

# Git Sucks

How git sucks and why you'll use it anyway

# Intro

- David Whittington
- Self Employed
  - xForty
  - ParentProxy

# Goals

- Convince you to at least try git
- Give you enough information to get started

# Experience?

- What VCS experience do you have?
  - RCS?
  - CVS/SVN?
  - Perforce?
  - Git/hg/bazaar?

# Version Control History

- In the beginning ... RCS
  - Lock – modify – unlock
  - Single file
  - Makes collaboration difficult

# Version Control History

- CVS/SVN
  - Copy – modify – merge
  - Central server
  - Makes forking + experimentation difficult

# Version Control History

- Distributed version control
  - Clone – modify – commit – fetch – merge ...
  - Lots of workflow options
  - Examples: Git, Mercurial, Bazaar-ng, Monotone

# What is Git?

- Distributed VCS system
- Created in 2005 by Torvalds following Bitkeeper fallout
- DAG based (as opposed to diff based)



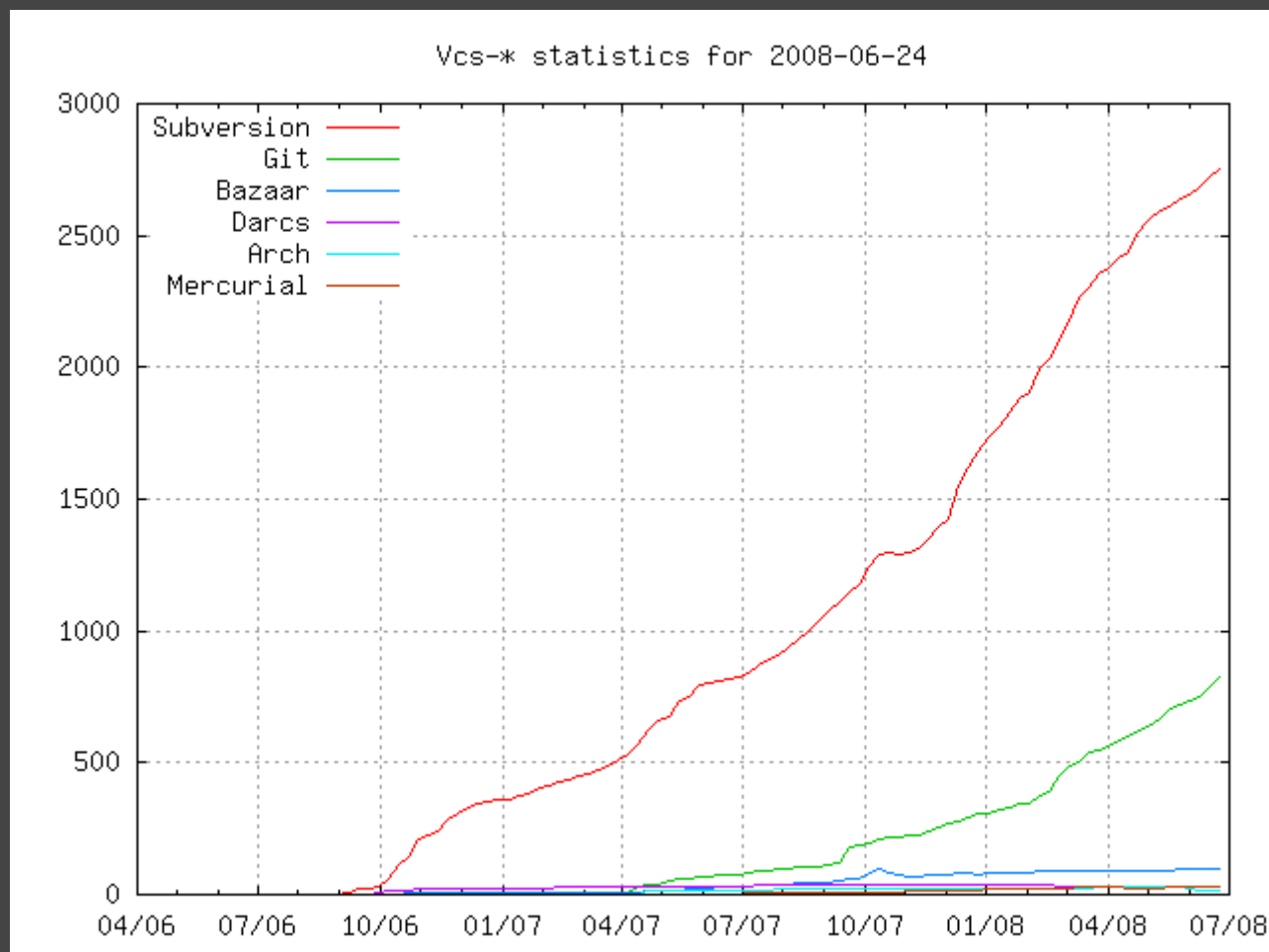
# Git Sucks

- DVCS = complexity
- Unintuitive
- Documentation also distributed
- Code can be obtuse

# Why You'll Use it Anyway

- Distributed VCS is Good
  - Encourages contributions
  - Encourages experimentation (branches are easy)
  - Offline access rocks

