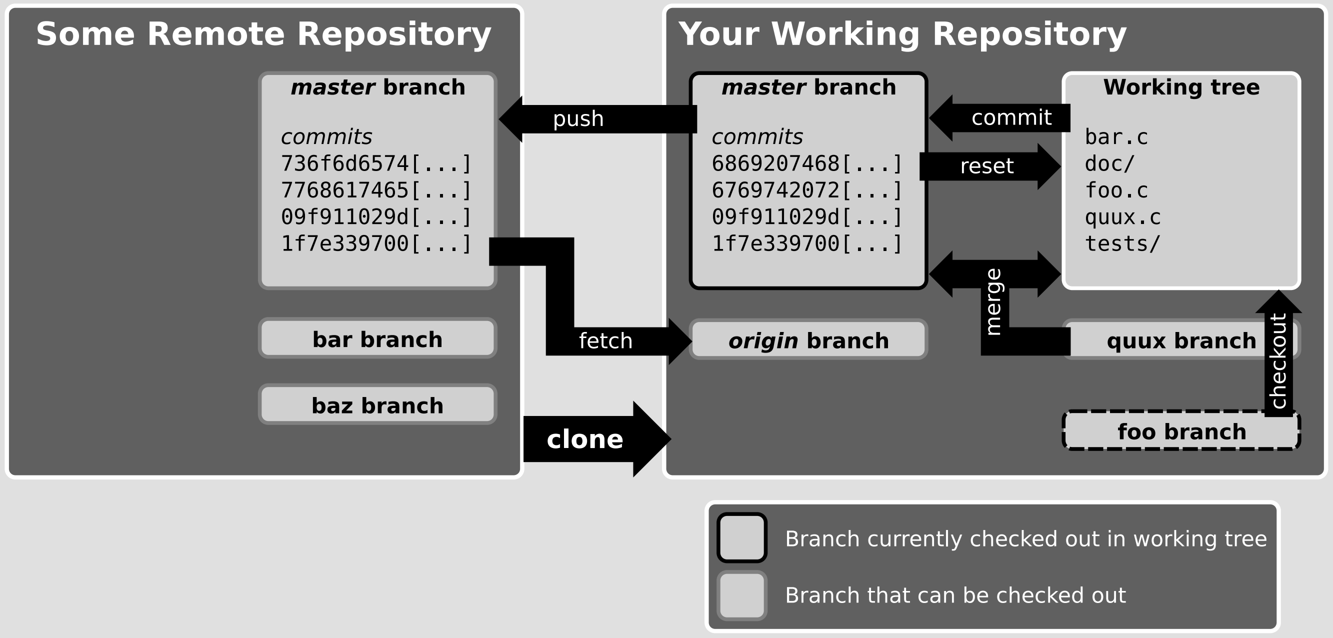
Git Cheat Sheet

The Big Picture



Resources

Git website
http://git.or.cz/
Cheat Sheet website
http://jan-krueger.net/git

Terminology

Branch
A line of development to which changes can be made. *Merging* branches means that changes performed in one branch are transported into another. The most recent commit of a branch is called its *tip* and it can be referenced to a *head*.
The default name of the development branch is *master*.

Commit (a.k.a.: revision, version)
A specific state in the branch's history. Each commit can be identified by a SHA hash and contains the hashes of its parents, i.e. the commit(s) it is based on, along with author information, a timestamp, and similar things.
As a verb: record specific changes made to the working tree in the associated branch as a new state.

Merge
Transport changes in a branch into the current one. To merge from a remote branch, a copy of it must first be *fetched*. The combination of *fetch* and *merge* is called *pull*.

Origin
Indicates the default *upstream* repository, i.e. the (possibly remote) repository you *cloned* your local repository from. (This is actually called *origin*, i.e. no capital "o").

Push
Transport local changes to a remote repository

Repository
A combination of a working tree (not usually accessible from the outside) and a set of branches, some of which may be copies of remote branches. On a physical level, a repository is a directory containing a *.git* directory with repository metadata, and the files you are currently working on.

Tag
A name for a specific commit that never changes. This can be used to mark interesting versions of a branch, e.g. releases.

Getting started

New to the trade:
1. This cheat sheet is not a tutorial. Read one!
2. Since I already mentioned tutorials: the Git website has a lot of documentation.

