

Git Basics

a) Setting up Git

Configured git with my credentials and verify credentials:

```
PS C:\Users\birud> git config --global user.name "Sparky1743"
PS C:\Users\birud> git config --global user.email "birudugadda.srivibhav@iitgn.ac.in"
PS C:\Users\birud> git config --global user.name
Sparky1743
PS C:\Users\birud> git config --global user.email
birudugadda.srivibhav@iitgn.ac.in
PS C:\Users\birud> |
```

b) Initializing a Local Repository

Created a folder named "STT-Lab1" and initialized it.

```
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> cd ..
PS C:\Users\birud\OneDrive - iitgn.ac.in\github> mkdir STT-Lab1

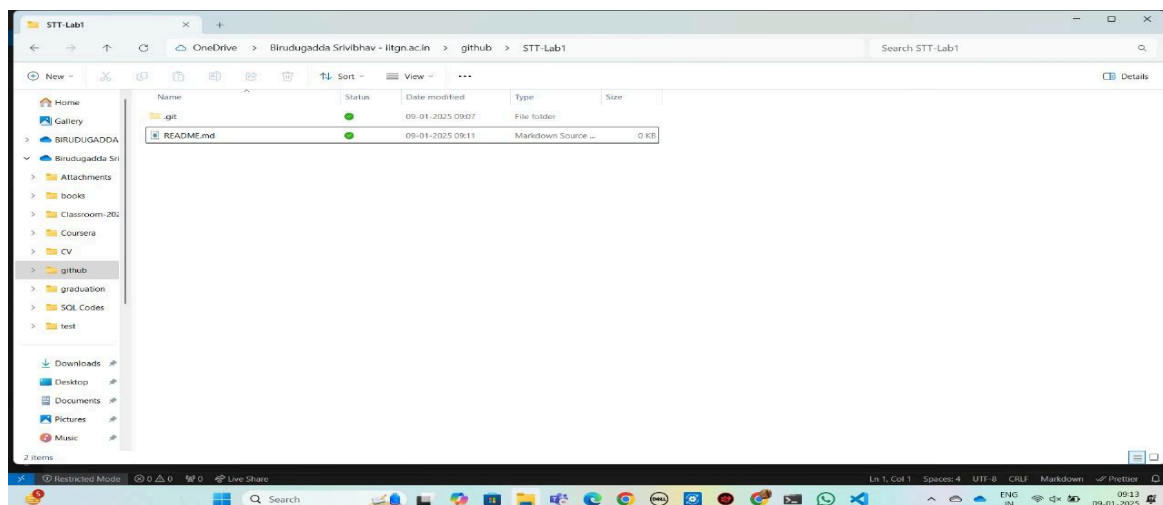
Directory: C:\Users\birud\OneDrive - iitgn.ac.in\github

Mode                LastWriteTime         Length Name
----                -
d-----           09-01-2025     09:07         STT-Lab1

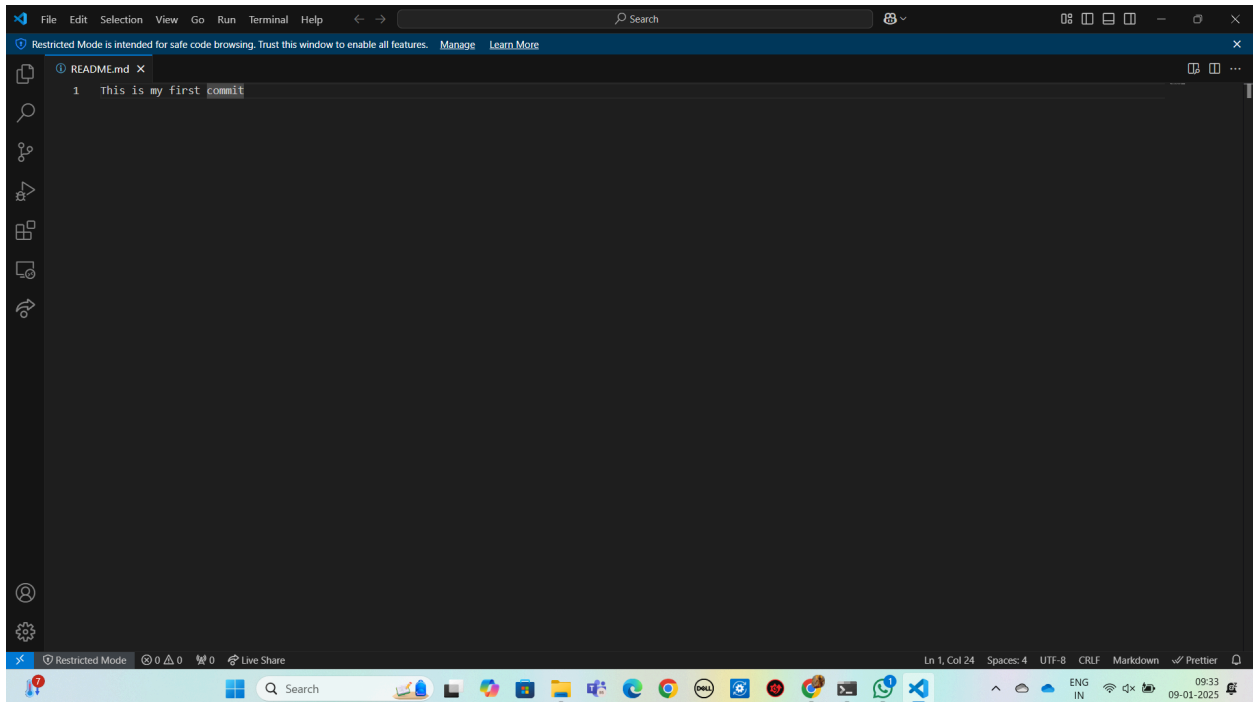
PS C:\Users\birud\OneDrive - iitgn.ac.in\github> cd .\STT-Lab1\
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git init
Initialized empty Git repository in C:/Users/birud/OneDrive - iitgn.ac.in/github/STT-Lab1/.git/
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> cat .git/config
[core]
    repositoryformatversion = 0
    filemode = false
    bare = false
    logallrefupdates = true
    symlinks = false
    ignorecase = true
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> |
```

