Git Task:

Task 1:

Implementing a Feature Using Git Flow

Scenario: User Login System

Develop a User Login System for a banking app using Git Flow, creating and managing branches manually.

tip: all merges should be done by open PR (Pull Request)
Task Steps

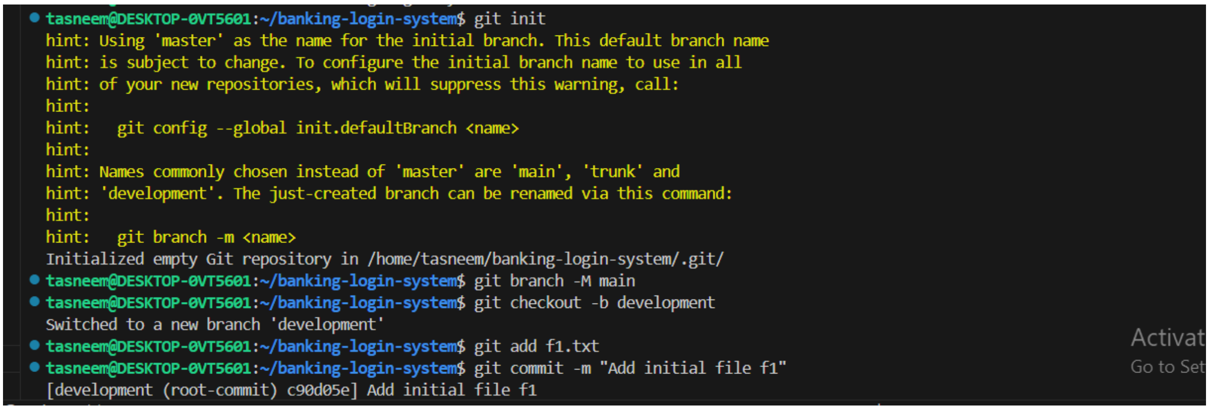
Step 1: Set Up Repository

Clone the repository

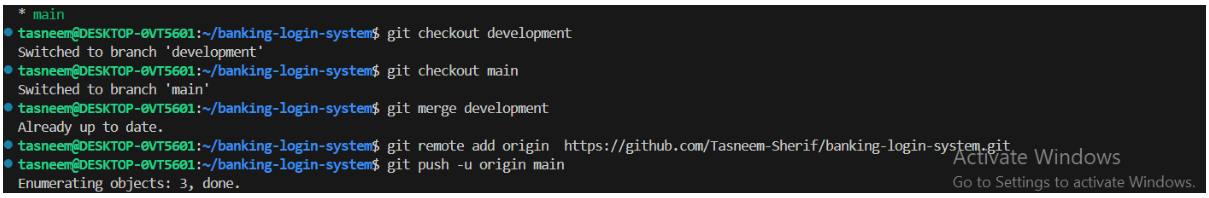
Initialize version control

Create main and development branches

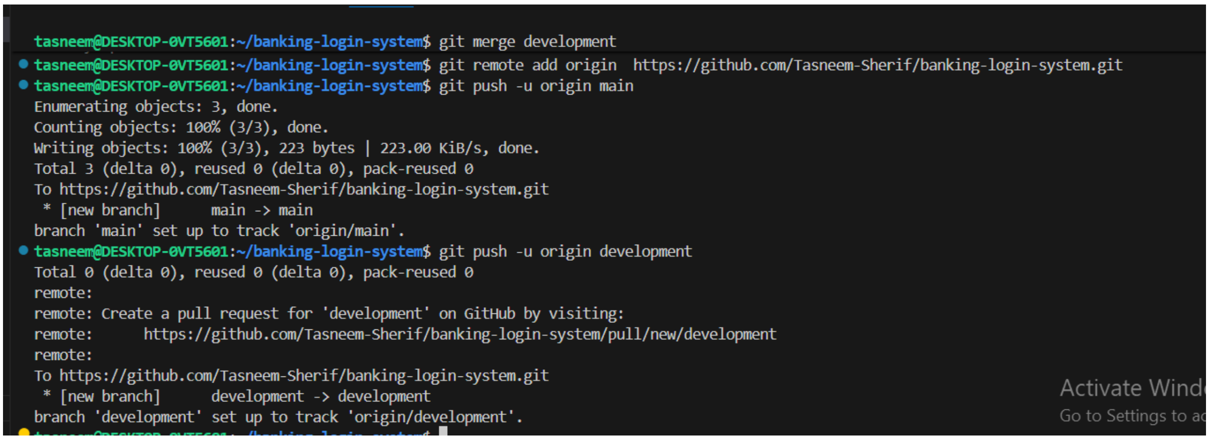
put file f1 on them



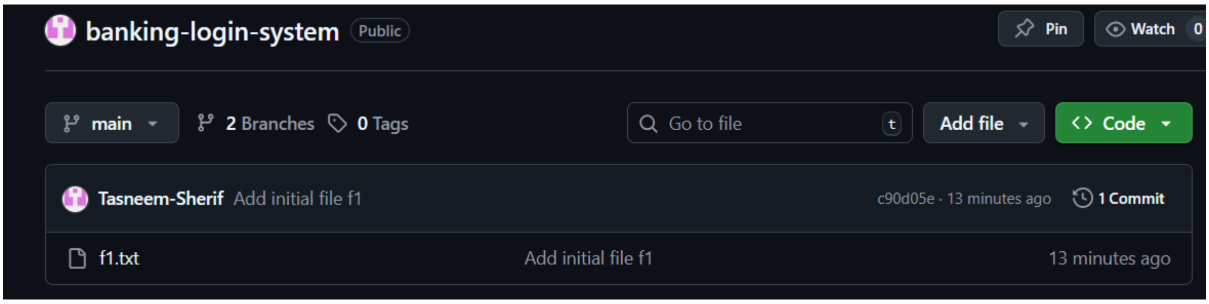
```
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git init
  hint: Using 'master' as the name for the initial branch. This default branch name
  hint: is subject to change. To configure the initial branch name to use in all
  hint: of your new repositories, which will suppress this warning, call:
  hint:
  hint:   git config --global init.defaultBranch <name>
  hint:
  hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
  hint: 'development'. The just-created branch can be renamed via this command:
  hint:
  hint:   git branch -m <name>
  Initialized empty Git repository in /home/tasneem/banking-login-system/.git/
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git branch -M main
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout -b development
  Switched to a new branch 'development'
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git commit -m "Add initial file f1"
  [development (root-commit) c90d05e] Add initial file f1
```



```
  * main
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
  Switched to branch 'development'
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout main
  Switched to branch 'main'
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge development
  Already up to date.
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git remote add origin  https://github.com/Tasneem-Sherif/banking-login-system.git
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push -u origin main
  Enumerating objects: 3, done.
```



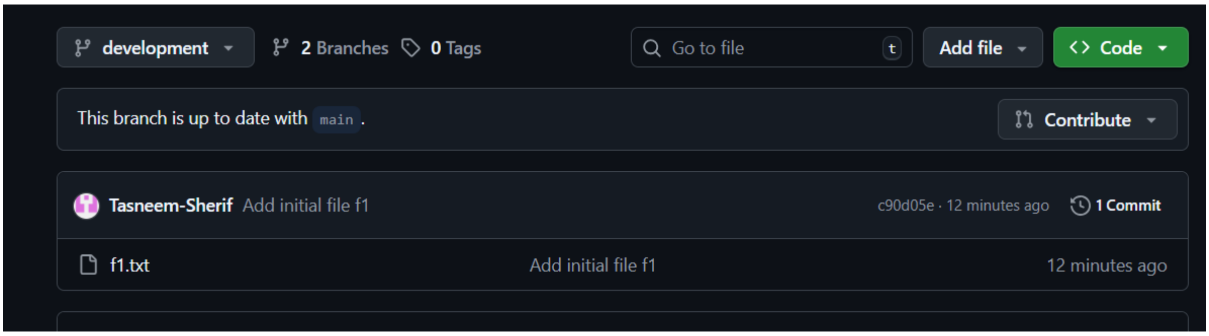
```
  tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge development
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git remote add origin  https://github.com/Tasneem-Sherif/banking-login-system.git
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push -u origin main
  Enumerating objects: 3, done.
  Counting objects: 100% (3/3), done.
  Writing objects: 100% (3/3), 223 bytes | 223.00 KiB/s, done.
  Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
  To https://github.com/Tasneem-Sherif/banking-login-system.git
   * [new branch]      main -> main
  branch 'main' set up to track 'origin/main'.
● tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push -u origin development
  Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
  remote:
  remote: Create a pull request for 'development' on GitHub by visiting:
  remote:      https://github.com/Tasneem-Sherif/banking-login-system/pull/new/development
  remote:
  To https://github.com/Tasneem-Sherif/banking-login-system.git
   * [new branch]      development -> development
  branch 'development' set up to track 'origin/development'.
```



banking-login-system Public

Tasneem-Sherif Add initial file f1 c90d05e · 13 minutes ago

f1.txt Add initial file f1 13 minutes ago



This branch is up to date with main.