# Why You'll Use it Anyway



from <http://blog.orebokeh.com/2008/06/updated-debian-vcs-statistics.html>

# Why You'll Use it Anyway

- These projects are using it:
  - Linux Kernel
  - X.org
  - Samba
  - Wine
  - Ruby on Rails
  - ... more at <http://git.or.cz/gitwiki/GitProjects>

# Why You'll Use it Anyway

- It really is powerful
  - Unixy
  - Fast
  - SVN bridge

Why You'll Use it Anyway

Github rocks!

# Why You'll Use it Anyway



Hypnotoad Commands It!

# Using Git - Configuration

```
$ git config --global user.name "David ..."
```

```
$ git config --global user.email "djwhitt@..."
```

```
$ git config --list
```

```
user.name="David Whittington"
```

```
user.email="djwhitt@gmail.com"
```

```
$ cat ~/.gitconfig
```

```
[user]
```

```
    name = David Whittington
```

```
    email = "djwhitt@gmail.com"
```



# Using Git – Cloning a Repo

```
$ git clone git://github.com/rails/rails.git
```

```
$ cd rails
```

# Using Git – Creating a Repo

```
$ mkdir deathray
```

```
$ cd deathray
```

```
$ git init
```

# Using Git – Adding a File

```
$ echo "deathray - a ray that kills" > README
```

```
$ git add README
```

```
$ git commit -m "initial commit"
```

