Introduction to Github

Don't Git scared, Git started

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Imad Hsissou, ENSA Marrakech, UCA
imad.hsissou@edu.uca.ma

Goals

- Be familiar with Version Control Systems *
- Basic understanding of how Git operates
- Can use basic Git commands and know what they do to the filesystem
- Learn how to contribute on Github

* Don't panic, I'll explain everything ☺

What is

git ?

- Git is a Distributed Version Control System *
- Originally developed by Linus Torvalds (Linux Emperor !)
- Very easy to learn
- Designed to handle everything from small to very large projects with speed and efficiency.

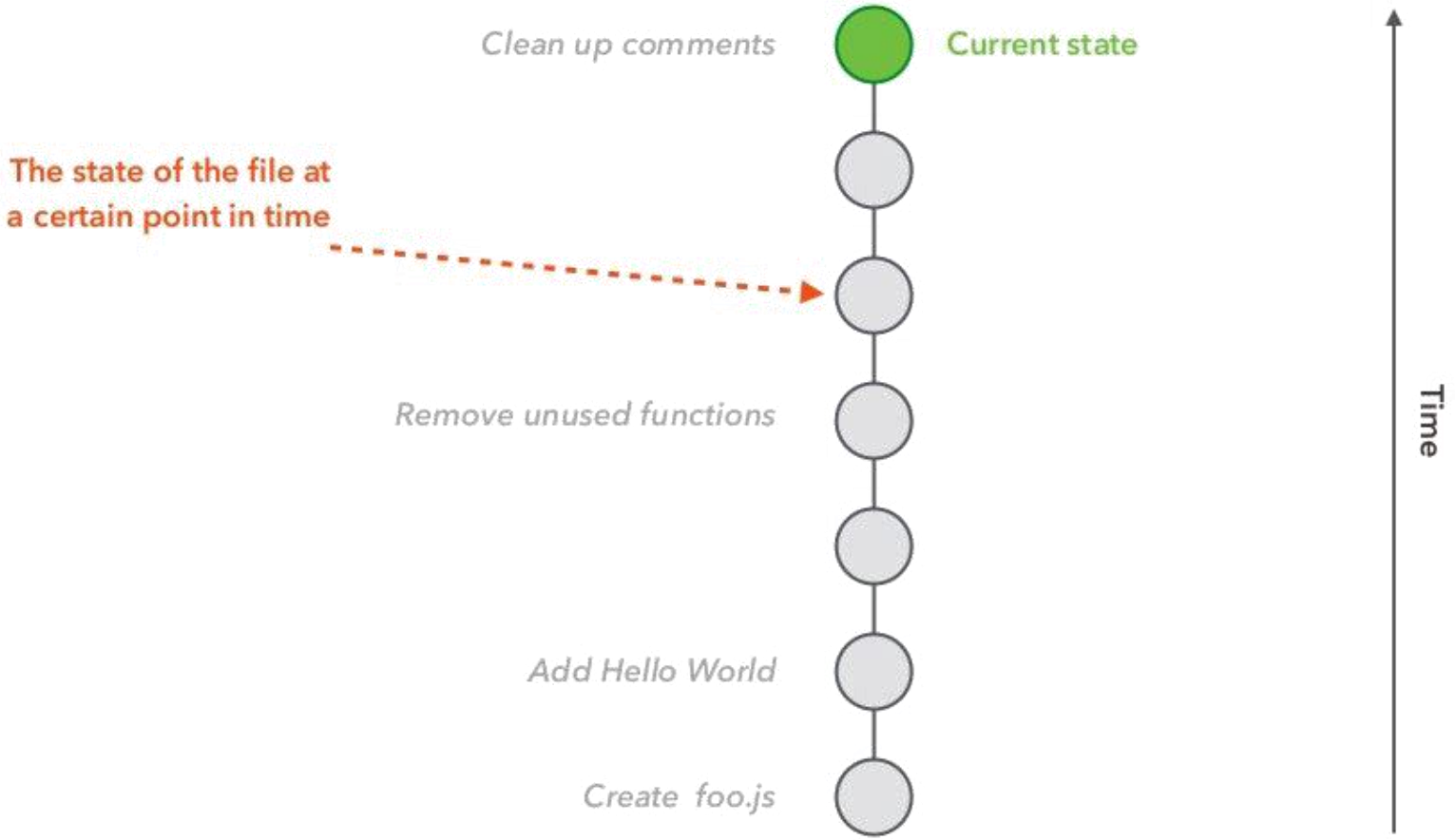
* Again, don't panic, I'll explain everything ☺

What is a Version Control System ?

