Hello,

Today’s topic

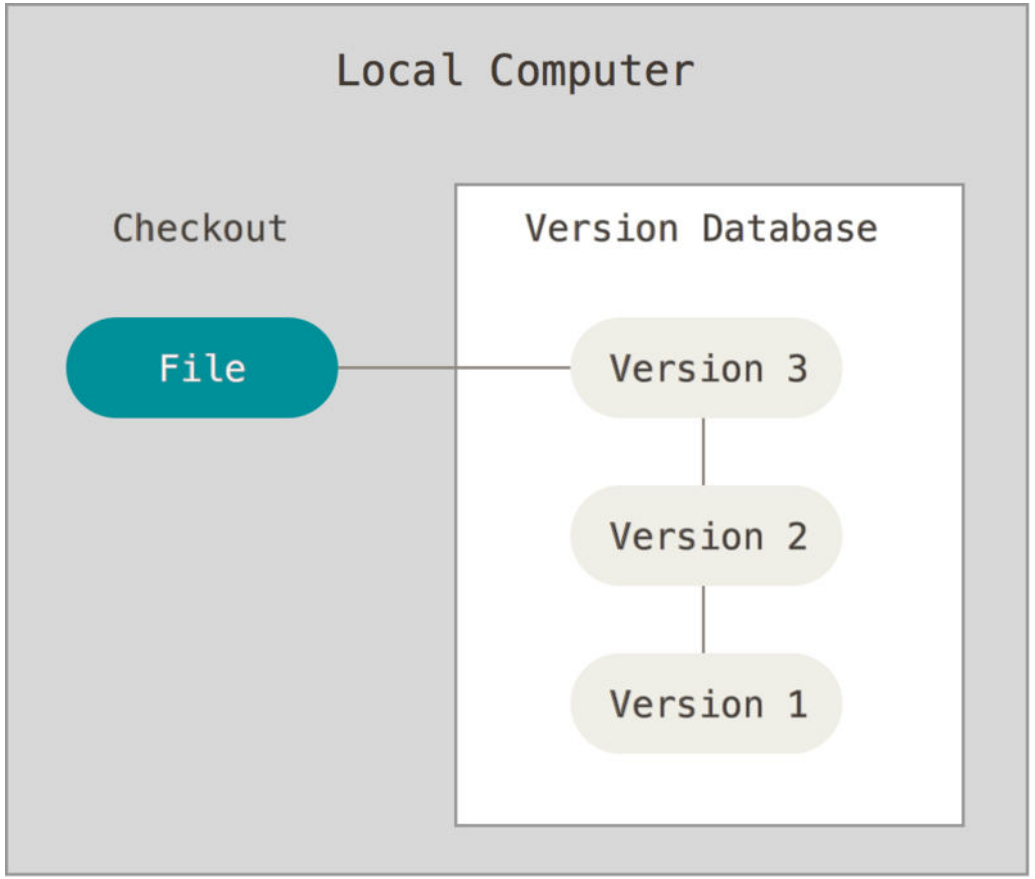
The Stupid content tracker

Contents:

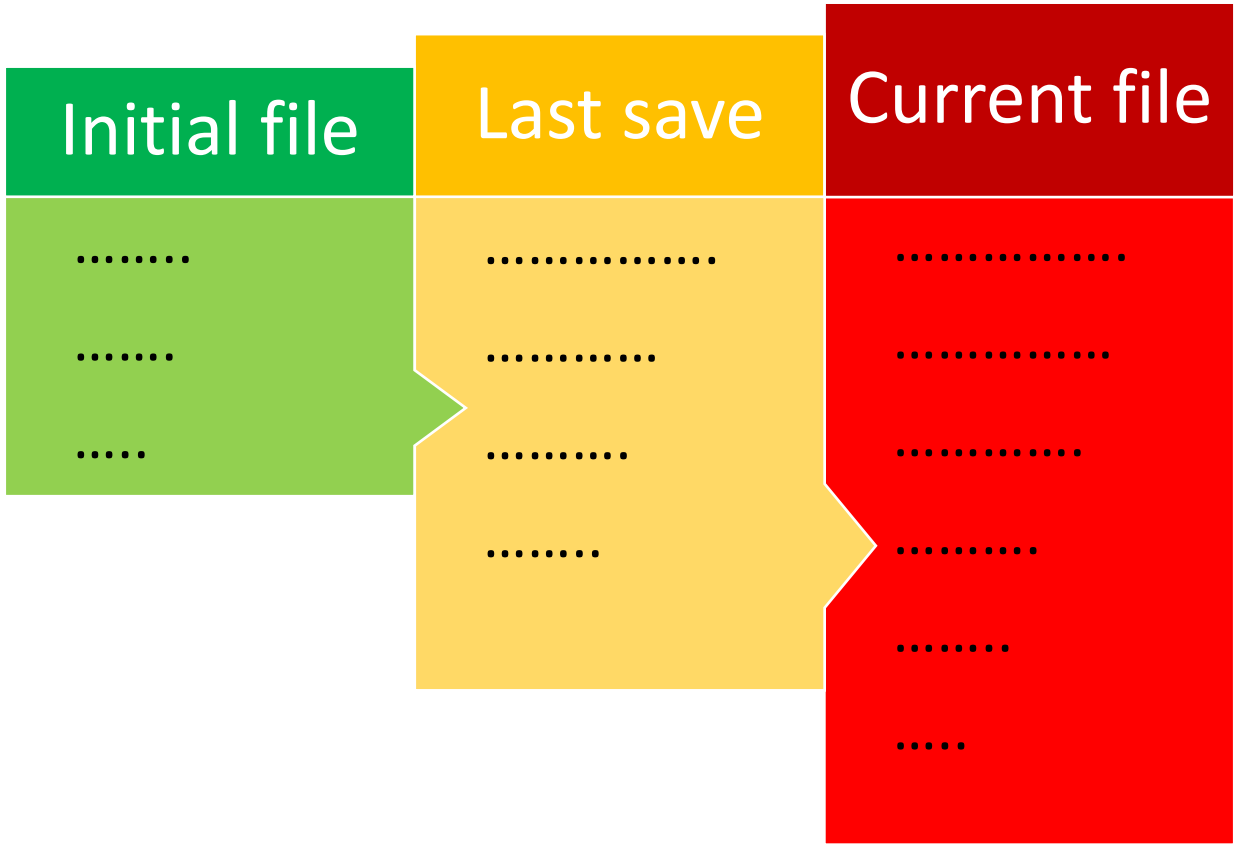
- Version Control system (VCS).
- SDLC
- Types of VCS.
- VCS tool - Git.
- Stages in Git.
- Setting up Git.
- Setting up GitHub.
- Commands in Git.
- Branching and Merging.

What is Version control ?