# Using Git – Modifying a File

```
$ echo "most awesome deathray ever" >> README
```

```
$ git add README
```

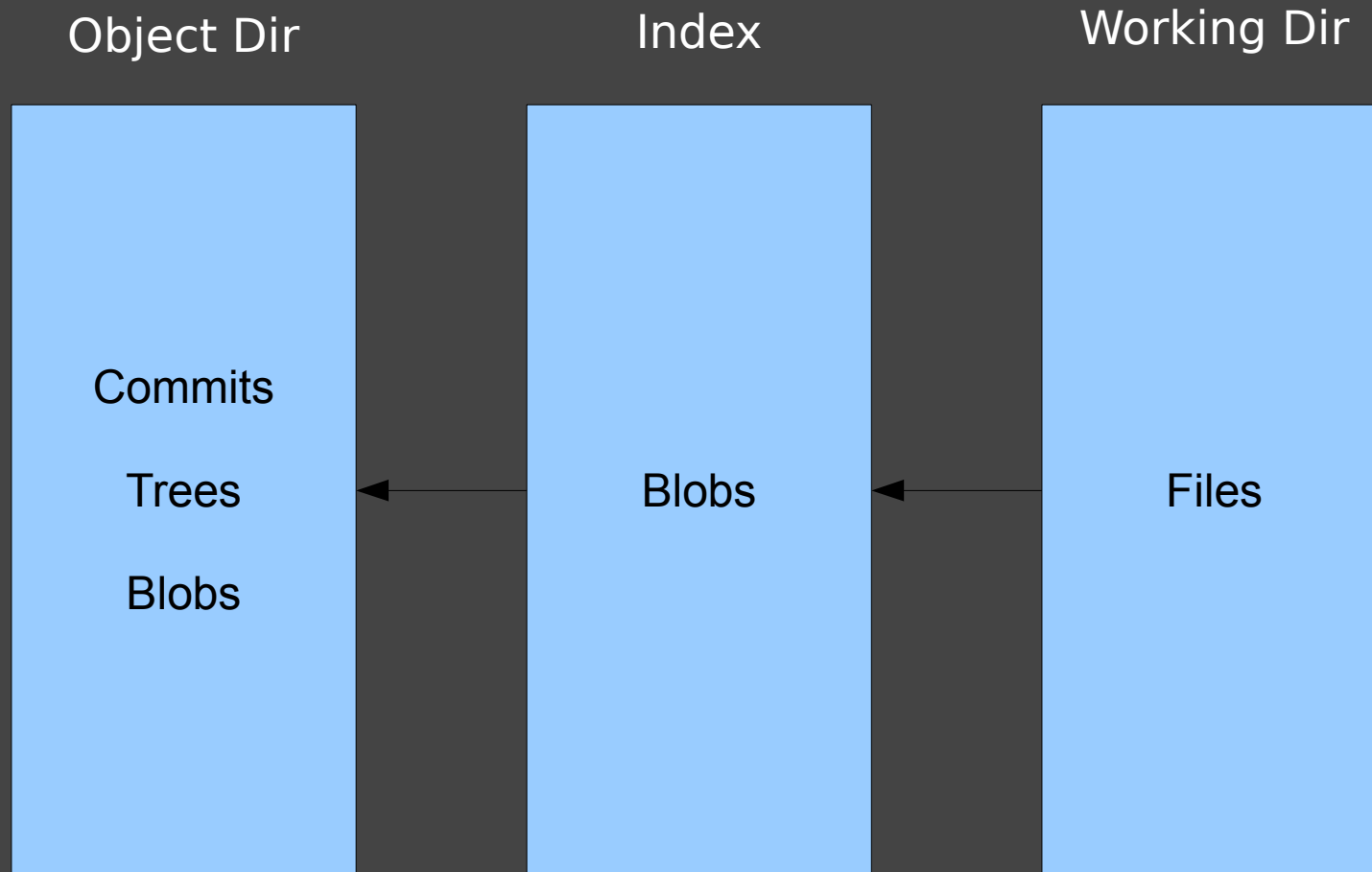
```
$ git commit -m "added detail to README"
```

or ...

```
$ echo "most awesome deathray ever" >> README
```

```
$ git commit -a -m "added detail to README"
```

# Using Git – The Index



# Using Git – Branches

```
$ git branch
```

```
* master
```

```
$ git branch fusion
```

```
$ git branch
```

```
fusion
```

```
* master
```

```
$ git checkout fusion
```

```
$ git branch
```

```
* fusion
```

```
master
```

# Using Git – Branches

The screenshot shows a Git GUI window with a menu bar (File, Edit, View, Help) and a commit history table. The table has columns for commit status, message, author, and date. The current commit is highlighted in green.

Commit Status	Message	Author	Date
fusion — master	added detail to	David Whittington <djwhitt@gmail.com>	2008-10-14 14:53:46
initial commit	David Whittington <djwhitt@gmail.com>		2008-10-14 14:53:27

SHA1 ID:  Row  /

Find

☒ Diff ☐ Old version ☐ New versions of

Author: David Whittington <djwhitt@gmail.com>  
Committer: David Whittington <djwhitt@gmail.com>  
Parent: [63c2c52b2e6195fe55fc9378e](#)  
Branches: [fusion](#), [master](#)  
Follows:  
Precedes:

added detail to README

index 569267f..b78a271 100644  
@@ -1 +1,2 @@  
deathray - a ray that kills  
[rest of diff]

