**FSD Laboratory 01**

Aim: Version control with Git.

Objectives:

1. To introduce the concepts and software behind version control, using the example of Git.
2. To understand the use of 'version control' in the context of a coding project.
3. To learn Git version control with Clone, commit to, and push, pull from a git repository.

Theory:

1. What is Git? What is Version Control?

Git is a distributed version control system (DVCS) used for tracking changes in source code during software development. It allows multiple developers to collaborate on a project simultaneously, managing and organizing changes to the codebase efficiently.

Version control is a system that records changes to files over time, enabling you to track modifications, revert to previous stages, work on different branches simultaneously, and collaborate with others seamlessly. It helps developers and teams manage and coordinate changes in the source code, ensuring that different versions of files are organized, maintained, and can be retrieved as needed. Version control systems like Git are crucial for the development of complex software projects, facilitating collaboration, preserving project history, and aiding in debugging and troubleshooting.

2. How to use Git for version controlling?

Git for version control:

* + - 1. Install Git: Install Git on your machine.
      2. Initialize a Git Repository.
      3. Add and Stage Files
      4. Commit Changes
      5. Check Status and History
      6. Create Branches
      7. Switch Branches
      8. Merge Branches
      9. Remote Repositories
      10. Push Changes

FAQ:

1. What is branching in Git?

Branching in Git is a fundamental concept that allows developers to diverge from the main line of development (often referred to as the "master" branch) and work on separate, isolated lines of code. Each branch represents an independent line of development, enabling developers to work on specific features, bug fixes, or experiments without affecting the main codebase.

2. How to create and merge branches in Git? Write the commands used.

To create and merge branches in Git,

* 1. Create a New Branch: To create a new branch, you'll use the git branch command

git branch <branch\_name>

* 1. Switch to the New Branch: Use the git checkout command to switch to the branch you just created

git checkout <branch\_name>

* 1. Make Changes and Commit

git add .

git commit -m "Your commit message"

* 1. Switch Back to the Main Branch: Switch back to the main branch using git checkout

git checkout master

* 1. Merge the Branch: Merge the changes from your new branch into the main branch

git merge <branch\_name>

Output: Screenshots of the output to be attached.

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ mkdir lecture

mkdir: cannot create directory ‘lecture’: File exists

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ mkdir assignment

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ vi touch firstfile.txt

2 files to edit

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ git init

Reinitialized existing Git repository in C:/Users/computer/.git/

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ git add firstfile.txt

fatal: Unable to create 'C:/Users/computer/.git/index.lock': File exists.

Another git process seems to be running in this repository, e.g.

an editor opened by 'git commit'. Please make sure all processes

are terminated then try again. If it still fails, a git process

may have crashed in this repository earlier:

remove the file manually to continue.

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ git commit -m "first commit"

fatal: Unable to create 'C:/Users/computer/.git/index.lock': File exists.

Another git process seems to be running in this repository, e.g.

an editor opened by 'git commit'. Please make sure all processes

are terminated then try again. If it still fails, a git process

may have crashed in this repository earlier:

remove the file manually to continue.

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ git init

Reinitialized existing Git repository in C:/Users/computer/.git/

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ git status

warning: could not open directory 'AppData/Local/Application Data/': Permission denied

warning: could not open directory 'Application Data/': Permission denied

warning: could not open directory 'Cookies/': Permission denied

warning: could not open directory 'Local Settings/': Permission denied

warning: could not open directory 'My Documents/': Permission denied

warning: could not open directory 'NetHood/': Permission denied

warning: could not open directory 'PrintHood/': Permission denied

warning: could not open directory 'Recent/': Permission denied

warning: could not open directory 'SendTo/': Permission denied

warning: could not open directory 'Start Menu/': Permission denied

warning: could not open directory 'Templates/': Permission denied

On branch main

Untracked files:

(use "git add <file>..." to include in what will be committed)