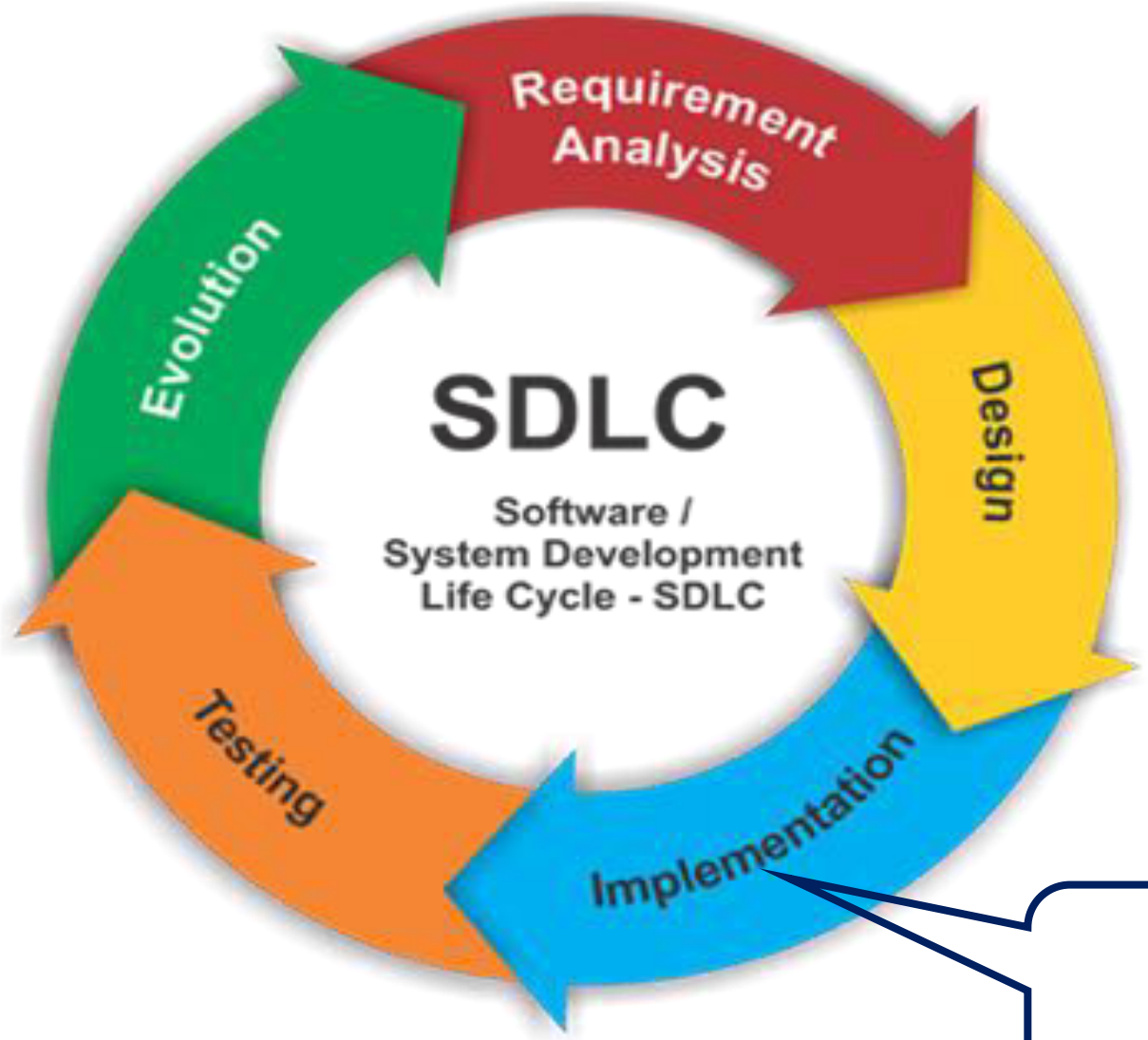
Version control is a system that records changes to a file or set of files over time so that you can recall specific **versions** later.



Why do we need it?



