example, you're using Vim as an IDE and want breakpoints to be clearly marked. Or, you want to label lines in need of editing with a question mark icon.

SOLUTION

Vim allows you to define a *sign* and then associate it with one or more lines of a file. It is displayed in the right-hand margin as a two-character string in the terminal, and an icon in Gvim.

Before you use a sign you must define it. For example:

```
:sign define fixme text=!! linehl=Todo texthl=Error icon=/path/to/todo.xpm
```

Let's break this down. We name the sign *fixme*, which is how we'll refer to it later. We specify that in the terminal the sign should be displayed as *!!*, and that in the GUI the icon stored at `/path/to/todo.xpm` should be used instead. The *linehl* argument defines the highlight group used for the entire line the sign is attached to; *texthl* defines the highlight group for the sign itself.

Now the sign is defined, presumably in `vimrc`, you can use it in any file. To attach the sign to a specific line you use:

```
:sign place id line=line name=name
file=file-path
```

For example:

```
:sign place 22 line=200 name=fixme file=/home/user/novel.txt
```

The *id* is arbitrary, but must be unique and numeric. The *name* is the same name you used when you defined the sign. The value of the *line* argument is the number of the line on which the sign should be attached. The *file* argument is the full path (no expansion is done) to a currently loaded file to which the sign should be attached. So, in the above example, two exclamation marks are inserted in the margin of the 200th line of `/home/user/novel.txt`.

Discussion

You only need to define signs once, so that's easy enough, but the syntax for placing signs is particularly unwieldy. Let's look at some alternative approaches.

You could place the following stanza in your `vimrc` so <F5> places the previously defined *fixme* sign on the current line of the current file:

```
function! SignFixme()
  execute(":sign place ".line(".")." line=".line(".")." name=fixme file=".expand("%:p"))
endfunction
map <F5> :call SignFixme()<CR>
```

Rather than placing signs manually, you may prefer to have them automatically placed on lines satisfying some criteria. The following stanza attaches the *fixme* sign to lines containing notes like *TODO: check for race conditions*. It operates on the current line or selection. So, you can select a range of lines, press <F6> then have your to-do list items flagged in the margin.

```
function! SignLines() range
  let n = a:firstline
  execute(":sign define fixme text=!! texthl=Todo")
  while n <= a:lastline
    if getline(n) =~ '\(TODO\|FIXME\)'
      execute(":sign place ".n." line=".n." name=fixme file=".expand("%:p"))
    endif
    let n = n + 1
  endwhile
endfunction
map <F6> :call SignLines()<CR>
```

GUI (GVIM)

CHANGING THE FONT

PROBLEM

You want to display the text in a different font.

For example, the current font isn't particularly readable, or is too large.

SOLUTION

Standard Vim uses the font from the terminal it is run under. Gvim, however, gives you full control over the font face and size.

The command `:set guifont` *`font-name`* changes the current font to *`font-name`*. The font name can be followed by a size. There are, unfortunately, some platform-specific differences at this point…

⇨ Specifying `guifont` in an Operating-System-Specific Manner

Linux

- The font name and size are space separated.
- Spaces and commas need to be backslash escaped.

For example: `:set guifont=Andale\ Mono\ 11`.

Mac

- The font name and size are colon separated.
- The size is prefixed with a `h`.
- Spaces and commas need to be backslash escaped.

For example: `:set guifont=Monaco:h11`.

Windows

- The font name and size are colon separated.
- The size is prefixed with a `h`.
- Spaces in font names can be replaced with underscores (_).

For example: `:set guifont=Andale_Mono:h11`.

DISCUSSION

To change the font you need to know its name. On most operating systems you can request a GUI font chooser with the command `:set guifont=*`. Linux users can also use the `xlsfonts` utility to see a list of available fonts.

If the font you've specified can not be found, Vim complains. To avoid this you can specify multiple fonts in order of preference with a comma separated list. The first valid font is loaded. For example: `:set guifont=Screen15,\ 7x13`. This approach is particularly useful if you use your Vim configuration on multiple computers, or if you simply want it to be portable.

Maximising Screen Space

Problem

The toolbar, menubar, and other GUI artifacts take up too much of your screen; you want to hide them.

Solution

Modify the *guioptions* variable. Gvim decides which elements of the GUI to display based on the value of *guioptions*. This is a series of letters, each of which refer to some specfic element. Some examples follow:

- `m` - Display a menu bar.
- `T` - Display a toolbar.
- `r` - Always display the right-hand scrollbar.
- `R` - Display the right-hand scrollbar if the window is split vertically.
- `l` - Always display left-hand scrollbar.
- `L` - Display the left-hand scrollbar if the window is split vertically.
- `b` - Display the horizontal scrollbar.

So, to hide the menu bar, toolbar, and scrollbars you could use `:set guioptions-=mTrlb`. To display a hidden element use *+=* instead, e.g. `:set guioptions+=T`.

Discussion

If you decide that you want to restore one or more of these elements you can simply execute `:set guioptions+=m`, for example. This can be cumbersome, however, as it requires you to remember the significance of each letter.

The following stanza in your `gvimrc` assigns `<F11>` to toggle the display of extraneous GUI elements:

```
function ToggleGUICruft()
  if &go==''
    exec('se go=mTrL')
  else
    exec('se go=')
  endif
endfunction
map <F11> <Esc>:call ToggleGUICruft()<cr>
```

Creating Menus and Toolbar Buttons

Problem

You want to add your own commands to Gvim's menus, or toolbar, for quick access.

For example, you've written a function that automatically writes bestselling novels for you, but you're not willing to use it if you have to type its name every time; you want to invoke it by selecting a menu option.

Solution

Use `:set amenu` *`menu command`* to map a menu item to a command. This is the GUI equivalent of `:map`.

For example, `:amenu Help.Op&ions :help options<cr>` adds a new item called *Options* to the *Help* menu, which invokes `:help options`. The ampersand (*&*) signifies that the character it prefixes can be used as a keyboard shortcut, so in this case `<Alt>+h+t` selects this command.

Discussion

You're not restricted to adding items to existing menus; you can create a new top-level menu simply by specifying a name not currently in use. For example:

```
:amenu <silent>&Vim.vim\.org :!xdg-open http://www.vim.org/<cr>
```

will create a new top-level menu called *Vim* with the shortcut key V. It will contain one entry named *vim.org* (we escape the . because otherwise it would create a *vim* entry which in turn contain an *org* item). When invoked it will open the Vim website on systems adhering to the *Free Desktop Specification*. The `<silent>` prefix prevents the command from being echoed on the command-line.

If you want to add a dashed separator line between menu items use a menu item named *-SEP-* and an empty command, e.g. `:amenu Help.-SEP- :`.

To control where a top-level menu appears relative to its neighbours you need to prefix `amenu` with a numeric priority: the lower the number the further right the menu's position. For example, `:5amenu First.first :echo 'first'<cr>` creates a top-level menu named *First* that appears before all of the others.

The same approach can be used to position menu items. For example, `:amenu 9999.1 Help.first :echo 'first'<cr>` adds a *first* item to the *Help* menu, which appears before the other items.

You can also use `:amenu` to add a new toolbar icon:

```
:amenu icon=image-path Toolbar.item-name
command
```

For example:

```
:amenu icon=options.png ToolBar.OptionsHelp :help<cr>
```

If the *image-path* consists only of a filename, as above, Vim prepends `$VIMRUNTIME/bitmaps/` to it.

SEARCHING

Searching for any Word

Problem

You want to search the current file for an arbitrary word.

Solution

Use `/word` to search forward in the file; `?word` to search backward.

Discussion

You can use incremental (*find-as-you-type*) search by using the `:set incsearch` option. Having done so, your cursor will move to the first match as you enter your query. This enables you to receive feedback on the effectiveness of your query. Once satisfied with your query, press `<Enter>` to run it. If you were interested more in the erratic cursor movement than searching, pressing `<Esc>` will cancel the search and return to where you began.

