DevOps Lab

Assignment 2:

Aim: To understand Version Control Systems Like Git and Create GitHub Account.

Theory:

Version control systems are a category of software tools that helps in recording changes made to files by keeping a track of modifications done to the code.

Need for Version Control Systems:

As we know that a software product is developed in collaboration by a group of developers they might be located at different locations and each one of them contributes in some specific kind of functionality/features. So in order to contribute to the product, they made modifications in the source code(either by adding or removing). A version control system is a kind of software that helps the developer team to efficiently communicate and manage(track) all the changes that have been made to the source code along with the information like who made and what change has been made. A separate branch is created for every contributor who made the changes and the changes aren't merged into the original source code unless all are analysed as soon as the changes are green signalled they merged to the main source code. It not only keeps source code organized but also improves productivity by making the development process smooth.

Benefits of the version control system:

a) Enhances the project development speed by providing efficient collaboration,

b) Leverages the productivity, expedite product delivery, and skills of the employees through better communication and assistance,

c) Reduce possibilities of errors and conflicts meanwhile project development through traceability to every small change,

d) Employees or contributor of the project can contribute from anywhere irrespective of the different geographical locations through this VCS.

e) For each different contributor of the project a different working copy is maintained and not merged to the main file unless the working copy is validated. A most popular example is Git, Helix core, Microsoft TFS, etc.

f) Helps in recovery in case of any disaster or contingent situation,

g) Informs us about Who, What, When, Why changes have been made.

Types of VCS:

a) Local Version Control Systems: It is one of the simplest forms and has a database that kept all the changes to files under revision control. RCS is one of the most common VCS tools. It keeps patch sets (differences between files) in a special format on disk. By adding up all the patches it can then re-create what any file looked like at any point in time.

b) Centralized Version Control Systems: Centralized version control systems contain just one repository and each user gets their own working copy. You need to commit to reflecting your changes in the repository. It is possible for others to see your changes by updating.
Two things are required to make your changes visible to others which are:

- You commit
- They update

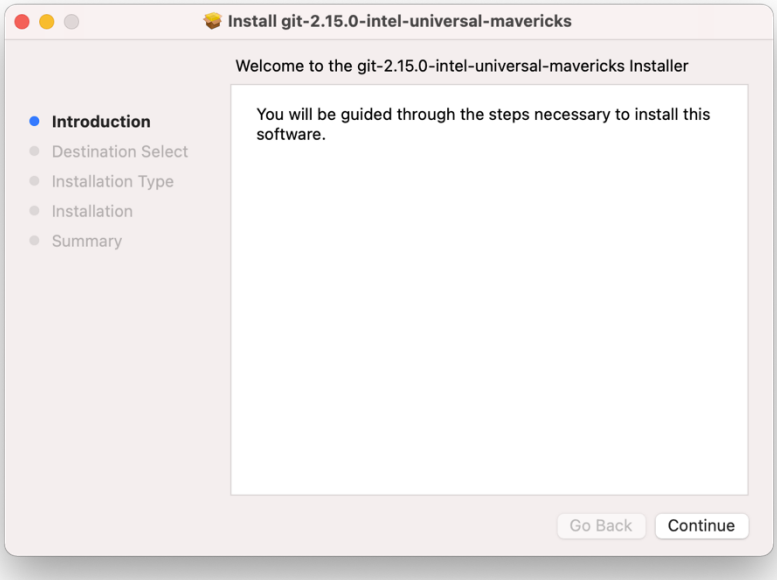
The benefit of CVCS (Centralized Version Control Systems) makes collaboration amongst developers along with providing an insight to a certain extent on what everyone else is doing on the project.

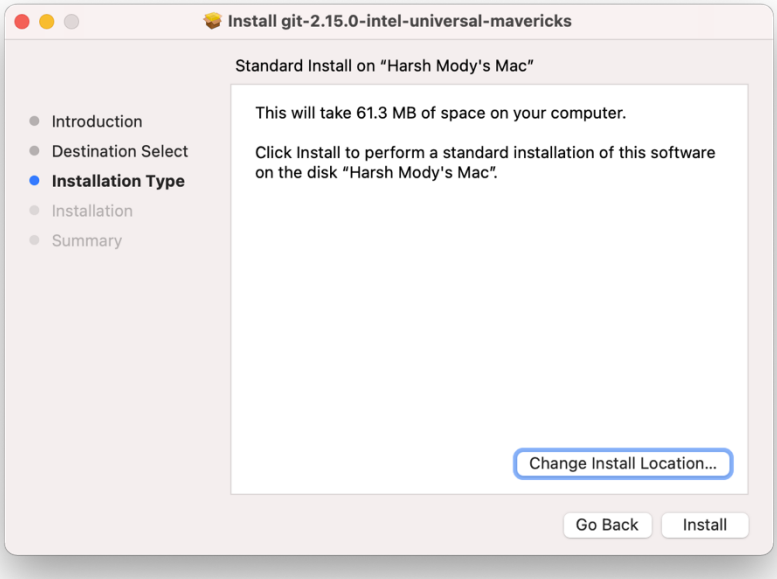
c) Distributed Version Control Systems: Distributed version control systems contain multiple repositories. Each user has their own repository and working copy. Just committing your changes will not give others access to your changes. This is because commit will reflect those changes in your local repository and you need to push them in order to make them visible on the central repository. Similarly, When you update, you do not get other's changes unless you have first pulled those changes into your repository.
To make your changes visible to others, 4 things are required:

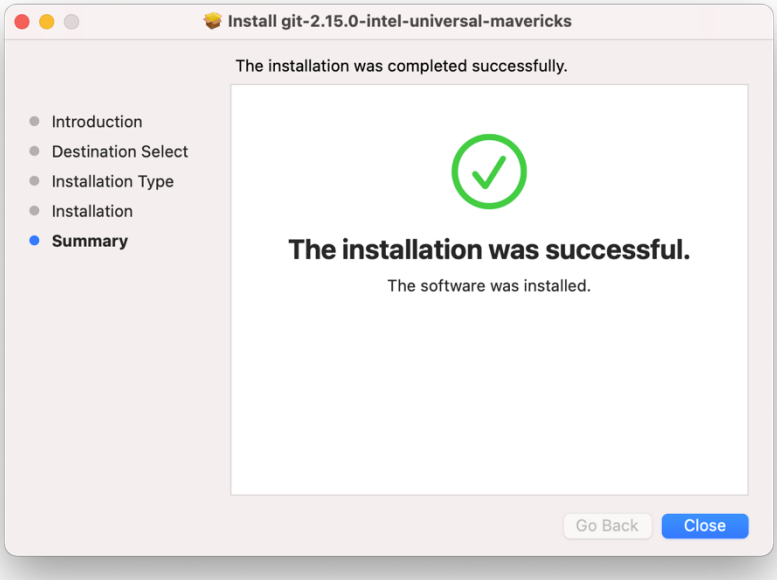
- You commit
- You push
- They pull
- They update

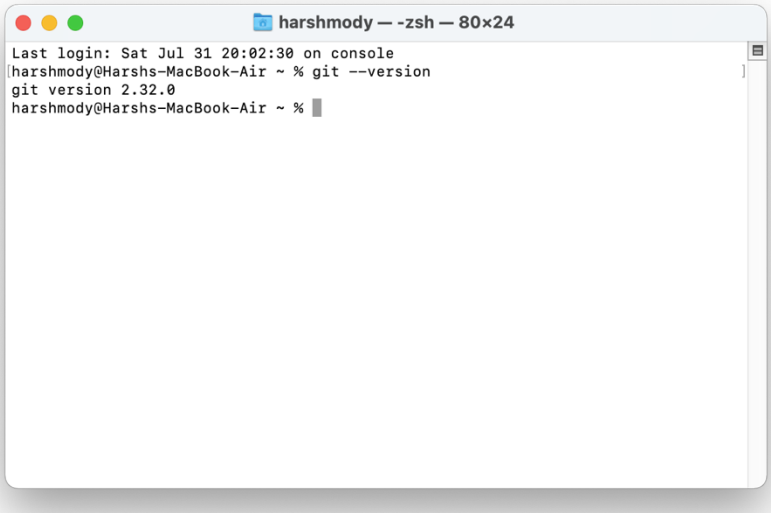
The most popular distributed version control systems are Git, Mercurial. They help us overcome the problem of single point of failure.

Installation of Git:


Install git-2.15.0-intel-universal-mavericks
Welcome to the git-2.15.0-intel-universal-mavericks Installer
Introduction
Destination Select
Installation Type
Installation
Summary
You will be guided through the steps necessary to install this software.
Go Back
Continue


Install git-2.15.0-intel-universal-mavericks
Standard Install on “Harsh Mody's Mac”
Introduction
Destination Select
Installation Type
Installation
Summary
This will take 61.3 MB of space on your computer.
Click Install to perform a standard installation of this software on the disk “Harsh Mody's Mac”.
Change Install Location...
Go Back
Install

