# Git

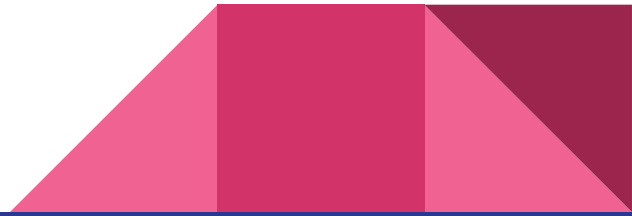
ABC CSE Winter School

# What is git?

Git is a version control tool

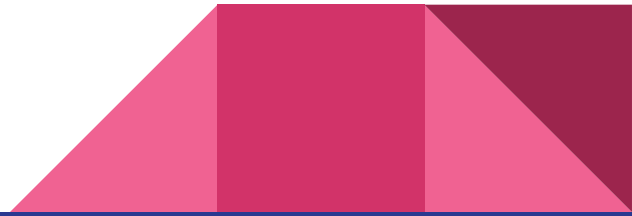
It allows you to track how your code changes after your edits

You literally have history of all of your modifications and allows you to utilize this information however you wish (almost whatever you imagine is possible)



# How git works?

Git is composed of 3 data structures (git terminology is used):
- **Blob** - equivalent of file, whatever file you want to keep track of
- **Tree** - references to other trees or blobs
- **Commit** - composed of a **tree**, **parent**(commit), and ***metadata***