You're not limited to finding literal strings; *word* can also be a *regular expression*. For example `/^[A-Z]` searches for lines beginning with capital letters.

To repeat your search use `//` or `??`.

After finding the first match using either of the above methods, you can press the `n` (mnemonic: *n*ext match) key to jump to the next match. To jump to the previous match, use `N`.

Searching Over Multiple Files

Problem

You want to search for a particular term in a collection of files. For example, you want to find the files in your project that mention *Mr J. Random*.

Solution

Use the `:vimgrep` command: `:vimgrep /pattern/ [flags] file0 file1 fileN`.

Discussion

In its simplest form, `vimgrep` takes a word to search for, and a list of files in which to do so. So, to search for *grapes* in `shopping-list.txt` you'd run `:vimgrep /grapes/ shopping-list.txt`.

You can name as many files as you like, but you'll probably want to use *shell globbing*, see the sidebar for details, instead to specify groups of files. Searching for *grapes* in all `*.txt` files could be accomplished with: `:vimgrep /grapes/ *.txt`.

⇨ Globbing

A number of Vim commands support filename *globbing*. This is a way of selecting a group of files by specifying a pattern matching their names. For example, `*.txt` refers to all files in the current directory whose names end in *.txt*. The `*` is a *wildcard* and means *anything*.

`**` recursively matches directories below the current one, so `**/*.txt` searches recursively downwards from the current directory for filenames ending in *.txt*.

If your operating system supports additional globbing patterns, you can use these as well.

You're not restricted to searching on simple words, however. You can use any of Vim's regular expressions between the forward slashes. Searching `/tmp/bar.txt` and `~/foo.tex` for lines starting with numbers: `:vimgrep /^[0-9]/ /tmp/bar.txt ~/foo.tex`.

`vimgrep` jumps to the first match it finds. To jump to the next match use `:cn`; use `:cN` for the previous.

 If you use `:grep` instead of `:vimgrep` an external `grep`-like utility is used to perform the search. The program used is the value of `&grepprg`. A good choice is Andy Lester's *ack* which can be used with `set grepprg=ack` and `set grepformat=%f:%l:%m`.

The `j` flag inhibits the jumpiness (*Ritalin* for Vim); simply saving the search results to the *quickfix list* (see sidebar for details) and leaving your cursor where it was.

The g flag controls how lines matching the pattern multiple times are handled. If not present (by default), only the first match of a line is shown; otherwise, every occurrence of the pattern is regarded as a separate match.

The flags can be combined in either order.

⇨ Quick Fix List

The *quick fix* list mentioned above is a Vim concept for creating a temporary index of positions in a file. `vimgrep` stores its results (a file name, a position within that file, and the matched text) in the quick fix list.

To view the quick fix list (i.e. the results of the last search) use `:cl[ist]`. The results are numbered, so you can jump to a specific one with `:cc` *`number`*.

For more information see `:help quickfix`.

Searching and Replacing

Problem

You want to replace all occurrences of one string with another.

For example, imagine you were using Vim to write a novel wherein there was a protaganist named *Curtis*. You decide to change his name to *Excalibur* to give him more panache. You want Vim to make these changes with the least possible effort.

Solution

Execute `:%s/target/replacement/g` to replace all occurrences of *`target`* with *`replacement`*. For example: `:%s/Curtis/Excalibur/g`.

Description

The solution above replaces *Curtis* with *Excalibur*. The `g` flag at the end causes this operation to be performed *g*lobally, i.e. multiple times on each line, if necessary.

The `%` prefix indicates that the replacement should occur over the entire file. Had you previously visually selected text to which you want to constrain the search/replace operation omit the `%`, e.g. `:s/Curtis/Excalibur/g`. Or, prefix the command with a range to contstrain it that way, e.g. `2,20s/Curtis/Excalibur/g` performs the operation over lines two to twenty.

The search string (*Curtis* in this example) doesn't have to be a literal string; it can be any Vim regular expression. The details of Vim's regular expressions are explained in the *Creating Regular Expressions* recipe, so I won't go into them here. Two tips, though:

- Search for words - If you provide a literal string to replace, as above, Vim even replaces occurrences that form parts of other words. For example `:%s/and/or/g` would change *supply and demand* into *supply or demor*. To avoid this, surround the string with *word boundary anchors* (`\<`, `\>`). Thus, the above command could be rewritten as `:%s/\<and\>/or/g`.
- Search case insensitively - If you want *linux* to match *Linux*, *linux*, and *LiNuX* you need to either add the `i` flag to the end of the replacement command, or, use `:set ignorecase` to enable this behaviour for all searches.

Searching for the Word Beneath the Cursor

Problem

You want to search the current document for the word underneath your cursor. You'd rather not type it in again.

Solution

In *Normal* mode, place your cursor on or just in front of the word you wish to find, then press `*` (mnemonic: star search). This will jump to the *next* occurrence of the word in the current file. Alternatively, pressing `#` will find the *previous* occurrence.

Discussion

After finding the first match using either of the above methods, you can press the `n` (mnemonic: *n*ext match) key to jump to the next match. To jump to the previous match, use `N`.

To search for words *containing* the current word, press `g*` or `g#`, as appropriate. For instance, if the current word is *back*, `g*` will jump to *hunchback*.

Creating Regular Expressions

Problem

You want to use a Vim regular expression, but don't know how they work.

For example, you want to search a document for a word that begins with a vowel.

Solution

Vim allows you to use regular expressions (*regexps*) in many areas. The Searching for Any Word recipe, for example, explains how to search a file for a regexp.

A regexp is a pattern that describes a string. We will use the `/pattern/` notation for describing patterns, and the "`string`" notation to represent the text the pattern is being tested against.

The simplest form of pattern is a literal string, which matches that exact string. For example, `/cow/` matches "`cow`", "`Don't have a cow`", and "`cower`".

The period (`.`) has special significance in a regexp. It matches any single character. So, `/.ow/` also matches "`cow`", but also "`sow`", and "`tow`".

You can use character ranges to indicate that any one of the specified characters are acceptable. For example `/[cs]ow/` would match "`cow`", "`sow`", and "`undersow`".

If your range consists of alphabetically or numerically consecutive characters you can specify the start character and end character separated by a hyphen. For example, to match "*b*", "*c*", "*d*", "*e*", or "*f*", you can use `/[b-f]/`. Or, an integer between 1 and 5: `/[1-5]/`.

You can invert character ranges so they match any character *not* specified. For example, `/[^cs]ow/` matches any character that isn't a "*c*" or an "*s*" followed by "*ow*", i.e. "*acknowledge*", "*I said "ow"!*", and "*bellow*".

Another useful concept of regexps is repetition. If you wanted to match strings containing consecutive "*o*"s followed by an "*i*, like "*cooing*" and "*tattooist*", you could use `/ooi/`. If you wanted to abstract this pattern, however, to match one or more "*o*"s followed by an "*i*", you'd have a problem.

The solution is to suffix the part of the pattern that can be repeated with a *metacharacter* which specifies the type of repetition. A metacharacter is simply a character that has special significance in a regular expression. For example, the "*+*" metacharacter requires that what precedes it[20] occurs either one or more times. For example, `/o\+i/` matches one or more "*o*"s followed by an "*i*": "*abattoir*", "*cooing*", and "*oii*".

The "***" metacharacter represents any number of occurrences of the preceding character, so `/o*i/` matches "*zucchini*", "*boating*", and "*zooming*". This time the "*o*" is made optional. (Given that it starts the pattern it's actually unnecessary; `/i/` will match everything that it matches).