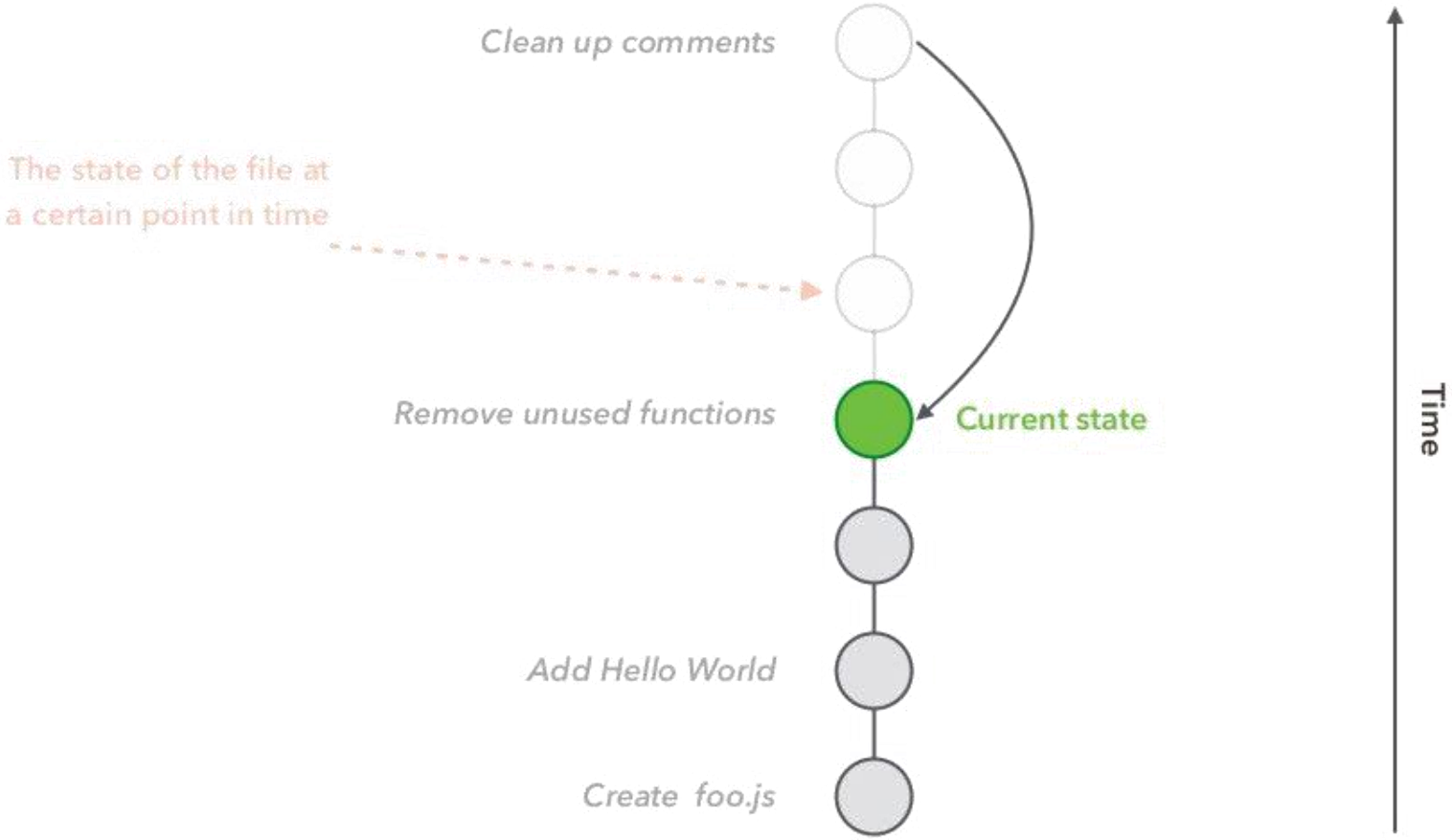
About Version Control

- A system that records changes to a file or set of files over time so that you can recall specific versions later.
- It allows you to revert files back to a previous state.
- revert the entire project back to a previous state.
- compare changes over time.
- see who last modified something.
- who introduced an issue and when.
- and more …