# Let’s get started

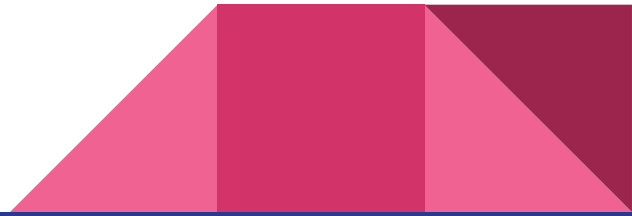
git init - initializes git repository

git status - to see the status of your repository

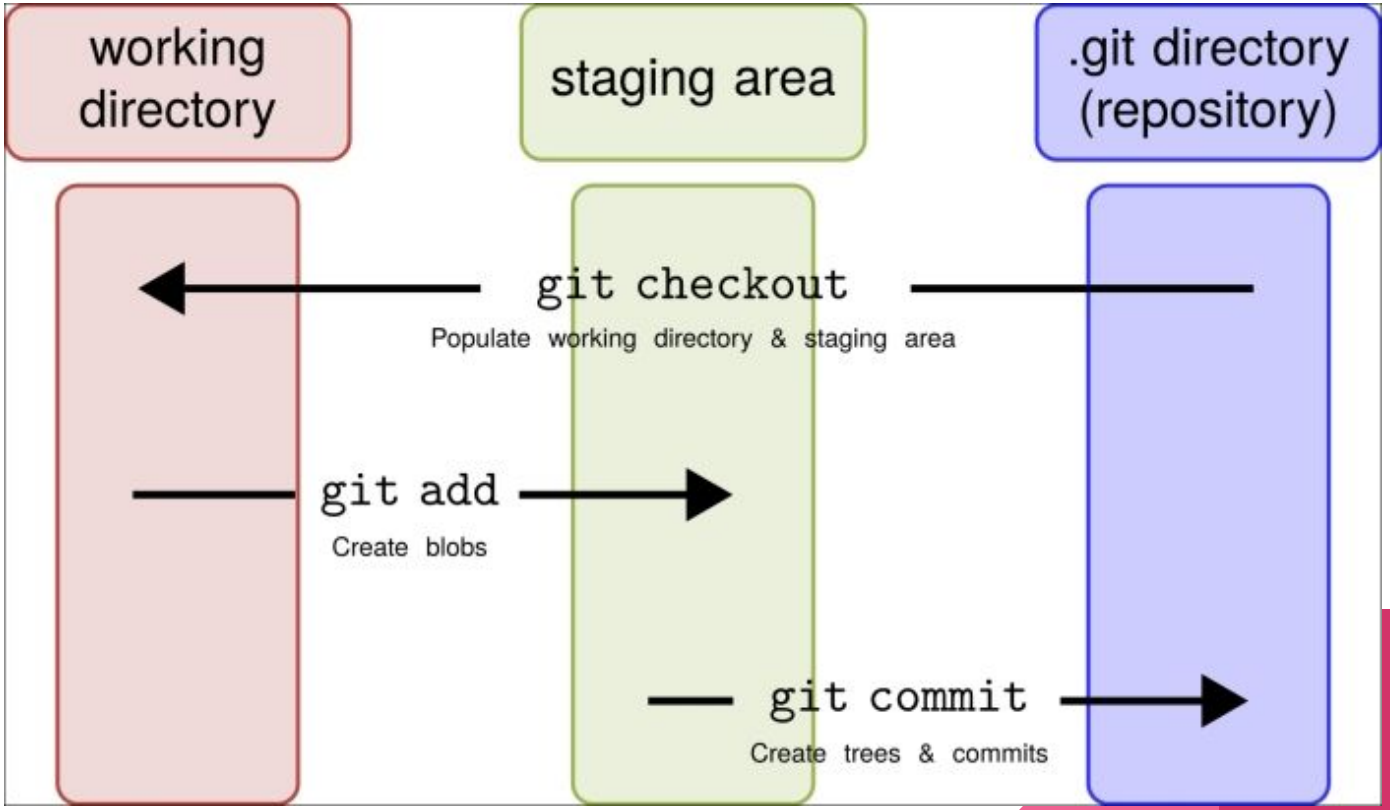
git add <file> - to track the file

git commit - to save the state of all tracked files

git log - history of all your commits



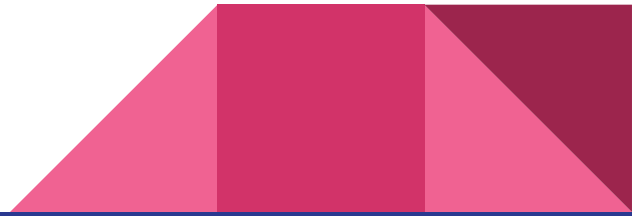
# A little bit to know



# How to travel through versions?

git checkout <hash> - this command allows you to move between your commits

It also accepts branches as arguments to switch to them



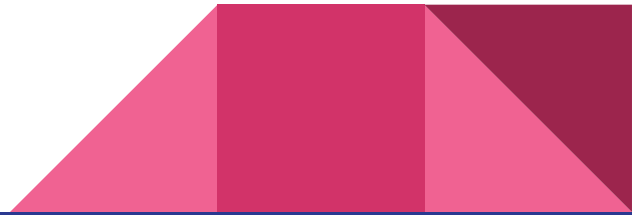
# More commands

git diff - shows the differences between your working directory and the last commit

git diff <file> - shows the difference for particular file

git diff <hash> <file> - shows the difference between the working directory and commit at <hash>

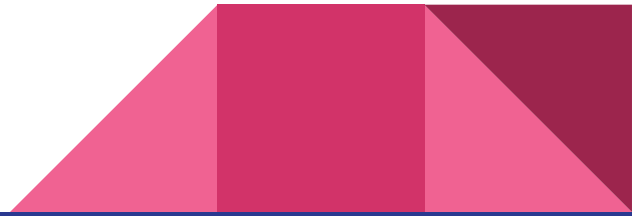
git diff <hash1> <hash2> <file> - shows the difference of <file> for commits at <hash1> and <hash2>



# Branching

git branch <name> - creates a new branch with name <name>

git merge <branch-name> - merges changes from a branch to the branch you are currently working on



# Remotes

git remote - list remotes

git remote add <name> <url> - add a remote

git push <remote> <local branch>:<remote branch> - send objects to remote, and update remote reference

git branch --set-upstream-to=<remote>/<remote branch> - set up correspondence between local and remote branch

git pull - same as git fetch; git merge

git clone - download repository from remote