A more useful example is `/[a-c]t*o\+i/` which matches either "*a*", "*b*", or "*c*" followed by any number of "*t*"s, followed by at least one "*o*", followed by an "*i*". The following words satisfy the pattern: "*tattooing*", "*coins*", and "*limboing*". It may not

20. In fact, it requires that the *atom* that precedes it occurs one or more times, but this recipe is already too complex. If you want this level of detail see `:help pattern` or a regular expression book.

be intuitive that "*tattooing*" would match, so let's walk through it: The "*a*" satisfies `/[a-c]/`, the following two "*t*"s match `/t*/`, the following two "*o*"s match `/o\+/`, then the "*i*" matches `/i/`.

A key concept to grasp here is that a string matches a regexp as long as a contiguous portion of it matches. In the example above the regexp looks at the first character of "*tattooing*" and tries applying the pattern to it. This fails because "t" is not a member of the character class `[a-c]`. So it moves on to the next letter and starts again, this time it matches up to "*i*", as explained above, and because the pattern has now been exhausted, the rest of the string is ignored.

You can make a portion of the regexp optional (i.e. insisting that it matches 0 or 1 times) with `\=`. You can generalise this with the `\{`*min*`,`*max*`\}` notation which matches at least *min* times, but no more than *max* times. For example, `/[^a-c][a-c]\{2,4\}[hero]/` matches "*yachts*" ("*yach*"), and "*blabbed*" ("*labbe*"), but doesn't match "*cabbage*".

Like character ranges, alternation allows you to specify a list of alternatives that can match at a given point. Whereas character ranges specify sets of characters, alternation is used for sets of strings. For example, `/ing\|ed/` matches the string "*ing*" or the string "*ed*", e.g. "*simpered*", and "*attacking*". If you used a character range here, e.g. `/[inged]/`, the pattern would match any string that contained an "*i*", an "*n*", a "*g*", an "*e*", or a "*d*". i.e. it would match all the strings the alternation approach does, but also many, many more.

All the patterns so far have been allowed to match at any point in the string. That is to say, before Vim gives up on a match it will try applying the pattern at every point in the text. You can change this behaviour by using anchors: `^` matches the start of a line, while `$` matches the end. So, `/^\s\=\uo/` matches a line that begins with an optional white space character,

which is followed by an uppercase letter, which is followed by an "*o*". The following strings will all match: " *Popes are religious*", "*Roman*", and "*Soviet Union*".

You can combine the two anchors to require that the whole line matches the pattern. For example, `/^\uo\%(v|ma\).\+[rnt]\$/` will match "*Tomahawk thrown*", "*November*" and "*Soviet*", but will reject "*Soviet Union*" or "*During November*".

Discussion

The features described above are common to most regexp implementations. Vim offers some extensions, though, that users familiar with other regexp implementations may not be aware of.

By default regexps are case sensitive. That is to say `/cow/` will not match "*Cow*". You can make all patterns ignore case with `:set ignorecase`. To change the case sensitivity for a particular pattern surround the relevant portions with `\c` (to ignore case from this point on) and/or `\C` to respect case from this point on. For example, `/\ccow/` matches "*cow*", "*coW*", and "*Cow*". However, `/\cco\Cw/` matches "*COw*" and "*cow*", but not "*COW*". The `\c` makes the "*co*" case insensitive, then the `\C` makes the "*w*" case sensitive.

Some characters in a regexp have a special significance and don't match themselves literally in the string. For example, `/^foo/` matches a line starting with "*foo*"; it doesn't match "*^foo*". To match a special character you need to precede it with a backslash, For example `\^` matches "^", `\$` matches "*$*", `\.` matches ".", etc.

Of particular note in Vim is `\n`, which matches a newline character, `\r` which matches a carriage return character. and `\t` which matches a <Tab>.

Vim supports *backreferences* which allow you to refer to part of a match later in the same match. For example, `/\([a-z]\)\1/` matches a lowercase letter followed by the same character that just matched. This would match "*zoom*", and "*seeing*". The parenthesised portion of the pattern is a *group*, and the backreference (`\n`) refers to the n^{th} group. So, `/\([a-z]\)\([a-z]\)\2\1/` matches two lowercase letters, followed by the second one again, then the first one again. This matches strings like "*abba*".

Looking up Documentation for the Keyword Under the Cursor

Problem

You want to invoke an external command to lookup documentation for the keyword underneath the cursor. For example, Linux users may like to read the manual for the named command with the `man` utility.

Solution

Use `:set keywordprg=`*`program`*, then hit K while hovering over the word.

Discussion

This recipe calls the command specified with `:set keywordprg`, passing the current word[21] as an argument. Thus, if `keywordprg` = `man`, then hovering over the word *ls* and hitting K would display the documentation for Linux's `ls` command.

When used with `man`, Vim translates a count for the K command into a section number. So 7K over *glob* invokes `man 7 glob` to display section 7 of the `glob` documentation.

The Ruby programming language has a utility called `ri` that displays documentation about the given Ruby method. The Perl programming language has a similar command called `perldoc`. By setting `keywordprg` appropriately, you can make context-sensitive documentation lookup trivial.

---

21. *word* is used in the sense of a string that looks like a word to Vim; it is not necessarily a valid word in your language.

DISPLAY

Working with Long Lines

Problem

Your file contains lines which are too long to fit on the screen. You find it hard to edit and view.

Solution

The `:set wrap` command, which should be on by default, changes how long lines are displayed. Once they reach the right margin they are broken, and continued on the line below. (To disable this behaviour: `:set nowrap`).

`wrap` only changes the way the lines are displayed, however; the file will not be changed. It inserts *soft* line breaks.

This means that a file containing two particularly long lines may be represented by Vim as having 5 lines, for example, after wrapping. If you try to navigate this file using the basic movement commands `j` would move between the two logical lines, rather than the *screen lines*. The solution is to prefix the movement commands with g, so `gj` moves down one screen line.

If using `wrap`, you can specify what point the line should be broken by executing `:set linebreak`. This uses the value of `breakat` to decide where to break the line. To change the characters used modify `breakat`.

You can use `:set textwidth=`*`width`* to enforce a maximum line length, after which the text is broken with a "hard" line break. Vim breaks at white space, so lines may be shorter

than `width`. To reformat existing text according to this preference either select them visually and hit `gq` or, in *Normal* mode, you can reformat the current paragraph with `gqap`.

DISCUSSION

In general, you'll be better off using *hard* line breaks with *textwidth*. This removes the need to differentiate between logical lines and screen lines, and means that the file will display reasonably in any editor, even if it doesn't wrap long lines.

Traditionally, text file lines are kept under 80 characters. This is mainly a holdover from the days of terminals whose displays were limited in this way, but is still customary in many programming languages and e-mail. To enforce this restriction just `:set textwidth=80`.

There's another way to insert hard line breaks without specifying a maximum line length. It is called `wrapmargin` and wraps lines relative to the width of the terminal window. For example, `:set wrapmargin=4` means that when a line is more than four characters away from the right-hand margin, it is broken. This approach is more flexible than `textwidth`, but has the disadvantage of producing files which will display poorly on smaller displays or when the screen is split between multiple files. Especially if you're sharing the files you produce with others, I suggest the use of `textwidth` instead.

`textwidth` takes precedence over `wrapmargin`. For `wrapmargin` to take effect `textwidth` must be zero, as it is by default.

Displaying Line Numbers

Problem

You want to see each line's number alongside it. For example, if you're writing a program, error messages frequently reference line numbers.

Solution

Use `:set number` to enable line numbering. If you're using a small monitor, you may want to disable them: `:set nonumber`.

Discussion

Even if you're not programming, line numbers can still be useful. For example, if you're collaborating on a file with other people, they may mention specific lines, which you can then jump to with `:`*`number`*. If you're wrapping long lines, the line number can be used to differentiate the beginning of the line from the point at which it has been wrapped.

By default the number column is at least 4 characters wide, regardless of how many lines the file has. To change this minimum width use `:set numberwidth=`*`width`*.