Tasneem-Sherif Add initial file f1 c90d05e · 12 minutes ago

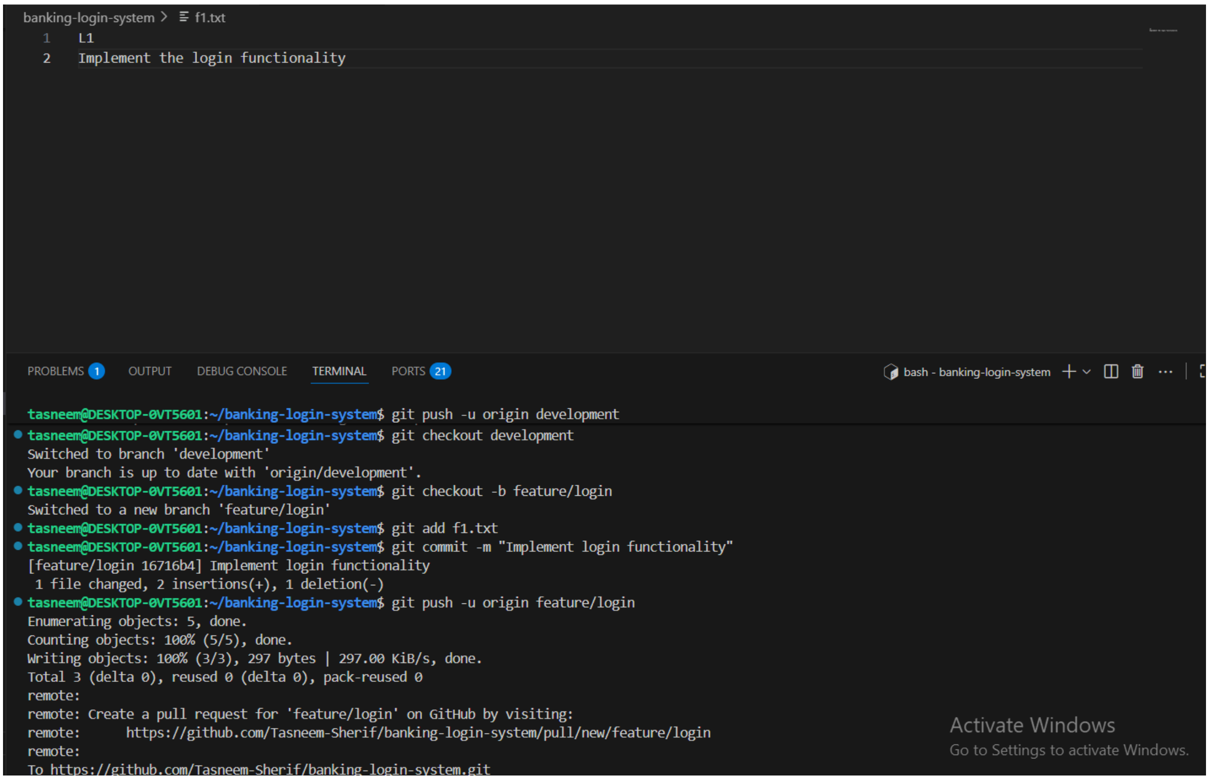
f1.txt Add initial file f1 12 minutes ago

Step 2: Feature Branch

Create a new branch from the development branch for the login feature

Add 'Implement the login functionality' in f1

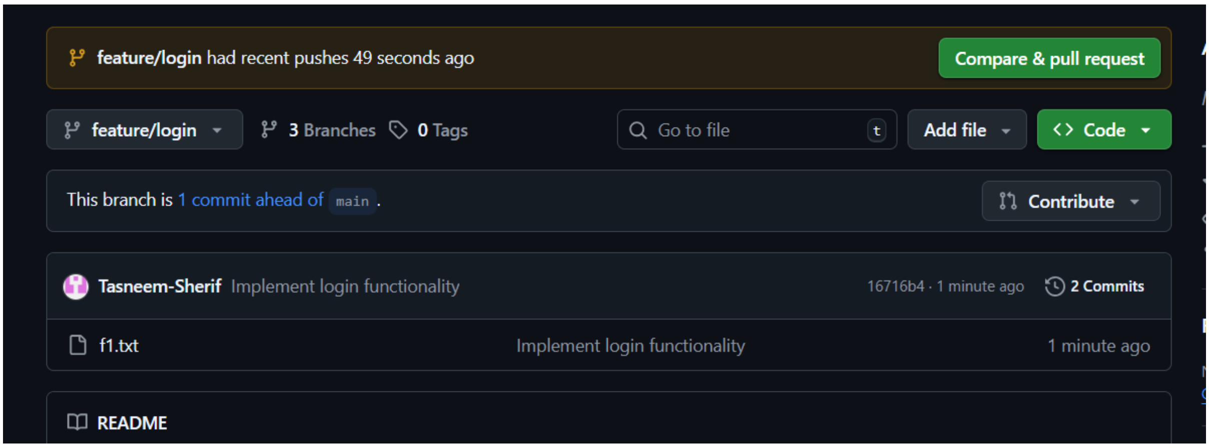
Commit and push changes to the feature branch



banking-login-system > f1.txt
PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS 21
bash - banking-login-system
Activate Windows
Go to Settings to activate Windows.

```
L1
Implement the login functionality
```

