

Getting started with the Git revision control system

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Rugby Linux User Group

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What is Git?

Git is a fast, scalable, distributed revision control system with an unusually rich command set that provides both high-level operations and full access to internals.

Installing Git

Debian `aptitude install git-core`

OpenSUSE `zypper install git-core`

Fedora `yum install git-core`

Gentoo `emerge -va git-core`

From source Get source from <http://git.or.cz/>, then:

```
$ ./configure
```

```
$ make
```

```
$ make install
```

MS-Windows Don't care. YDIW, etc.

Our first commit

What not to do at this point:

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$ git-<TAB>
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Display all 137 possibilities? (y or n)

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Creating a repository

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```
$ git init
Initialized empty Git repository in .git/

$ ls -la
drwx-----  3 lamby lamby 4096 2007-10-28 00:49 .
drwxr-xr-x 74 lamby lamby 4096 2007-10-28 00:49 ..
drwxr-xr-x  7 lamby lamby 4096 2007-10-28 00:49 .git
```

Your first commit

Committing is simple:

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```
$ vim hello.py
$ git add hello.py

$ git commit
Created initial commit 0b7acf6: Intiial commit
1 files changed, 3 insertions(+), 0 deletions(-)
create mode 100644 hello.py
```

What just happened?

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- Git has a staging area for commits
- `git add` adds files to the staging area
- `git commit` commits the staging area
- `git status` shows the status of the commit area

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Reverting a commit (rollback)

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$ git-reset --hard
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Resets working tree to last committed state.

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Fixing a commit

Run: `$ git commit -a --amend` after fixing broken files.

Sharing your work - overview

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- 1 Create a new repository we can 'push' to
- 2 Configure our local repo to point to it
- 3 Push our changes
- 4 Let people know how to clone this repo!
- 5 Merging changes from other repositories

Creating a remote repository

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- 'Bare' repositories vs. normal repositories

Creating a bare repository

```
$ mkdir myproject.git  
$ cd !$  
$ git --bare init
```

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- Each repo can 'track' other repositories, called *remotes*
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- Each repo can 'track' other repositories, called *remotes*
- 'Remote' specifications are stored in `.git/config`
- Use `git remote` to add a new remote:

Tracking our remote repository

```
$ git remote add origin uwcs.co.uk:git/myproject.git
```

Pushing changes

- Once you have made some commits, you can push changes!

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- Use `--all` the first time you push

Pushing changes (first time)

```
$ git push --all
```

Pushing changes

```
$ git push
```

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How others could clone your repository

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Using the 'dumb' protocols

If you are pushing to a repository that will be served over HTTP you must execute:

```
$ chmod +x hooks/post-update
```