The line numbers are only displayed when you're viewing the file with Vim; the actual file isn't modified. If you'd like it to be, and you have the `cat` command on your system, you can execute `:%!cat -n %`. This filters the entire file through `cat` and prepends the number to each line.

Lastly, if you'd like to see the line numbers when you print the file without permanently changing its contents: `:set printoptions=number:y`.

Working with Remote Files

Problem

You want to edit/view a file that is stored on another computer.

For example, you might want to change a file on your website from your home computer. Or, you want to change the *message of the day* file on a server you administer.

Solution

To invoke Vim with a remote file use its URL as the argument to `vim`. For example: `vim sftp://guest@example.com/file.txt`.

To work with remote files from within Vim, just use their URLs in place of a filename with normal editing commands.

So, to to open a remote file for editing use `:e` *URL*. For example: `:e ftp://user@example.com/README`.

To save to a remote file use `:w` *URL*. For example: `:w scp://kci@jojo.example.com/etc/motd`.

Discussion

Vim supports the following protocols: SCP, SFTP, RCP, HTTP (read-only), WEBDAV, *rsync* (read-only), and *fetch* (read-only). However, it relies on external programs to do so. On

Linux, most of these programs are available by default; on Windows, for example, only FTP is normally available. See `:help netrw-externapp` for more information.

If the protocol requires authentication, you can supply the username as part of the URL, and then be prompted for the password interactively. This gets boring fast, however.

If you're editing files via SSH or SCP consider setting up *passwordless logins*. The principle is explained in Password-less logins with OpenSSH for *Debian Linux*, but it is much for the same for other operating systems.

If you're using FTP on Linux, you can store your credentials in `~/.netrc'`. The file is formatted as follows:

```
machine {host name 1}
        login {username}
        password {password}

 machine {host name 2}
...
```

It should be made read-only for your user: `chmod 600 ~/.netrc` . Now you can use URLs like *ftp://example.org/README*, and it will find your username and password automatically.

> ⚠ FTP is an insecure protocol, so please don't use it unless you must. SSH/SFTP/SCP are all superior alternatives.

Changing the Status Line

Problem

You don't like the way the status line looks or would prefer if it displayed different types of information.

For example, you work with files created on different operating systems, so you'd like the file format (e.g. *unix*, *MS-Windows*, or *mac*) to be displayed along the bottom of the screen.

Solution

Use the `:set statusline` command along with a format string. The format string is the text you want displayed interspersed with variable names corresponding to the types of information you want included.

By default Vim hides the status line. To show it: `:set laststatus=2`.

For example, to display the file format you could use `:set statusline=%{&ff}`. You can surround this with arbitrary text, for example: `:set statusline=format:\ %{&ff}`.

Here are some common variables the status line can display:

Name	Description
`b`	Value of byte under cursor.

`c` Column number.

`l` Line number.

`r` Displays `[RO]` if file is read only.

`t` File name (as opposed to file path)

`y` File content type, e.g. `[ruby]` or `[latex]`.

`\&ff` File format, e.g. `unix`, `mac`, `dos`.

Variable names are prefixed with a percentage sign (`%`). Spaces, bars (`|`), and other special characters need to be backslash escaped.

Here's a longer example:

```
:set statusline=%t\ %y\ format:\ %{&ff};\ [%c,%l]
```

Sample output: `.vimrc [vim] format: unix [2,3]`.

Discussion

You may have noted that the syntax for displaying the file format was different from the other variables. The *%{}* syntax evaluates the expression contained within the braces and displays the result.

For example, to display the name of the current colour scheme: `%{g:colors_name}` (example output: `morning`). Or the current language: `%{v:lang}` (example output: `en_GB.UTF-8`). Here we are simply displaying the value of Vim internal variables. (See `:let` for a list).

The reason `%{&ff}` works is because `ff` is the Vim option for getting/setting the file format, and the `&` prefix is used for referring to options. The value of any option can be displayed in this way.

You can even call a function in this way. For example, to show the last modification time of the current file:

```
\%{strftime(\"\%c\",getftime(expand(\"\%\%\")))}
```

Sample output: `Fri 01 May 2009 19:26:07 BST`

Redefining Highlight Groups

Problem

You want to change the colours of specific elements of the display. For example, you want text to be white on a black background.

Solution

Use the `:highight` *`group definition`* command.

A *highlight group* (*`group`*) is an element of the display whose colours can be customised. Some of the default highlight groups are:

Cursor
: Character under the cursor.

ErrorMsg
: Command line error messages.

Normal
: Normal text.

Visual
: Text selected under Visual mode.

The *`definition`* is a list of key-value pairs. For example, the following sets the terminal foreground colour to black and the terminal background colour to yellow:

```
:highlight Normal ctermfg=black ctermbg=yellow
```

These are some common arguments:

ctermfg
: Terminal foreground colour.

ctermbg
: Terminal background colour.

term
: Terminal font style, e.g. *bold*, *italic*, *underline*.

guifg
: GUI foreground colour.

guibg
: GUI background colour.

Apart from *term*, these arguments take a colour name or number as a value. Recognised colour names include *black*, *brown*, *grey*, *blue*, *green*, *cyan*, *magenta*, *yellow*, and *white*.

The arguments that are not supplied retain their previous values. For example, `:highlight Normal\ ctermbg=white` changes the background colour to *white*, but keeps the previous foreground colour.

Let's look at some examples:

- `:highlight Visual term=bold` - Text that has been selected using *Visual* mode is rendered in bold.
- `:highlight Comment ctermfg=grey ctermbg=white term=bold` - Comments are rendered in bold, grey text.

DISCUSSION

Normally you'll select a colour scheme, and not define highlighting groups at all. Occasionally, though, you want more control over colours or need to edit a syntax file. That's where the `:highlight` command comes in.

Before you change highlight groups you may like to check their current values. You can do this with `:highlight` *`group`*. To view all current settings use `:highlight`.

⇨ Defining a Highlight Group

You can define your own highlight group by using the `:highlight` command as described above with a group name of your choice. To select what is highlighted you use `:match` *`group /pattern/`*. For example:

```
:highlight Elephant ctermbg=grey ctermfg=white
  :match Elephant /\celephant/
```

This renders all occurrences of the word *elephant*, regardless of case due to the `\c` escape, in white on grey.

MODIFYING THE CURSOR

PROBLEM

You want to make the cursor easier to see.

For example, you're using visually "busy" syntax highlighting, and sometimes lose the cursor. Or, you're working with columnar data, and need the entire column that the cursor is over to be highlighted.

SOLUTION

To change the cursor colour in Gvim redefine the *Cursor* highlighting group[22].

Another approach is to highlight the line the cursor is on. You do this by executing `:set cursorline`. Again, to change the colours modify the *CursorLine* highlighting group.

Similarly, you can highlight the current column the cursor is in with `:set cursorcolumn`. The highlight group is, predictably, called *CursorColumn*.

If you want your terminal to resemble a sniper's sights, you can combine both line and column highlighting to create a cross-hair effect, as shown below.

22. The Creating Highlight Groups recipe explains how to redefine highlight groups, but in standard Vim the terminal defines the cursor colour.

Discussion

Gvim allows you to customise every conceivable aspect of the cursor display with the command `:set guicursor`. This allows you to change the cursor's appearance based on the mode (i.e. one colour for Insert mode, another for Normal), its height, and control whether it blinks… This is achieved by providing a *format string* as the value for `guicursor`. Here are some examples:

- `n-c-v:ver50-ncvCursor` - In Normal, Command, and Insert mode set the cursor to a vertical bar 50% of the current character's width. Highlight it with the *ncvCursor* group.
- `i:block-iCursor-blinkon0,v:block-vCursor` - In Insert mode use a non-blinking block cursor highlighted with the *iCursor* highlighting group. In Visual mode also use a block cursor, but highlight it with *vCursor*.