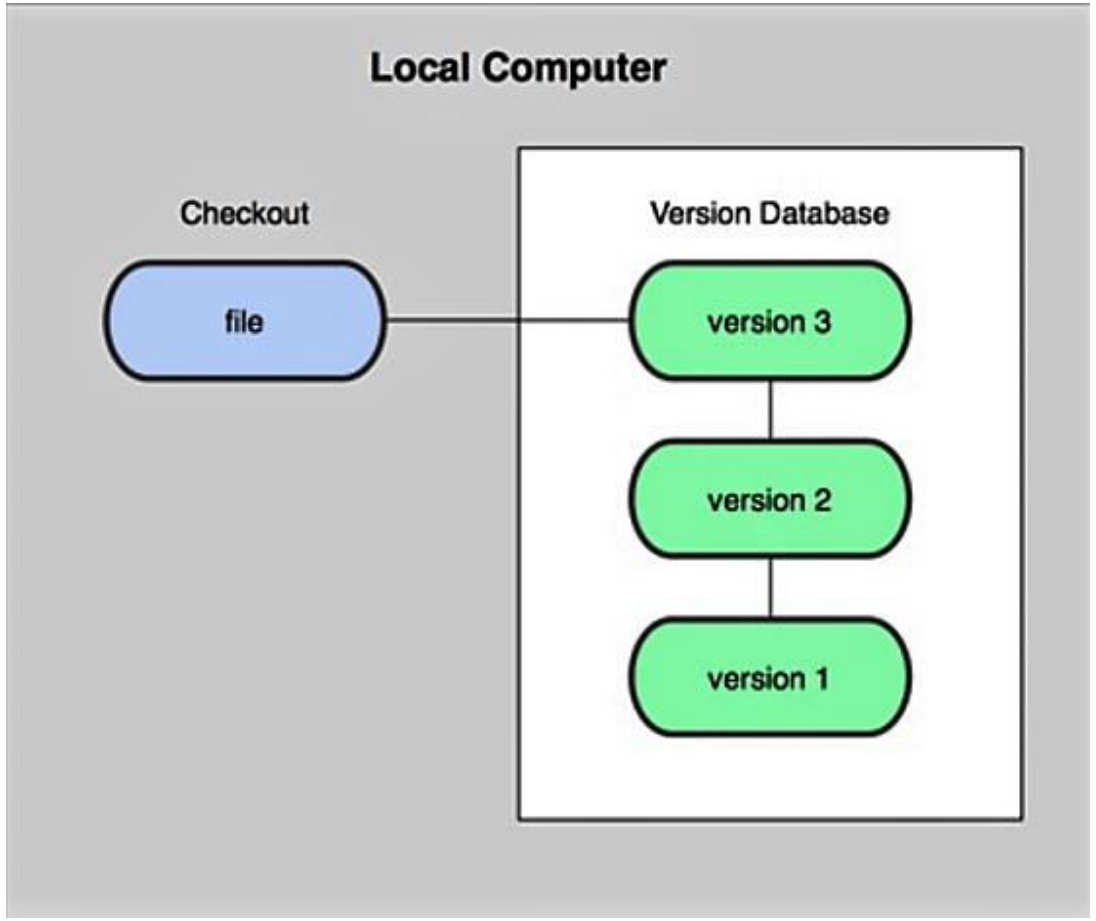
SDLC



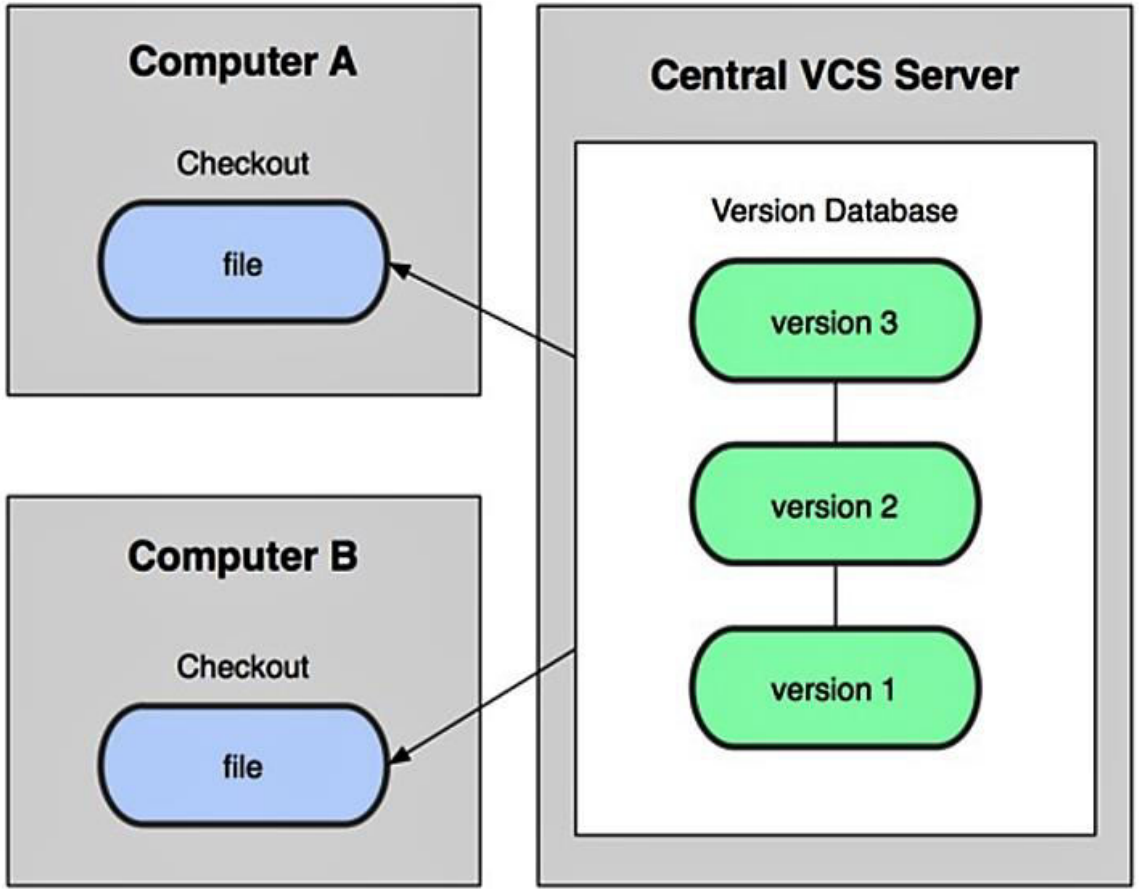
Version control

Types of version control

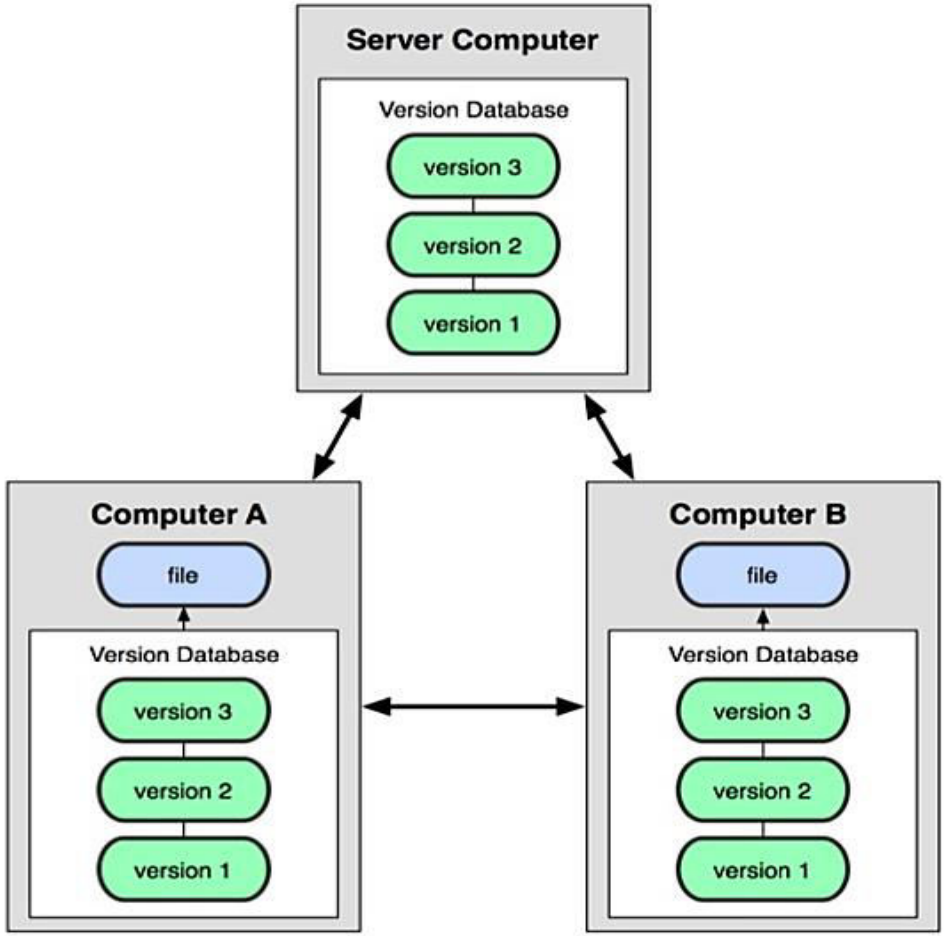
Local version control system



Centralized Version control system



Distributed Version control system



GIT

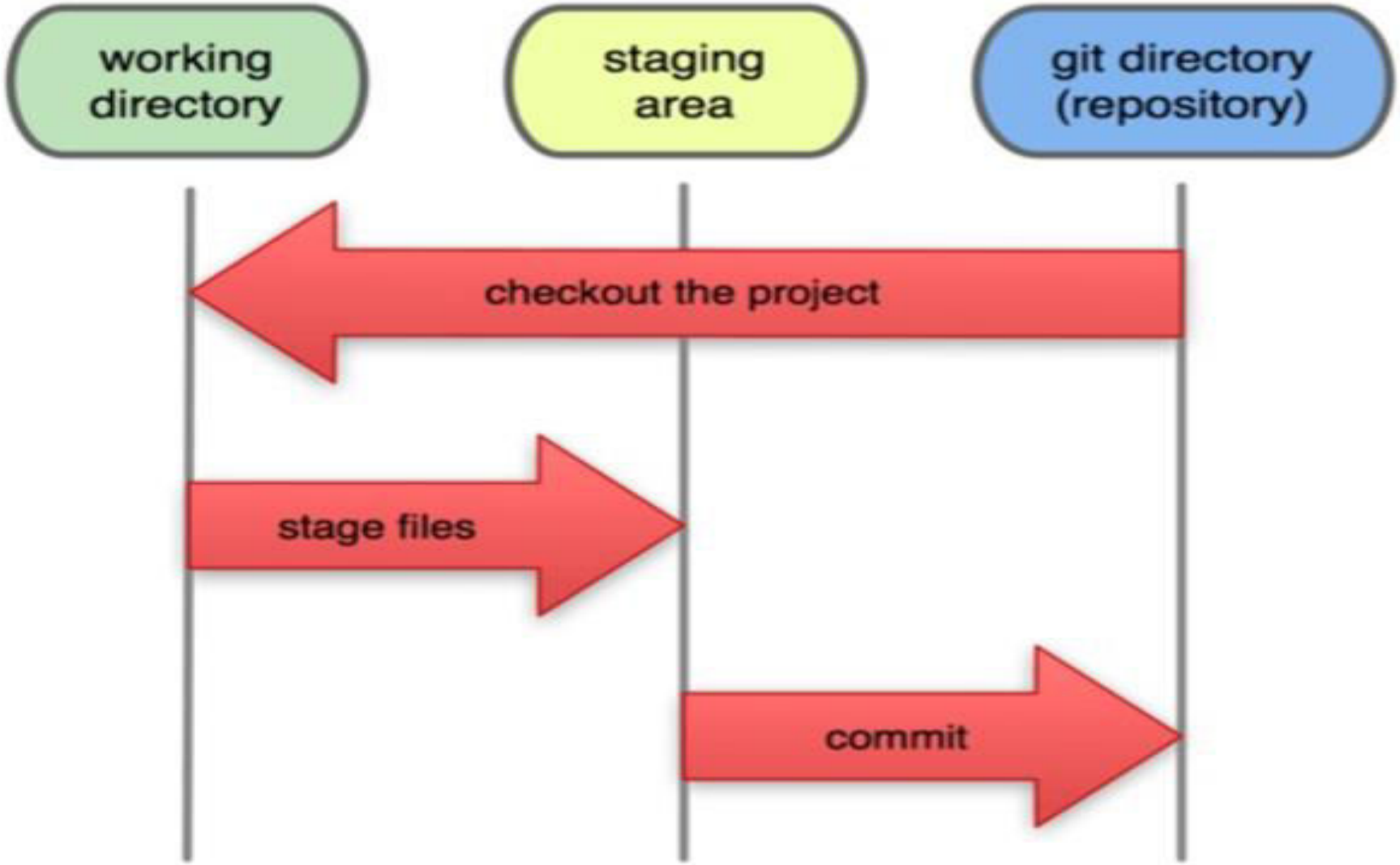
A Version Control tool

What is git ?

- Created by Linus Torvalds in 2005 for development of the Linux kernel.
- Distributed version control system.
- Its under GNU general public license.

How GIT works ?

The three states



Getting started – Installing git

```
lebowski@Maveowski: ~
lebowski@Maveowski:~$ sudo apt-get install git-all
```

Setting up the Git

```
lebowski@Maveowski:~$ git config --global user.name "Krishna"
lebowski@Maveowski:~$ git config --global user.email "venkatis@live.com"
lebowski@Maveowski:~$ git config --list
user.name=Krishna
user.email=venkatis@live.com
core.editor=vim
credential.helper=cahce
lebowski@Maveowski:~$
```

Finding help

- $ git help <command>
- $ git <command> --help
- $ man git-<command>

Setting up Github

The world's leading soft

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GitHub, Inc. [US] | https://github.com

Features Business Explore Marketplace Pricing

Search GitHub

Sign in or Sign up

Built for developers

GitHub is a development platform inspired by the way you work. From **open source** to **business**, you can host and review code, manage projects, and build software alongside millions of other developers.

Username

student.emertxe

Email

student.emertxe@gmail.com

Password

••••••••••

Use at least one letter, one numeral, and seven characters.

Sign up for GitHub

By clicking "Sign up for GitHub", you agree to our terms of service and privacy policy. We'll occasionally send you account related emails.

2:29 PM
15-Jul-17

GitHub · Where software | Inbox (2) - student.emer

GitHub, Inc. [US] | https://github.com/join/plan

Search GitHub | Pull requests | Issues | Marketplace | Gist

Welcome to GitHub

You've taken your first step into a larger world, **@student-emertxe**.

Completed	Step 2:	Step 3:
Set up a personal account	Choose your plan	Tailor your experience

Choose your personal plan

- (selected) Unlimited public repositories for free.
- **Unlimited private repositories** for $7/month.

Don't worry, you can cancel or upgrade at any time.

☐ **Help me set up an organization next**

Organizations are separate from personal accounts and are best suited for businesses who need to manage permissions for many employees.
Learn more about organizations.

Continue

Both plans include:

- ✓ Collaborative code review
- ✓ Issue tracking
- ✓ Open source community
- ✓ Unlimited public repositories
- ✓ Join any organization

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Welcome to GitHub

