Git

Git - Why are we so... excited?

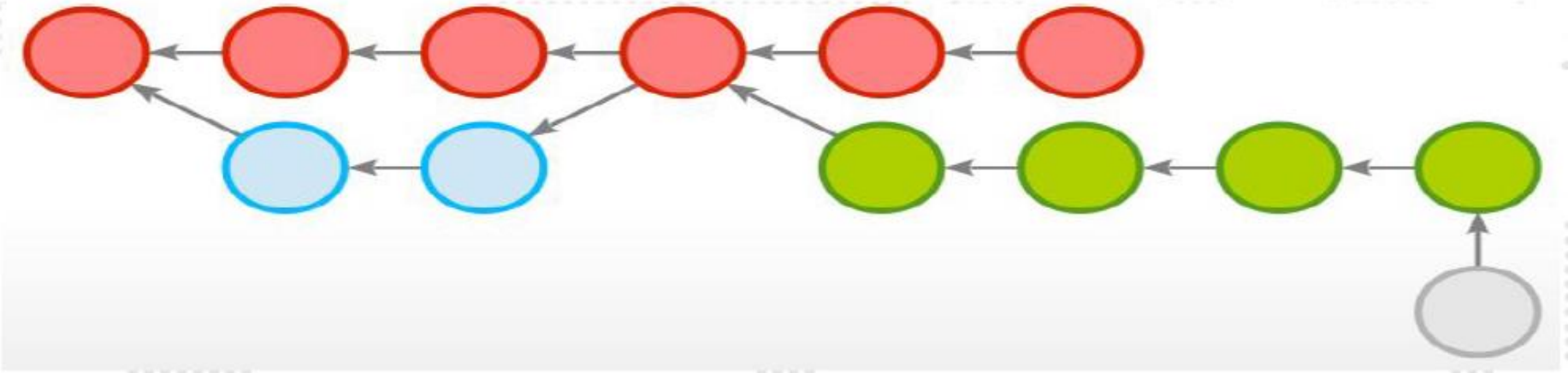
- Subversion is ok – Git is better
- Commit often, very often...
- Everything is local
- Everything is distributed
- Cheap branching
- Data assurance
- Fast
- Everything has a history... P.S That is going to be important later on
- The swiss army knife – you just have to know how to use it

What is that GIT/git/Git thing?

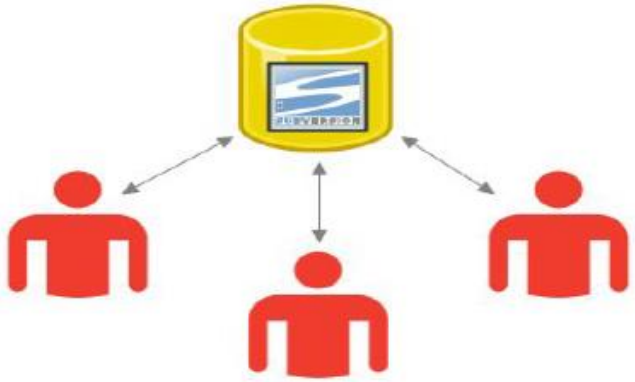
- Distributed Version Control System (DVCS)
- Open Source
- Started by Linus T. to aid kernel development
- Used by a lot of projects
- Git is not GitHub!
- Git is not Stash!
- Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency

Git takes care of...

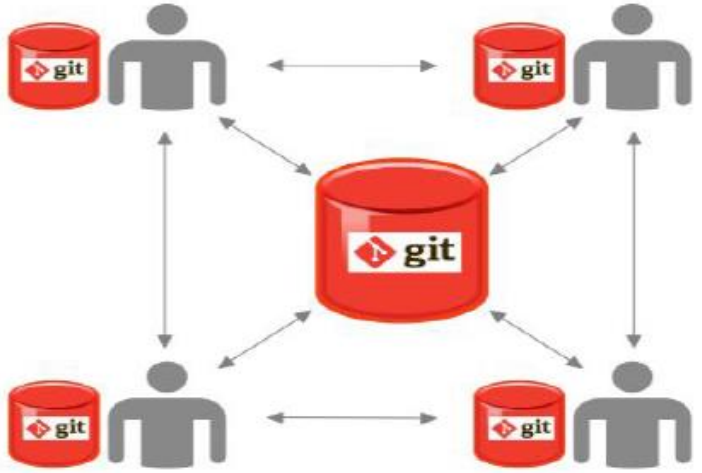
- Content: by protecting each commit with SHA-1
- History: by keeping relations
- Merges: by using the history
- Speed: by using snapshots and not diffs



