# Git Cheat Sheet

## Settings

- show git configuration:

```
git config --list
git config --get user.name
```

- set configuration:

```
git config --global --add user.name "John Doe"
git config --add color.ui "auto"
```

`--global` makes the setting global for all repos.

- some common settings:

| Setting | Meaning |
|---|---|
| user.name | User name. |
| user.email | User email. |
| color.ui | Use colors ("auto"!)? |
| core.editor | Which editor to use? |

## Basic Git

- Create a repository:

```
cd projDir
git init
```

- Add files to repository:

```
git add file1 file2
```

or

```
git add *
```

- Status and log:

```
git status
git log
```

- Commit changes:

```
git commit changedFile -m "Commit message."
```

or

```
git commit -a
```

Open the editor specified by `core.editor` for editing the commit message and then commit all changed files.

```
git commit file1 file2
```

Only commit `file1` and `file2`, open editor for editing the commit message.

- remove file from version control:
  - also remove file from disk:

```
git rm file
```

  - keep file on disk:

```
git rm --cached file
```

- go back to `fileName`'s last commited version:

```
git checkout -- fileName
```

- get help:

```
git stash --help
```

  shows the man page for `git stash`.

- rename a versioned file:

```
git mv oldName newName
```

- `diff` for all files:

```
git diff
```

  `diff` for a single file:

```
git diff fileName
```

- let git ignore certain files: create a file `.gitignore` and add it to the repo:

```
# comment
*.so
```

```
!bla.so
TODO
```

This makes `git` ignore the file `TODO` and all `.so` files, except `bla.so`.

# Branches

- list branches:

```
git branch
```

  Add `-r` for remote branches, use `-a` for remote and local branches.

- create new branch:

```
git branch newBranch
```

  Create a branch and check it out immediately:

```
git checkout -b newBranch
```

- change to a branch:

```
git checkout branchName
```

- delete branch:

```
git branch -d branchName
```

  for branches that branch off `HEAD`;

```
git branch -D branchName
```

for any branch.

- merge `other` branch into current branch:

```
git merge other
```

- push all branches to remote repository:

```
git push --all
```

- rename a branch:

```
git branch -m oldBranch newBranch
```

- checkout single files from another branch to current branch:

```
git checkout branchToUse fileName
```

- create a tracking branch that follows remote changes:

```
git branch --track myBranch remoteAlias/theirBranch
```

Alternatively,

```
git pull theirBranach
```

will fetch `'origin/theirBranch` and merge with the local `theirBranch` branch.

# Using `git` with remote repositories

- add alias `myRepo` for remote repository:

```
git remote add myRepo ssh://user@host.domain.tld/directory/myRepo
```

- show aliases for remote repositories:

```
git remote
git remote show aliasName
```

The second line gives details (also on branches).

- rename a remote:

```
git remote rename oldAlias newAlias
```

- remove a remote (and all tracking branches already fetched):

```
git remote rm alias
```

- clone a copy of a remote repository and create a local repository with a suitable remote `origin` set:

```
git clone URL
```

`clone` will get create a subfolder, fill (fetch) the subfolder with the contents of the repo and then create and checkout the default branch.

- get a specific branch from the remote and start working in it:

```
git checkout -b branchName origin/branchName
```

- retrieve all remote branches with

```
git fetch remoteAlias
```

No local branches will be altered (merging possibly needed).

- fetch a remote branch and merge it with the current branch:

```
git pull remoteAlias branchName
```

The working copy shall be clean for this operation.

- after a branch has been deleted from a remote repo,

```
git prune remoteAlias
```

will delete the remote-tracking branches that do not exist in the remote anymore.

- push local changes back to the remote with

```
git push remoteAlias branchName
```

A different name for the branch will be used by

```
git push remoteAlias localBranchName:remoteBranchName
```

- delete remote branch:

```
git push remoteAlias :branchName
```

## With central repository

- Create a repository on central server:

```
git init --bare --shared foo.git
chgrp -R dev foo.git  (optional)
```

`shared` makes the repo group writable. `bare` means there is no working copy.

- push local repo to server:

```
cd localRepo
git push ssh://user@host.domain.tld/home/user/foo.git '*:*'
```

(this pushes the local repo with everything to the server)

- clone new working directory that tracks the one on the server:

```
git clone ssh://user@host.domain.tld/home/user/foo.git newRepo
```

- after hacking in `newRepo`, update repo on server:

```
cd newRepo
git push
```

For more options, see above.

## With GitHub

- create repository `repoName` from the web interface
- teach local repository about the remote one:

```
cd repoName
git remote add origin git@github.com:githubuser/repoName.git
```

- push files to GitHub:

```
cd repoName
git push
```

- to clone the GitHub repo:

```
git clone git@github.com:githubuser/repoName.git newRepo
```

- push changes back to GitHub:

```
cd repoName
git push
```

For more options, see above.

# Discarding changes in working copy

There are at least two different ways to reset to working directory to the last versioned status:

## Checkout: Forget about changes

```
git checkout -- fileName
```

resets `fileName` to the last checked in version.

## Stashes: keep changes

- changes in a working dirctory may be 'stashed' away:

```
git stash save "Status before going back"
```

- stashes are listed with:

```
git stash list
```

- apply the stash on top of the stack again:

```
git stash apply
```

keeps to stash saved, whereas

```
git stash pop
```

applies the stash and also removes the stash form the list.

- delete a stash:

```
git stash drop
```

deletes the stash on top of the stack, whereas

```
git stash drop stash@{0}
```

deletes the stash `stash@{0}`.

# Links

- Git reference: http://gitref.org/
- "Pro Git" book: http://progit.org/
- Git community book: http://book.git-scm.com/
- Git with central sever: http://toroid.org/ams/git-central-repo-howto

# TODO

- notions (staging, head...)
- info on merging
- learn rebasing
- fix bugs (that certainly do exist in here)