You'll find endless opportunities to learn, code, and create, **@student-emertxe**.

Completed	Step 2:	Step 3:
Set up a personal account	Choose your plan	Tailor your experience

How would you describe your level of programming experience?

- ○ Totally new to programming
- ◉ Somewhat experienced
- ○ Very experienced

What do you plan to use GitHub for? (check all that apply)

- ☑ Development
- ☐ Research
- ☐ Design
- ☐ School projects
- ☑ Project Management
- ☐ Other (please specify)

Which is closest to how you would describe yourself?

- ○ I'm a hobbyist
- ◉ I'm a student
- ○ I'm a professional
- ○ Other (please specify)

What are you interested in?

c × makefile ×

e.g. tutorials, android, ruby, web-development, machine-learning, open-source

Submit skip this step

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Your Actions | Inbox (2) - student.emer

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Search GitHub | Pull requests | Issues | Marketplace | Gist

Learn Git and GitHub without any code!

Using the Hello World guide, you'll create a repository, start a branch, write comments, and open a pull request.

Read the guide | Start a project

 Terms Privacy Security Status Help

Contact GitHub API Training Shop Blog About

https://github.com/new

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Please verify your email | Create a New Repository

GitHub, Inc. [US] | https://github.com/new

Search GitHub | Pull requests | Issues | Marketplace | Gist

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner: student-emertxe / Repository name: my_first_repo

Great repository names are short and memorable. Need inspiration? How about **symmetrical-octo-bassoon**.

Description (optional)

Learning how GitHub works.

- (•) **Public**
  Anyone can see this repository. You choose who can commit.
- ( ) **Private**
  You choose who can see and commit to this repository.

[x] **Initialize this repository with a README**
This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: None | Add a license: None

Create repository

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Please verify your email | student-emertxe/my_first

GitHub, Inc. [US] | https://github.com/student-emertxe/my_first_repo

This repository | Search | Pull requests | Issues | Marketplace | Gist

student-emertxe / my_first_repo

Watch 0 | Star 0 | Fork 0

Code | Issues 0 | Pull requests 0 | Projects 0 | Wiki | Settings | Insights

Learning how GitHub works.

Edit

Add topics

1 commit | 1 branch | 0 releases | 1 contributor

Branch: master | New pull request | Create new file | Upload files | Find file | Clone or download

student-emertxe Initial commit — Latest commit 40c4fb9 just now

README.md	Initial commit	just now

README.md

my_first_repo

Learning how GitHub works.

