Using Git on OS-X

Munich Cocoaheads
2009-11-12
2009-12-10
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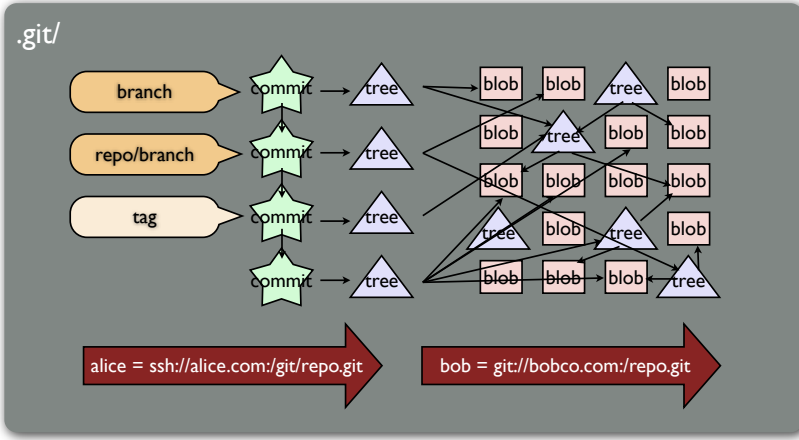
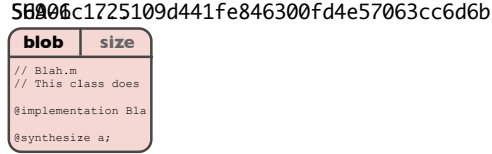
Coming up

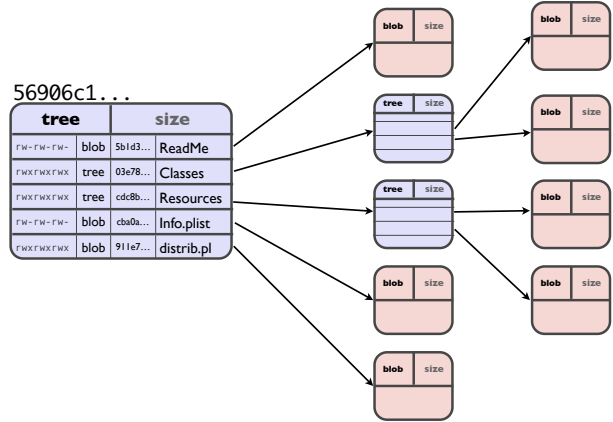
- Basic Concepts
- Daily Git
- Git with XCode