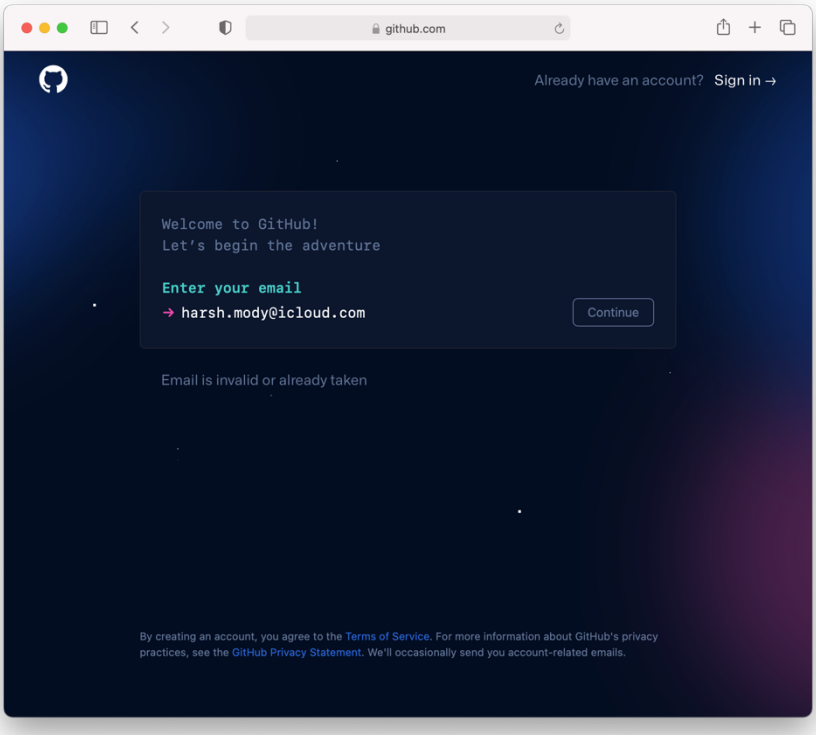




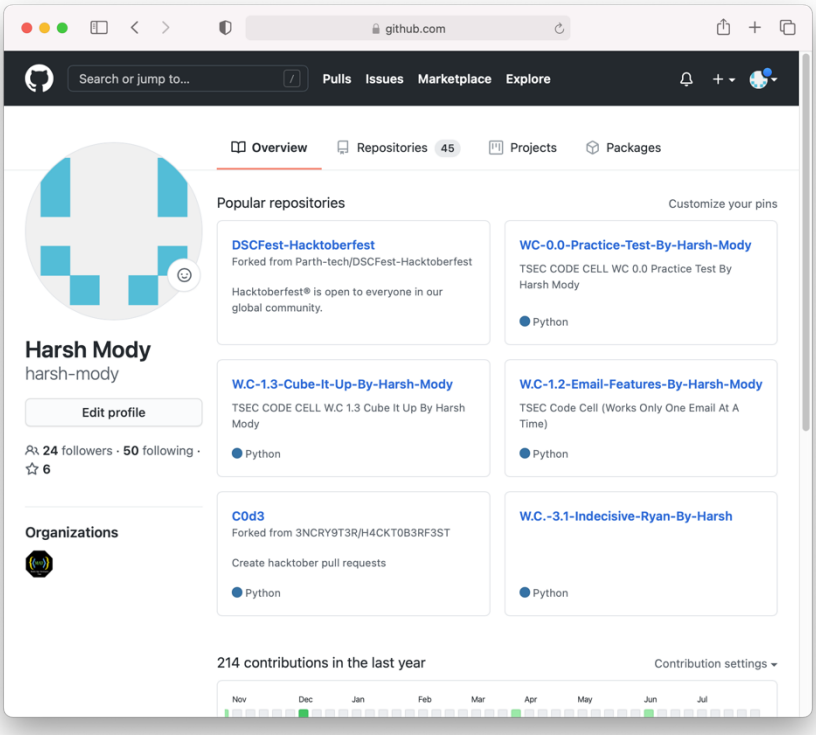
GitHub:

GitHub, Inc. is a provider of Internet hosting for software development and version control using Git. It offers the distributed version control and source code management (SCM) functionality of Git, plus its own features. It provides access control and several collaboration features such as bug tracking, feature requests, task management, continuous integration and wikis for every project. Headquartered in California, it has been a subsidiary of Microsoft since 2018.

Create a GitHub Account:



And follow steps to verify and set password. Since I already have a GitHub account, I will login directly.



Conclusion: Thus, successfully understood the importance of version control systems like Git and also understood the Usage of GitHub and installed Git as our VCS and created GitHub account successfully.