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Please verify your email | student-emertxe/my_firs

GitHub, Inc. [US] | https://github.com/student-emertxe/my_first_repo

This repository | Search | Pull requests | Issues | Marketplace | Gist

student-emertxe / my_first_repo

Watch 0 | Star 0 | Fork 0

Code | Issues 0 | Pull requests 0 | Projects 0 | Wiki | Settings | Insights

Learning how GitHub works.

Edit

Add topics

1 commit | 1 branch | 0 releases | 1 contributor

Branch: master | New pull request | Create new file | Upload files | Find file | Clone or download

student-emertxe Initial commit

README.md Initial commit

README.md

my_first_repo

Learning how GitHub works.

Clone with HTTPS

Use SSH

Use Git or checkout with SVN using the web URL.

https://github.com/student-emertxe/my_firs

Copy to clipboard

Open in Desktop | Download ZIP

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Create a local repository cmd: init

```
lebowski@Maveowski:~$ mkdir my_first_repo
lebowski@Maveowski:~$ cd my_first_repo/
lebowski@Maveowski:~/my_first_repo$ git init
Initialized empty Git repository in /home/lebowski/my_first_repo/.git/
lebowski@Maveowski:~/my_first_repo$
```

Adding remote repo cmd: remote, add

```
lebowski@Maveowski:~/my_first_repo$ git remote add name https://github.com/student-emertxe/my_first_repo.git
lebowski@Maveowski:~/my_first_repo$ git remote -v
name    https://github.com/student-emertxe/my_first_repo.git (fetch)
name    https://github.com/student-emertxe/my_first_repo.git (push)
lebowski@Maveowski:~/my_first_repo$
```

Clone a remote repository cmd: clone

```
lebowski@Maveowski:~$ git clone https://github.com/student-emertxe/my_first_repo.git
Cloning into 'my_first_repo'...
remote: Counting objects: 3, done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
lebowski@Maveowski:~$ ls
calc        Downloads                                                    examples.desktop  New folder
core        duplicity-inc.20170607T020037Z.to.20170608T042226Z.manifest.gpg  git               Pictures
Desktop     duplicity-inc.20170607T020037Z.to.20170608T042226Z.vol1.difftar  Music             Public
Documents   ECEP                                                         my_first_repo     Restore
lebowski@Maveowski:~$ cd my_first_repo/
lebowski@Maveowski:~/my_first_repo$ ls
README.md
lebowski@Maveowski:~/my_first_repo$ la
.git  README.md
lebowski@Maveowski:~/my_first_repo$
```

Check status of files cmd : status

```
lebowski@Maveowski:~/my_first_repo$ vi file.c
lebowski@Maveowski:~/my_first_repo$ git status
On branch master

Initial commit

Untracked files:
  (use "git add <file>..." to include in what will be committed)

        file.c

nothing added to commit but untracked files present (use "git add" to track)
```

Tracking new files cmd: add

```
lebowski@Maveowski:~/my_first_repo$ git add file.c
lebowski@Maveowski:~/my_first_repo$ git status
On branch master

Initial commit

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)

        new file:   file.c
```

Staging modified files cmd: commit

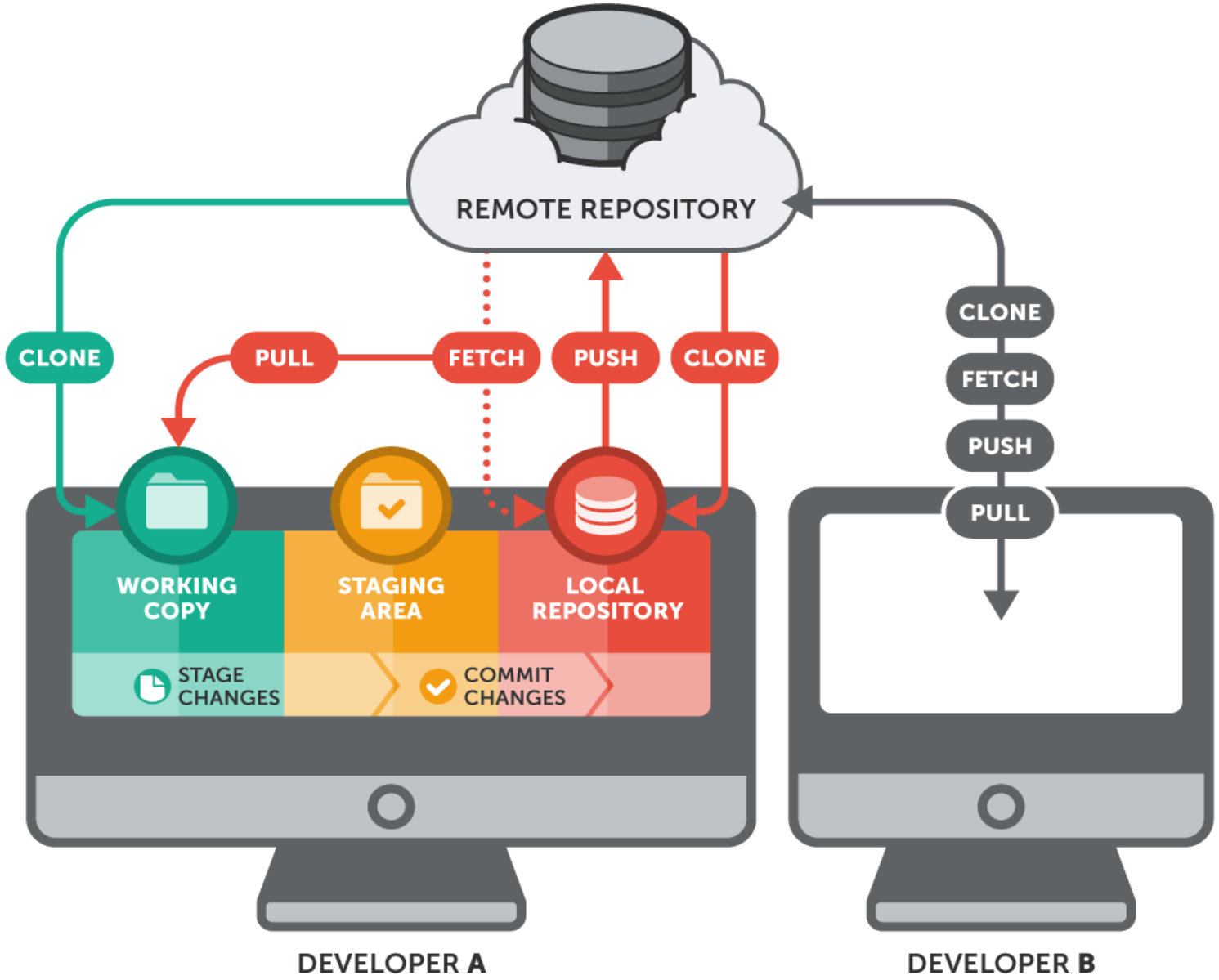
```
lebowski@Maveowski:~/my_first_repo$ git commit -m "commiting first file"
[master (root-commit) 86846ce] commiting first file
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 file.c
lebowski@Maveowski:~/my_first_repo$ git status
On branch master
nothing to commit, working tree clean
lebowski@Maveowski:~/my_first_repo$
```