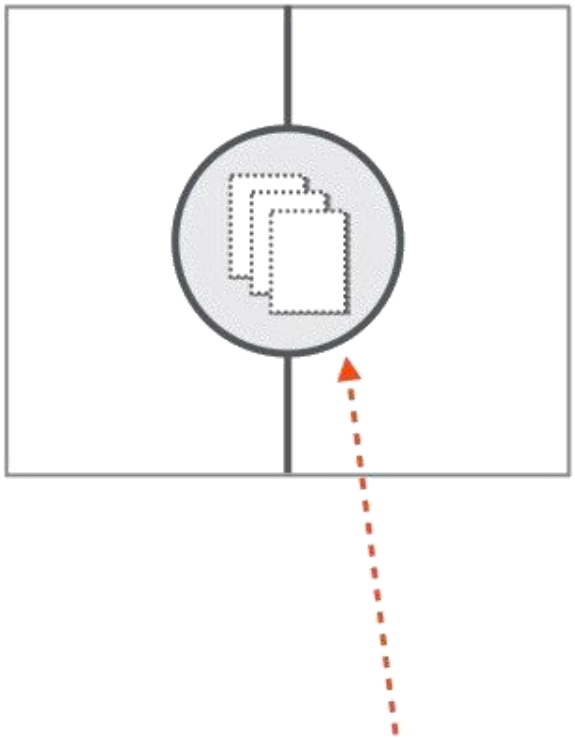
File

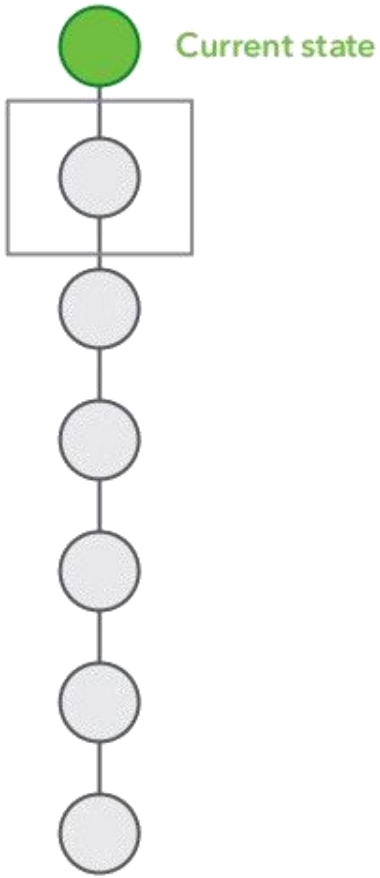

Clean up comments
Current state
The state of the file at
a certain point in time
Remove unused functions
Add Hello World
Create foo.js
Time

File


Clean up comments
The state of the file at
a certain point in time
Remove unused functions
Current state
Add Hello World
Create foo.js
Time

File(s)