☒ Patch ☐ Tree

Comments  
README

# Using Git – Branches

```
$ echo "reactor core" > reactor
```

```
$ git add reactor
```

```
$ git commit -m "adding reactor"
```

```
$ ls
```

```
README reactor
```

```
$ git checkout master
```

```
$ ls
```

```
README
```



# Using Git – Branches

The screenshot shows a Git GUI application with the following components:

- Menu Bar:** File, Edit, View, Help.
- Commit History Table:**

Branch	Commit Message	Author	Date
fusion	adding reactor	David Whittington <djwhitt@gmail.com>	2008-10-14 16:21:11
master	added detail to README	David Whittington <djwhitt@gmail.com>	2008-10-14 14:53:46
	initial commit	David Whittington <djwhitt@gmail.com>	2008-10-14 14:53:27
- SHA1 ID:** eba882d496d755ed0cc48d4a9b29ff5c47d9caa2
- Navigation:** Row 2 / 3, Find, next, prev, commit, containing: [ ], Exact, All fields.
- Search:** [ ]
- Diff View:**
  - Selected: Diff (Patch, Tree).
  - Child: 9b17c65a52f94c280034b89f1
  - Branch: fusion
  - Follows:
  - Precedes:
  - added detail to README
  - index 569267f..b78a271 100644
  - @@ -1 +1,2 @@
  - deathray - a ray that kills
  - +most awesome deathray ever
- Comments:** README

# Using Git - Merging

```
$ git branch
```

```
fusion
```

```
* master
```

```
$ echo "focussing lens" > lens
```

```
$ git add lens
```

```
$ git commit -m "adding lens"
```

# Using Git - Merging

The screenshot shows the TortoiseSVN graphical user interface. At the top is a menu bar with 'File', 'Edit', 'View', and 'Help'. Below the menu is a commit history table with columns for commit status, message, author, and date. The history shows a 'master' branch with a commit 'adding lens' and a 'fusion' branch with a commit 'adding reactor'. Below the history is a 'SHA1 ID' field showing '9742ec6f36bcd8b8790e2bacc01e1001d13e46db' and a 'Row' indicator showing '1 / 4'. Below the SHA1 ID is a 'Find' section with buttons for 'next', 'prev', 'commit', and 'containing:', followed by a search box and buttons for 'Exact' and 'All fields'. Below the search section is a 'Search' button and a 'Diff' section with buttons for 'Diff', 'Old version', and 'New versions of'. The 'Diff' section shows a diff for the file 'lens' with a 'new file mode 100644' and 'index 0000000..4dd9c73'. The diff content shows a single line added: 'lens'. To the right of the diff is a 'Comments' section with a text area containing the word 'lens'.

Commit	Message	Author	Date
● master	adding lens	David Whittington <djwhitt@gmail.com>	2008-10-14 16:22:48
● fusion	adding reactor	David Whittington <djwhitt@gmail.com>	2008-10-14 16:21:11
●	added detail to README	David Whittington <djwhitt@gmail.com>	2008-10-14 14:53:46
●	initial commit	David Whittington <djwhitt@gmail.com>	2008-10-14 14:53:27

SHA1 ID: 9742ec6f36bcd8b8790e2bacc01e1001d13e46db Row 1 / 4

Find next prev commit containing: Exact All fields

Search

◆ Diff ◇ Old version ◇ New versions of

Author: David Whittington <djwhitt@gmail.com>  
Committer: David Whittington <djwhitt@gmail.com>  
Parent: eba882d496d755ed0cc48d4a9  
Branch: master  
Follows:  
Precedes:

adding lens

new file mode 100644  
index 0000000..4dd9c73  
@@ -0,0 +1 @@  
+lens

Comments  
lens

# Using Git - Merging

```
$ git merge fusion
```

# Using Git - Merging

The screenshot shows a Git GUI interface with a menu bar (File, Edit, View, Help) and a commit history table. The table lists five commits, with the top commit being a merge of the 'fusion' branch into 'master'. Below the table is a SHA1 ID field and navigation buttons. A search bar is located below the navigation buttons. The bottom section of the window displays commit details for the selected commit, including author, committer, parent hashes, branch name, and the commit message.