.arduinoIDE/

.bash\_history

.cache/

.conda/

.condarc

.config/

.eclipse/

.gitconfig

.ipynb\_checkpoints/

.ipython/

.jupyter/

.lesshst

.matplotlib/

.p2/

.packettracer

.spyder-py3/

.thumbnails/

.viminfo

.vscode/

3D Objects/

AppData/

Cisco Packet Tracer 6.2sv/

Contacts/

Desktop/

Documents/

Downloads/

Favorites/

IntelGraphicsProfiles/

Links/

Music/

My project/

NTUSER.DAT

NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TM.blf

NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TMContainer00000000000000000001.regtrans-ms

NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TMContainer00000000000000000002.regtrans-ms

OneDrive/

Pictures/

Saved Games/

Searches/

Terrain/

Untitled.ipynb

Untitled1.ipynb

Videos/

eclipse-workspace/

eclipse/

fsd\_csf/

ham.ipynb

ntuser.dat.LOG1

ntuser.dat.LOG2

ntuser.ini

sdpod\_agent/

secondfile.txt

terrain\_Aryan Bardoh/

touch

nothing added to commit but untracked files present (use "git add" to track)

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ git add firstfile.txt

fatal: Unable to create 'C:/Users/computer/.git/index.lock': File exists.

Another git process seems to be running in this repository, e.g.

an editor opened by 'git commit'. Please make sure all processes

are terminated then try again. If it still fails, a git process

may have crashed in this repository earlier:

remove the file manually to continue.

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ git add fileone.txt

fatal: Unable to create 'C:/Users/computer/.git/index.lock': File exists.

Another git process seems to be running in this repository, e.g.

an editor opened by 'git commit'. Please make sure all processes

are terminated then try again. If it still fails, a git process

may have crashed in this repository earlier:

remove the file manually to continue.

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ pwd

/c/Users/computer

\

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~ (main)

$ cd nishtha

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (main)

$ git init

Initialized empty Git repository in C:/Users/computer/nishtha/.git/

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git add fileone.txt

fatal: pathspec 'fileone.txt' did not match any files

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ vi touch fileone.txt

2 files to edit

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git init

Reinitialized existing Git repository in C:/Users/computer/nishtha/.git/

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git add fileone.txt

fatal: pathspec 'fileone.txt' did not match any files

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git add filetwo.txt

fatal: pathspec 'filetwo.txt' did not match any files

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git commit -m "initial commit"

On branch master

Initial commit

Untracked files:

(use "git add <file>..." to include in what will be committed)

touch

nothing added to commit but untracked files present (use "git add" to track)

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git log

fatal: your current branch 'master' does not have any commits yet

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ vi filetwo.txt

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git add .

warning: in the working copy of 'filetwo.txt', LF will be replaced by CRLF the next time Git touches it

warning: in the working copy of 'touch', LF will be replaced by CRLF the next time Git touches it

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ ls

filetwo.txt touch

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git commit -m "Second commit"

[master (root-commit) 68155e3] Second commit

2 files changed, 4 insertions(+)

create mode 100644 filetwo.txt

create mode 100644 touch

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git status

On branch master

nothing to commit, working tree clean

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ ls

filetwo.txt touch

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ touch fileone.txt

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ vi fileone.txt

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git init

Reinitialized existing Git repository in C:/Users/computer/nishtha/.git/

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ ls -all

total 35

drwxr-xr-x 1 WPUDESK48473+computer 197121 0 Aug 7 09:23 ./

drwxr-xr-x 1 WPUDESK48473+computer 197121 0 Aug 7 09:23 ../

drwxr-xr-x 1 WPUDESK48473+computer 197121 0 Aug 7 09:24 .git/

-rw-r--r-- 1 WPUDESK48473+computer 197121 24 Aug 7 09:23 fileone.txt

-rw-r--r-- 1 WPUDESK48473+computer 197121 22 Aug 7 09:20 filetwo.txt

-rw-r--r-- 1 WPUDESK48473+computer 197121 18 Aug 7 09:17 touch

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git status

On branch master

Untracked files:

(use "git add <file>..." to include in what will be committed)

fileone.txt

nothing added to commit but untracked files present (use "git add" to track)

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git add filetwo.txt

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git commit -m "Initial commit"

On branch master

Untracked files:

(use "git add <file>..." to include in what will be committed)

fileone.txt

nothing added to commit but untracked files present (use "git add" to track)

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git status

On branch master

Untracked files:

(use "git add <file>..." to include in what will be committed)

fileone.txt

nothing added to commit but untracked files present (use "git add" to track)

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git log

commit 68155e30f7c92c88017121a741cfb776dfd5f367 (HEAD -> master)

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:21:38 2023 +0530

Second commit

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ vi filethree.txt

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git add .

warning: in the working copy of 'fileone.txt', LF will be replaced by CRLF the next time Git touches it

warning: in the working copy of 'filethree.txt', LF will be replaced by CRLF the next time Git touches it

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git commit -m "Second commmit"

[master c9e8b7f] Second commmit

2 files changed, 6 insertions(+)

create mode 100644 fileone.txt

create mode 100644 filethree.txt

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git log

commit c9e8b7fb9b1f0b63ecc5b1b0a0c213f852a0bc6f (HEAD -> master)

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:28:40 2023 +0530

Second commmit

commit 68155e30f7c92c88017121a741cfb776dfd5f367

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:21:38 2023 +0530

Second commit

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ vi filefour.txt

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git add .

warning: in the working copy of 'filefour.txt', LF will be replaced by CRLF the next time Git touches it

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git commit -m "Third commit"

[master 88683b2] Third commit

1 file changed, 2 insertions(+)

create mode 100644 filefour.txt

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git log

commit 88683b2883663dbb178d8ab1e60fa2f6596aa511 (HEAD -> master)

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:29:51 2023 +0530

Third commit

commit c9e8b7fb9b1f0b63ecc5b1b0a0c213f852a0bc6f

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:28:40 2023 +0530

Second commmit

commit 68155e30f7c92c88017121a741cfb776dfd5f367

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:21:38 2023 +0530

Second commit

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git checkout -b "dev"

Switched to a new branch 'dev'

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (dev)

$ echo "this is a fsd class

> echo "this is an fsd class" >> thirdfile.txt

> cat thirdfile.txt

> cls

> cd

> ^C

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (dev)

$ echo "Fourth text" >> Filethree.txt

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (dev)

$ cat filethree.txt

this is file three

Fourth text

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (dev)

$ git commit -m "Fourth commit"

On branch dev

Changes not staged for commit:

(use "git add <file>..." to update what will be committed)

(use "git restore <file>..." to discard changes in working directory)

modified: filethree.txt

no changes added to commit (use "git add" and/or "git commit -a")

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (dev)

$ git log

commit 88683b2883663dbb178d8ab1e60fa2f6596aa511 (HEAD -> dev, master)

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:29:51 2023 +0530

Third commit

commit c9e8b7fb9b1f0b63ecc5b1b0a0c213f852a0bc6f

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:28:40 2023 +0530

Second commmit

commit 68155e30f7c92c88017121a741cfb776dfd5f367

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:21:38 2023 +0530

Second commit

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (dev)

$ git merge dev

Already up to date.

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (dev)

$ git log

commit 88683b2883663dbb178d8ab1e60fa2f6596aa511 (HEAD -> dev, master)

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:29:51 2023 +0530

Third commit

commit c9e8b7fb9b1f0b63ecc5b1b0a0c213f852a0bc6f

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:28:40 2023 +0530

Second commmit

commit 68155e30f7c92c88017121a741cfb776dfd5f367

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:21:38 2023 +0530

Second commit

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (dev)

$ git checkout master

Switched to branch 'master'

M filethree.txt

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ git log

commit 88683b2883663dbb178d8ab1e60fa2f6596aa511 (HEAD -> master, dev)

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:29:51 2023 +0530

Third commit

commit c9e8b7fb9b1f0b63ecc5b1b0a0c213f852a0bc6f

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:28:40 2023 +0530

Second commmit

commit 68155e30f7c92c88017121a741cfb776dfd5f367

Author: Nishad1363 <nishadwanjari1363@gmail.com>

Date: Mon Aug 7 09:21:38 2023 +0530

Second commit

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$ ^C

WPUDESK48473+computer@WPUDESK48473 MINGW64 ~/nishtha (master)

$

**Problem Statement:**

Create a public git repository for your team and submit the repo URL as a solution to this assignment, Learn Git concept of Local and Remote Repository, Push, Pull, Merge and Branch.