The above examples should be adaptable for your uses. For the gritty detail of the supported syntax look at `:help guicursor`.

CHANGING THE WINDOW TITLE

PROBLEM

You want to change the title of a Vim window to make it more descriptive.

SOLUTION

Assign a value to the `titlestring` option, and set the `title` option. For example:

```
:set title titlestring=My\ Title
```

DISCUSSION

When working with multiple instances of Vim, it can be difficult to remember what task each window corresponds to. You can avoid this problem by customising each window's title. The window title can also function similarly to the status line, reminding the user about an important aspect of the current file.

The default window title contains the current filename, followed by a character indicating the state of this file, followed by the name of its directory[23]. The state character is one of the following:

-

    File can't be modified

23. To be precise, the directory name is followed by a hyphen then the value of `&v:servername`, if set, otherwise just *VIM*.

+

File has been modified

=

File is read-only

=+

File is read-only and has been modified

This is already quite a descriptive title, but we can customise it further using a format string, as described in the Changing the Status Line recipe. The Vim documentation (`:help titlestring`) gives the following example:

```
:auto BufEnter * let &titlestring = hostname() . "/" .
expand("%:p")
```

Here the window title is reset when the user enters a new buffer. It contains the hostname, a forward slash, then the full path of the current file[24].

Another example is to display the value of an environment variable in the window title along with the filename. For instance, Ruby on Rails developers could prefix the filename with the value of `RAILS_ENV`, which indicates whether the application is in development, production, staging, or testing mode:

```
let &titlestring=expand($RAILS_ENV) . ": " .
expand("%:t")
```

One last trick is to embed the value of an external command in the window title using the `%{system('command')}` syntax. This could be used to display the name of the current

24. For an explanation of the `%:p` syntax see the Filename Modifiers section of the Executing External Commands recipe.

branch, if using a version control system, or indicate whether the project's unit tests are passing or failing.

EXTENDING

Creating Keyboard Shortcuts with Key Mappings

Problem

You'd like to execute a command, or series thereof, with a keyboard shortcut rather than continually type it in. Or, you'd like to change an existing keyboard shortcut so that it does something more useful.

For example, you use the `<Space>` key to page down in other applications, and you'd like to do the same in Vim. Or, you regularly reformat paragraphs with `gqap`, but would prefer to simply hit `Q`.

Solution

Use *key mappings*. A map is simply a key combination followed by another key combination. When you enter the first key combination Vim acts as if you entered the second.

For example, to remap `<Space>` to `<PageDown>` you execute `:map <Space> <PageDown>`. The `map` command creates a mapping for *Normal*, *Visual*, and *Operator Pending* mode; i.e. if you press `<Space>` in *Insert* mode this mapping, thankfully, has no effect.

Mapping `Q` to `gqap` is similarly straight forward: `:nmap Q gqap`. Unlike `map`, `:nmap` only takes effect in Normal mode. We used `nmap` here because this mapping doesn't make sense in other modes: in Insert mode we want `Q` to insert a literal *Q*, and in Visual mode we want to reformat the selected text rather than the current paragraph. The Visual mode mapping is `:vmap Q gq`.

The other main types of mapping commands are:

`:imap`

Insert mode only.

`:cmap`

Command-line only.

`:map`

Normal, Visual, and Operator-pending.

DISCUSSION

Keyboard mapping is yet another way to save valuable keystrokes. If you find yourself executing a command repeatedly create a mapping. It's also useful for creating more sensible aliases for existing keyboard shortcuts that you can never quite remember.

It's generally recommended to map the function keys (<F1>-<F12>), as well as their shifted counterparts (e.g. <Shift>-<F3>) because they're not used by Vim[25]. As long as you use a combination that doesn't interfere with the commands you do use, you're free to use whatever you want, though.

Before you create a mapping you might like to check what, if anything, it's currently being used for. You can do this by executing `:help` *key*, e.g. `:help <F1>` will show that Vim maps it to `:help`. If you want to see the user-defined mappings (whether set by you or a plugin) call the `:map` command with no arguments. This works will the mode-specific map commands outlined above, too, so `:imap` will show Insert mode mappings.

25. <F1> *is* used for `:help` but pretty useless given that you'd normally use `:help` *topic*.

Changing the Colour Scheme

Problem

You don't like the colours Vim uses; you want to change them.

For example, you've found a colour scheme you like better, so want to instruct Vim to use it. Or, you find that the current colour scheme makes text hard to read so want to find a more suitable one.

Solution

To browse existing colour schemes enter `:colourscheme`, then hit `<Tab>` to cycle through the installed schemes. If you find one that you like hit `<Enter>` to apply it.

Discussion

A colour scheme is a set of rules controlling how different elements of the interface appear. Vim is distributed with a selection of colour schemes, but you can also download new ones, as explained in the sidebar.

The Vim Color Scheme Test is a a gallery of colour schemes along with their names. Browse through it to select a theme you like, then follow the instructions below to install it.

⇨ Installing Colour Schemes

1. Browse the available colour schemes at Vim.org and download any that you like.
2. Create a `$VIM/colors`, e.g. `mkdir -p ~/.vim/colors` on POSIX systems.
3. Copy the `.vim` file you downloaded in step one to the `colors` directory you just created.
4. Open `vim` then execute `:colorscheme` *`name`*, where *`name`* is that of the file you downloaded without the `.vim` extension.
5. If you want to use this colour scheme permanently add `colorscheme` *`name`* to your `vimrc`; otherwise repeat these steps with a different colour scheme.

Before you change your color scheme you may like to make a note of what you're using at the moment. You can find the name of the current scheme with `:echo g:colors_name`.

To change a specific aspect of a colour scheme you can redefine a highlight group.

Creating Command-Line Commands

Problem

You want to create your own `:`*command* command.

Solution

Use the `:command` command like so: `:command` *name command*, where *name* is the command you're creating and *command* the command *name* should execute. (*name* must start with an initial capital)

For example, `:command Ls !ls -all %` lets you use `:Ls` to view the *long listing* for the current file on POSIX systems, thus showing the permissions, owner, group, etc.

Discussion

The *command* can be anything you could enter at the `:` prompt.

You can modify how the command is defined by supplying `:command` with a list of arguments with the syntax `:command` *arg1, arg2, ... ,argN name command*. These are not to be confused with arguments passed to the *command*, itself, however.

To create a command that accepts arguments you use the syntax `:command -nargs=`*spec name command*, where *spec* is:

1

One argument.

*

Any number of arguments.

?

Zero or one arguments.

+

One or more arguments.

You reference the arguments in *command* with the *<args>* placeholder. The *<q-args>* quotes special characters in the argument. For example, you could use `:command -nargs=1 Ci !cd %:h && git commit %:t -m <q-args>` to quickly change to the directory containing the current file (`%:h` is the current pathname with the last component removed) and commit the current file (`%:t` is the last component of the current pathname) to a Git repository by typing `:Ci` *message*, without worrying about using quotation marks and the like[26].

To create a command that accepts a count you use the `-count=`*default* argument, then reference the count in *command* as *<count>*.

To create a command that accepts a range you use the `-range=`*spec* argument. If you don't supply a *spec* (i.e. `-range`), the range defaults to the current line. A spec of `%` means that the range defaults to the whole file. You can reference the range in the *command* with the placeholders *<line1>* and *<line2>* which denote the first and last line of the given range, respectively.

26. For more robust integration with Git see the Integrating Vim with Git recipe

Extending Vim with Scripts and Plugins

Problem

You want to add functionality to Vim, preferably without having to write it yourself.

Solution

Browse Vim Scripts to find a script that meets your needs. Its 'type' should be *utility* or *ftplugin*. Download the latest version to your computer. If the plugin comes with its own installation instructions, use those; otherwise, read on.