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$ vim foo / git diff / ...
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$ git branch brad-branch
$ git checkout brad-branch
$ git pull brad brads-new-cool-stuff
$ vim foo / git diff / ...
$ git checkout master
$ git merge brad-stuff
```

Cool stuff

Speed

- Git is optimised for Linux:

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Speed

- Git is optimised for Linux:
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 - Fast downloading
 - Laziness

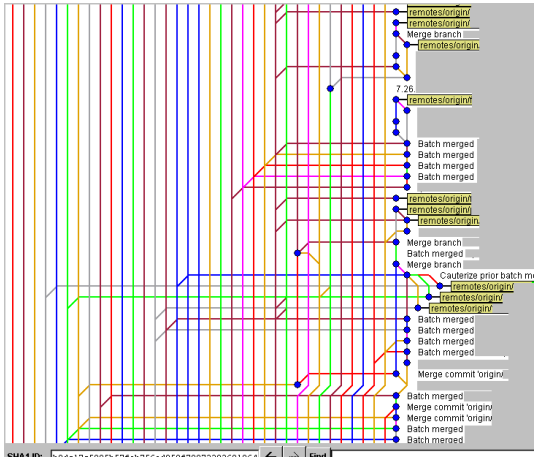
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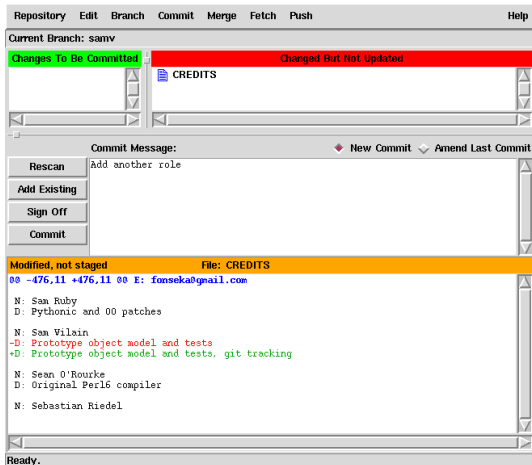
Speed

- Git is optimised for Linux:
 - Fast merging
 - Fast branching
 - Fast downloading
 - Laziness
- Garbage-collection: `git gc`
- Fast.. yet robust

Gitk - 'the Git repository browser'



git-gui - 'a portable graphical interface to Git'



Gitweb - 'web interface to Git'

The screenshot shows a web browser window displaying the Gitweb interface for the user 'chris-lamb.co.uk'. The page title is 'projects /' and the main heading is 'LQMBD's git repositories'. Below the heading, there are instructions on how to clone a repository using either a local path or an HTTPS URL. The main content is a table listing various Git repositories with columns for Project, Description, Last Change, and actions (such as 'summary', 'shortlog', 'log', 'tree').

Project	Description	Last Change	
autograph-music.git	Website for autograph-music.co.uk	2 months ago	summary shortlog log tree
bfide.git	PyGTK BrainF*** IDE	4 weeks ago	summary shortlog log tree
cakephp-instaweb.git	Instantly serves a CakePHP application.	5 weeks ago	summary shortlog log tree
cakeplanet.git	CakePHP PlanetPlanet clone.	2 months ago	summary shortlog log tree
chris-lamb.co.uk.git	chris-lamb.co.uk website	3 weeks ago	summary shortlog log tree
contentless-ping.git	Irssi auto-'pong' script.	7 weeks ago	summary shortlog log tree
dns-filter.git	DNS proxy for obnoxious ISPs with catch-all DNS.	7 weeks ago	summary shortlog log tree
dotfiles.git	Configuration dotfiles.	2 months ago	summary shortlog log tree
kiwiki-wordpressimport.git	Tool to import Wordpress entries into kiwiki.	3 weeks ago	summary shortlog log tree
lamby-xen.git	Web-based control panel for community Xen hosting.	7 weeks ago	summary shortlog log tree
live-helper.git	Lamby's Live-helper branch.	7 days ago	summary shortlog log tree
lnurl.git	Lamby's lnurl tree.	2 weeks ago	summary shortlog log tree
mytab.git	Simple group finance web application.	7 weeks ago	summary shortlog log tree
pkg-cakephp.git	Debian packaging for CakePHP stable branch.	42 min ago	summary shortlog log tree
pkg-cakephp1.2.git	Debian packaging for CakePHP (1.2 branch)	41 min ago	summary shortlog log tree
pkg-lbphp-simplepie.git	Debian packaging for Simplepie.	2 months ago	summary shortlog log tree
pkg-swiftprog.git	Debian packaging for SWI-Prolog.	6 weeks ago	summary shortlog log tree
pkg-trac-ldr.git	Debian packaging for Trac ldr plugin.	6 weeks ago	summary shortlog log tree
python-citylink.git	Python interface to Citylink's parcel tracking.	3 weeks ago	summary shortlog log tree
radioapplet.git	Lamby's radioapplet tree.	2 days ago	summary shortlog log tree
talk-starting-git.git	Starting GR (WUGLUG talk).	2 hours ago	summary shortlog log tree
uchoob.git	Lamby's uchoob tree.	40 hours ago	summary shortlog log tree

At the bottom right of the table, there is a button labeled 'TXT: OPML'.

Importing from \$TOOL

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- Import complete history from:
 - Subversion / SVK
 - CVS
 - Perforce
 - Mercurial
 - Darcs
 - Arch, Quilt, IBM Rational ClearCase, ...

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 - Arch, Quilt, IBM Rational ClearCase, ...
- Roll your own imports easily with `git-fast-import`.
- More info:
<http://git.or.cz/gitwiki/InterfacesFrontendsAndTools>

Working transparently with SVN repositories

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 - The familiar, faster and saner Git tools

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- Get:
 - The familiar, faster and saner Git tools
 - Off-line commits (whilst still being distributed)
 - A warm glow of elitism
- More info: `man git-svn`

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 - Specifying a command that should be run on each revision
- Can be restricted to specified paths
- Effective only with good patch discipline

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- Good for developing local changes before sending upstream

'Git-rebase'

- Update a local patch series against mainline
- Good for developing local changes before sending upstream
- Or move changesets from custom branches back onto to main line

Thanks!

RUGLUG contact information:

- Website: <http://rugby.lug.org.uk/>

Source for these slides is on the 'rugby' branch of:

`git://git.retout.co.uk/talk-starting-git.git`