Commit	Message	Author	Date
16217a7724c26a9a5d076382a8c3bfa2544c6962	Merge branch 'fusion'	David Whittington <djwhitt@gmail.com>	2008-10-14 16:23:37
9742ec6f36bcd8b8790e2bacc	adding reactor	David Whittington <djwhitt@gmail.com>	2008-10-14 16:21:11
9b17c65a52f94c280034b89f1	adding lens	David Whittington <djwhitt@gmail.com>	2008-10-14 16:22:48
...	added detail to README	David Whittington <djwhitt@gmail.com>	2008-10-14 14:53:46
...	initial commit	David Whittington <djwhitt@gmail.com>	2008-10-14 14:53:27

SHA1 ID: 16217a7724c26a9a5d076382a8c3bfa2544c6962

Find next prev commit containing: Exact All fields

Search

Diff Old version New versions of

Author: David Whittington <djwhitt@gmail.com>  
Committer: David Whittington <djwhitt@gmail.com>  
Parent: 9742ec6f36bcd8b8790e2bacc  
Parent: 9b17c65a52f94c280034b89f1  
Branch: master  
Follows:  
Precedes:  
Merge branch 'fusion'

Patch Tree

Comments

# Using Git - Rebasing

```
$ git branch
```

```
fusion
```

```
* master
```

```
$ echo "focussing lens" > lens
```

```
$ git add lens
```

```
$ git commit -m "adding lens"
```

# Using Git - Rebasing

The screenshot shows the TortoiseSVN application window. At the top is a menu bar with 'File', 'Edit', 'View', and 'Help'. Below the menu bar is a commit history table with columns for commit status, message, author, and date. The history shows a sequence of commits on the 'master' branch, with the most recent commit being 'adding lens' by David Whittington. Below the history is a 'SHA1 ID' field containing the hash '3ef2aa1cfa23cf6f7ae0079ff89607da36209749'. To the right of the hash are navigation buttons for 'Row' (1 / 4). Below the hash is a 'Find' section with buttons for 'next', 'prev', 'commit', and 'containing:'. To the right of these buttons are 'Exact' and 'All fields' options. Below the 'Find' section is a 'Search' field. To the right of the search field are tabs for 'Diff', 'Old version', and 'New versions of'. The 'Diff' tab is selected, showing a diff view of the commit. The diff view shows the commit message 'adding lens' and the file 'lens' being added. The file content is shown in a text area, with the first line being 'lens'.

Commit	Message	Author	Date
● master	adding lens	David Whittington <djwhitt@gmail.com>	2008-10-14 16:25:28
● fusion	adding reactor	David Whittington <djwhitt@gmail.com>	2008-10-14 16:21:11
●	added detail to README	David Whittington <djwhitt@gmail.com>	2008-10-14 14:53:46
●	initial commit	David Whittington <djwhitt@gmail.com>	2008-10-14 14:53:27

SHA1 ID: 3ef2aa1cfa23cf6f7ae0079ff89607da36209749

Row 1 / 4

Find next prev commit containing: Exact All fields

Search

◆ Diff ◇ Old version ◇ New versions of

Author: David Whittington <djwhitt@gmail.com>  
Committer: David Whittington <djwhitt@gmail.com>  
Parent: eba882d496d755ed0cc48d4a9  
Branch: master  
Follows:  
Precedes:

adding lens

new file mode 100644  
index 0000000..4dd9c73  
@@ -0,0 +1 @@  
lens

# Using Git - Rebasing

```
$ git rebase fusion
```



# Using Git - Rebasing

The screenshot shows a Git GUI interface with the following components:

