GLCS : Git

Rappel (ou introduction)
de git

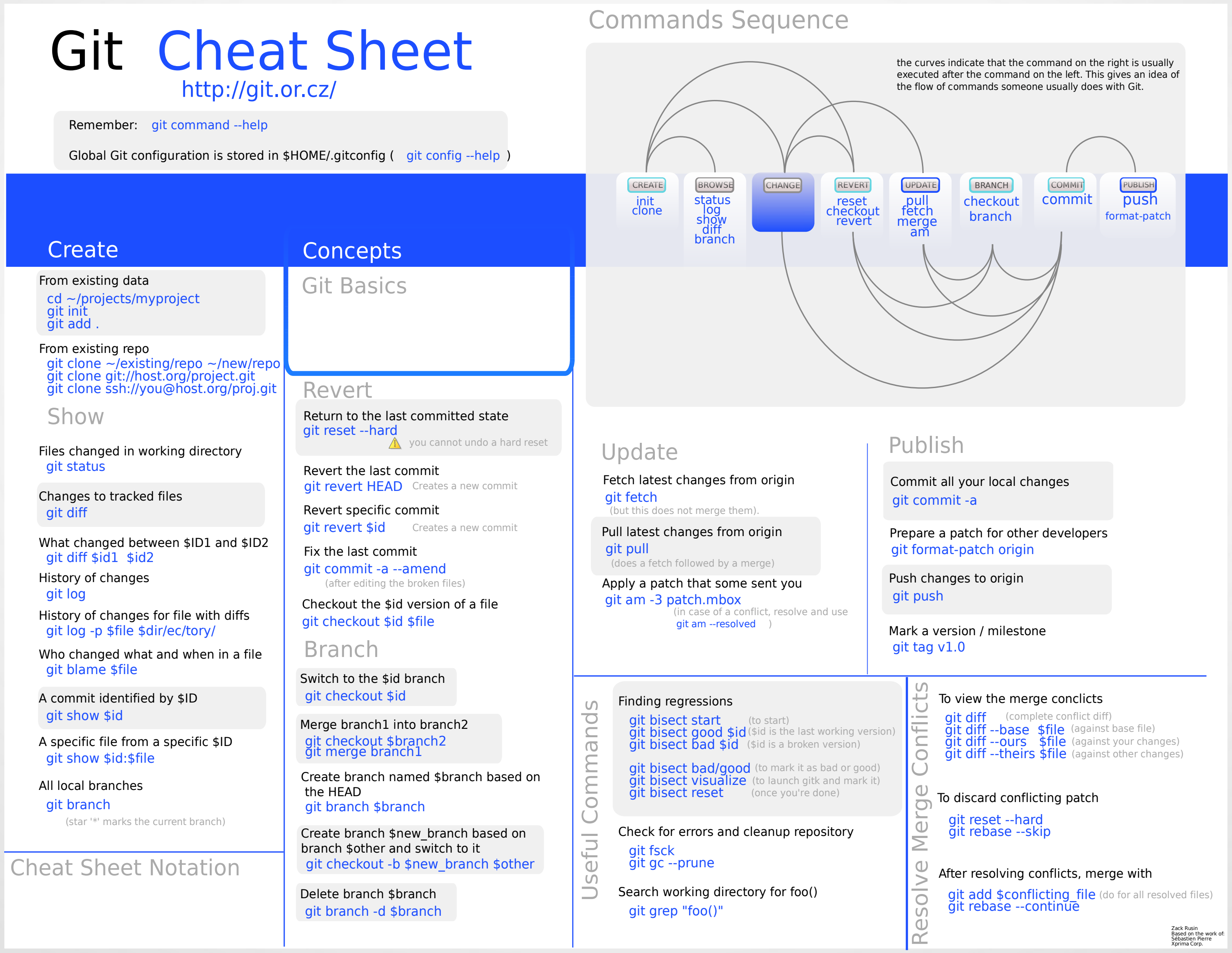
Git : les concepts

- Un gestionnaire de révisions décentralisé
- Objectifs
  - Garder un historique des modifications
    (super UNDO)
  - Simplifier la collaboration sur un même projet
- Notions de base
  - Répertoire de travail (WD)
  - Dépôt avec historique (Repository)
    - Révisions (commit)
    - Graphe acyclique dirigé (DAG)
- Voir http://eagain.net/articles/git-for-computer-scientists/

Git : commandes de base

- Git clone : crée un repository / WD
- Git commit : sauver l’état courant
- Git pull : fusionner l’état courant avec la version distante
  - Git fetch : télécharger la version distante
  - Git merge : fusionner deux versions
- Git push : partager sa version locale
- Qgit / gitk : voir l’historique
- https://gitlab.maisondelasimulation.fr/

Git : utilisation avancée



Git Cheat Sheet

http://git.or.cz/

Remember: git command --help

Global Git configuration is stored in $HOME/.gitconfig (git config --help)

Create

From existing data

```
cd ~/projects/myproject
git init
git add .
```

From existing repo

```
git clone ~/existing/repo ~/new/repo
git clone git://host.org/project.git
git clone ssh://you@host.org/proj.git
```

Show

Files changed in working directory
`git status`

Changes to tracked files
`git diff`

What changed between $ID1 and $ID2
`git diff $id1 $id2`

History of changes
`git log`

History of changes for file with diffs
`git log -p $file $dir/ec/tory/`

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 show $id:$file`

All local branches
`git branch`
(star '*' marks the current branch)

Cheat Sheet Notation

Concepts

Git Basics

Revert

Return to the last committed state
`git reset --hard`
⚠ you cannot undo a hard reset

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`

Branch

Switch to the $id branch
`git checkout $id`

Merge branch1 into branch2

```
git checkout $branch2
git merge branch1
```

Create branch named $branch based on the HEAD
`git branch $branch`

Create branch $new_branch based on branch $other and switch to it
`git checkout -b $new_branch $other`

Delete branch $branch
`git branch -d $branch`

Commands Sequence

the curves indicate that the command on the right is usually executed after the command on the left. This gives an idea of the flow of commands someone usually does with Git.

CREATE: init, clone
BROWSE: status, log, show, diff, branch
CHANGE
REVERT: reset, checkout, revert
UPDATE: pull, fetch, merge, am
BRANCH: checkout, branch
COMMIT: commit
PUBLISH: push, format-patch

Update

Fetch latest changes from origin
`git fetch`
(but this does not merge them).

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

Apply a patch that some sent you
`git am -3 patch.mbox`
(in case of a conflict, resolve and use git am --resolved)

Publish

Commit all your local changes
`git commit -a`

Prepare a patch for other developers
`git format-patch origin`

Push changes to origin
`git push`

Mark a version / milestone
`git tag v1.0`

Useful Commands

Finding regressions

```
git bisect start          (to start)
git bisect good $id       ($id is the last working version)
git bisect bad $id        ($id is a broken version)

git bisect bad/good       (to mark it as bad or good)
git bisect visualize      (to launch gitk and mark it)
git bisect reset          (once you're done)
```

Check for errors and cleanup repository

```
git fsck
git gc --prune
```

Search working directory for foo()
`git grep "foo()"`

Resolve Merge Conflicts

To view the merge conclicts

```
git diff                  (complete conflict diff)
git diff --base $file     (against base file)
git diff --ours $file     (against your changes)
git diff --theirs $file   (against other changes)
```

To discard conflicting patch

```
git reset --hard
git rebase --skip
```

After resolving conflicts, merge with

```
git add $conflicting_file (do for all resolved files)
git rebase --continue
```

Zack Rusin
Based on the work of:
Sébastien Pierre
Xprima Corp.