Centralized vs Decentralized



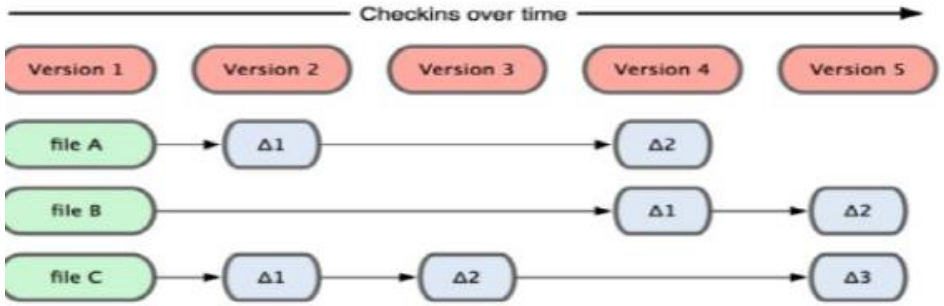
Centralized

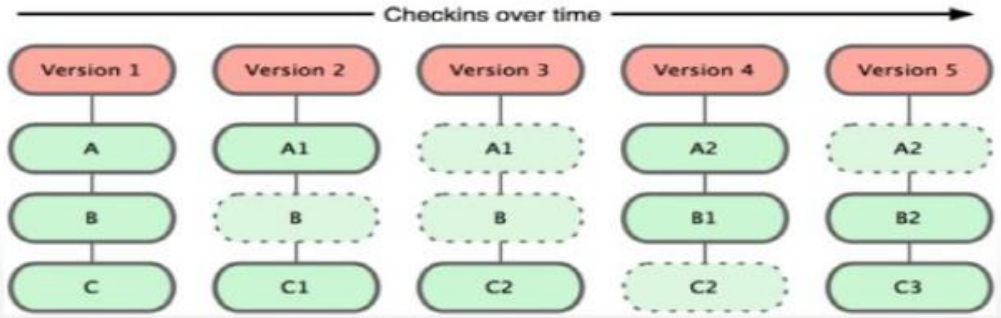


Distributed

How things are stored

Snapshots and not file differences





Git Concepts

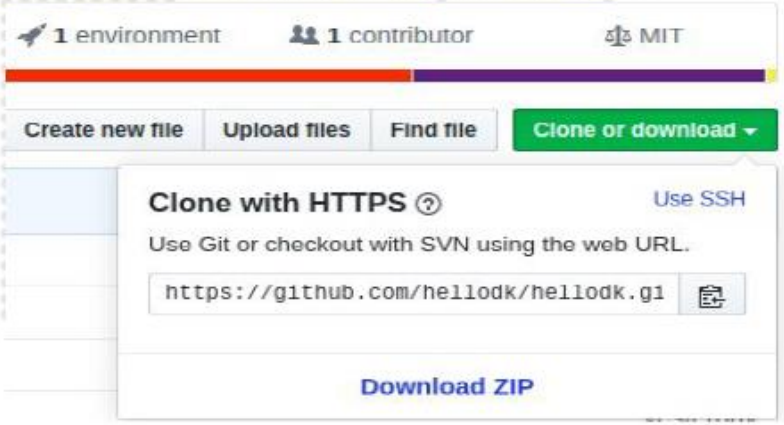
- Stage
- Branch
- Stash

Installing Git

- Update the yum repository
  - yum update -y
- Install git
  - yum install -y git
- Check version of git
  - git version
- Create a free github.com account

Git Common Commands

- Initialize a git repository inside a directory
  - git init
- Clone a git repository using ssh
  - git clone ssh://git@github.com/[username]/[repository-name].git
- Clone a git repository using HTTPS
  - git clone https://github.com/hellodk/hellodk.github.io.git



To Enable SSH between your machine and Git

- Generate keys,

  ssh-keygen -t rsa -b 4096 -C “<email_address>”

- Add Keys to the agent

  eval $(ssh-agent -s)

  ssh-add ~/.ssh/id_rsa

- Add Public key to github keys
- Try testing

  ssh -T git@github.com

Git Common Commands

- Check status of the directory(git repository)
  - git status
- Add a file to the staging area
  - git add [file-name.txt]
- Add all new and changed files to the staging area
  - git add -A
- Commit changes
  - git commit -m "[commit message]"
- Remove a file (or folder)
  - git rm -r [file-name.txt]