Pulling from remote cmd: pull

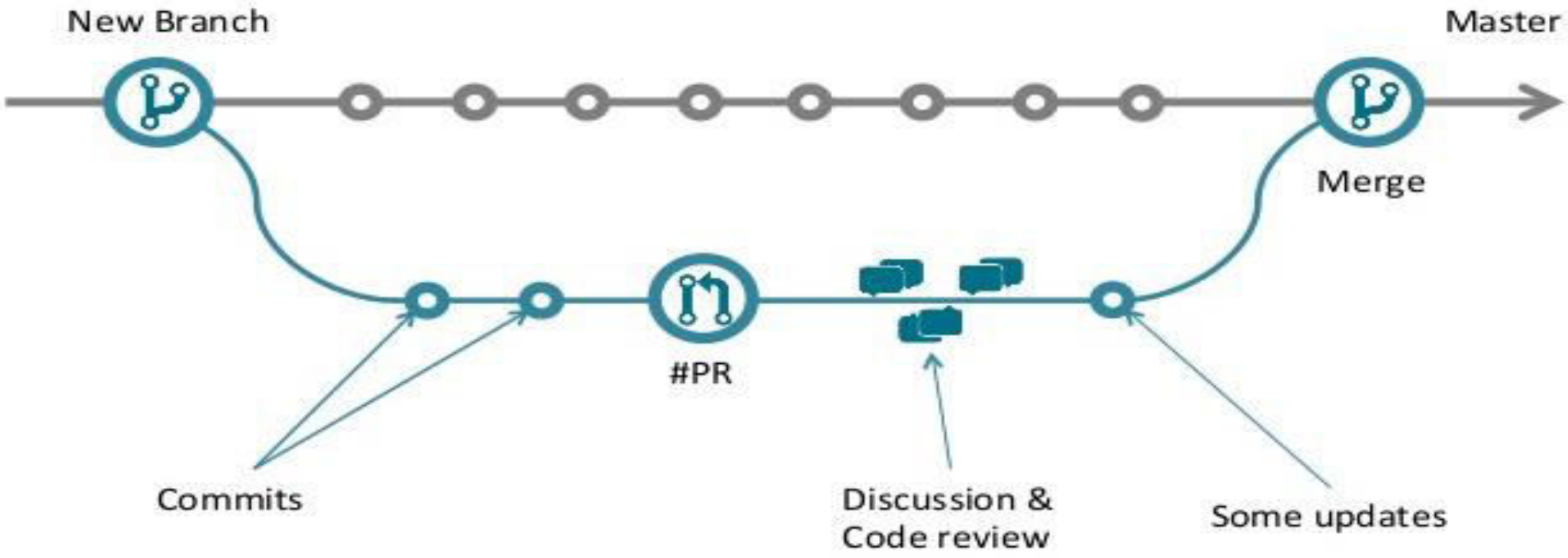
```
lebowski@Maveowski:~/my_first_repo$ git pull origin master
From https://github.com/student-emertxe/my_first_repo
 * branch            master     -> FETCH_HEAD
Already up-to-date.
```

Pushing to remote cmd: push

```
lebowski@Maveowski:~/my_first_repo$ git push origin master
Username for 'https://github.com': student-emertxe
Password for 'https://student-emertxe@github.com':
Counting objects: 7, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (5/5), done.
Writing objects: 100% (7/7), 615 bytes | 0 bytes/s, done.
Total 7 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), done.
To https://github.com/student-emertxe/my_first_repo.git
   40c4fb9..73b86c6  master -> master
lebowski@Maveowski:~/my_first_repo$
```


REMOTE REPOSITORY
CLONE
PULL
FETCH
PUSH
CLONE
WORKING COPY
STAGING AREA
LOCAL REPOSITORY
STAGE CHANGES
COMMIT CHANGES
CLONE
FETCH
PUSH
PULL
DEVELOPER A
DEVELOPER B

Branch – The Killing feature



Branching cmd: branch, checkout

```
lebowski@Maveowski:~/my_first_repo$ git branch demo_1
lebowski@Maveowski:~/my_first_repo$ git branch
  demo_1
* master
lebowski@Maveowski:~/my_first_repo$ git checkout demo_1
Switched to branch 'demo_1'
lebowski@Maveowski:~/my_first_repo$ git branch
* demo_1
  master
lebowski@Maveowski:~/my_first_repo$ git checkout -b demo_2
Switched to a new branch 'demo_2'
lebowski@Maveowski:~/my_first_repo$ git branch
  demo_1
* demo_2
  master
lebowski@Maveowski:~/my_first_repo$
```

Merging branches cmd: merge

```
lebowski@Maveowski:~/my_first_repo$ vi file2
lebowski@Maveowski:~/my_first_repo$ git status
On branch demo_2
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

        modified:   file2

no changes added to commit (use "git add" and/or "git commit -a")
lebowski@Maveowski:~/my_first_repo$ git commit -a -m "Edited file2"
[demo_2 1b88e77] Edited file2
 1 file changed, 2 insertions(+)
lebowski@Maveowski:~/my_first_repo$ git status
On branch demo_2
nothing to commit, working tree clean
lebowski@Maveowski:~/my_first_repo$ git checkout master
Switched to branch 'master'
lebowski@Maveowski:~/my_first_repo$ git merge demo_2
Updating 73b86c6..1b88e77
Fast-forward
 file2 | 2 ++
 1 file changed, 2 insertions(+)
lebowski@Maveowski:~/my_first_repo$
```

Merge conflicts

```
lebowski@Maveowski:~/my_first_repo$ git checkout demo_1
Switched to branch 'demo_1'
lebowski@Maveowski:~/my_first_repo$ vi file2
lebowski@Maveowski:~/my_first_repo$ git commit -a -m "File 2 edited in demo_1 branch"
[demo_1 5de80bf] File 2 edited in demo_1 branch
 1 file changed, 1 insertion(+)
lebowski@Maveowski:~/my_first_repo$ git checkout master
Switched to branch 'master'
lebowski@Maveowski:~/my_first_repo$ git merge demo_1
Auto-merging file2
CONFLICT (content): Merge conflict in file2
Automatic merge failed; fix conflicts and then commit the result.
lebowski@Maveowski:~/my_first_repo$ git status
On branch master
You have unmerged paths.
  (fix conflicts and run "git commit")
  (use "git merge --abort" to abort the merge)

Unmerged paths:
  (use "git add <file>..." to mark resolution)

        both modified:   file2

no changes added to commit (use "git add" and/or "git commit -a")
```

lebowski@Maveowski: ~/my_first_repo

```
1 <<<<<<< HEAD
2 Editing file2
3 From the branch demo_2
4 =======
5 Editing file 2 in branch 1
6 >>>>>>> demo_1
~
```