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push -u origin development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Switched to branch 'development'
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout -b feature/login
Switched to a new branch 'feature/login'
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git commit -m "Implement login functionality"
[feature/login 16716b4] Implement login functionality
 1 file changed, 2 insertions(+), 1 deletion(-)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push -u origin feature/login
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Writing objects: 100% (3/3), 297 bytes | 297.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'feature/login' on GitHub by visiting:
remote:      https://github.com/Tasneem-Sherif/banking-login-system/pull/new/feature/login
remote:
To https://github.com/Tasneem-Sherif/banking-login-system.git
```



feature/login had recent pushes 49 seconds ago

This branch is 1 commit ahead of main.

Tasneem-Sherif Implement login functionality 16716b4 · 1 minute ago 2 Commits

f1.txt Implement login functionality 1 minute ago

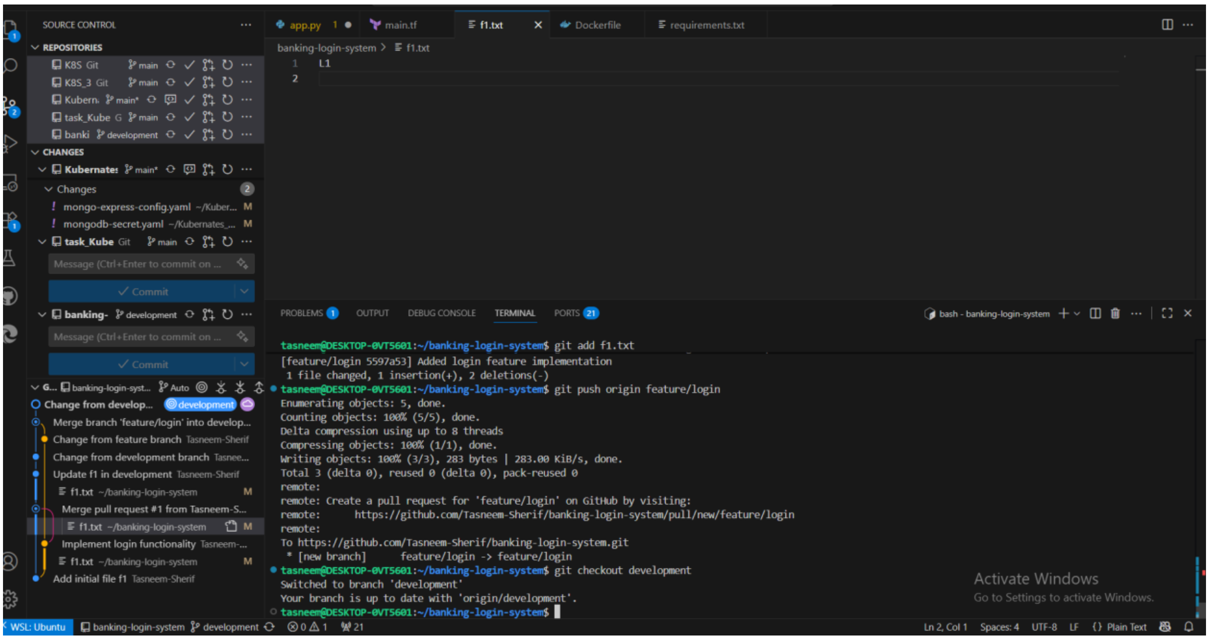
README

Step 3: Merge Conflict

Modify the same file in both the development branch and the feature branch

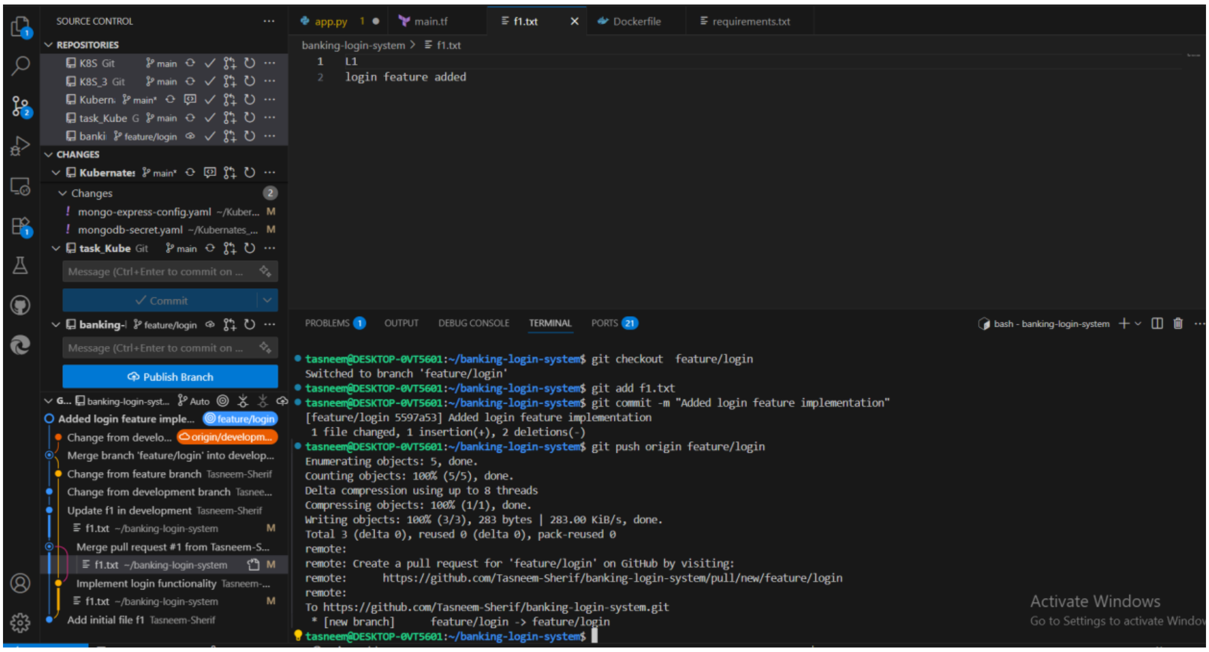
Attempt to merge the feature branch into development

Resolve conflicts manually and commit



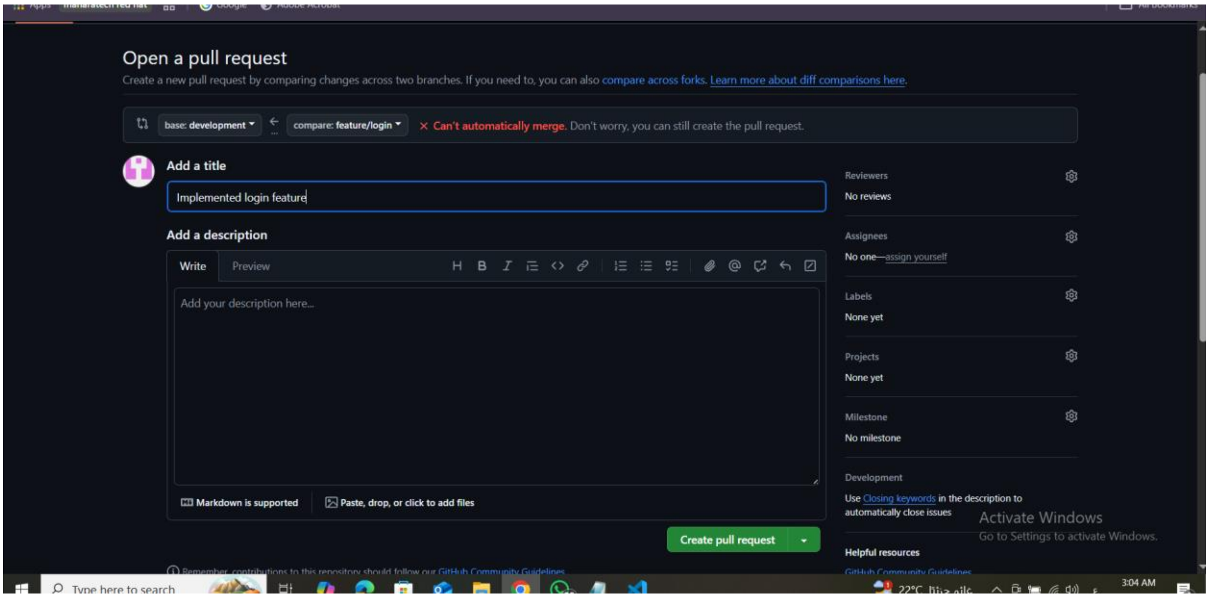
```
L1

```

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
[feature/login 5597a53] Added login feature implementation
 1 file changed, 1 insertion(+), 2 deletions(-)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin feature/login
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (1/1), done.
Writing objects: 100% (3/3), 283 bytes | 283.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'feature/login' on GitHub by visiting:
remote:      https://github.com/Tasneem-Sherif/banking-login-system/pull/new/feature/login
remote:
To https://github.com/Tasneem-Sherif/banking-login-system.git
 * [new branch]      feature/login -> feature/login
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Switched to branch 'development'
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$
```



```
L1
login feature added
```