Git Common Commands

- List branches
  - git branch
  - git branch -a
- Create a new branch
  - git branch [branch name]
- Delete a branch
  - git branch -d [branch name]
- Delete a remote branch
  - git push origin --delete [branch name]

Git Common Commands

- Create a new branch and switch to it
  - git checkout -b [branch name]
- Clone a remote branch and switch to it
  - git checkout -b [branch name] origin/[branch name]
- Rename a local branch
  - git branch -m [old branch name] [new branch name]
- Switch to a branch
  - git checkout [branch name]
- Switch to the branch last checked out
  - git checkout -

Git Common Commands

- Discard changes to a file
  - git checkout -- [file-name.txt]
- Merge a branch into the active branch
  - git merge [branch name]
- Merge a branch into a target branch
  - git merge [source branch] [target branch]
- Stash changes in a dirty working directory
  - git stash
- Remove all stashed entries
  - git stash clear

Git Common Commands

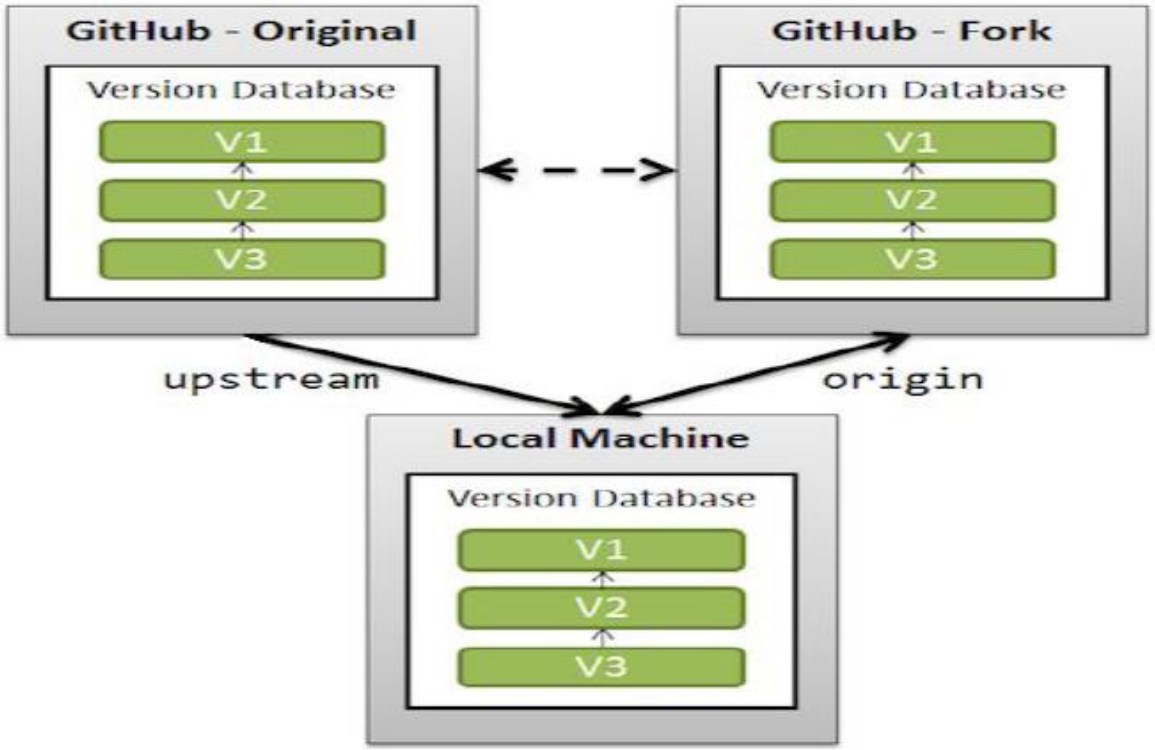
- Push a branch to your remote repository
  - git push origin [branch name
- Push changes to remote repository (and remember the branch)
  - git push -u origin [branch name
- Push changes to remote repository (remembered branch)
  - git push
- Delete a remote branch
  - git push origin --delete [branch name
- Update local repository to the newest commit
  - git pull