- Menu Bar:** File, Edit, View, Help.
- Commit History:** A list of commits with a graphical representation of the branch structure. The 'master' branch is highlighted in green. The commits are:
  - initial commit
  - added detail to README
  - fusion
  - adding reactor
  - adding lens
- SHA1 ID:** e48b1308c91ba71f4ddcfae665e733adac17537c
- Row:** 1 / 4
- Find:** next, prev, commit, containing: (text input), Exact (checkbox), All fields (checkbox).
- Search:** (text input).
- Diff View:** A section with tabs for Patch and Tree. The Patch tab is selected. The diff shows the changes in the 'lens' file.

```
Author: David Whittington <djwhitt@gmail.com>
Committer: David Whittington <djwhitt@gmail.com>
Parent: 9b17c65a52f94c280034b89f1
Branch: master
Follows:
Precedes:

    adding lens

-----
new file mode 100644
index 0000000..4dd9c73
@@ -0,0 +1 @@
+lens
```

# Using Git – Git Status

```
$ git status  
# Changed but not updated:  
#       modified:   lens  
# Untracked files:  
#       amplifier
```

# Using Git – Git Log

```
$ git log
```

```
commit c23d31c9d34c7bf540a8e57f615f735f9ecdc2f2
```

```
Author: David Whittington <djwhitt@gmail.com>
```

```
Date:    Tue Oct 14 14:25:55 2008 -0400
```

```
    adding lens
```

```
...
```

# Using Git - .gitignore

```
$ cat .gitignore  
# swap files  
*.swp  
# temp dir  
/tmp
```

# Using Git - Aliases

```
$ git config --global alias.co checkout
```

```
$ git co fusion
```

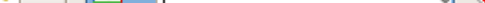
# Using Git – Awesome Stuff

```
$ git add --interactive
```

```
$ git add --patch
```