If the file you've downloaded has a name ending with `.vim` you usually just need to save it in the right directory and then its ready to use. For scripts labelled *utility*, also known as *global plugins*, this directory is `$VIMHOME/plugin`; for those labeled *ftplugin*, also known as *filetype plugins*, the last component of this path is *ftplugin* instead. If this directory does not already exist you need to create it. The sidebar lists the locations of the plugin directories on various operating systems.

If the file is compressed (ending with `.zip` or `.tar.gz`), try uncompressing it in the parent directory of the applicable plugin directory. For example, on Linux this is `~/.vim/`.

Now you should just be able to start Vim and have the plugin work.

Plugin Directory Location

Note: For filetype plugins, the last portion of these paths is *ftplugin*, not *plugin*.

Unix

```
~/.vim/plugin
```

PC and OS/2

```
$HOME/vimfiles/plugin or $VIM/vimfiles/plugin
```

Amiga

```
s:vimfiles/plugin
```

Macintosh

```
$VIM:vimfiles:plugin
```

Mac OS X

```
~/.vim/plugin
```

RISC-OS

```
Choices:vimfiles.plugin
```

Plugin Types

Plugins can be either *global* or filetype-specific. Global plugins are loaded for every file you open; filetype-specific plugins are only loaded for certain filetypes.

Discussion

As complicated as the above instructions may sound, it's generally trivial to install a plugin. For example, on Linux to install the *potwiki* plugin:

```
$ mkdir -p ~/.vim/plugin
$ wget
http://www.vim.org/scripts/download_script.php?src_id=9316 -O
~/.vim/plugin/potwiki.vim
```

(If your plugin directory already exists, the first command is superfluous.)

Vim 7 added support for a new plugin installation method called *vimball*. Vimballs make plugin installation and configuration easier, and are a slight improvement over the previous methods. They're not in wide use yet, but if you find a plugin distributed in this way (they have a **.vba* extension), try following the steps below:

1. Download the **.vba* file.
2. Open it with Vim, e.g. `vim something.vba`.
3. Use `:VimballList` to verify its contents.
4. Install it by sourcing: `:source %`.

Integrating Vim with Git

Problem

You use the Git version control system with Vim and want shortcuts for common operations and syntax highlighting for `git` output.

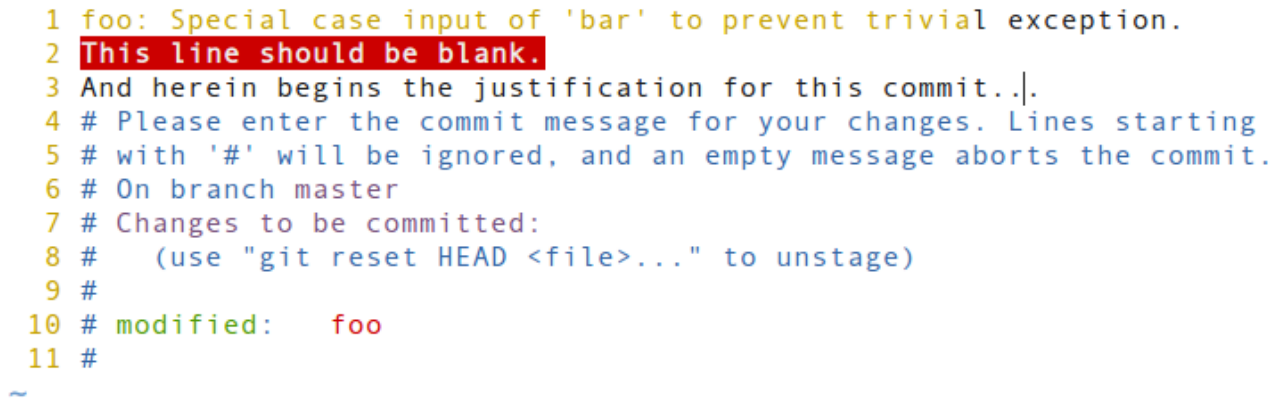
Solution

Thanks to the work of Tim Pope and others, Vim ships with syntax highlighting support for Git output/templates. For example, after executing `git commit -a`, with Vim set as your default editor, you'll see

```
1
2 # Please enter the commit message for your changes. Lines starting
3 # with '#' will be ignored, and an empty message aborts the commit.
4 # On branch master
5 # Changes to be committed:
6 #   (use "git reset HEAD <file>..." to unstage)
7 #
8 # modified:   foo
9 #
~
```

Vim can even help you write better commit messages. Git commit messages should typically have a 50-character or less summary as their first line, with a blank second line, then, optionally a long explanation, wrapped at about 72 characters[27]. There's no need to remember this convention, however, because Vim warns you, visually, if you colour outside the lines. For example:

27. For an explanation of this convention see A Note About Git Commit Messages.



In this example, the first line is too long, so the extraneous characters are coloured black. The second line should be blank, so it has a red background to indicate its contents are in error.

motemen's *git-vim* plugin extends this support by adding shortcuts and commands for common Git operations.

Install it by copying its files to your Vim directory. For example, on Linux:

```
mkdir -p ~/.vim
cd /tmp
git clone git://github.com/motemen/git-vim.git
cp -r git-vim/{plugin,syntax} ~/.vim/
cd -
```

You now have access to commands such as `:GitCommit`, which will, split your window horizontally, loading the Git commit template into the upper pane. Once you have written your commit message and quit the buffer, your file will be committed. (This assumes, of course, that the current file is located in a Git working directory).

Bob Hiestand's `vcscommand` plugin offers similar functionality to `git-vim`, but it also supports CVS, SVN, and SVK. This makes it especially suitable for situations where one uses multiple version control systems.

Discussion

Through a combination of editable history and particularly fast operation, Git invites regular commits. This is only feasible, however, if Git is tightly integrated into Vim, because otherwise version control will become a source of distraction that steals your focus and wastes your time.

Vim's ability to execute external commands already makes using `git` reasonably straightforward. For instance, `:!git add %` would add the current file, while `:!git log` would temporarily suspend Vim to show you the commit log.

The *git-vim* plugin expedites this process by providing Normal mode shortcuts. `\ga`[28] adds the current file, `\gc` commits it, etc.[29]

git-vim takes this integration further for commands like `:GitBlame` where the window is split vertically to show the author's name alongside the lines he was responsible for.

```
337 e82c4b23 (motemen          command! -nargs=1 GitCatFile          call GitCatFile(<q-args>)
338 f0644fe6 (motemen          command!          GitBlame            call GitBlame()
339 e82c4b23 (motemen          command! -nargs=+ Git                 call GitDoCommand(<q-args>)
340 a7d32d15 (motemen          command!          GitVimDiffMerge     call GitVimDiffMerge()
341 a7d32d15 (motemen          command!          GitVimDiffMergeDone call GitVimDiffMergeDone()
342 73a18176 (Ilkka Laukkanen command! -nargs=* GitPull              call GitPull(<q-args>)
343 d8cd9886 (motemen          command!          GitPullRebase       call GitPull('--rebase')
344 73a18176 (Ilkka Laukkanen command! -nargs=* GitPush              call GitPush(<q-args>)
~                              ~
```

This presentation is clearly superior to the output of `:!git blame %`, shown below, in that it employs syntax highlighting, allows inline editing, and hides extraneous output.

---

28. This example and those following assume that your `Leader` variable is set to the default of `/`; see `:help leader` for details.