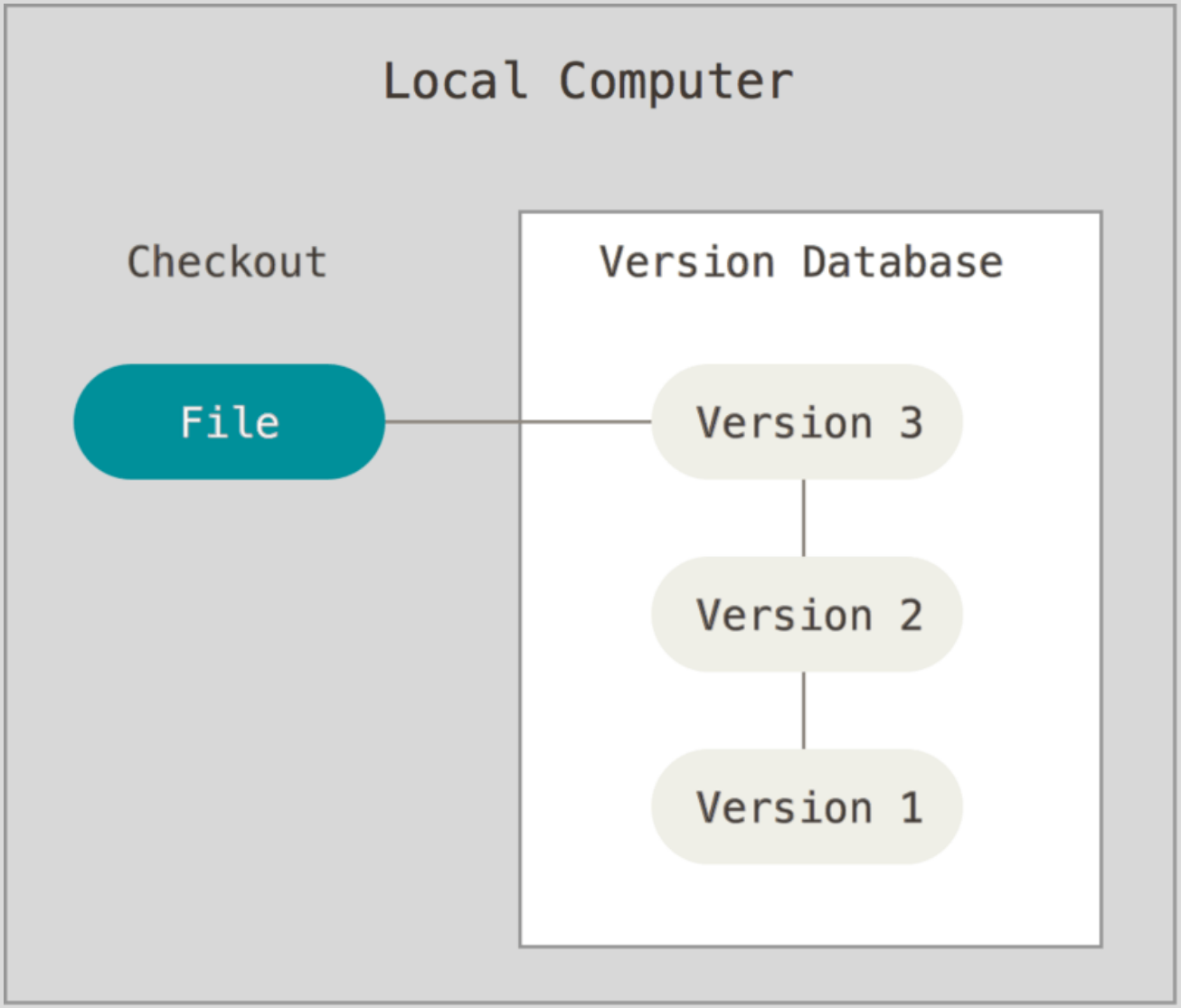

A snapshot of the states of the
files at a certain point in time


Current state

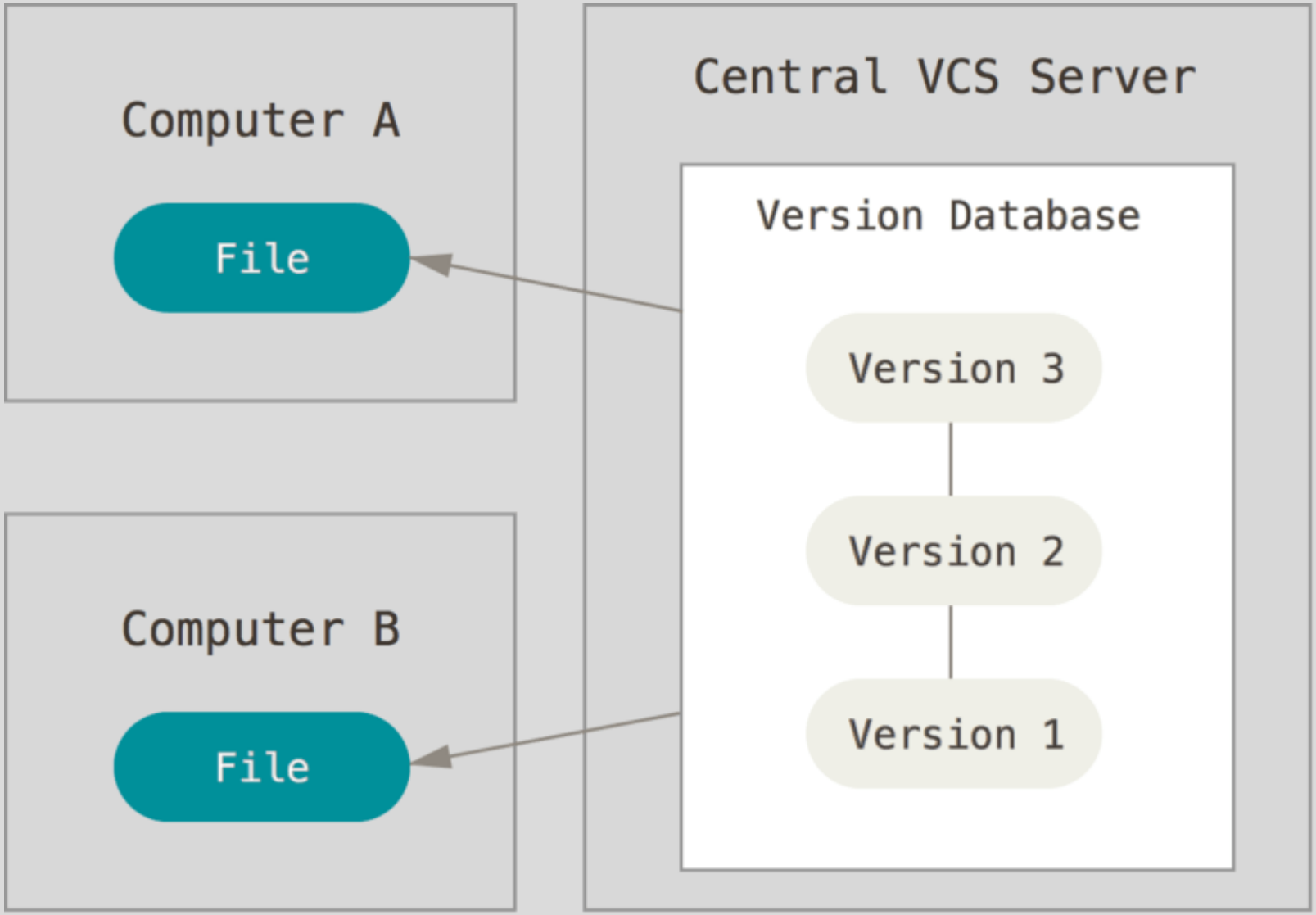

Time

What is a Distributed Version Control System ?