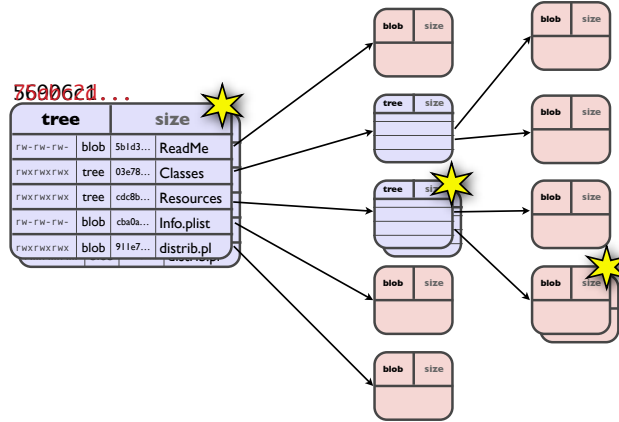
- Non-Obvious Git

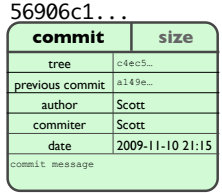
project_dir/
.git/

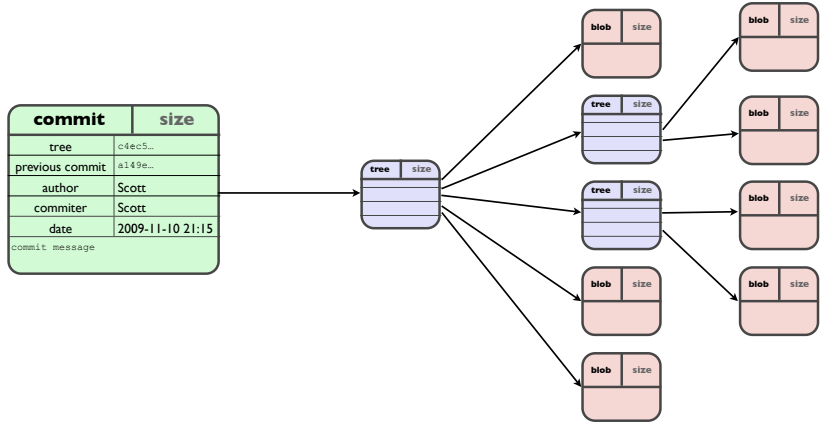

.git/
branch
repo/branch
tag
commit
commit
commit
commit
tree
tree
tree
tree
blob
blob
tree
blob
blob
tree
blob
blob
blob
blob
blob
blob
blob
blob
tree
blob
tree
blob
blob
blob
blob
tree
alice = ssh://alice.com:/git/repo.git
bob = git://bobco.com:/repo.git


SHA06c1725109d441fe846300fd4e57063cc6d6b
blob
size
// Blah.m
// This class does
@implementation Bla
@synthesize a;

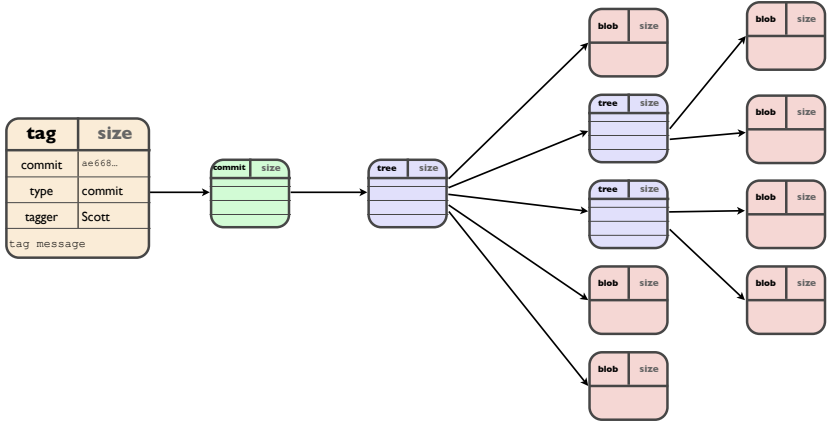

56906c1...
tree
size
rw-rw-rw-
blob
5b1d3...
ReadMe
rwxrwxrwx
tree
03e78...
Classes
rwxrwxrwx
tree
cdc8b...
Resources
rw-rw-rw-
blob
cba0a...
Info.plist
rwxrwxrwx
blob
911e7...
distrib.pl
blob
size
tree
size
tree
size
blob
size
blob
size
blob
size
blob
size
blob
size
blob
size

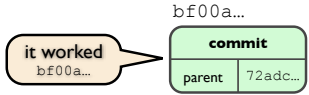

5600621...
tree
size
rw-rw-rw-
blob
5b1d3...
ReadMe
rwxrwxrwx
tree
03e78...
Classes
rwxrwxrwx
tree
cdc8b...
Resources
rw-rw-rw-
blob
cba0a...
Info.plist
rwxrwxrwx
blob
911e7...
distrib.pl
blob
size
tree
size
blob
size
blob
size
tree
size
blob
size
blob
size
blob
size
blob
size

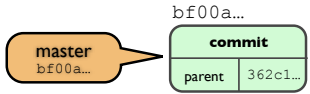

56906c1...
commit
size
tree
c4ec5…
previous commit
a149e…
author
Scott
commiter
Scott
date
2009-11-10 21:15
commit message

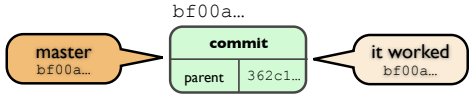

commit
size
tree
c4ec5…
previous commit
a149e…
author
Scott
commiter
Scott
date
2009-11-10 21:15
commit message
tree
size
blob
size
tree
size
tree
size
blob
size
blob
size
blob
size
blob
size
blob
size
blob
size

