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>
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 changes

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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

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- ‘Bare‘ repositories vs. normal repositories

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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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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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$ 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

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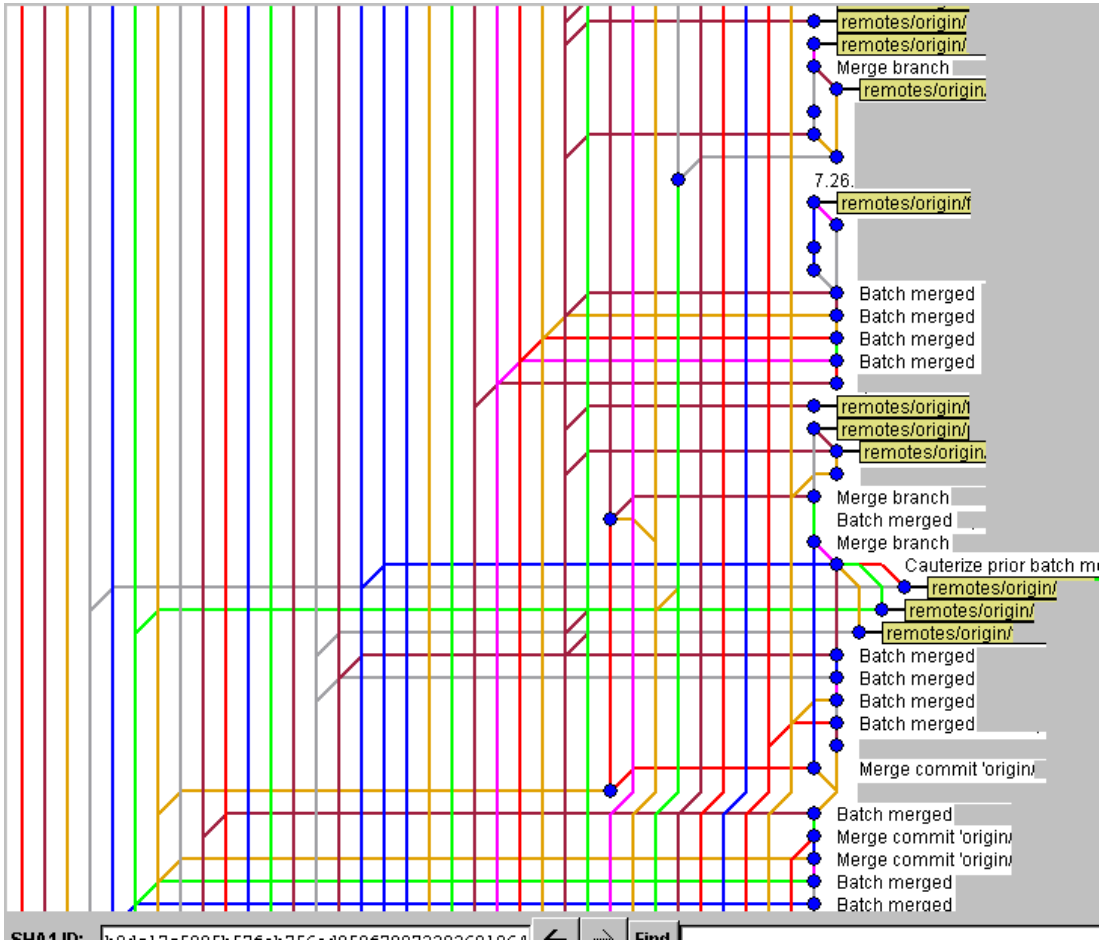
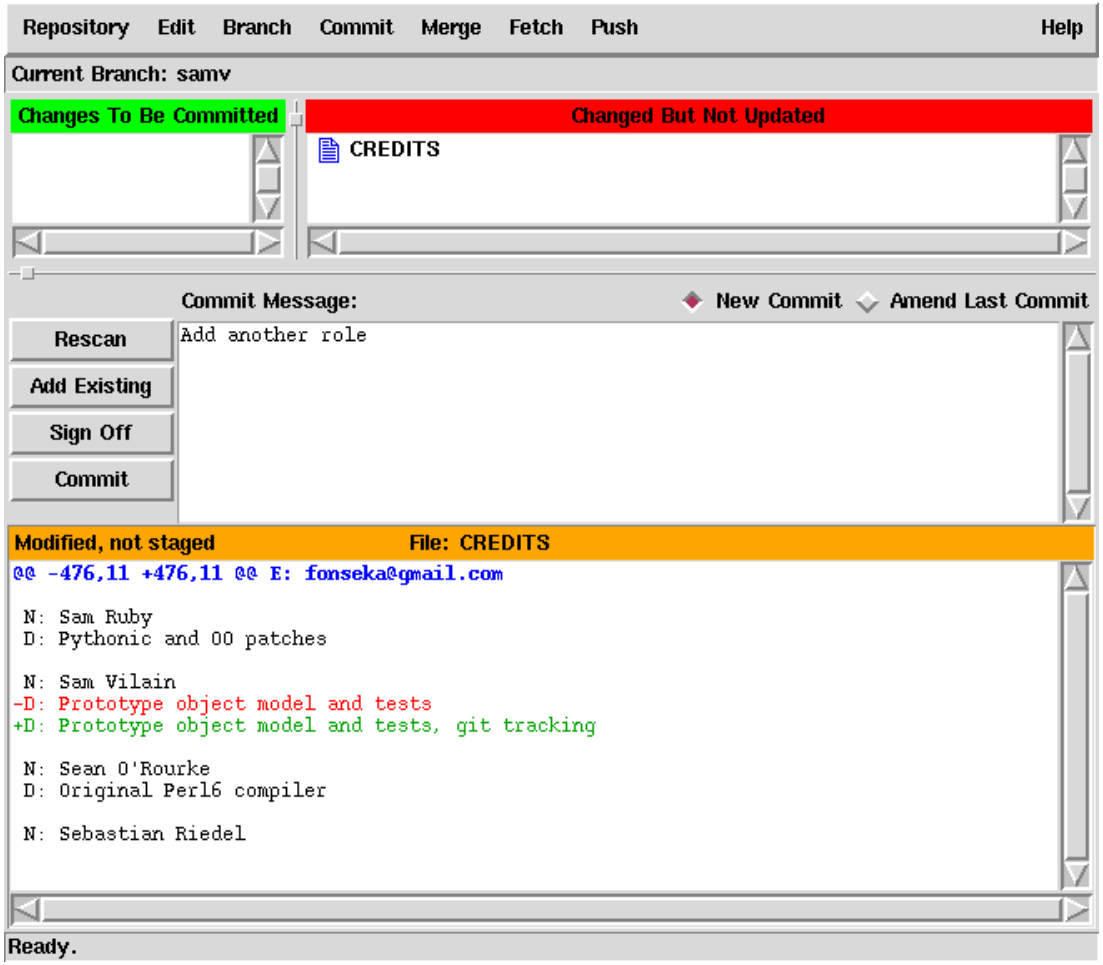
  - Laziness
- Garbage-collection: `git gc`
- Fast.. yet robust