c) Adding and Committing Files

Created a README.md file.



Added "This is my first commit" text to it.



Added this file to the staging area and committed the file.

```
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> cat .\README.md
This is my first commit
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git add .
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   README.md

PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git commit -m "added README.md"
[master (root-commit) 9d0944a] added README.md
 1 file changed, 1 insertion(+)
 create mode 100644 README.md
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> |
```

d) Viewing the commit history

Used "git log" to view the commit history.

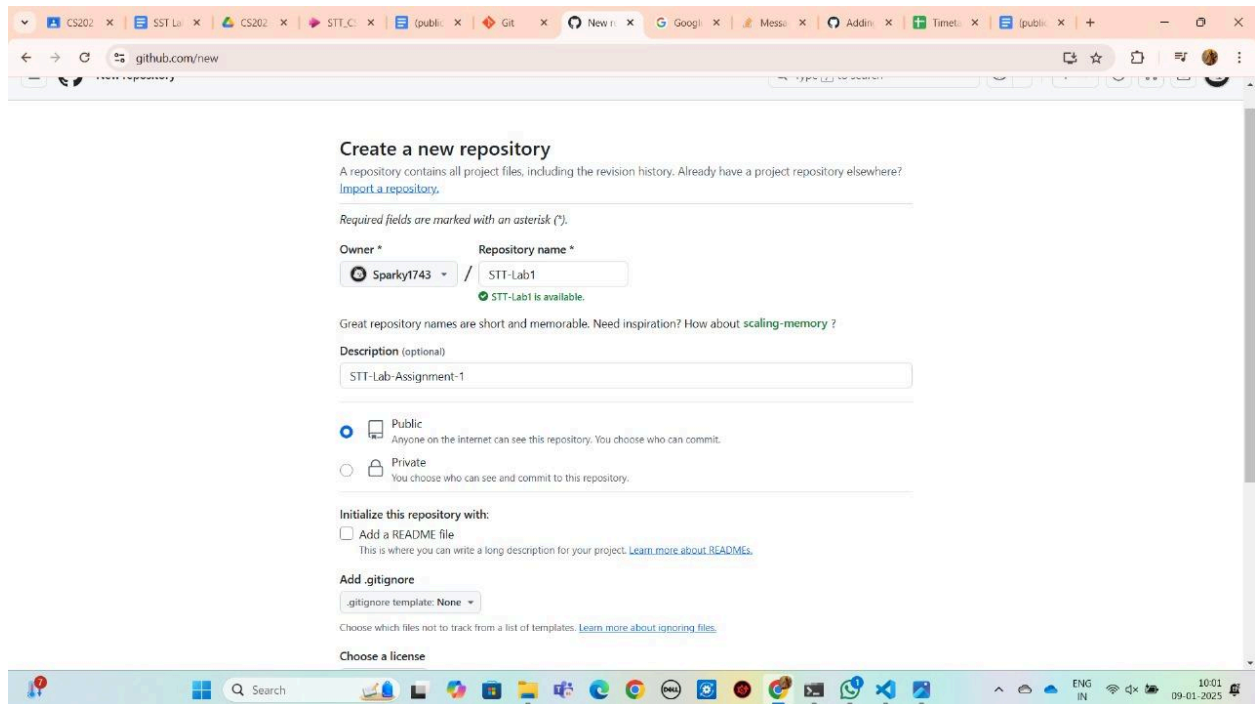
```
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git log
commit 9d0944a84b6cb8c5816594f1cf56cef3242dcaf6 (HEAD -> master)
Author: Sparky1743 <birudugadda.srivibhav@iitgn.ac.in>
Date: Thu Jan 9 09:17:46 2025 +0530

    added README.md
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> |
```