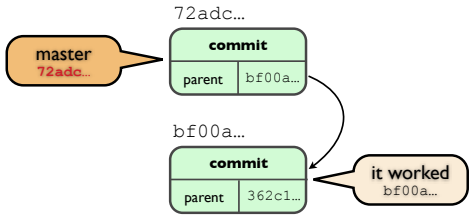
56906c1...
tag
size
commit
ae668…
type
commit
tagger
Scott
tag message


tag
size
commit
ae668…
type
commit
tagger
Scott
tag message
commit
size
tree
size
blob
size
tree
size
tree
size
blob
size
blob
size
blob
size
blob
size
blob
size
blob
size

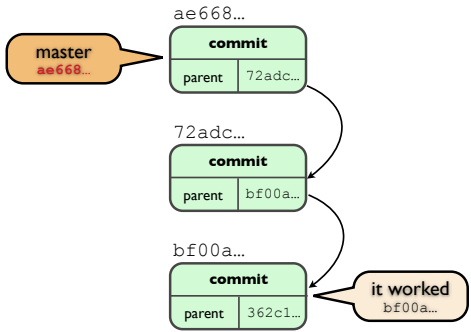

bf00a...
it worked
bf00a...
commit
parent
72adc...


bf00a…
master
bf00a…
commit
parent
362c1…

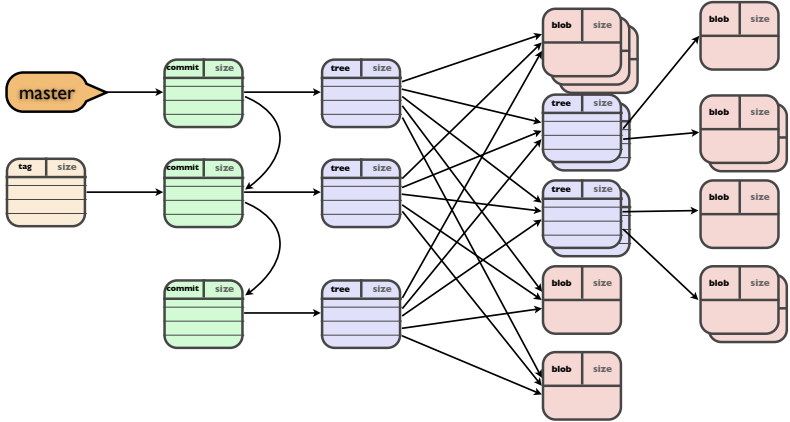

bf00a...
master
bf00a...
commit
parent
362c1...
it worked
bf00a...

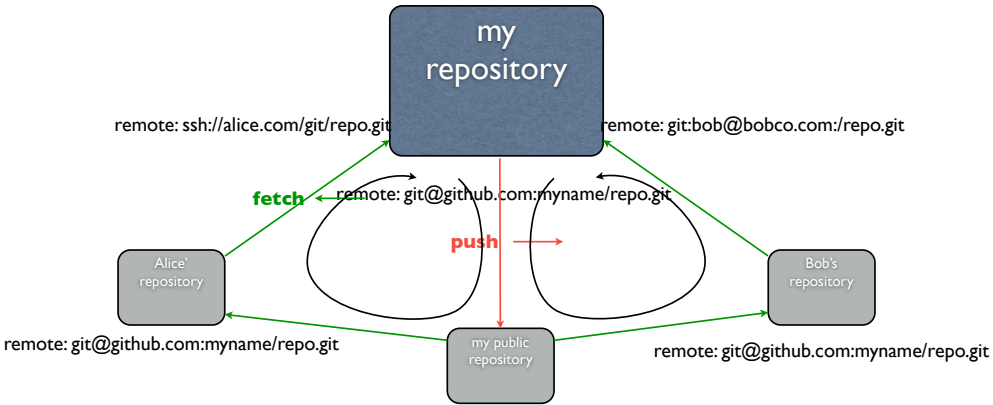

72adc...
master
72adc...
commit
parent
bf00a...
bf00a...
commit
parent
362c1...
it worked
bf00a...