29. For a complete list of shortcuts offered by this plugin see its `README.rdoc` file.

```
e82c4b23 (motemen         2008-06-18 13:08:41 +0900 337) command! -nargs=1 GitCatFile          call GitCatFile(<q-args>)?[m
f0644fe6 (motemen         2009-05-01 15:32:42 +0900 338) command!          GitBlame            call GitBlame()?[m
e82c4b23 (motemen         2008-06-18 13:08:41 +0900 339) command! -nargs=+ Git                 call GitDoCommand(<q-args>)?[m

a7d32d15 (motemen         2008-05-17 19:45:20 +0900 340) command!          GitVimDiffMerge     call GitVimDiffMerge()?[m
a7d32d15 (motemen         2008-05-17 19:45:20 +0900 341) command!          GitVimDiffMergeDone call GitVimDiffMergeDone()?[m
73a18176 (Ilkka Laukkanen 2009-05-06 03:00:06 +0800 342) command! -nargs=* GitPull             call GitPull(<q-args>)?[m
d8cd9886 (motemen         2009-05-01 12:13:14 +0900 343) command!          GitPullRebase       call GitPull('--rebase')?[m
73a18176 (Ilkka Laukkanen 2009-05-06 03:00:06 +0800 344) command! -nargs=* GitPush             call GitPush(<q-args>)?[m
```

OTHER USES OF VIM

BROWSING DIRECTORIES

PROBLEM

You want to see the contents of a directory, perhaps so as to select a file to edit. For instance, if working on a project comprising multiple files you want to see a list of the files in a separate window.

SOLUTION

Invoke Vim with a directory name as an argument, e.g. `vim ~/projects/flying-pigs/`. From within Vim use the `:Ex` (mnemonic: *Ex*plore) command. By default it shows the contents of the current file's directory, but you can provide a directory name if you wish. For example: `:Ex ~/projects/flying-pigs`. The directory is shown in a split screen if the current file has been modified.

To force a directory listing in a split pane, so you can view a file and its directory listing at once, use `:Sex`[30]. Similarly, `:Vex` to browse in a vertical split, and `:Tex` to browse in a new tab.

DISCUSSION

By default Vim lists every file contained in a directory. To get a more `ls`-style listing you can specify a hiding list with `:let g:netrw_listhide='\^\..*'`. (This is a comma-separated list of regular expressions). When you're browsing a directory files starting with a

30. No, that's not a joke; the concept is synonymous with Vim

period will now be hidden. [31] If you hit a once you'll invert the hiding list (showing only hidden files). If you hit a again you'll remove the hiding list, showing everything.

To change how directory entries are sorted you can modify the `g:netrw_sort_sequence` variable. By default its value is, deep breath:

```
[\/]$,\.h$,\.c$,\.cpp$,*,\.o$,\.obj$,\.info$,\.swp$,\.bak$,\~$
```

The order of the patterns is the order of the sort. For instance, the first pattern matches directories, so they're shown first. The next pattern matches file names ending with `*.h` (C header files), so they're shown next. And so on. The `*` pattern matches everything not matched by the other patterns. You can change this pattern on-the-fly by hitting S while viewing a directory listing.

You can change into a directory by selecting it and hitting `Enter`. The same thing works for files. If you'd rather open a file in a new buffer use p. P will open the file in a split screen.

If you want to operate on the files you see read Using Vim as a File Manager.

31. By Unix/Linux convention filenames which begin with a period are designated hidden. By default file browsers and other utilities ignore these files unless explicitly commanded not to.

USING VIM AS A FILE MANAGER

PROBLEM

You want to use Vim to manage your file system in a similar way to *Nautilus*, *Midnight Commander*, or *Windows Explorer*.

For example, you want to rename files matching a certain pattern. Or you want to compress the contents of a directory.

SOLUTION

Browsing Directories explains the basics of working with directories in Vim, so read it first.

Marking Files

To operate on files you must first *mark* them (this does not have any relation to the *marks* feature).

- **Mark** the file under the cursor: `mf` (mnemonic: *m*ark *f*ile).
- **Unmark** the marked file under the cursor: `mf`.
- Mark files **matching a Vim regular expression**: `mr` (mnemonic: *m*ark with *r*egular expression). You're then prompted for a pattern.
- **Unmark all** files: `mu` (mnemonic: *m*arks *u*ndo).
- **Visually** mark files: `<Shift>-v`, then `j` and `k` to change the selection area.

You can operate on a single file or a group of them. In the latter case, you need to select files by marking them, as explained in the sidebar. You can now perform various operations on these files such as:

- **Deletion**: hit `D`. You're prompted for each file you've selected. Answering `a` deletes them all without asking you any more.
- **Renaming**: hit R. For each file you're prompted for its new name.
- **Copying/Moving**: Hit `mt` (mnemonic: *m*ark *t*arget) in the target directory. Change to the directory containing the source files, select them, then hit `mc` (mnemonic: *m*arked *c*opy) to copy or `mm` (mnemonic: *m*arked *m*ove) to move.
- **Diff**: To diff up to three marked files, use `md` (mnemonic: *m*arked *d*iff).
- **Printing**: hit `mp` to print marked files (mnemonic: *m*ark *p*rint).
- **Execute shell command**: hit `mx` (mnemonic: *m*arked e*x*ecute). (See the discussion for examples).
- **Compress/Decompress**: hit `mz` (mnemonic: *m*arked g*z*ip). (Other compression utilities can be used instead of `gzip`, but the Vim command remains the same).
- **Open** in horizontal split: hit `o` (mnemonic: *o*pen).

DISCUSSION

Vim can be used as a pretty well-featured file manager. In fact, given that it can be scripted, key mapped, and configured in concert with Vim, as well as seamlessly operate on remote directories, it is arguably better.

Perhaps the most interesting command is `mx`. This allows you to pass the list of marked files to an external command. You're prompted for a command line, in which you can use the `%` wildcard. Vim then loops through the selected files and calls the command for each one, substituting `%` for the filename.

For example, using a POSIX-compatible system, select three files (`foo.txt`, `bar.txt`, and `glark`) with `mf`. Hit `mx` and enter `cat %>>foo-bar-glark`. Vim will now execute:

```
cat foo.txt >>foo-bar-glark
cat bar.txt >>foo-bar-glark
cat glark >>foo-bar-glark
```

`foo-bar-glark` will now contain the contents of each file in turn.

The `mz` command also bears further discussion. It toggles the state of the selected files between compressed and decompressed.

If a file is uncompressed, Vim attempts to compress it. By default it uses `gzip`, but you can change this by modifying the `g:netrw_compress` variable. For example, to use Bzip2: `:let g:netrw_compress=bzip2`.

For decompression Vim uses an extension-to-program mapping:

- `.tar` - `tar -xf`
- `.gz` - `gunzip`
- `.bz2` - `bunzip2`
- `.zip` - `unzip`

For example, if a filename ends with `.zip` Vim decompresses it by calling `unzip` *`zip-file`*. To add support for another format use `:let g:netrw_decompress[`*`ext`*`] =` *`prog`*.

Viewing Differences Between Files

Problem

You have multiple versions of a file and want to see how they differ.

For example, if you're working on a document with somebody else, you want to see the differences between their version and yours.

Solution

Vim calls this feature *diff*, as per UNIX convention. You *diff* a file.

To diff from the command line invoke Vim as `vimdiff`, e.g. `:vimdiff -o file1 file2`. To diff from within Vim use `:diffsplit file`.

The screen is split horizontally, and each file is shown in its own window. The differences between them are highlighted. By default, a line that exists in one file but not in another are coloured blue; the line in the other buffer that should have held this line is coloured green, and is called a *filler* line. When a line exists in both buffers it is coloured purple. If characters inside the line differ they are highlighted in red. Identical lines have no highlighting. Identical runs of lines are folded.

To split the screen vertically use `:vimdiff file1 file2` or `:vert diffsplit file1 file2`.

DISCUSSION

Diffs are traditionally used in programming to compare an old and new version of source code to see what has changed. As suggested above, though, they're invaluable when collaborating on a file with somebody else. For example, you write a file named `grant-proposal.txt`, then e-mail it to somebody else for input. They make their changes and e-mail it back. You now have two files: `grant-proposal.txt` and `grant-proposal.changes.txt`. You use `:vimdiff grant-proposal.txt grant-proposal.changes.txt` to see your collaborator's suggestions.