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout  feature/login
Switched to branch 'feature/login'
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git commit -m "Added login feature implementation"
[feature/login 5597a53] Added login feature implementation
 1 file changed, 1 insertion(+), 2 deletions(-)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin feature/login
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (1/1), done.
Writing objects: 100% (3/3), 283 bytes | 283.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'feature/login' on GitHub by visiting:
remote:      https://github.com/Tasneem-Sherif/banking-login-system/pull/new/feature/login
remote:
To https://github.com/Tasneem-Sherif/banking-login-system.git
 * [new branch]      feature/login -> feature/login
tasneem@DESKTOP-0VT5601:~/banking-login-system$
```



Open a pull request

Create a new pull request by comparing changes across two branches. If you need to, you can also compare across forks. Learn more about diff comparisons here.

base: development ← compare: feature/login × Can't automatically merge. Don't worry, you can still create the pull request.

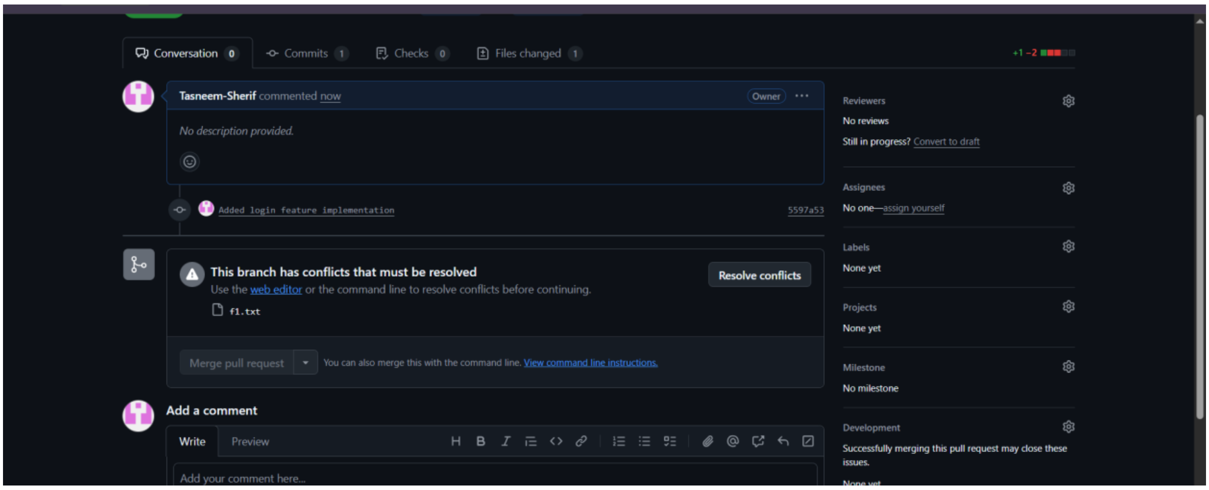
Add a title

Implemented login feature

Add a description

Add your description here...

Reviewers: No reviews
Assignees: No one—assign yourself
Labels: None yet
Projects: None yet
Milestone: No milestone
Development: Use Closing keywords in the description to automatically close issues



Conversation 0 · Commits 1 · Checks 0 · Files changed 1 · +1 −2

Tasneem-Sherif commented now (Owner)

No description provided.

Added login feature implementation 5597a53

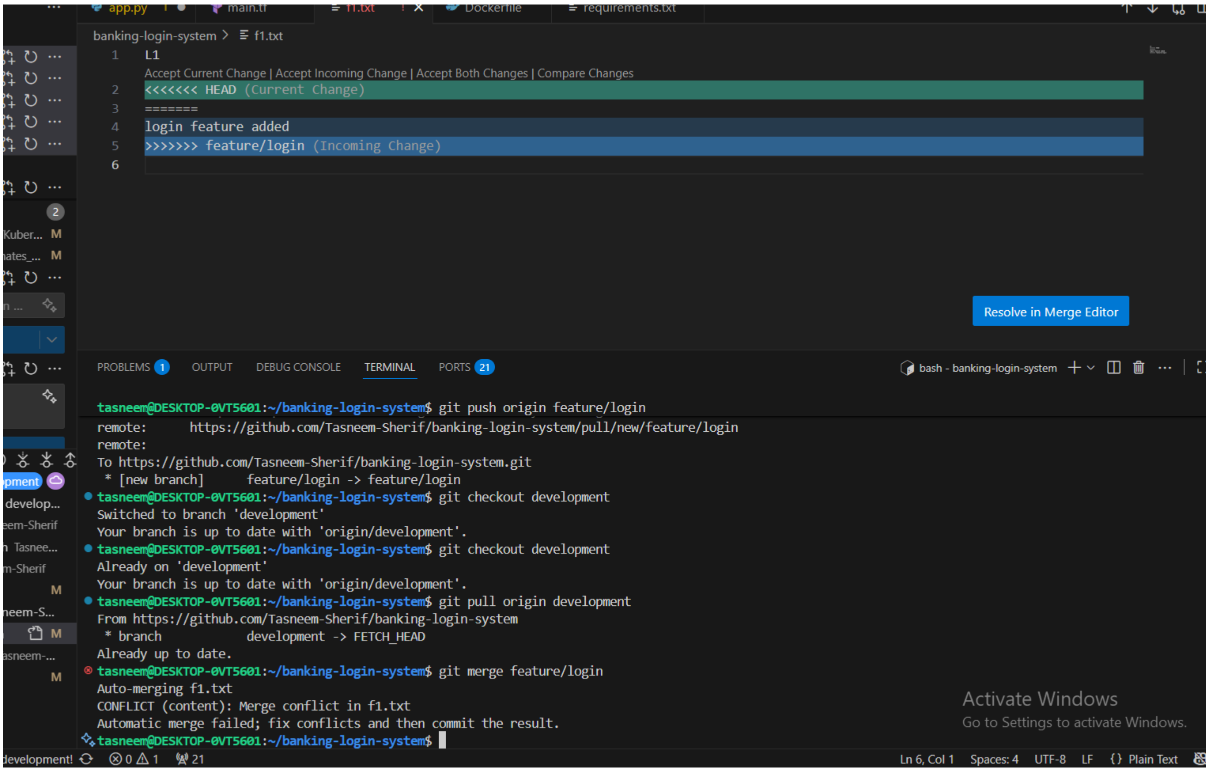
This branch has conflicts that must be resolved

Use the web editor or the command line to resolve conflicts before continuing.

f1.txt

You can also merge this with the command line. View command line instructions.

Reviewers: No reviews
Still in progress? Convert to draft
Assignees: No one—assign yourself
Labels: None yet
Projects: None yet
Milestone: No milestone
Development: Successfully merging this pull request may close these issues.

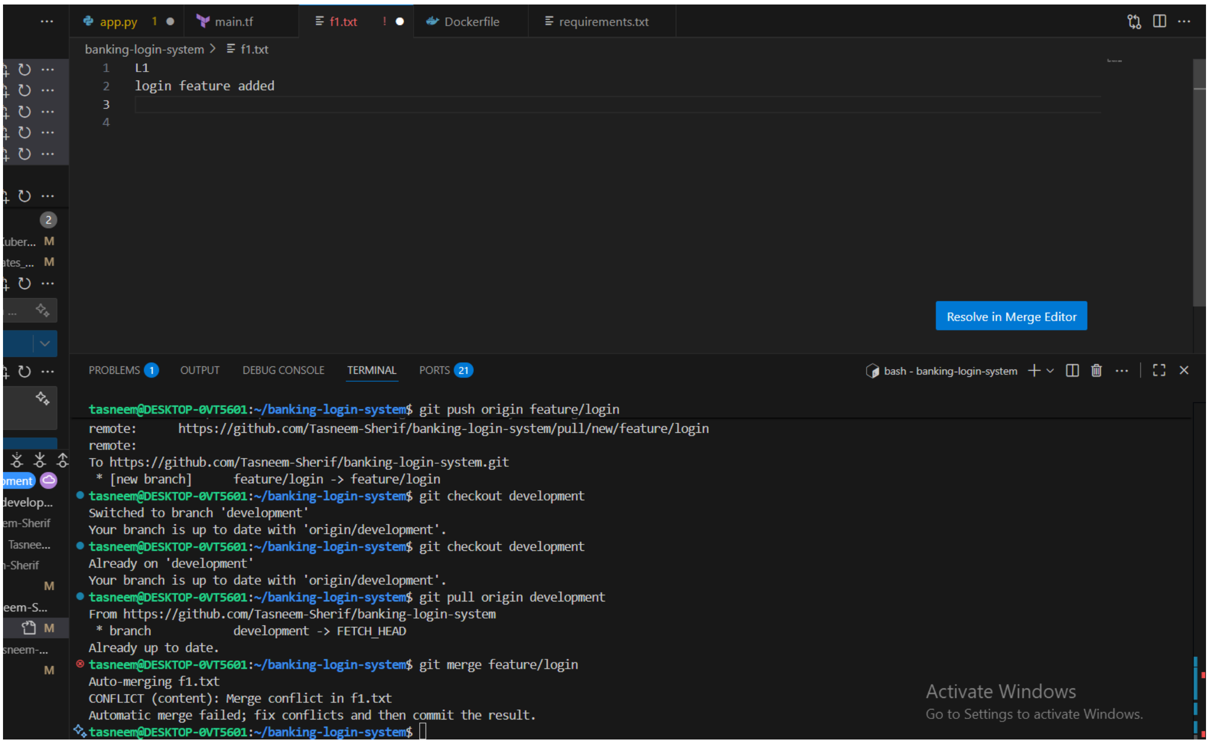


banking-login-system > f1.txt