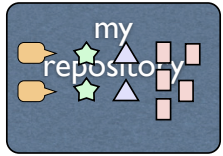
HEAD and your current branch are automatically updated when you commit a change.



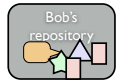
tags are immutable and reliably point to a known state of the entire repository

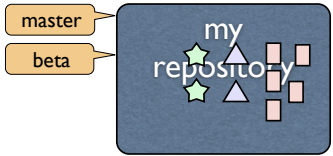

master
tag
size
commit
size
commit
size
commit
size
tree
size
tree
size
tree
size
blob
size
tree
size
tree
size
blob
size
blob
size
blob
size
blob
size
blob
size
blob
size

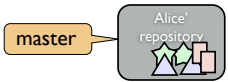

my repository
remote: ssh://alice.com/git/repo.git
remote: git:bob@bobco.com:/repo.git
fetch
remote: git@github.com:myname/repo.git
push
Alice' repository
Bob's repository
remote: git@github.com:myname/repo.git
my public repository
remote: git@github.com:myname/repo.git

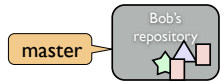

my
repository

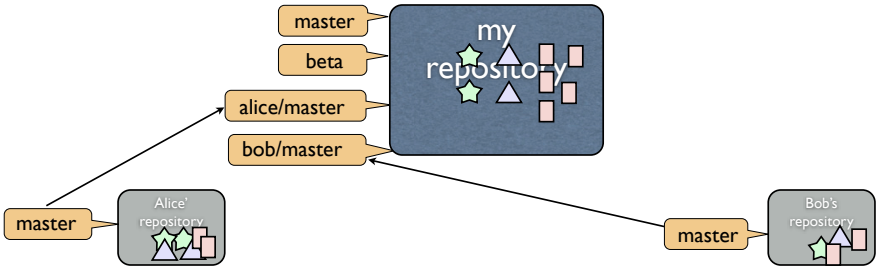
Alice'
repository


Bob's
repository

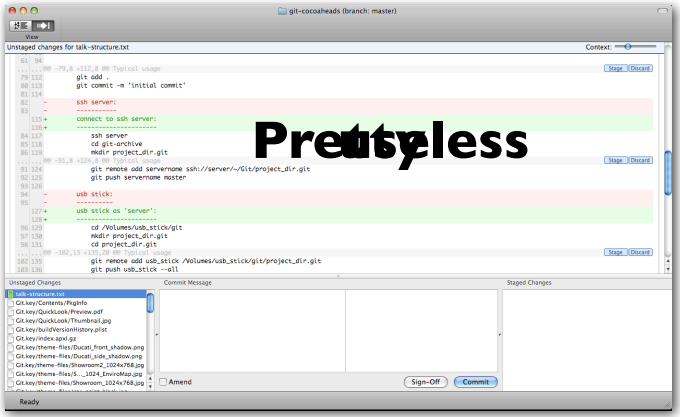

master
beta
my
repository


master
Alice'
repository

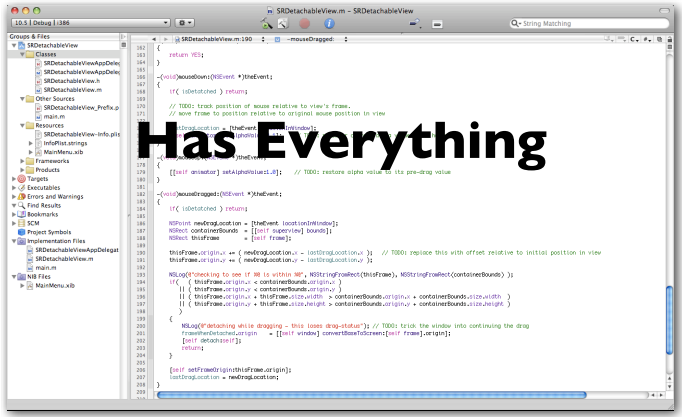

master
Bob's
repository

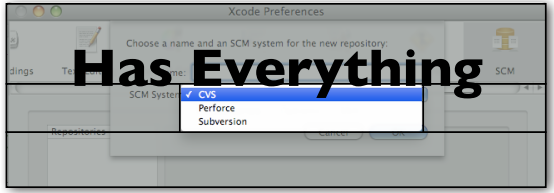

master
beta
alice/master
bob/master
my repository
master
Alice' repository
master
Bob's repository