Working with Remote Repositories

a) Connecting to GitHub

Created a new repository on GitHub also named "STT-Lab1"



Now this repo has no branches. So we will link the previously created local repo to this GitHub repo.

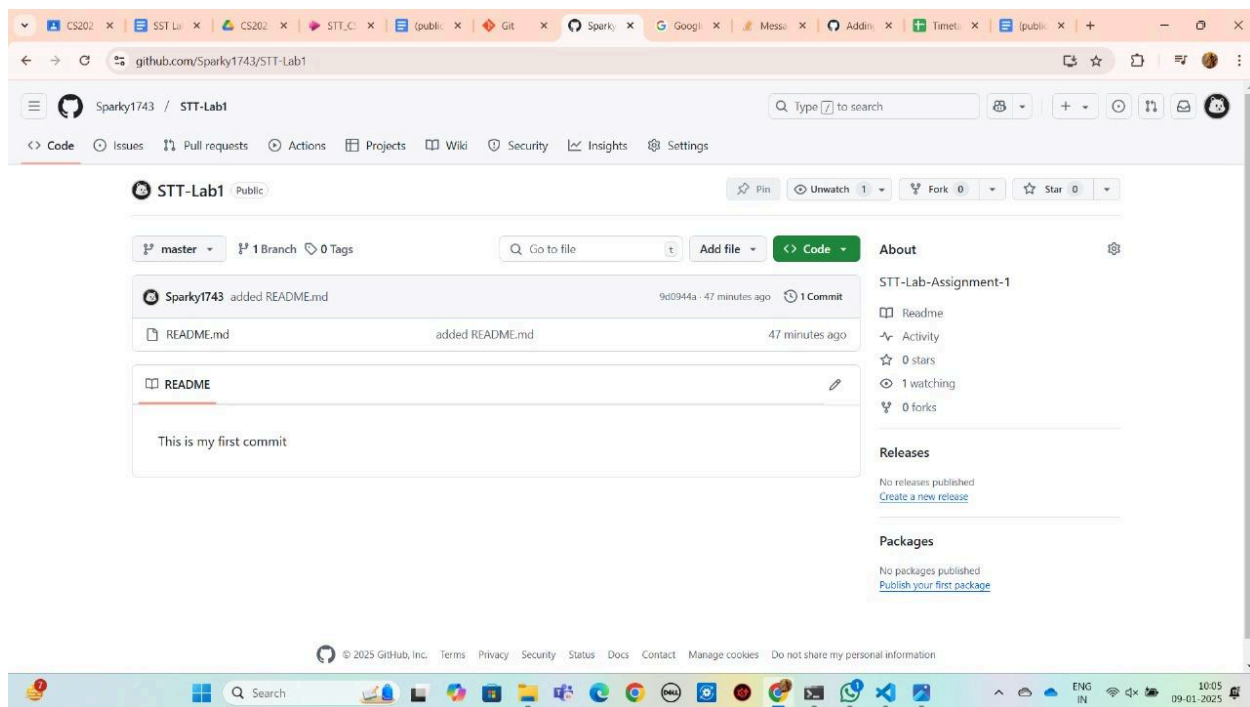
b) Pushing Changes to GitHub

```
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git remote add origin https://github.com/Sparky1743/STT-Lab1
error: remote origin already exists.
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git remote -v
origin https://github.com/Sparky1743/STT-Lab1 (fetch)
origin https://github.com/Sparky1743/STT-Lab1 (push)
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git push origin
fatal: The current branch master has no upstream branch.
To push the current branch and set the remote as upstream, use

    git push --set-upstream origin master

To have this happen automatically for branches without a tracking
upstream, see 'push.autoSetupRemote' in 'git help config'.
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git push --set-upstream origin master
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 253 bytes | 253.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Sparky1743/STT-Lab1
 * [new branch]      master -> master
branch 'master' set up to track 'origin/master'.
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> |
```