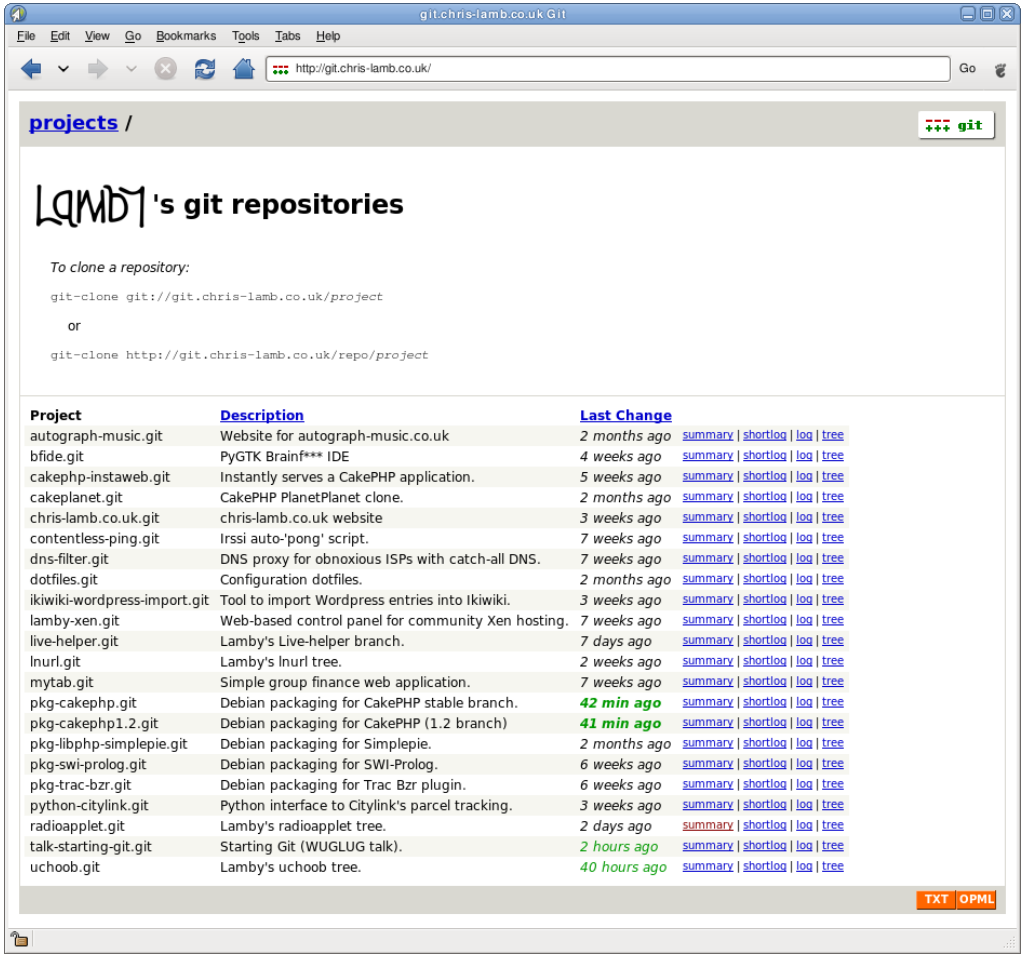
Gitk - 'the Git repository browser'



git-gui - ‘a portable graphical interface to Git’



Gitweb - ‘web interface to Git’



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

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- Import complete history from:
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  - CVS
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  - Mercurial
  - Darcs
  - Arch, Quilt, IBM Rational ClearCase, ...
- Roll your own imports easily with `git-fast-import`.
- More info:
  `http://git.or.cz/gitwiki/InterfacesFrontendsAndTools`

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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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- Can be restricted to specified paths
- Effective only with good patch discipline

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- 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`