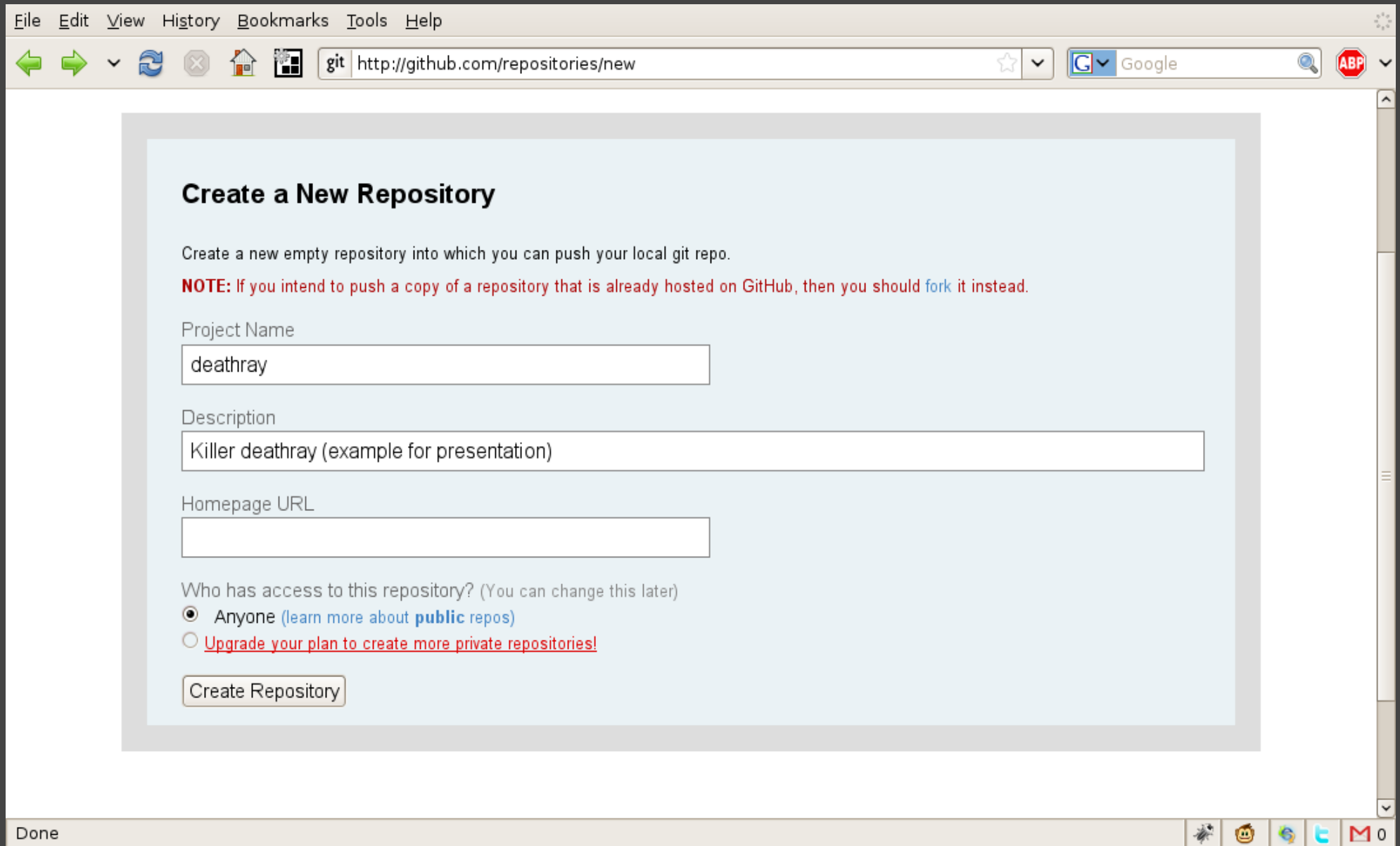
```
$ git stash
```

## File Edit View History Bookmarks Tools Help

 0

github.com      1

# Using Git - Github



The screenshot shows a web browser window with the address bar displaying 'http://github.com/repositories/new'. The page title is 'Create a New Repository'. The form contains the following fields and options:

- Project Name:** A text input field containing 'deathray'.
- Description:** A text input field containing 'Killer deathray (example for presentation)'.
- Homepage URL:** An empty text input field.
- Who has access to this repository? (You can change this later)**
  - ☒ **Anyone** ([learn more about public repos](#))
  - ☐ [Upgrade your plan to create more private repositories!](#)
- Create Repository:** A button at the bottom of the form.

The browser's taskbar at the bottom shows the 'Done' status and several application icons, including a bug, a smiley face, a globe, a Twitter bird, and a mail icon with a '0' notification badge.



# Using Git - Github



The screenshot shows a web browser window with the address bar displaying `git http://github.com/djwhitt/deathray/tree/master`. The page content is a light blue box containing the following sections:

**Global setup:**  
Download and install [Git](#)  
`git config --global user.email djwhitt@gmail.com`

**Next steps:**  
`mkdir deathray`  
`cd deathray`  
`git init`  
`touch README`  
`git add README`  
`git commit -m 'first commit'`  
`git remote add origin git@github.com:djwhitt/deathray.git`  
`git push origin master`

**Existing Git Repo?**  
`cd existing_git_repo`  
`git remote add origin git@github.com:djwhitt/deathray.git`  
`git push origin master`

**Importing a SVN Repo?**  
`git svn init`

The browser's status bar at the bottom shows "Done" and a taskbar with various application icons.

# Using Git – Remote + Push

```
$ git remote add github \  
> git@github.com:djwhitt/deathray.git  
$ git push github master
```

# Using Git – Fetch, Merge, Pull

```
$ git fetch github
```

```
$ git merge github/master
```

or...

```
$ git pull github master
```

# Using Git - Tracking

```
$ git config branch.master.remote github
```

```
$ git config branch.master.merge github/master
```

# Stuff I Didn't Cover

- Workflow
- Conflicts
- Many more git commands
- Internals
- Other hosting options

# Resources

- <http://git.or.cz/index.html>
- <http://git-scm.com/>
- <http://www.gitcasts.com/>
- <http://peepcode.com/>
  - screencast and pdf book
  - not free

Questions?