Git On OS-X

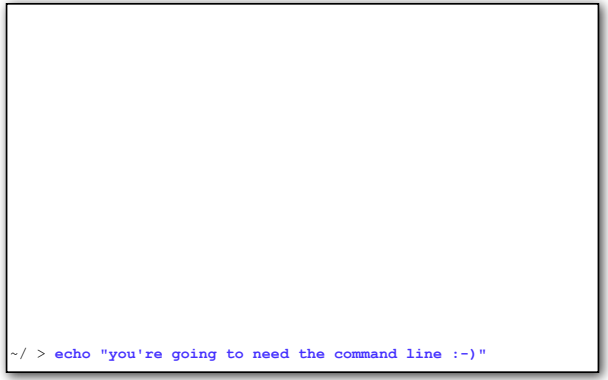


Pretty Useless


SRDetachableView.m – SRDetachableView
10.5 | Debug | i386
String Matching
Groups & Files
SRDetachableView
Classes
SRDetachableViewAppDeleg
SRDetachableViewAppDeleg
SRDetachableView.h
SRDetachableView.m
Other Sources
SRDetachableView_Prefix.p
main.m
Resources
SRDetachableView-Info.plis
InfoPlist.strings
MainMenu.xib
Frameworks
Products
Targets
Executables
Errors and Warnings
Find Results
Bookmarks
SCM
Project Symbols
Implementation Files
SRDetachableViewAppDelegat
SRDetachableView.m
main.m
NIB Files
MainMenu.xib
SRDetachableView.m:190
-mouseDragged:
Has Everything



Has Everything


~/ > echo "you're going to need the command line :-)"

First Steps

```
~/ > $EDITOR ~/.gitconfig

[core]
    pager = more
    excludesfile = /Users/me/.gitignore
[user]
    name = My Full Public Identity
    email = h4x0r@example.com
[format]
    pretty = format:%h %ci [%aN] %s
```

pager stops long lists from flying past your nose uncontrollably

excludesfile specifies files should never be checked into a git repository

format:
- %h = hash id
- %ci = commit date, iso 8601 format
- %aN = author name
- %s = summary

more info: `git log --help`

```
~/ > $EDITOR ~/.gitignore

# apple typical files
.DS_Store
.Spotlight-V100
.com.apple.timemachine.supported
.fseventsdbuild

# XCode user state files
*.mode1v3
*.pbxuser
*.objc_sync

# other SCM systems
.svn

# editor temporary files
*~
*.swp

# files you generate while building
build/
version.txt
CHANGELOG
```

```
~/ > git help <cmd>
```

```
~/ > git <cmd> --help
```

make sure you install git's man-pages.

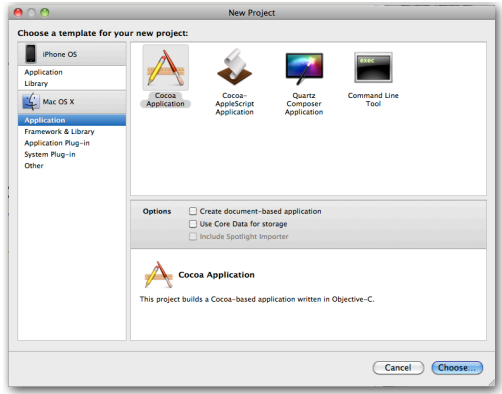
Use the man branch of the git repository