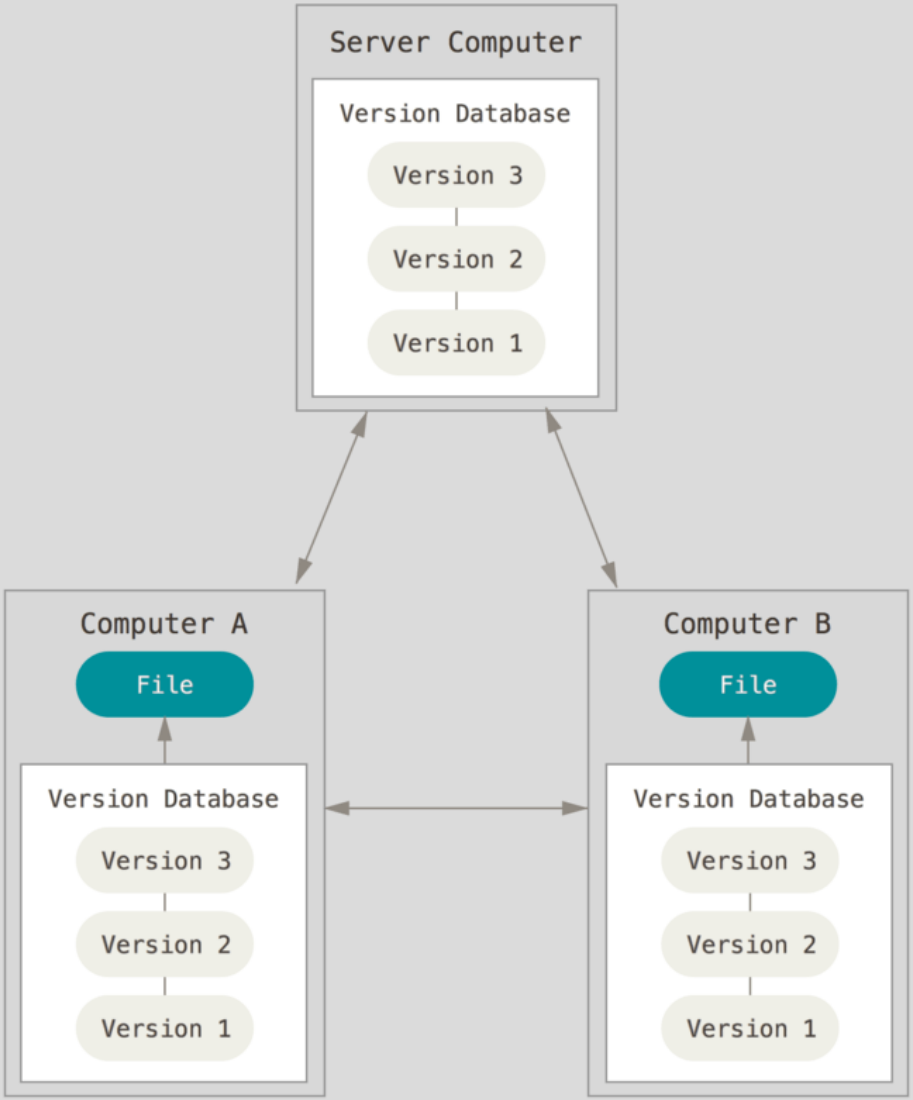
Local version control



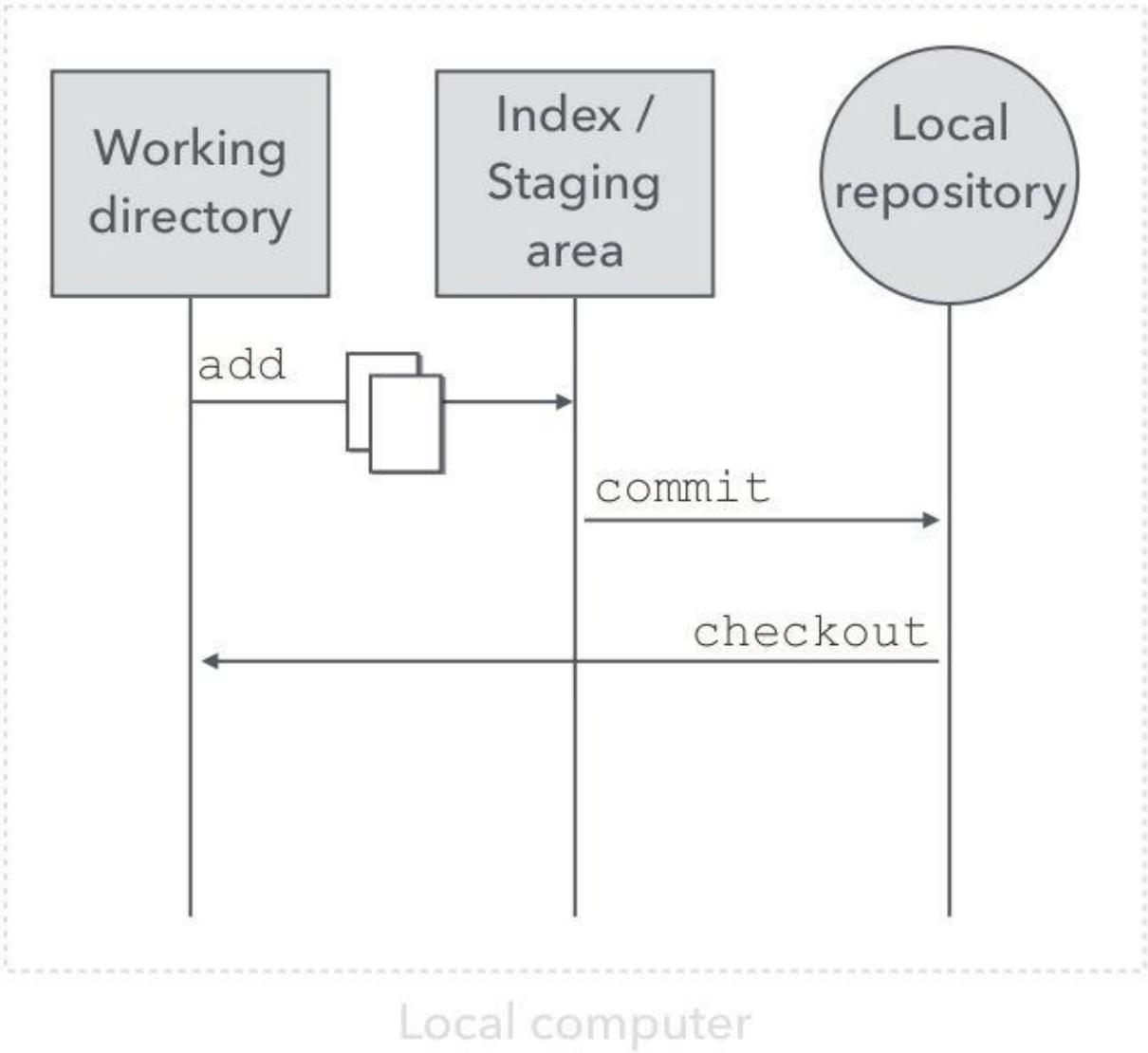
Centralized version control



Distributed Version Control



Git Commands


Working directory
Index / Staging area
Local repository
add
commit
checkout
Local computer