lebowski@Maveowski: ~/my_first_repo

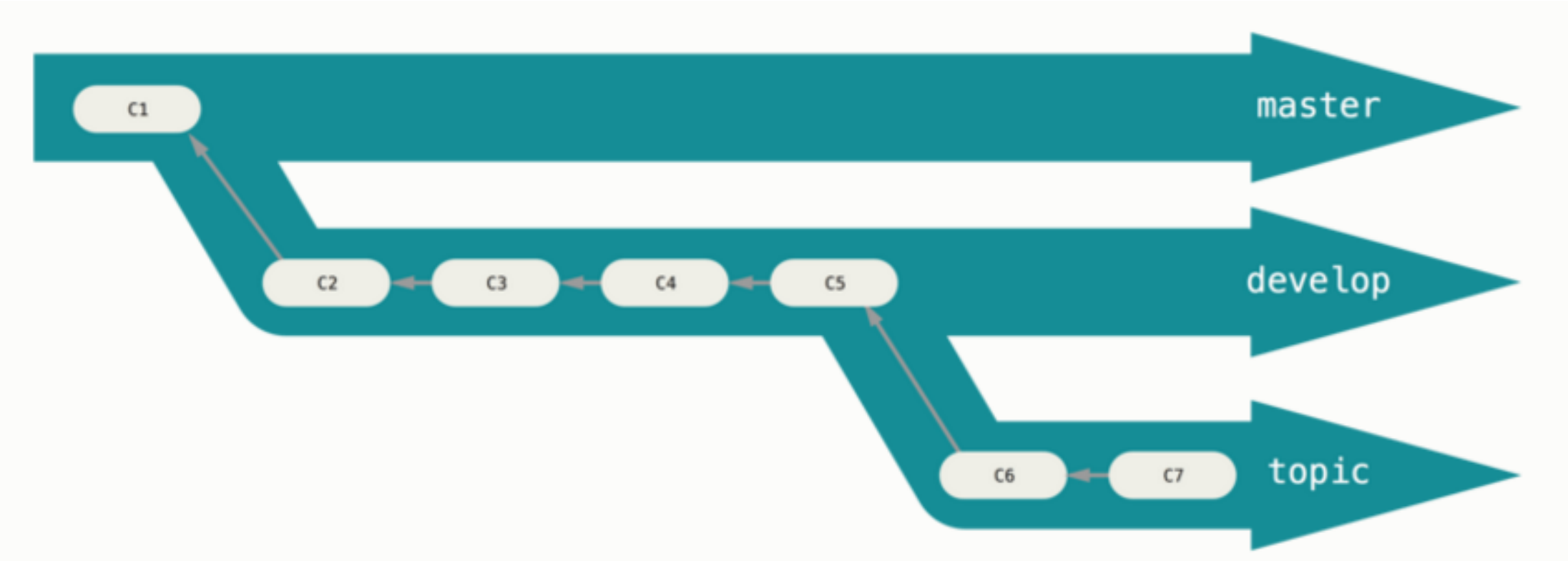
```
1 Editing file2
2 From the branch demo_2
3 Editing file 2 in branch 1
~
~
~
```

```
lebowski@Maveowski:~/my_first_repo$ git add file2
lebowski@Maveowski:~/my_first_repo$ git commit -m "Merged demo_1"
[master bcbec00] Merged demo_1
lebowski@Maveowski:~/my_first_repo$ git status
On branch master
nothing to commit, working tree clean
lebowski@Maveowski:~/my_first_repo$
```

Miscellaneous commands

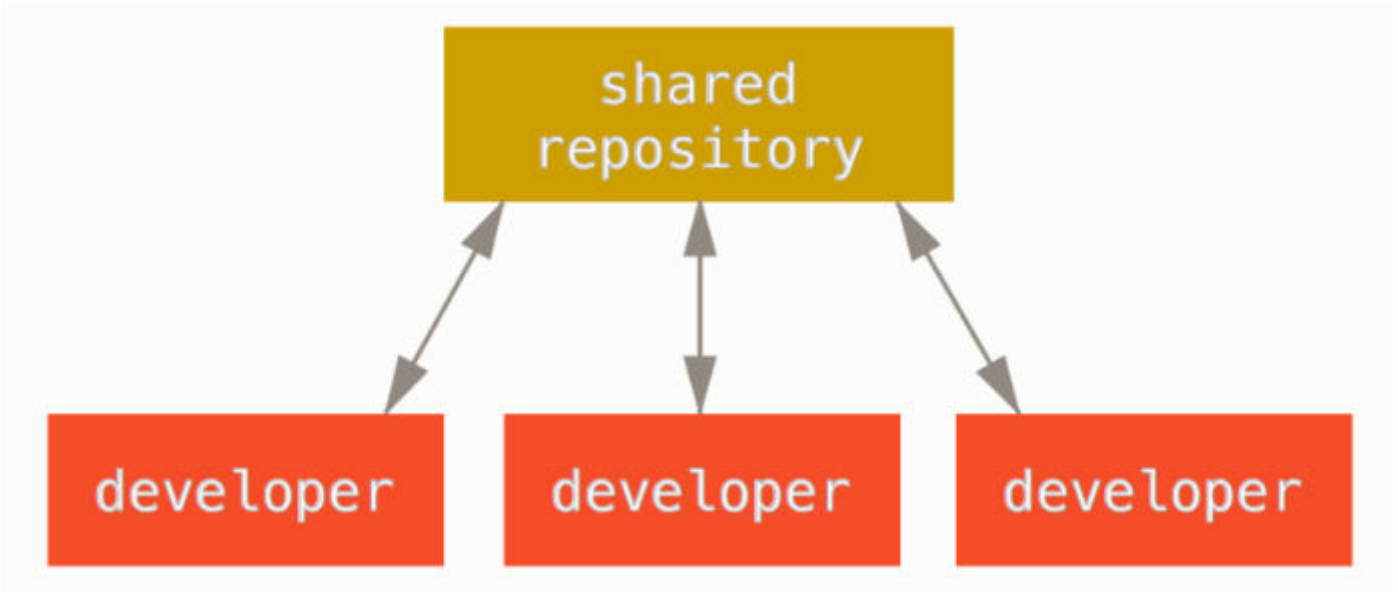
- git rm – delete a file.
- git log – shows the commit logs.
- git reset – reset staged changes.
- git fetch – fetch all the changes in the remote repo.
- git diff – gives the difference in files
- git tag – tags a commit.
- gitk – graphical interface for the local repo.