Now the new branch "master" has been created and my previous changes have been pushed.



c) Cloning a Repository

We will be cloning the same previously created repository to a new location.

```
PS C:\Users\birud\OneDrive - iitgn.ac.in> git clone https://github.com/Sparky1743/STT-Lab1
Cloning into 'STT-Lab1'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 3 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.
PS C:\Users\birud\OneDrive - iitgn.ac.in> |
```

d) Pulling changes

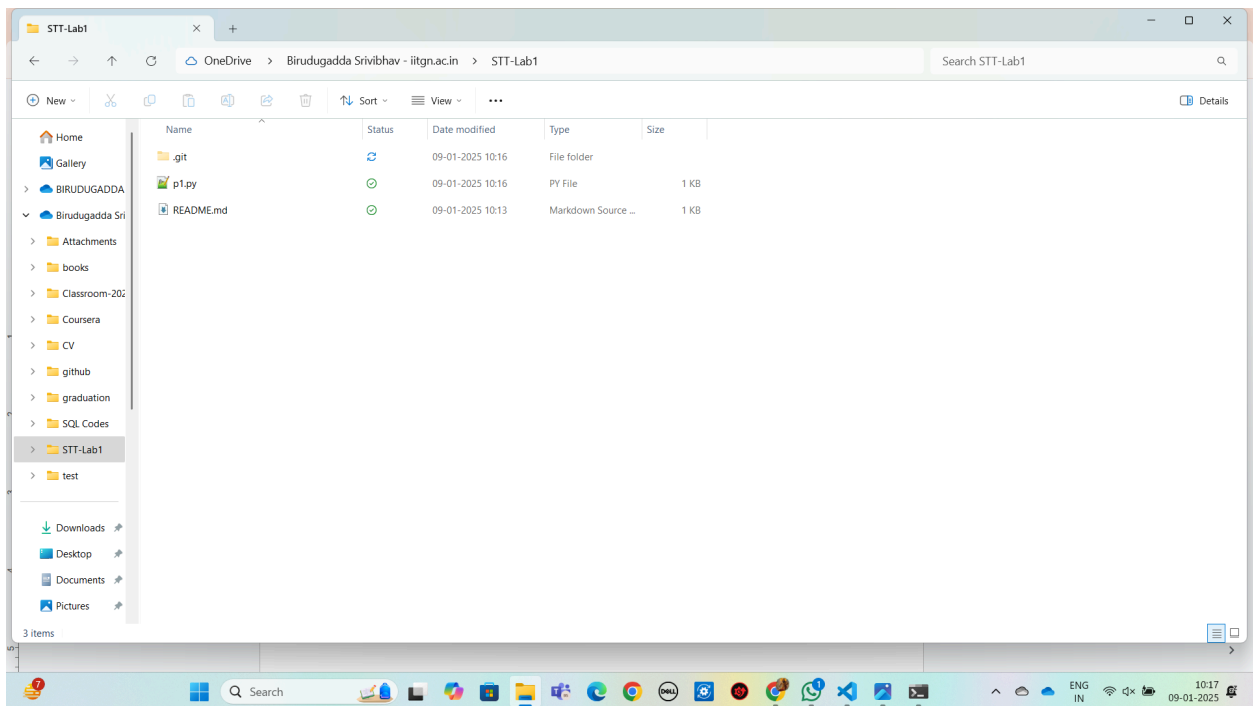
Now we make some changes to the repo in GitHub and pull these changes to our local machine.

I have created a new p1.py file:

Sparky1743 Create p1.py 14a20e8 · 2 minutes ago History		
Name	Last commit message	Last commit date
README.md	added README.md	1 hour ago
p1.py	Create p1.py	2 minutes ago

Now we will pull the changes to our local machine from the terminal.

```
PS C:\Users\birud\OneDrive - iitgn.ac.in> cd '.\STT-Lab1\'
PS C:\Users\birud\OneDrive - iitgn.ac.in\STT-Lab1> git pull
remote: Enumerating objects: 4, done.
remote: Counting objects: 100% (4/4), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (3/3), 950 bytes | 105.00 KiB/s, done.
From https://github.com/Sparky1743/STT-Lab1
   9d0944a..14a20e8  master    -> origin/master
Updating 9d0944a..14a20e8
Fast-forward
 p1.py | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 p1.py
PS C:\Users\birud\OneDrive - iitgn.ac.in\STT-Lab1> |
```



