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ECE - AIML

FSD ASSIGNMENT - 01

AIM: Version Control with Git

OBJECTIVES: (1) To introduce the concepts & software behind version control, using the concept 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, & push, pull from a Git repository

THEORY:

Q1] What is Git, what's version control?

→ Git is a distributed version control system used to track changes in code or files, enabling collaboration & history tracking. It allows developers to manage projects, branch, merge & revert changes efficiently.

→ Version Control is a system that records changes to files over time, allowing users to revisit & manage past versions, collaborate seamlessly & prevent conflicts in a collaborative work.

Q2] How to use Git for version controlling?

→ ① Install Git

- ② ↳ Create a new repository: `git init`
↳ Create a clone of an existing one:
`git clone <repository-url>`

③ Track changes

- ↳ Add files: `git add <file>` or `git add.`
↳ Commit changes: `git commit -m "message"`

④ View changes:

- ↳ Check status: `git status`
↳ View history: `git log`

⑤ Branching:

- ↳ Create branch: `git branch <branch-name>`
↳ Switch: `git checkout <branch-name>` or
`git switch <branch-name>`

⑥ Collaborate:

- ↳ Pull changes: `git pull`
↳ push changes: `git push`

⑦ Merge branches with: `git merge`

* FAQ:

Q1] What is branching in Git?

→ Branching in Git allows us to create independent line of development within a repository. It enables you to work on features, fixes/ experiments separately without affecting the main codebase & later merge changes back when ready.

Q2] How to create & merge in Git?
Write the commands used?

- ① To create a branch: `git branch <branch-name>`
② To merge a branch:
↳ switch to the branch you want to merge into using `git checkout main`
↳ Merge the branch using `git merge branch-name`.

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Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git add .
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git status
On branch main
Your branch is up to date with 'origin/main'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   New Text Document.txt

PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git commit -m "First Github FSD Assignment"
[main da13bd9] First Github FSD Assignment
 1 file changed, 1 insertion(+)
 create mode 100644 New Text Document.txt
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git push
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 317 bytes | 158.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/MIT-WPU-DoEEE/expt-1-git-and-github-PranavRasane.git
 602519c..da13bd9  main -> main
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> |
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1 file changed, 1 insertion(+)
 create mode 100644 New Text Document.txt
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git push
Enumerating objects: 4, done.
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To https://github.com/MIT-WPU-DoEEE/expt-1-git-and-github-PranavRasane.git
 602519c..da13bd9  main -> main
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git checkout main
Already on 'main'
Your branch is up to date with 'origin/main'.
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git branch
* main
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git checkout -b testing
Switched to a new branch 'testing'
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git status
On branch testing
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    testing.txt

nothing added to commit but untracked files present (use "git add" to track)
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git add .
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git status
On branch testing
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   testing.txt

PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git commit -m "New Branch Created and Pushed a new file on it"
[testing 66bfe12] New Branch Created and Pushed a new file on it
 1 file changed, 0 insertions(+), 0 deletions(-)
```

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PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git commit -m "New Branch Created and Pushed a new file on it"
[testing 66bfe12] New Branch Created and Pushed a new file on it
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 testing.txt
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git status
On branch testing
nothing to commit, working tree clean
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git push
fatal: The current branch testing has no upstream branch.
To push the current branch and set the remote as upstream, use

    git push --set-upstream origin testing

To have this happen automatically for branches without a tracking
upstream, see 'push.autoSetupRemote' in 'git help config'.

PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git push --set-upstream origin testing
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 354 bytes | 354.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'testing' on GitHub by visiting:
remote:   https://github.com/MIT-WPU-DoEEE/expt-1-git-and-github-PranavRasane/pull/new/testing
remote:
To https://github.com/MIT-WPU-DoEEE/expt-1-git-and-github-PranavRasane.git
 * [new branch]   testing -> testing
branch 'testing' set up to track 'origin/testing'.
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> |
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Windows PowerShell
remote:      https://github.com/MIT-WPU-DoEEE/expt-1-git-and-github-PranavRasane/pull/new/testing
remote:
To https://github.com/MIT-WPU-DoEEE/expt-1-git-and-github-PranavRasane.git
* [new branch]      testing -> testing
branch 'testing' set up to track 'origin/testing'.
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane>

                                                                    git merge testing

Already up to date.
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> git merge testing
Updating dal3bd9..66bfe12
Fast-forward
 testing.txt | 0
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 testing.txt
PS C:\Users\dell6\OneDrive\Desktop\FSD_Assign_1\expt-1-git-and-github-PranavRasane> |
```