- Working directory

  Files on your computer (file system)
- Index / Staging area

  Set of files to be included in the next snapshot
- Repository

  Database of snapshots

Start a new project

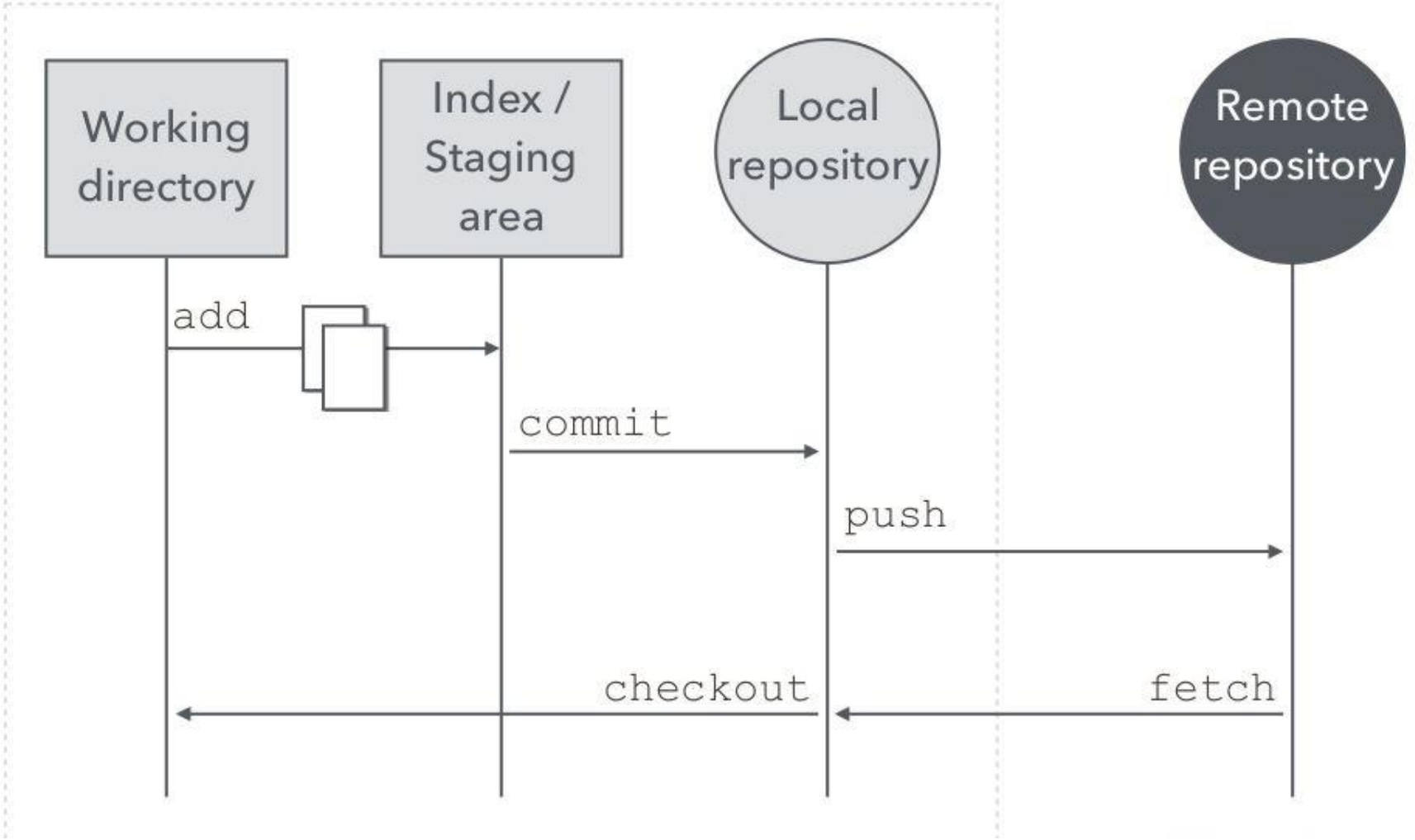
```
$ git init
```

Common Git Commands

Git Command	
`$ git status`	Review what changes you've made.
`$ git add <files>`	Tell Git that a file is to be included in the next snapshot
`$ git commit <files>`	Store a snapshot in the local repository

Inside a Commit