http://git-scm.com

http://github.com

http://gitready.com

http://google.com


New Project
Choose a template for your new project:
iPhone OS
Application
Library
Mac OS X
Application
Framework & Library
Application Plug-in
System Plug-in
Other
Cocoa Application
Cocoa-AppleScript Application
Quartz Composer Application
Command Line Tool
Options
Create document-based application
Use Core Data for storage
Include Spotlight Importer
Cocoa Application
This project builds a Cocoa-based application written in Objective-C.
Cancel
Choose...

```
~/>            cd project


~/project/ >   git init
Initialized empty Git repository in project_dir/.git/


~/project/ >   git add .


~/project/ >   git commit -m 'initial commit'
[master (root-commit) 64fb323] initial commit
 1 files changed, 1 insertions(+), 0 deletions(-)
 create mode 100644 hello.txt
```

create your project in XCode
create a new git repository
add your files & directories to git
commit your changes

```
~/project/ >  $EDITOR .gitattributes


*.pbxproj -crlf -diff -merge
*.nib     -crlf -diff -merge
*.xib     -crlf -diff -merge
*.graffle -crlf -diff -merge


~/project/ >  git add .gitattributes


~/project/ >  git commit -m 'add .gitattributes - prevent accidental merging of special XCode files'
[master (root-commit) 64fb323] initial commit
 1 files changed, 1 insertions(+), 0 deletions(-)
 create mode 100644 .gitattributes
```

Tell git to treat these files as if they were binaries.

XML files are notorious for being text, but "unmergable".

`.gitattributes` is project-specific
- must be checked into each project seperately
- will automatically be used by all project members

```
~/ > git clone -o cloned_repo URL/project.git

~/ > cd project

~/project/ > git checkout -b my_stuff cloned_repo/master
```

cloning a repository automatically sets up a remote repository called `origin`.

You can specify a different name for the remote repository with `-o name`

```
~/ > git clone ~/old_project_dir ~/new_project_dir
```

cloning a repository automatically sets up a remote repository called `origin`.

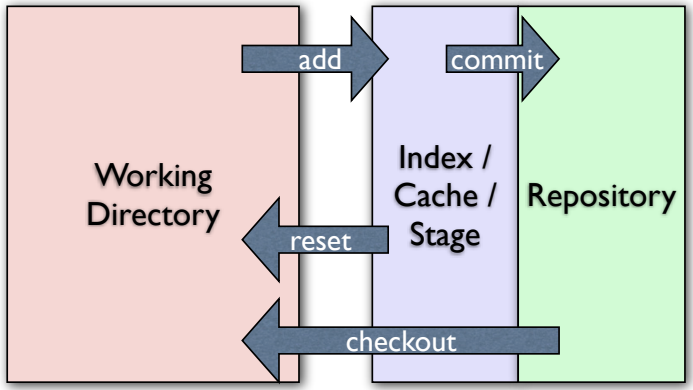
You can specify a different name for the remote repository with `-o name`

Daily Work

work work work…

```
~/project/ > git status

~/project/ > git add file file file directory…  or git add -A  or git add -u

~/project/ > git status

~/project/ > git commit -m 'what I just did'
```

```
git add -A
    new files
    changed files
    removed files

git add -u
    changed files
    removed files
```


add
commit
Working
Directory
Index /
Cache /
Stage
Repository
reset
checkout

```
~/project/ > git commit -a -m 'what I just did'
```

git commit -a
same as
git add -A; git commit

```
~/project/ > git checkout -b new_branch

~/project/ > git branch -a

~/project/ > git branch -d old_branch

~/project/ > git branch -D old_branch
```

TIP: you can create a new branch AFTER you have already made changes.

Just `checout -b new_branch` before you `git add`

```
~/project/ > git diff

~/project/ > git diff --cached

~/project/ > git diff HEAD

~/project/ > git diff branch
```

```
~/project/ > git merge other_branch
```

fix conflicts…

```
~/project/ > git add -A
```

```
~/project/ > git commit -m 'merge changes from other_branch'
```

git always merges into the working directory

merged files are added automatically

conflicts are not added - you need to resolve them first

```
~/project/ > git reset

~/project/ > git reset --hard HEAD
```

`git reset --hard` updates the cache and the working tree to match the named branch (by default `HEAD`)