Setting up pylint workflow

First we will update the p1.py code to some >30 lines code, commit it and then run pylint.

```
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git add .
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git status
On branch master
Your branch is up to date with 'origin/master'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   p1.py

PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git commit -m "modified p1.py"
[master 2eee95f] modified p1.py
 1 file changed, 32 insertions(+), 1 deletion(-)
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git log
commit 2eee95f67d43e3411559ccf7462daa01f69e784d (HEAD -> master)
Author: Sparky1743 <birudugadda.srivibhav@iitgn.ac.in>
Date:   Thu Jan 9 10:36:00 2025 +0530

    modified p1.py

commit 14a20e8bf4bf5275e29cf19a5223ca721327e407 (origin/master)
Author: Birudugadda Srivibhav <birudugadda.srivibhav@iitgn.ac.in>
Date:   Thu Jan 9 10:12:23 2025 +0530

    Create p1.py

commit 9d0944a84b6cb8c5816594f1cf56cef3242dcf6
Author: Sparky1743 <birudugadda.srivibhav@iitgn.ac.in>
Date:   Thu Jan 9 09:17:46 2025 +0530

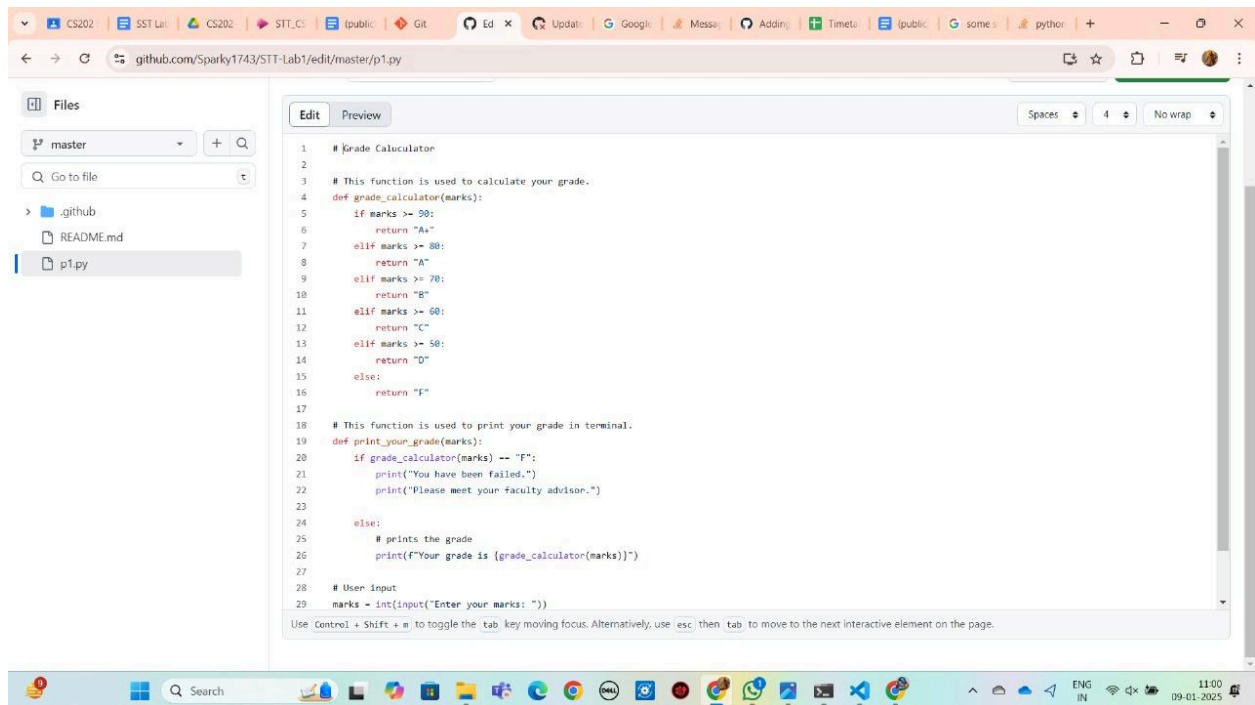
    added README.md
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> |
```

```
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 16 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 581 bytes | 581.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Sparky1743/STT-Lab1
   14a20e8..2eee95f  master -> master
PS C:\Users\birud\OneDrive - iitgn.ac.in\github\STT-Lab1> |
```

Now I have configured pylint in GitHub actions.