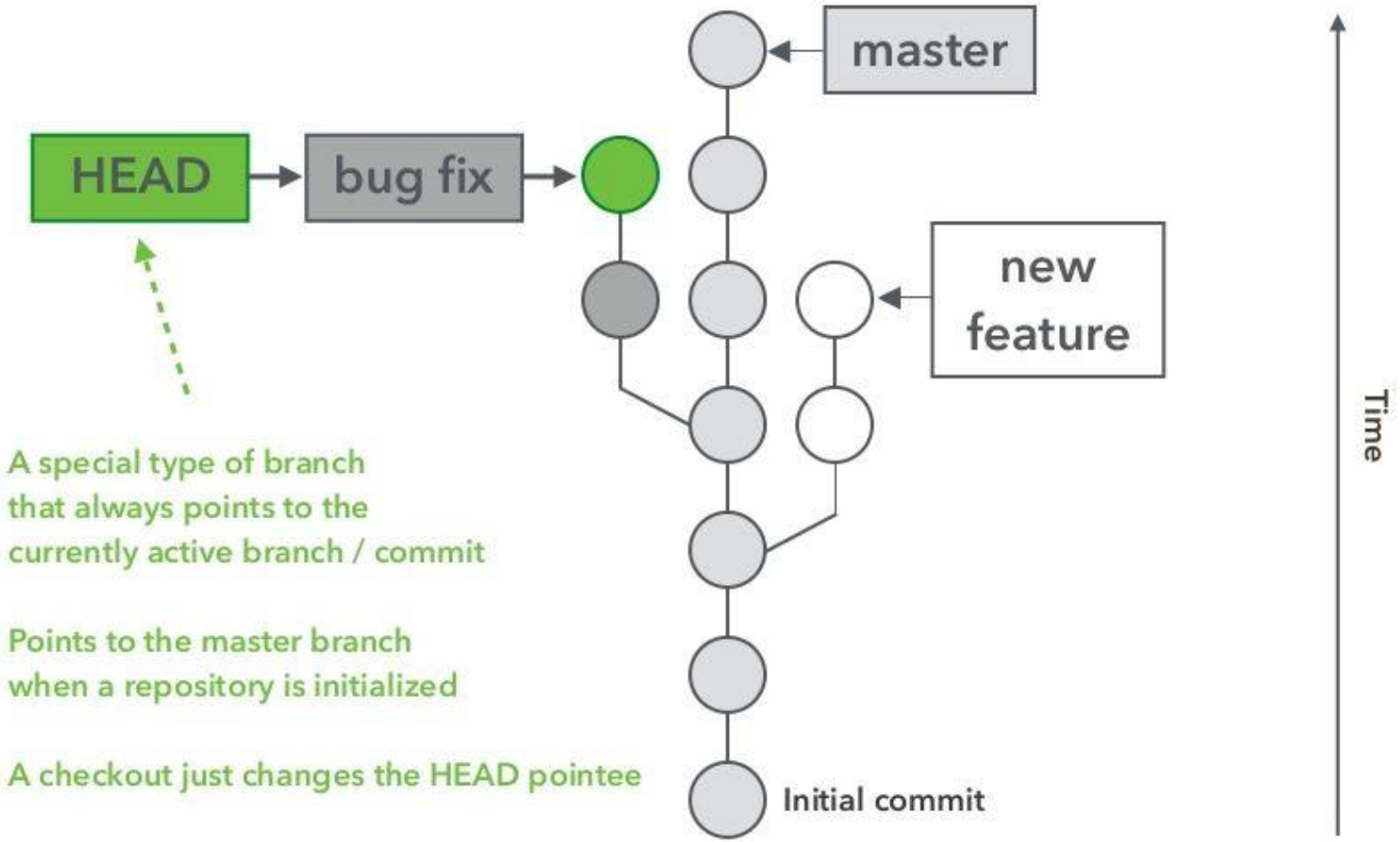
- Commit Reference (SHA-1 checksum)
- Author
- Date
- Message
- Reference to parent commit(s)
- Tree
  Includes the references to all the files in the snapshot


Working directory
Index / Staging area
Local repository
Remote repository
add
commit
push
checkout
fetch

Common Git Commands

Git Command	
`$ git pull`	Pull down and merge commits from a remote repository.
`$ git push <remote>`	Push commits to a remote repository.
`$ git remote`	Listes all remotes that you have configured.