Switching from another system:
3. Interoperability tools exist: Arch, CVS, SVN
4. *add/commit* work differently than in most other SCM systems: *add* schedules changes for committing, *commit* records them. *commit -a* does both.
5. Every working tree contains a full repository, unlike as in CVS or SVN.

Useful Tools

git
Has all the standard operations as subcommands, e.g. *branch, checkout, clone, commit, fetch, merge* and so on.

git-gui
A graphical user interface for Git (Tk). Offers commands to commit, branch, merge etc.

gitk
Git's standard repository browser. Visualizes commits and such.

git-web
A web interface for viewing a Git repository. Ships with Git.

This is version 2.0 of Jan Krüger's Git cheat sheet. You can contact the author by e-mail at: <jk@jk.gs>.

Git Cheat Sheet

Create

From existing files
```
  git init
  git add .
  git commit
```
From remote repository
```
  git clone .../old .../new
  git clone git://...
  git clone ssh://...
```

Browse

```
git status
git diff oldref newref
git log [-p] [file|dir]
git blame file
git show ref[:file]
git branch (shows list, * = current)
git tag -l (shows list)
```

Change

Track Files

```
git add files
git mv old new
git rm files
git rm --cached files
      (stop tracking but keep files in working dir)
```

Revert

In Git, reverting usually means adding a commit that undos changes in previous commits.

```
git reset --hard (NO UNDO)
      (throw away all pending changes)
git revert ref
git commit -a --amend
      (replace previous commit)
git checkout ref file
```

Update

```
git fetch (from default upstream)
git fetch ref
git pull (= fetch + merge)
git am -3 patch.mbox
git apply patch.diff
```

Branch

```
git checkout branch
     (switch working dir to branch)
git merge branch
     (merge into current)
git branch branch
     (branch current)
git checkout -b new other
     (branch new from other and
     switch to it)
```

Record

In Git, commit only respects changes that have been marked explicitly with add.

```
git commit [-a]
      (-a: add changed files automatically)
git push [remote]
      (push to origin or remote)
git tag foo
      (mark current version)
```

Publish

```
git push
git push remote
git format-patch origin
      (create set of diffs)
```

Resolve Conflicts

Use add to mark files as resolved.

```
git diff [--base]
git diff --ours
git diff --theirs
git log --merge
gitk --merge
```

Explanation of Syntax

`[foo]`	`foo is optional`
`...`	`You can get creative here`
`foo`	*`foo`* `is a placeholder for something you need to fill in`
`ref`	`An object hash or name (see "Object Refs" for standard names)`

Configuration

Change options using `git config [--global]` *`varname value`*. The following variable names are useful:

`core.bare`
True for repositories without a working tree (usually public repositories).

`core.sharedRepository`
Set to `group` or `all` to make the repository contents writeable for the file group or everybody.

`core.compression`
A zlib compression level for objects (0-9, 9 = best compression) or -1 to use zlib's default.

`color.branch`
Color-code list of branches (true = always, auto = only when outputting to a terminal)

`color.diff`
Color-code diffs (true, auto)

`color.status`
Color-code output of `git status` (true, auto).

`user.email`
Your e-mail address (used in commits).

`user.name`
Your name (used in commits).

Object refs

`master`	default devel branch
`origin`	default upstream branch
`HEAD`	current branch
`HEAD^`	parent of HEAD
`HEAD~4`	great-great grandp. of HEAD
`foo..bar`	from ref foo to ref bar

Other Useful Commands

`git archive`
Create release tarball

`git bisect`
Binary search for defects

`git cherry-pick`
Take single commit from elsewhere

`git fsck`
Check tree

`git gc`
Compress metadata (performance)

`git rebase`
Forward-port local changes to remote branch

`git remote add URL`
Register a new remote repository for this tree

`git stash`
Temporarily set aside changes

`git tag`
(there's more to it)

Commit Messages

Some of Git's viewing tools need commit messages in the following format:

```
A brief one-line summary
<blank line>
Details about the commit
```

There's a little bit of room for your own notes here. This is your chance to customize this cheat sheet!

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Partially based on work by Zack Rusin, http://zrusin.blogspot.com/