After running pylint, i have encountered some errors for my code:

Initial code:

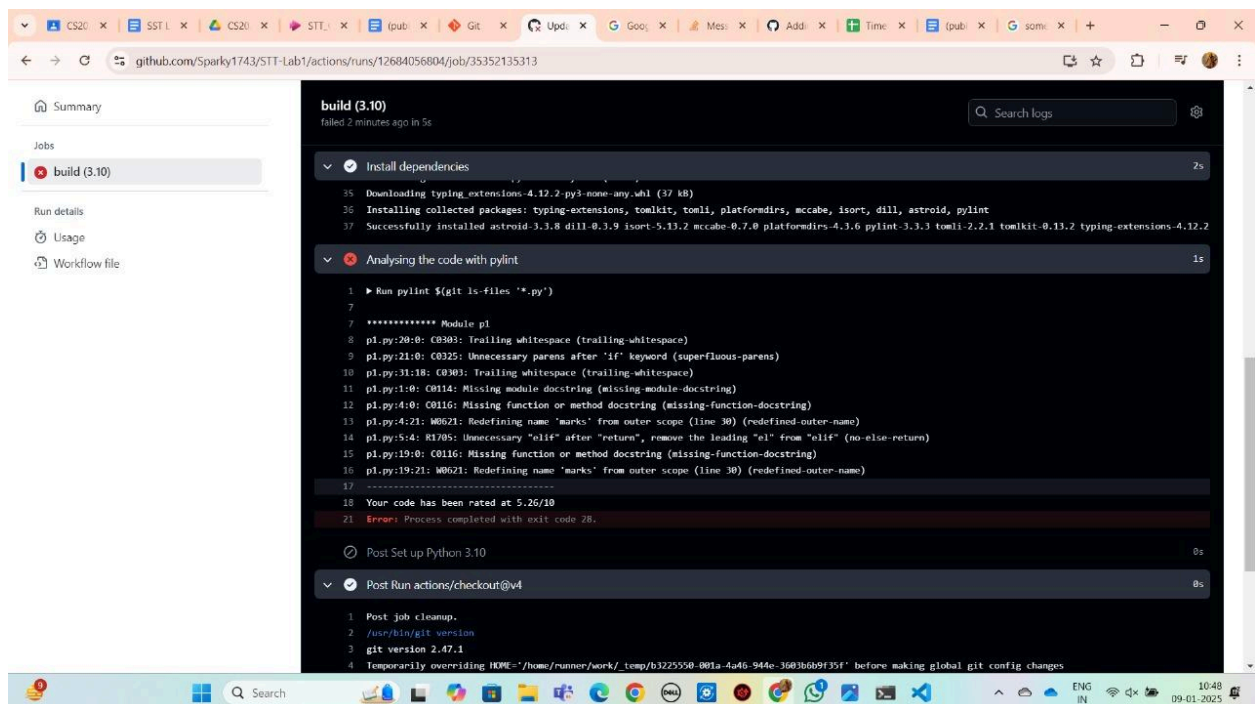


The screenshot shows a web browser window with the GitHub repository `github.com/Sparky1743/STT-Lab1/edit/master/p1.py` open. The file `p1.py` is being edited. The code is as follows:

```
1 # Grade Calculator
2
3 # This function is used to calculate your grade.
4 def grade_calculator(marks):
5     if marks >= 90:
6         return "A+"
7     elif marks >= 80:
8         return "A"
9     elif marks >= 70:
10        return "B"
11    elif marks >= 60:
12        return "C"
13    elif marks >= 50:
14        return "D"
15    else:
16        return "F"
17
18 # This function is used to print your grade in terminal.
19 def print_your_grade(marks):
20     if grade_calculator(marks) == "F":
21         print("You have been failed.")
22         print("Please meet your faculty advisor.")
23     else:
24         # prints the grade
25         print(f"Your grade is {grade_calculator(marks)}")
26
27 # User input
28 marks = int(input("Enter your marks: "))
```

The interface includes a file explorer on the left showing the repository structure with `README.md` and `p1.py`. The editor has tabs for 'Edit' and 'Preview'. The bottom status bar shows the system time as 11:00 on 09-01-2025.

