# Git Cheat Sheet

Legend
<required>
[optional]

Get Help!
git help [command]

Learn More!
http://book.git-scm.com/
http://gitref.org/
http://learn.github.com/
http://help.github.com/
http://progit.org/book/
http://gitready.com/

## Create

From existing data
```
cd ~/projects/myproject
git init
git add .
```
From existing repo
```
git clone ~/existing/repo ~/new/repo
git clone you@host.org:dir/project.git
```
default protocol is ssh

Remote repository for existing local data
```
mkdir repo.git && cd repo.git
git init --bare [--shared=group]
```
see help for info

## Change

Files changed in working directory
```
git status
```
Changes to tracked files
```
git diff
```
Changes between ID1 and ID2
```
git diff <ID1> <ID2>
```
History of changes
```
git log
```
History of changes with files changed
```
git whatchanged
```
Who changed what and when in a file
```
git blame <FILE>
```
A commit identified by ID
```
git show <ID>
```
A specific file from a specific ID
```
git diff <ID>:<FILE>
```
All local branches
```
git branch
```
star "*" marks the current branch

Search for patterns
```
git grep <PATTERN> [PATH]
```

## Branch/Tag

Switch to the BRANCH branch
```
git checkout <BRANCH>
```
Merge branch B1 into branch B2
```
git checkout <B2>
git merge <B1>
```
Create branch based on HEAD
```
git branch <BRANCH>
```
Create branch based on another
```
git checkout <NEW> <BASE>
```
Delete a branch
```
git branch -d <BRANCH>
```
Make a version or milestone
```
git tag <VERSION_NAME>
git tag -a <VERSION_NAME> -m <MESSAGE>
```
recommended

Delete a tag
```
git tag <VERSION_NAME>
```

## Revert

Return to the last committed state
```
git checkout -f | git reset --hard
```
Revert the last commit
```
git revert HEAD
```
Creates a new commit

Revert specific commit
```
git revert <ID>
```
Creates a new commit

Fix the last commit
```
git commit -a --amend
```
after editing the broken files

Checkout the ID version of a file
```
git checkout <ID> <FILE>
```
Rvert git reset --hard
```
git reflog
git reset HEAD@{<N>}
```

## Update

Fetch latest changes from origin
```
git fetch
```
this does not merge them

Pull latest changes from origin
```
git pull
```
does a fetch followed by a merge

Apply a patch that someone sent you
```
git am -3 patch.mbox
```
In case of conflict, resolve the conflict and
```
git am --resolve
```

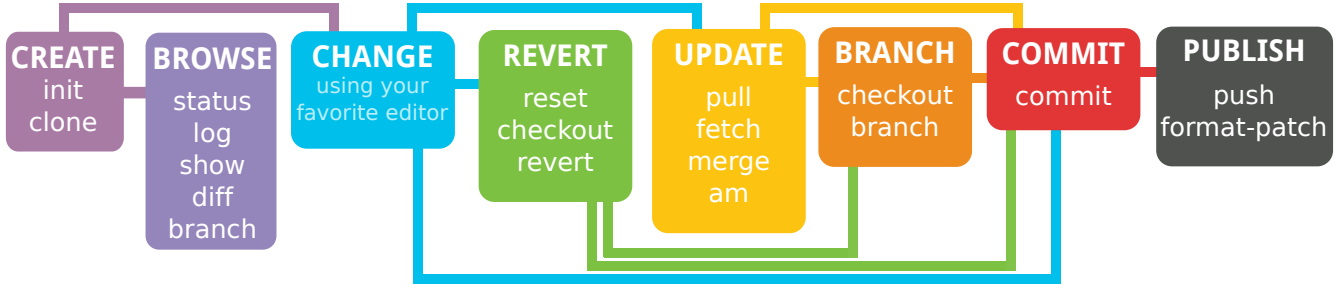
## Commit

Commit all local changes
```
git commit
git commit -m '<MESSAGE>'
git commit -a -m '<MESSAGE>'
```
Changes last commit
```
git commit --amend
```

## Publish

Prepare a patch for other developpers
```
git format-patch origin
```
Push changes to origin
```
git push <REMOTE> <BRANCH>
```
Fetch changes
```
git fetch <REMOTE>
```
Delete renote branch
```
git push <REMOTE> :<BRANCH>
```
Publish tags
```
git  push origin/upstream --tags
```
List remotes
```
git  [REMOTE] -v
```

## Workflow




## Useful tips

Get help!
```
git help [command]
```
Create empty branch
```
git symbolic-ref HEAD refs/heads/newbranch
rm .git/index
git clean -fdx
<DO WORK>
git add your files
git commit -m 'Initial commit'
```
Graphical log
```
git log --graph
git log --graph --pretty=oneline --abbrev-commit
```
Push branch to remote
```
git push <REMOTE> <BRANCH>
```
Semantic Versioning
```
git tag <MAJOR.MINOR.PATCH>
```
major: API changes
minor: add functionality
patch: bug fixes

## Merge conflicts

View merge conflicts
```
git diff
```
View merge conflicts against base file
```
git diff --base <FILE>
```
View merge conflicts against other changes
```
git diff --theirs <FILE>
```
View merge conflicts against your changes
```
git diff --ours <FILE>
```
Discard a conflicting patch
```
git reset --hard
git rebase --skip
```
After resolving conflicts, merge with
```
git add <CONFLICTING_FILE>
git rebase --continue
```

## Configuration

git config [--global]

global is stored in ~/.gitconfig

```
user        [user.name <NAME>
             user.email <EMAIL>
color       [color.ui auto true/false
github      [github.user <USER>
             github.token <TOKEN>
optimisation[pack.threads 0
             diff.renamelimit 0
```
do not use on low memory pc
```
windows     [core.autocrlf true
editor      [core.editor <EDITOR>
merge       [merge.tool <EDITOR>
```

**master** is the default development branch
**origin** is the default upstream repository
**HEAD** is the current branch

## Successful branching model