Git Concepts

- **What is Git?**
  Git is a [distributed] Version Control System, which tracks the file changes

- **What is GitHub?**
  GitHub is a cloud storage where we can store and manager project source code.

- **What is Repository?**
  It is used for storing the software projects, it is most used for storing one project per repository.

- **What is Branch?**
  It is a new or upgraded version of branch from which it is created.
  EX: 1st version/branch of Flipkart project code that didn't had Flipkart groceries
  and the 2nd version/branch has the logic/code of Flipkart groceries
  but 2nd version doesn't mean it will not have the previous version's code, it is just an upgradation on top of previous version.
  1. create branch: **git branch <new Branch Name>**.
  2. Switch to another branch: a) **git switch <Branch Name>.** b) **git branch <Branch Name>.**
  3**.** create and switch to new branch: **git checkout -b <new Branch Name>**.

- **What is Commit?**
  It is a snapshot of a repo at a specific point in time.
  Command: **git commit -m "commit message here"**

- **What is Merging?**
  It is the process of bringing new changes from child repo to its parent repo

- **What is Staging?**
  once all the changes are done and finalized, changes can be moved to staging by committing
  staging is the step before pushing the code to actual origin/target[remote repo].

- **What is Stashing?**
  Stashing is nothing but to remove the local changes which are not committed yet and save it in a temporary place with a name called stash name.
  such stashed changes can be brought back by stash pop.

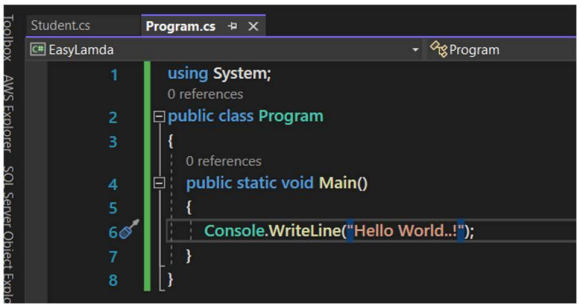
- **What is Cloning?**
  Cloning is copying all the contents from the remote repository to a local repository.

❖ **What are Merge conflicts?**

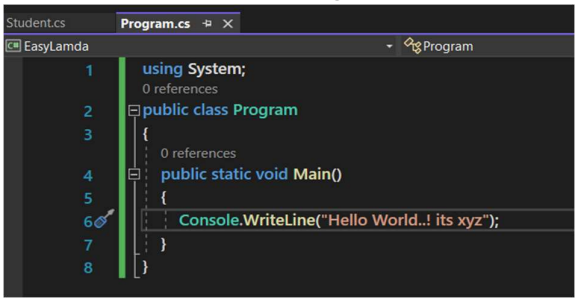
When we try to merge branches but there are some changes which Git fails to identify and it needs our help to accomplish merging process.

ex: lets say we have 3 branches master, Foo, Bar and all are at synch and there are 2 dev's namely raven, xavier.

all branch's code:



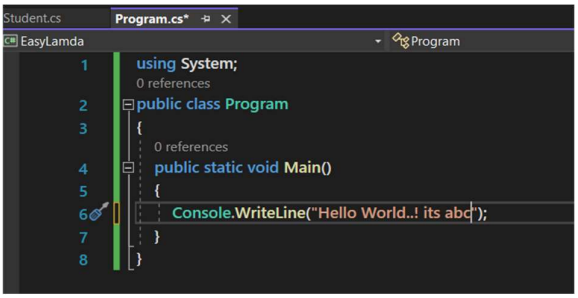
Now raven makes some changes to Foo:



and this code[Foo] is now merged to master branch

and now master branch code looks exact like ravens branch 'Foo':

but now xavier makes some changes to branch 'Bar':



Now when xavier tries to merge branch 'Bar' with master it results in conflicts because git doesn't know whether to keep **xyz** change done by raven or **abc** done by xavier so it lets us to decide what to do and this is nothing but git conflict.