```
L1
<<<<<<< HEAD (Current Change)
=======
login feature added
>>>>>>> feature/login (Incoming Change)

```

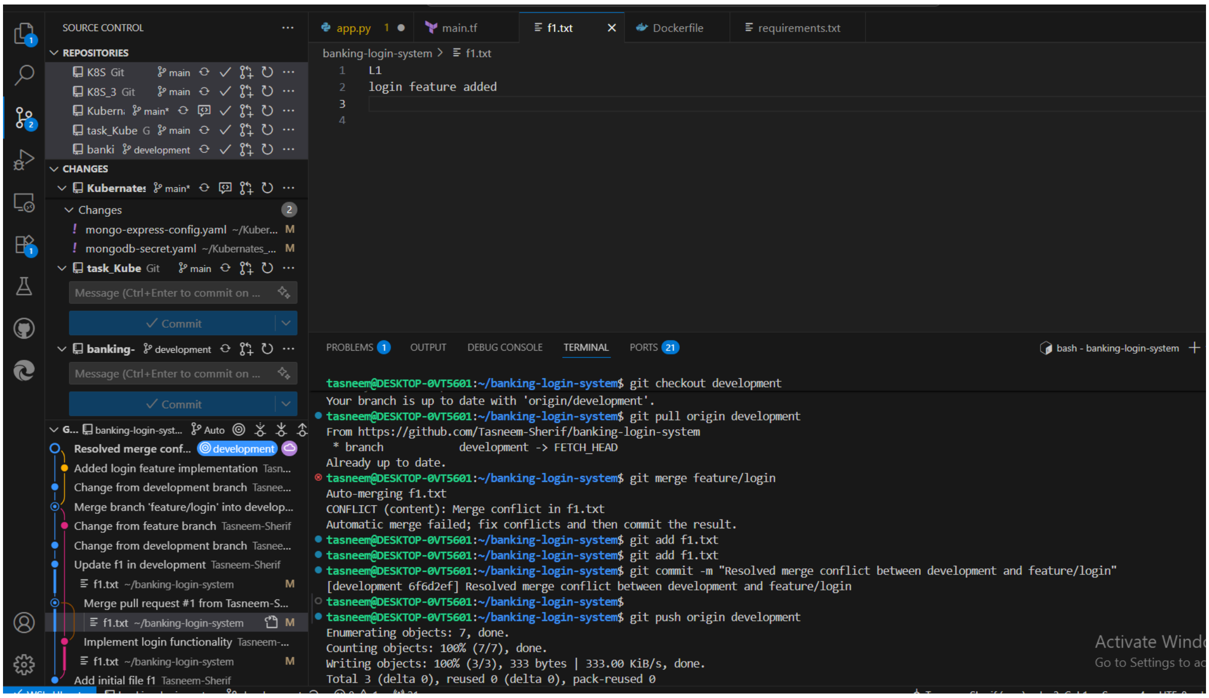
app.py
main.tf
f1.txt
Dockerfile
requirements.txt
Accept Current Change | Accept Incoming Change | Accept Both Changes | Compare Changes
Resolve in Merge Editor
PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS 21
bash - banking-login-system
Activate Windows
Go to Settings to activate Windows.
Ln 6, Col 1   Spaces: 4   UTF-8   LF   {} Plain Text

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin feature/login
remote:      https://github.com/Tasneem-Sherif/banking-login-system/pull/new/feature/login
remote:
To https://github.com/Tasneem-Sherif/banking-login-system.git
 * [new branch]      feature/login -> feature/login
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Switched to branch 'development'
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Already on 'development'
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git pull origin development
From https://github.com/Tasneem-Sherif/banking-login-system
 * branch            development -> FETCH_HEAD
Already up to date.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge feature/login
Auto-merging f1.txt
CONFLICT (content): Merge conflict in f1.txt
Automatic merge failed; fix conflicts and then commit the result.
tasneem@DESKTOP-0VT5601:~/banking-login-system$
```



```
L1
login feature added
```