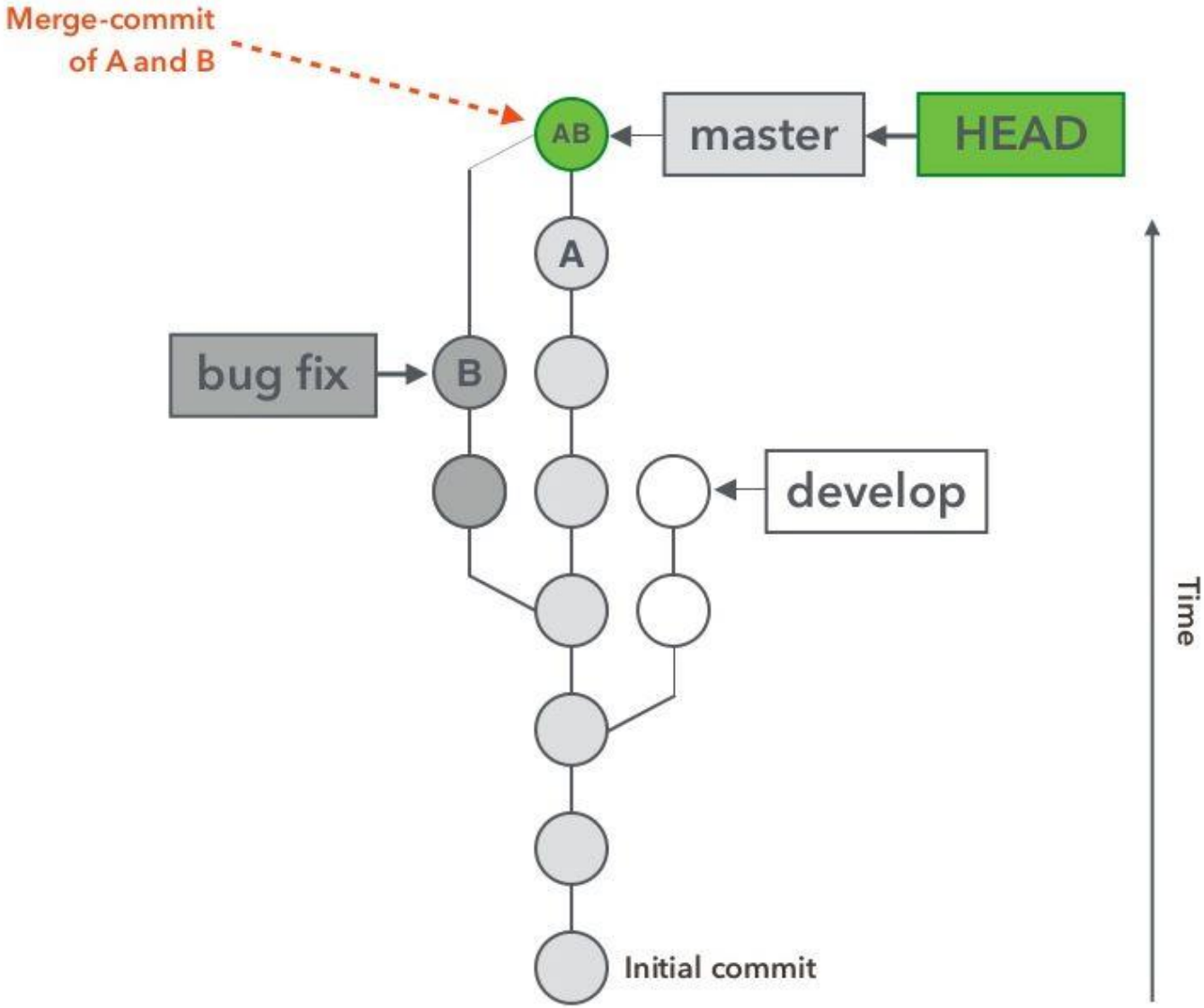
Branch


master
HEAD
bug fix
new
feature
A special type of branch
that always points to the
currently active branch / commit
Points to the master branch
when a repository is initialized
A checkout just changes the HEAD pointee
Initial commit
Time

Merge

- Merge two commits together
- Can be used to merge branches

```
$ git merge <branch>
```


Merge-commit
of A and B
AB
master
HEAD
A
bug fix
B
develop
Time
Initial commit


What is Github ?

GitHub

is a web-based Git repository hosting service

GitHub

Is the largest host of source code in the world