

What is git and github?

git stands for global information tracker git is a popular version control system that tracks the code and tracks the changes in the code allowing the multiple users to to develop the code and to do the collaborative coding . git is a decentralized or distributed version control system. using git we can store the multiple versions of the software or a code etc . git is also a local repository where the multiple employees can work on their own branch.

github is a cloud based platform that hosts the git repositories and provides the collaboration tools like pull request and adding the new repositories in the cloud etc.

What is CVCS and DVCS ?

CVCS stands for the centralized version control system which an single central server the offline work is not possible should be connected to the internet . slower operations and dependent on the server . If the server crashes, total data will be lost in the centralized version control system .

DVCS stands for decentralized or distributed version control system .We can work offline if we want to push the files into the remote repository . it much faster when we compare to cvcs and now a days we mostly use the dvcs etc.

Create a project of any and push the project

to create a project add new folder using

cmd : mkdir <file name>

then using

cmd : git init <this will initialize the folder as git folder>

then we need to add some data to the folder and

use the cmd : git add <filename>

then use git commit this will commit all the files and ready to push to the remote repo

then we need to create a new repo in the github and by using this we can add our local repo data to remote repo

### **...or create a new repository on the command line**

```
echo "# exam-repo" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin git@github.com:NishanthDhanalakoti/exam-repo.git
git push -u origin main
```

now using git remote we can set our remote repository using the above ssh

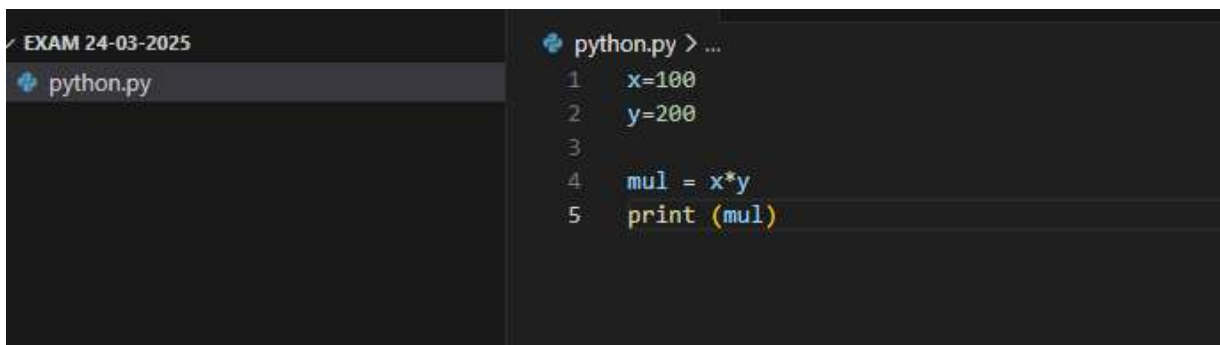
now using the push cmd we can push all our data to remote repo.

```

PS C:\Users\Administrator\Desktop\exam 24-03-2025> git init
Reinitialized existing Git repository in C:/Users/Administrator/Desktop/exam 24-03-2025/.git/
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git add .
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git commit -m "my first file "
[main (root-commit) ddfc4cc] my first file
 1 file changed, 5 insertions(+)
 create mode 100644 python.py
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git status
On branch main
nothing to commit, working tree clean
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git branch
* main
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git remote add origin git@github.com:NishanthDhanalakoti/exam-repo.git
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git push -u origin main
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 261 bytes | 261.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:NishanthDhanalakoti/exam-repo.git
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.
PS C:\Users\Administrator\Desktop\exam 24-03-2025>

```

i have created a python.py file and push the file to remote repo

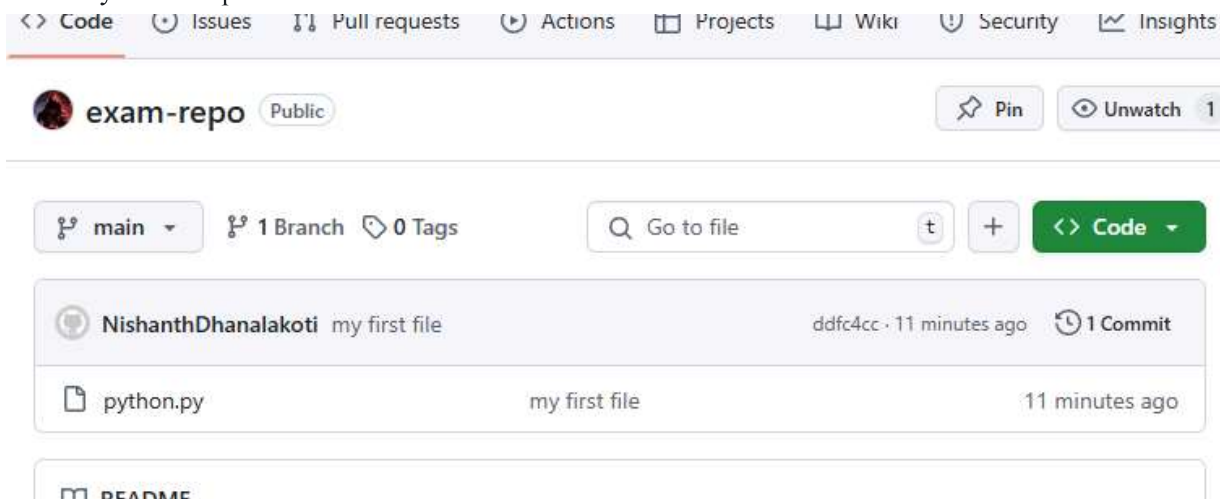


```

python.py > ...
1  x=100
2  y=200
3
4  mul = x*y
5  print (mul)

```

this is my online repo exam



the file is successfully uploaded to the github.

