HEAD - local repository committed files are present here

Index - Staging area

Working directory - local changes

HEAD - file pointing to current commit of that branch

ORIG\_HEAD - file pointing to last commit before the changes

git fetch - updates FETCH\_HEAD to current commit fetched, HEAD is not yet changed

git pull - git fetch + git merge

--rebase and --merge are arguments to pull

--merge adds new commit (depends if it is diverged) while --rebase puts the commits of current branch on top of source branch commits, whereas --merge preserves the commit history as well as commit order of feature branch by simply adding new merge commit

**Local branch Remote branch**

1. A
2. A A
3. B

A

1. B C

A A

In case of merge

1. New commit

C

B

A

In case of rebase

1. B

C

A

In case of conflicts rebase resolves one conflict at a time whereas merge presents all conflicts together

If the branch is not diverged then merge will result in fast forward (i.e. the commit can be traversed through the commit history), if is diverged then it will result in merge commit

Diverged means the remote branch and local branch have different commits