Initials errors:



The screenshot shows a GitHub Actions workflow run for the job `build (3.10)`. The workflow is failing due to linting errors. The logs show the following steps:

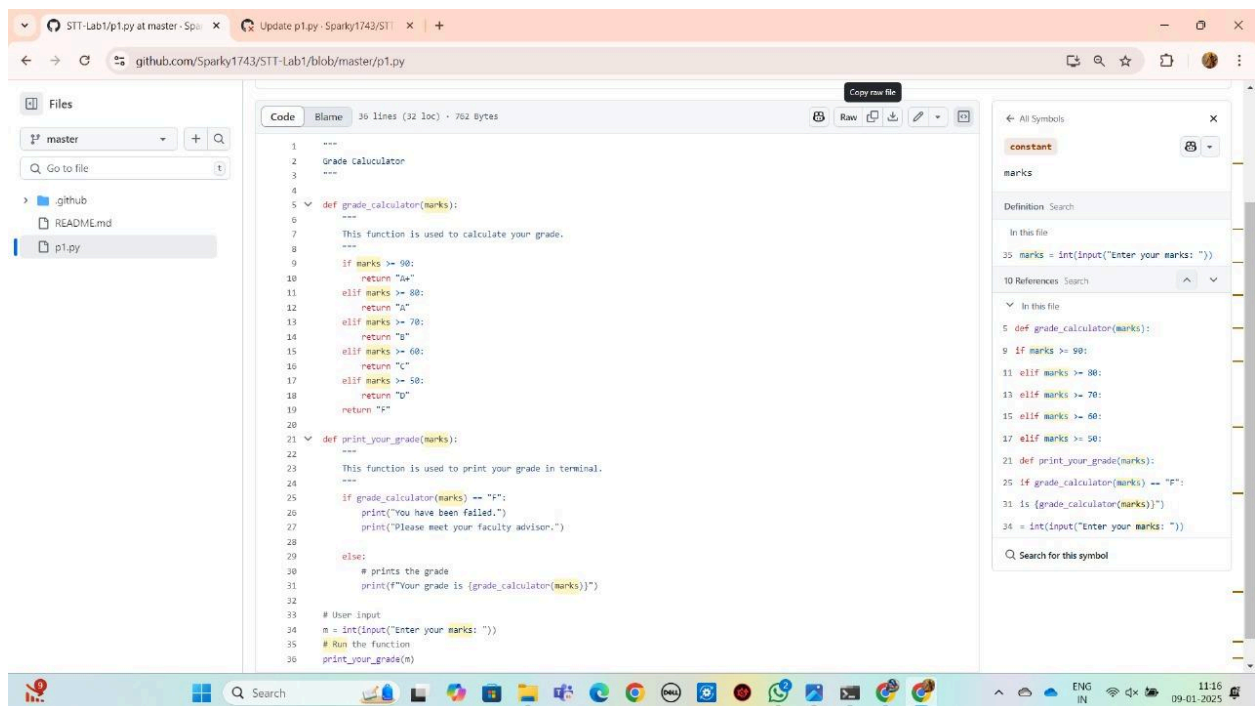
- Install dependencies**: Successfully installed various packages including `typing-extensions`, `tomli`, `platformdirs`, `mccabe`, `isort`, `dill`, `astroid`, and `pylint`.
- Analysing the code with pylint**: This step failed with the following errors:
 - `Module pl`: `Module pl` (line 7)
 - `trailing-whitespace`: `trailing-whitespace` (line 20)
 - `superfluous-parens`: `superfluous-parens` (line 21)
 - `trailing-whitespace`: `trailing-whitespace` (line 31)
 - `missing-module-docstring`: `missing-module-docstring` (line 11)
 - `missing-function-docstring`: `missing-function-docstring` (line 12)
 - `redefined-outer-name`: `redefined-outer-name` (line 13)
 - `no-else-return`: `no-else-return` (line 14)
 - `missing-function-docstring`: `missing-function-docstring` (line 15)
 - `redefined-outer-name`: `redefined-outer-name` (line 16)
- Post Set up Python 3.10**: Completed successfully.
- Post Run actions/checkout@v4**: Completed successfully.

The workflow summary on the left shows the job `build (3.10)` failed. The bottom status bar shows the system time as 10:48 on 09-01-2025.

We will be debugging step by step. Firstly, remove the Trailing white spaces.
After removing Trailing white spaces:

```
Analysing the code with pylint
1 ▶ Run pylint $(git ls-files '*.py')
7 ***** Module p1
8 p1.py:1:0: C0114: Missing module docstring (missing-module-docstring)
9 p1.py:4:0: C0116: Missing function or method docstring (missing-function-docstring)
10 p1.py:4:21: W0621: Redefining name 'marks' from outer scope (line 29) (redefined-outer-name)
11 p1.py:5:4: R1705: Unnecessary "elif" after "return", remove the leading "el" from "elif" (no-else-return)
12 p1.py:19:0: C0116: Missing function or method docstring (missing-function-docstring)
13 p1.py:19:21: W0621: Redefining name 'marks' from outer scope (line 29) (redefined-outer-name)
14
15 -----
16 Your code has been rated at 6.84/10
```