Multiple Repositories

```
local ~/project/ >        ssh me@remote.com

remote ~/ >               mkdir project.git

remote ~/project.git/ >   cd project.git

remote ~/project.git/ >   git init --bare

remote ~/project.git/ >   logout

local ~/project/ >        git remote add public_repo ssh://me@remote.com/~/project.git

local ~/project/ >        git push public_repo release_branch
```

you should NOT publish your private directories (basic security)

create a `bare repository` on a public server

push only the branches your wish to publish

```
~/project/ > git clone --bare . /Volumes/usb_stick/project.git

~/project/ > git remote add usb_stick /Volumes/usb_stick/project.git

~/project/ > git push usb_stick
```

USB stick, external disk

great for ad-hoc sharing

great for backup

treat like a public repository

```
~/project/ > cp -R . /Volumes/usb_stick/project

~/project/ > git remote add usb_stick /Volumes/usb_stick/project

~/project/ > git push usb_stick
```

copying a repository works just fine - both copies can synchronise with each other!

```
~/project_dir/ > git remote -v

public_repo   ssh://me@remote.com/~/project.git (fetch)
public_repo   ssh://me@remote.com/~/project.git (push)
usb_stick     /Volumes/usb_stick/project.git (fetch)
usb_stick     /Volumes/usb_stick/project.git (push)
```

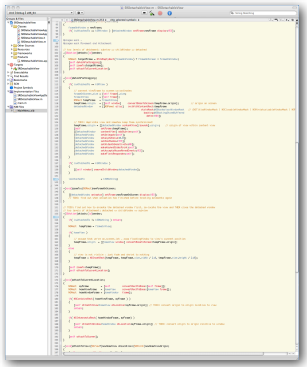
```
~/project/ > $EDITOR .git/config

...
[remote "steve"]
        url = ssh://steveserve.com/~/Git/project.git
        fetch = +refs/heads/*:refs/remotes/steve/*
[remote "mac"]
        url = git@github.com:mac/project.git
        fetch = +refs/heads/*:refs/remotes/mac/*
[remotes]
        buddies = steve mac
...

~/project/ > git remote update buddies
Updating steve
...
Updating mac
...
```

Publish your changes via a bare repository

Never push to someone else's repository

Use `git remote update` to track multiple repositories

~/project/ > open *.xcode*

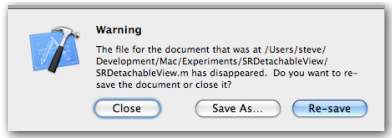


```
~/project/ > git status

~/project/ > git diff

~/project/ > git checkout -b fix

~/project/ > git commit -am '…'

~/project/ > git checkout master

~/project/ > git merge fix

~/project/ > git push public
```

```
git checkout
```

"**Read from Disk**", XCode just-wants to use your work.

Warning: OK, XCode just-wants to use your repository



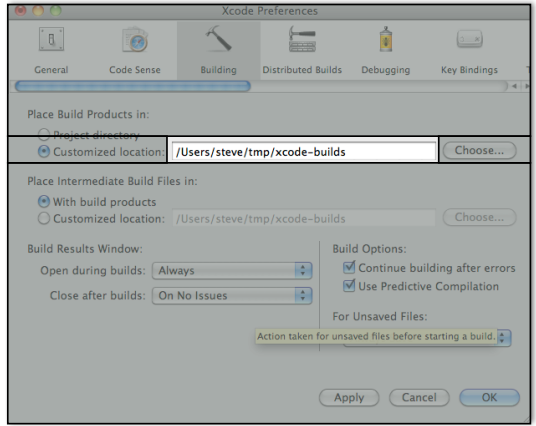
If you get this message, your should:

Save your work (possibly in a Temporary Directory)

Close XCode

Fix up your working directory

Open XCode again


Xcode Preferences
General
Code Sense
Building
Distributed Builds
Debugging
Key Bindings
Place Build Products in:
Project directory
Customized location:
/Users/steve/tmp/xcode-builds
Choose...
Place Intermediate Build Files in:
With build products
Customized location:
/Users/steve/tmp/xcode-builds
Choose...
Build Results Window:
Open during builds:
Always
Close after builds:
On No Issues
Build Options:
Continue building after errors
Use Predictive Compilation
For Unsaved Files:
Action taken for unsaved files before starting a build.
Apply
Cancel
OK