Git Common Commands

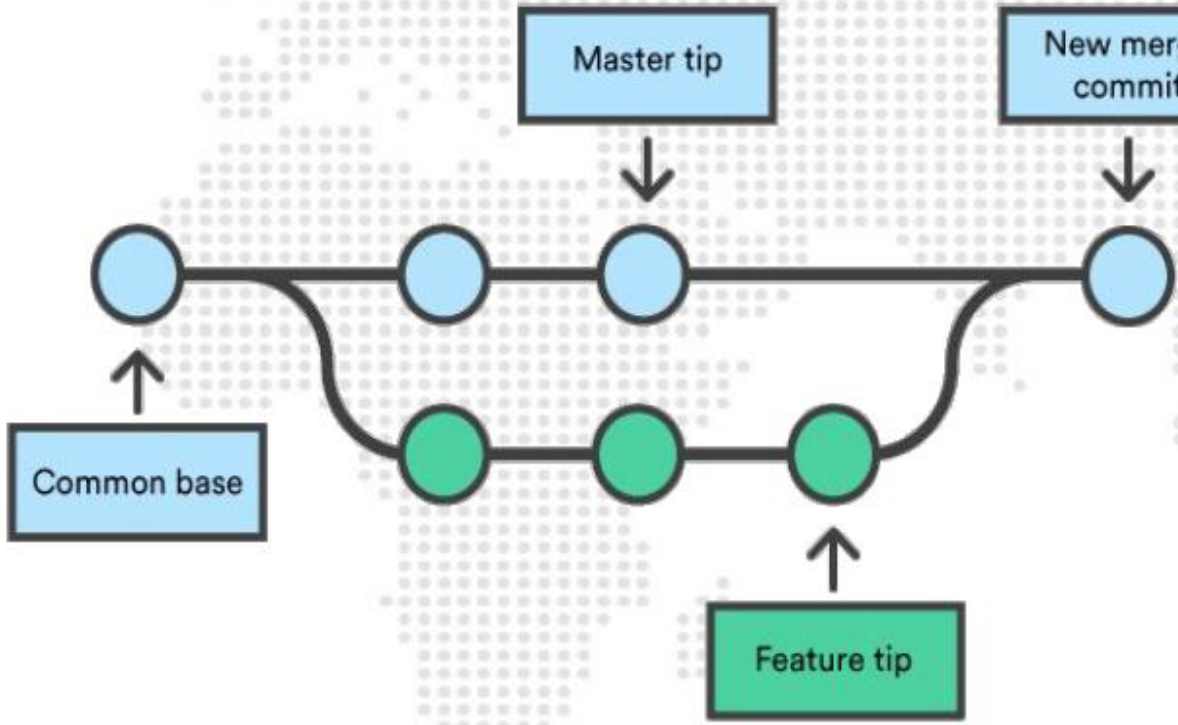
- View changes
  - git log
- View changes (detailed)
  - git log --summary
- View changes (briefly)
  - git log --oneline
  - git diff [source branch] [target branch]

Git Repositories

- List git repositories
  - git remote -v



Branching in Git



Exercises

- Set git config
  - git config --list
- Set git config for user
  - git config global user.name hellodk
- Set git config for user
  - git config global user.email hello.dk@outlook.com
- Set git config for user
  - git config global core.editor vim

Exercises

- Create a directory and cd into it
  - mkdir grocery
  - cd grocery
- Initialize git repository
  - git init
- Verify directory contents
  - ls -ltra
- Create multiple files
  - echo "My shopping list repository" > README.md
  - echo "banana" > shoppingList.txt

Exercises

- Verify git server status
  - git status
- Add all the files in the staging area
  - git add .
- Verify git server status
  - git status
- Make a commit
  - git commit –m "Added files"
- Verify git log
  - git log

Exercises

- Want to make changes in the commit message
  - git commit --amend
- Verify the git log again and check the log message now
  - git log
  - git log --format=raw

Exercises

- Creating Branches
  - git branch berries
  - git branch a1
  - git branch a2
  - git branch -a
  - git branch
  - git branch --list
  - git checkout a1
  - echo "From branch a1" > a1
  - git add a1
  - git commit -m "Added a1"

Exercises

- Creating Branches
  - ls -ltr
  - git checkout -
  - git branch
  - ls -ltr

Exercises

- Create an empty repository in github.com
- Create ssh-keys if not already created
  - ssh-keygen
- Add the ssh keys to github
- Set the remote URL for this repository with ssh url
  - git remote add origin git@github.com:hellodk/grocery.git
- Push the commit to the remote
  - git push

Exercises

- Make changes to a file from the github
- Make changes to the same file from CLI
- Do a commit and then push to remote
- Add tags using
  - git tag v1
  - git push origin v1
  - git tag -f v2
  - git push --tags

Tags vs Branches

- Both tags and branches point to a commit
- they are thus for a specific hash and will save time by not requiring to type in a hash
- a branch always points to the top of a development line
- branch will change when a new commit is pushed
- a tag will not change
- tags are more useful to "tag" a specific version
- tag will then always stay on that version and usually not be changed