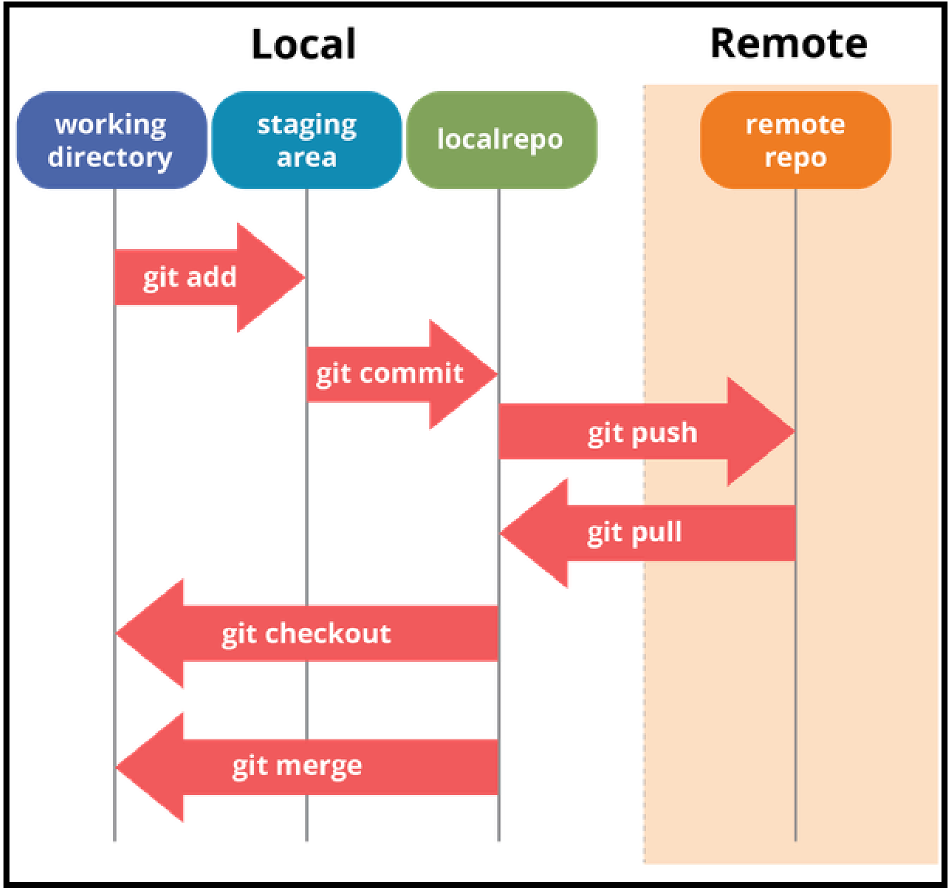
Definitions:

- A **repo** is a graph of commit objects.
  Each Git repo keeps tracks of three things:
  1. **Working directory/Working tree:** The files on your local system, at their current state.
  2. **Index/Staging Area:** All the changes that will be committed with the next commit.
  3. **History:** The graph of commit objects that were committed.



- A **commit object** is a snapshot of the codebase, with some extra metadata.
  When we run git commit, a new commit object gets created and added to the graph. An edge is created from this new commit to its parent (the most recent commit before we ran git commit).
- In **git push origin master**:
  - **origin** is the name of the repo we're pushing our changes to.
  - Git allows you to define remotes, a remote is a name that is associated with a URL of a remote repository.
  - When you clone a repo, Git automatically creates the origin remote, and associates it with the URL of the repository that you cloned.
  - **master** is the name of the branch of the remote repository we're pushing the changes to. By default, a Git repo starts with a single branch, called master.
- **Fork:** A copy of a repository on GitHub owned by a different user.
- **Branch:** A lightweight movable pointer to a commit. It is simply a pointer to a commit object in the history. Branching is used to work on different sequences in parallel in a single same repo.

- **Clone:** A local version of a repository, including all commits and branches.
- **Pull request:** A place to compare and discuss the differences introduced on a branch with reviews, comments, integrated tests, and more.
- **HEAD:** A pointer to the most recent commit of the current branch.. The HEAD pointer can be moved to different branches, tags, or commits when using git checkout.

Git Commands:

Git Command	**Explanation**
git init [directory]	Creates a new Git repository from an existing directory.
git clone [repo/URL]	Clones a repository (local or remote via HTTP/SSH).
git clone [repo/URL] [folder]	Clones a repository into a specified folder on your local machine.
git status	Shows the state of the current directory (list staged, unstaged, and untracked files)
git log	Lists the commit history of the current branch.
git log --all	Lists all commits from all branches.
git branch	Lists all branches in the repository.
git branch -aa	Lists all remote branches.
git branch [branch]	Creates a new branch under a specified name.
git checkout [branch]	Switches to a branch under a specified name. If it doesn’t exist, a new one will be created.
git branch -d [branch]	Deletes a local branch.
git push -u origin [branch]	Pushes a local branch to the remote repository.
git merge [branch]	Merges the specified branch with the current branch.
git add [file/directory]	Stages changes for the next commit.
git add ./git add */git add -a	Stages everything in the directory for an initial commit.
git commit -m "[descriptive_message]"	Commits staged snapshots in the version history with a descriptive message included in the command.

git diff	Explores the difference(s) between the working directory and the index.
git diff --cached	Explores the difference(s) between the last commit and the index.
git diff HEAD	Explores the difference(s) between the last commit and the working directory.
git revert [file/directory]	Undoes changes in a file or directory and creates a new commit. reset doesn't create new commit objects, but it changes the HEAD pointer (and optionally changes the working directory and/or index).
git reset [file]	Unstages a file without overwriting changes.
git reset [commit]	Undoes any changes introduced after the specified commit. It undoes changes in the history and the index but not the working directory.
git reset --soft [commit]	Moves HEAD to the specified commit, without changing the index or the working directory.
git reset --hard [commit]	Moves HEAD to the specified commit, and updates both the index and working directory.
git fetch [remote_repo] [branch]	Fetches a branch from a remote repository.
git pull [remote_repo]	Fetches a repository and merges it with the local copy.
git push [remote_repo] [branch]	Pushes a branch to a remote repository with all its commits and objects.