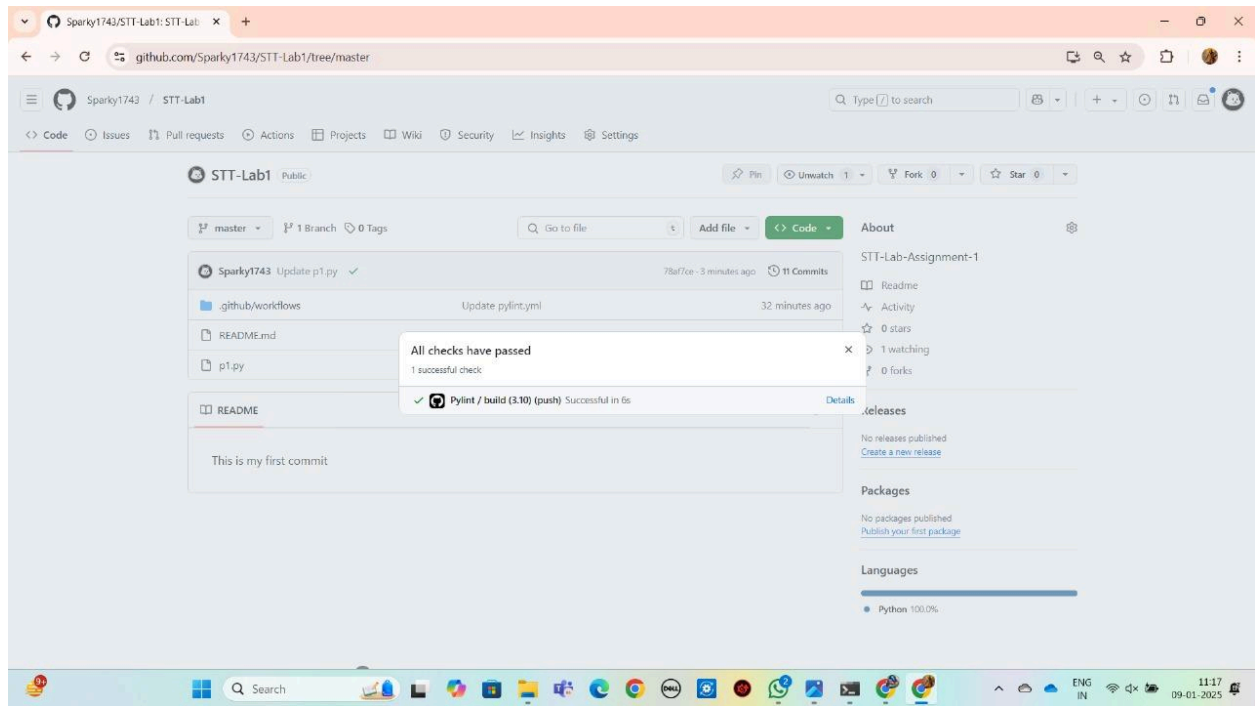
Now we add docstrings for functions.
The new code becomes:



```
Analysing the code with pylint
1 ▶ Run pylint $(git ls-files '*.py')
7 ***** Module p1
8 p1.py:5:21: W0621: Redefining name 'marks' from outer scope (line 35) (redefined-outer-name)
9 p1.py:9:4: R1705: Unnecessary "elif" after "return", remove the leading "el" from "elif" (no-else-return)
10 p1.py:22:21: W0621: Redefining name 'marks' from outer scope (line 35) (redefined-outer-name)
11
12 -----
13 Your code has been rated at 8.42/10
```


Finally we will rename marks variable to m and we will replace elif statements with if statements. So the final error free code becomes:

```
1  """
2  Grade Caluculator
3  """
4
5  ✓ def grade_calculator(marks):
6      """
7      This function is used to calculate your grade.
8      """
9      if marks >= 90:
10         return "A+"
11     if marks >= 80:
12         return "A"
13     if marks >= 70:
14         return "B"
15     if marks >= 60:
16         return "C"
17     if marks >= 50:
18         return "D"
19     return "F"
20
21  ✓ def print_your_grade(marks):
22      """
23      This function is used to print your grade in terminal.
24      """
25      if grade_calculator(marks) == "F":
26         print("You have been failed.")
27         print("Please meet your faculty advisor.")
28
29      else:
30         # prints the grade
31         print(f"Your grade is {grade_calculator(marks)}")
32
33  # User input
34  m = int(input("Enter your marks: "))
35  # Run the function
36  print_your_grade(m)
```



All tests have been passed.