It's important to note, though, that diff only works with plain text files. It won't work correctly if you use proprietary, binary formats such as Microsoft Word's `.doc`. As a general rule, if Vim can view a file it can diff it.

The windows *diff* feature splits your screen so each pane scrolls in concert with one other. This means that if you scroll to line 20 in the bottom pane, the top pane will automatically scroll to that point, too. This makes comparing long files easier, but you can disable it with `:set noscrollbind`.

You can jump between the changes with `[c` to go to the previous change, and `]c` for the next.

Outlining a Document

Problem

You want to create an *outline view* of a document such that its structure can be treated as a hierarchy, the levels of which can be expanded or collapsed.

For example, if you were writing an essay you may begin by creating an outline. Initially that would consist of the main section headings. You may then decide to subdivide those headings further, or add explanatory text that explains the heading's scope. As you continue this iterative process, you can focus on a particular level by *expanding* that level of the hierarchy. This process enables long or complex documents to be planned and organised in a logical fashion.

Solution

Use the Vim Outliner plugin.

Vim Outliner satisfies all of the objectives above. It's completely integrated with Vim, so your existing Vim knowledge still applies, and there's little to learn.

Download the plugin from VimOutliner.org, then follow the installation instructions. (The Extending Vim with Scripts and Plugins recipe may be helpful here).

Debian/Ubuntu users can install Vim Outliner via their package manager. The installation process is slightly convoluted, however, so instructions follow:

```
$ sudo apt-get install vim-vimoutliner
  vim-addon-manager
 $ sudo vim-addons -w install vimoutliner
```

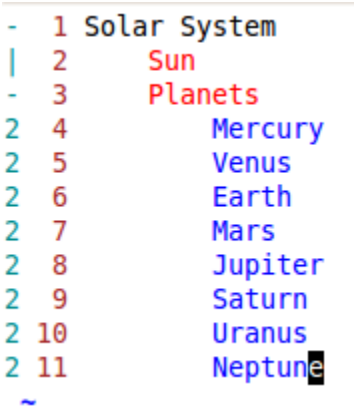
Add the following line to your `vimrc` if not already there:

```
filetype plugin indent on
```

Now open a new file with an `.otl` extension with Vim, e.g.

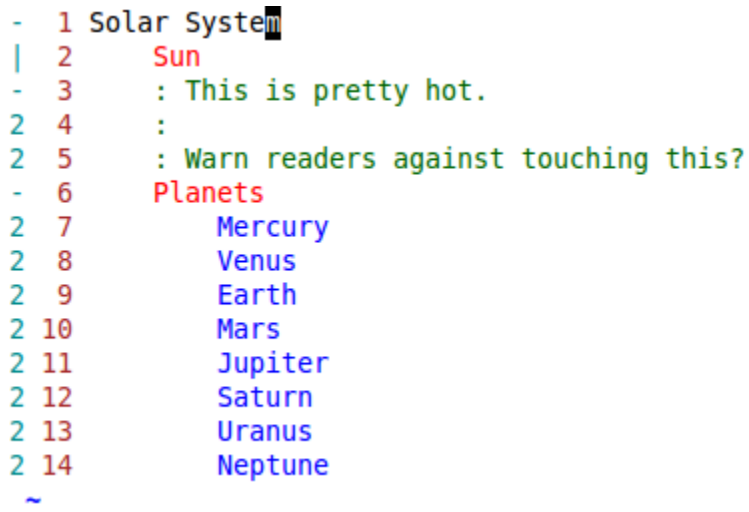
```
vim outline.otl
```

Each line of this file becomes an entry in the outline. Indentation is used to denote levels of hierarchy. For example:



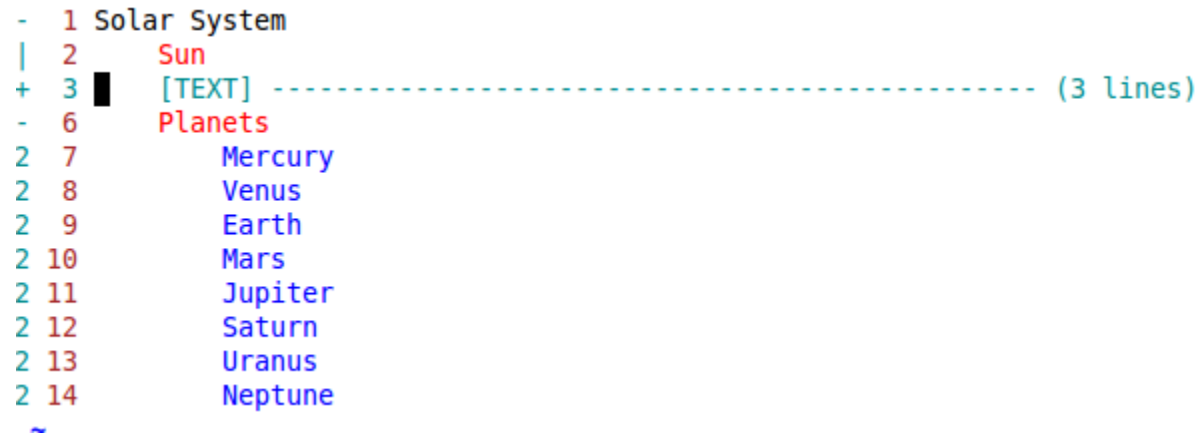
In this example, *Solar System* is at the top level of the outline. *Sun* and *Planets* are the next level down. All of the planets are in the next level after that. Each level is automatically assigned a colour.

You can add body text to a heading by starting a new line with a colon followed by a space, i.e. `: Body text`.



In the example above, body text has been added to the *Sun* heading.

Vim Outliner uses Vim's folds feature, so the standard *folds* commands still work. Continuing the above example, if your cursor is over the body text and you hit the fold close command `zc` the text will be hidden.



Using `zc` on a heading collapses its child elements. So, with the cursor over *Planets* `zc` displays:

```
-  1 Solar System
|  2     Sun
-  3     : This is pretty hot.
2  4     :
2  5     : Warn readers against touching this?
+  6     Planets ---------------------------------------------- (10 lines)
 ~
```

To expand a tree one level use `zo`; to expand it all the way down use `z0`.

To move a heading to a lower level in the hierarchy use `>>` in Normal mode; `<<` reverses the process.

A shortcut for expanding the hierarchy to a certain level is `\n`, where *n* is the minimum level you want displayed. `\0` expands every level. `\1` collapses every level. Using `\2` on our solar system outline displays only the first- and second-level headings:

```
-  1 Solar System
|  2     Sun
+  3     [TEXT] ----------------------------------------------- (3 lines)
+  6     Planets ---------------------------------------------- (8 lines)
 ~
```

For more information see `:help vimoutliner`.

A mature alternative to Vim Outliner is TVO (*The Vim Outliner*). Confusingly-similar name aside, it's worth considering if Vim Outliner doesn't suit you.

Discussion

A key strength of this form of organisation is that you can view a complex document *at a glance* with `\1`, then drill down to a specific heading to work on it.

I use one for my todo/ideas list by putting every item on a line of its own, then, as patterns emerge, grouping items under headings. For instance, I may add a heading for *Book on HTML*. Some time later I think of some chapters, so add them as subheadings to *Book on HTML*. When I want to start writing notes for a chapter I add body text to a heading, and start typing.

Vim Outliner comes with various scripts to convert outlines into other file formats. For instance, there is a script named `otl2html` which can be used to convert a `.otl` file into a `.html`. This lets you create semantically-correct webpages without writing HTML. There's also `otl2docbook` and `otl2pdb`, which target *DocBook* and *AddressDB Palm*, respectively. For more tools like this, see VimOutliner.org.