Workflows

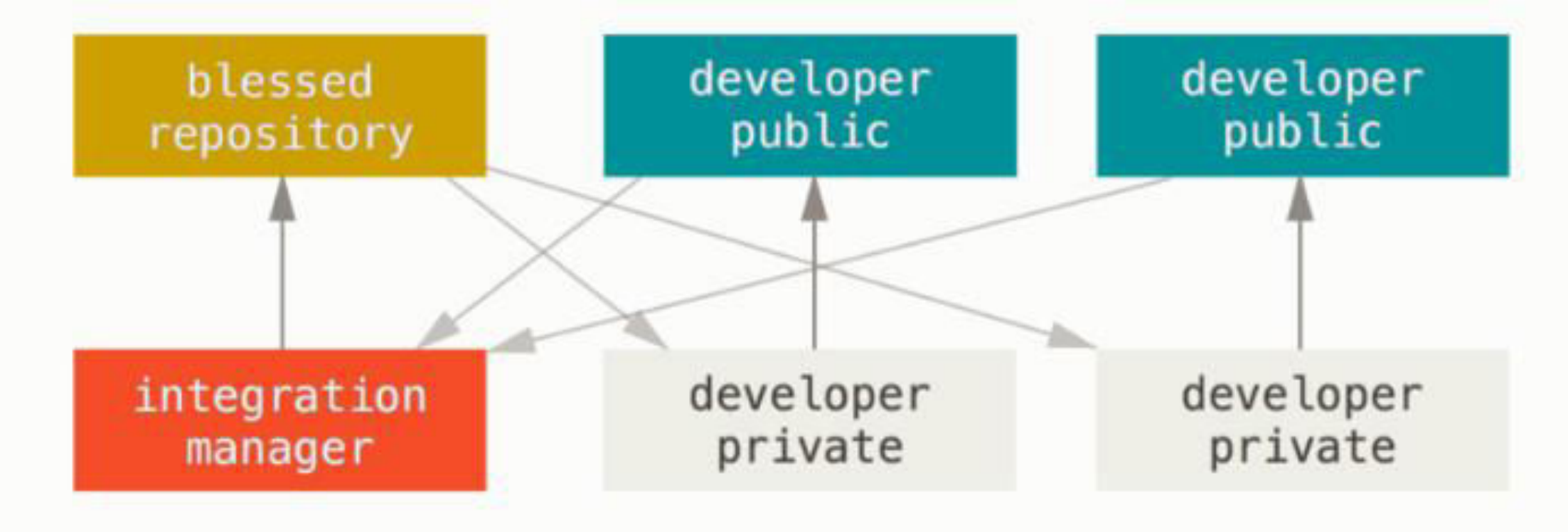


Distributed Workflows

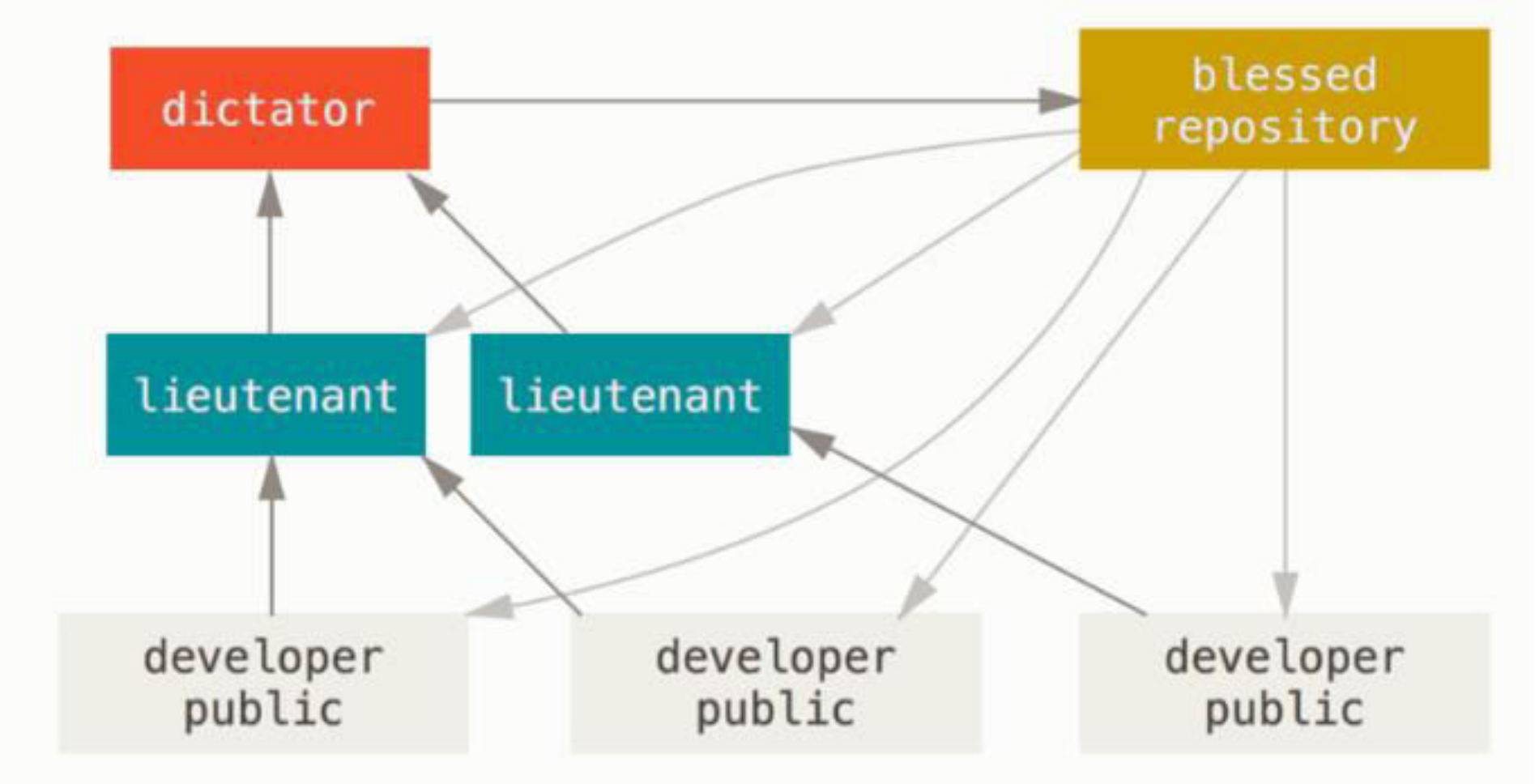
Centralized workflow



Integration-Manager workflow



Dictator and Lieutenants workflow



Our Experience

Venkat Krishna R

lmlebowski

I don't rest until it's the best.

India

Overview | Repositories 8 | Stars 1 | Followers 0 | Following 0

Pinned repositories

Customize your pinned repositories

- Image_Steganography — C, ★1
- Address_book — Application to manage contact details — C
- Arbitrary-precision-calculator — Performing calculations on bignum — C
- Expression_converter — Universal expression converter — C
- Mini_shell — Miniature version of the Linux shell. — C
- MP3_TAG_READER — To display and edit the tags of an IDv3 mp3 files. — C

Sudharshan B V

sudharshanbv

i'll code in dreams too...

bvsudharshan@gmail.com

Overview | Repositories 9 | Stars 0 | Followers 0 | Following 0

Popular repositories

Customize your pinned repositories

- minishell — This project is an attempt to demonstrate the working of a shell (bash) — C
- image-steganography — C
- mp3-tag-reader — C
- address-book — C
- APC — C
- text-indexer — C

Saranya R

RSaranyaECE

Passionate about Embedded System

Bangalore

saranya.r.25795@gmail.com

Overview | Repositories 8 | Stars 0 | Followers 0 | Following 0

Popular repositories

Customize your pinned repositories

- C-AddressBook — C
- C-SourcetoHTML — C
- C-Steganography — C
- C-Tagreader — C
- LI-MiniShell — C
- DS-APC — C

Ashish Jain

ashish2103parmar

Nothing to see here... look to the right-------->

ashish2103parmar@gmail.com

Overview | Repositories 6 | Stars 0 | Followers 0 | Following 0

Popular repositories

Customize your pinned repositories

- Mini-Shell — implementing mini shell — C
- first-repo-testing — C
- calculator — mini-calculator for git demo — C
- ashish2103parmar.github.io
- TFTP — Makefile
- APC — Arbitrary Precision Calculator — C

References:

https://git-scm.com/book/en/v2

Thank You