Create 3 branches and 5 tags

here i have created a 3 branches names

feature-1 feature-2 feature-3

and i have pushed the branches to the remote repository

```
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git branch feature-1
>> git branch feature-2
>> git branch feature-3
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git branch
feature-1
feature-2
feature-3
* main
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git push origin feature-1
fatal: 'origin' does not appear to be a git repository
fatal: Could not read from remote repository.

Please make sure you have the correct access rights
and the repository exists.
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git checkout feature-1
Switched to branch 'feature-1'
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git push origin feature-1 feature-2 feature-3
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:NishanthDhanalakoti/exam-repo.git
 * [new branch]      feature-1 -> feature-1
 * [new branch]      feature-2 -> feature-2
 * [new branch]      feature-3 -> feature-3
PS C:\Users\Administrator\Desktop\exam 24-03-2025>
```

```
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git tag n1.0
>> git tag n1.1
>> git tag n2.0
>> git tag n2.1
>> git tag n3.0
>>
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git tag
n1.0
n1.1
n2.0
n2.1
n3.0
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git push origin --tag
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:NishanthDhanalakoti/exam-repo.git
 * [new tag]         n1.0 -> n1.0
 * [new tag]         n1.1 -> n1.1
 * [new tag]         n2.0 -> n2.0
 * [new tag]         n2.1 -> n2.1
 * [new tag]         n3.0 -> n3.0
PS C:\Users\Administrator\Desktop\exam 24-03-2025>
```

Create a Keygen and push using ssh

ssh-keygen -t rsa -b 4096 -C "our email "

cat ~/.ssh/id\_rsa.pub

Go to GitHub > Settings > SSH and GPG keys > New SSH Key, paste the key.

Create a sub branch in agit and switch from subbranch to mainbranch(hit: use merge concept)

```
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git checkout -b feature-1-sub feature-1
Switched to a new branch 'feature-1-sub'
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git checkout feature-1-sub
Already on 'feature-1-sub'
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git branch
feature-1
* feature-1-sub
feature-2
feature-3
main
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git add .
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git commit -m "adding a new text file in the sub branch "
[feature-1-sub 17a251f] adding a new text file in the sub branch
1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 text.txt
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
PS C:\Users\Administrator\Desktop\exam 24-03-2025> git merge feature-1-sub
Updating ddfc4cc..17a251f
Fast-forward
 text.txt | 0
1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 text.txt
PS C:\Users\Administrator\Desktop\exam 24-03-2025> 
```

What is the importance of git checkout?

it is used to navigate between the the branches and by using the git checkout -b <name> will create a new branch .etc

What is the importance of git merge?

the git merge will combine the all the changes form the different branches and to merge with the main branch from all the created branches.

What is Linux and how is it different from other operating systems?

the linux is an type os os which is built in the linux kernel .

the linux is an open source which is free of cost and used by most of the organisations . it is easy for the developers and it is more secure . when we compare to the windows and mac os system these are all paid versions and less secure then the linux .etc

What are the basic Linux commands for file operations?

ls : it will list all the files and directories

cd : which will changes drirectories

mkdir : will create a folder

rm : used to delete the files

touch : will create an empty files

cp : used to copy a file

mv : is used to move a file

What is the difference between chmod and chown?

chmod is used to change the permissions of the the file to read write and execute we can use chmod 777 to change the permission of the files to read write and execute .

chown : it is used to change the owner of the file .

Explain the use of grep command.

the grep cmd is used to search a word or any file in the linux terminal

How do you schedule a cron job in Linux?

Explain the basic features of the Linux OS.

it is open source and has more stability and multiple users can be added to the single system and it has more security and it rarely crashes .it is very difficult to hack etc.

What are the major differences between Linux and Windows?

linux : the linux is an open source and more secure and highly customisable as per our usage and it is very fast .

windows : it is not an open source it require an licence and it not secure and we cannot add more users and it is limited customization and it slow when compared to linux

Define the basic components of Linux.

Kernel – The core of the OS.

Shell – Command-line interpreter.

File System – Manages files.

User Space – Applications run here

What is the chmod command in Linux, and how do you use it?

chmod is used to change the permissions of the the file to read write and execute we can use chmod 777 to change the permission of the files to read write and execute .

What are the most important Linux commands?

File Operations: ls, cp, mv, rm

Permissions: chmod, chown

Networking: ping, netstat

Process Management: ps, kill

How do you create,remove and copy files in linux?

mkdir : to create a folder

touch : to create a folder

rm : to remove the files

cp: to copy the files

What is ssh?

Secure Shell (SSH) is used to log in and execute commands remotely.