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin feature/login
remote:      https://github.com/Tasneem-Sherif/banking-login-system/pull/new/feature/login
remote:
To https://github.com/Tasneem-Sherif/banking-login-system.git
 * [new branch]      feature/login -> feature/login
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Switched to branch 'development'
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Already on 'development'
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git pull origin development
From https://github.com/Tasneem-Sherif/banking-login-system
 * branch            development -> FETCH_HEAD
Already up to date.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge feature/login
Auto-merging f1.txt
CONFLICT (content): Merge conflict in f1.txt
Automatic merge failed; fix conflicts and then commit the result.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ 
```



Resolved merge conf... development
Added login feature implementation Tasn...
Change from development branch Tasnee...
Merge branch 'feature/login' into develop...
Change from feature branch Tasneem-Sherif
Change from development branch Tasnee...
Update f1 in development Tasneem-Sherif
f1.txt ~/banking-login-system M
Merge pull request #1 from Tasneem-S...
f1.txt ~/banking-login-system M
Implement login functionality Tasneem-...
f1.txt ~/banking-login-system M
Add initial file f1 Tasneem-Sherif

```
L1
login feature added
```

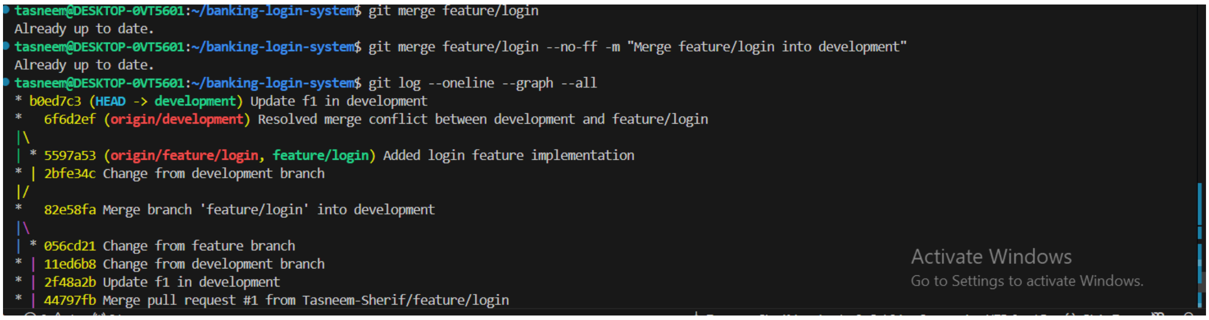
```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git pull origin development
From https://github.com/Tasneem-Sherif/banking-login-system
 * branch            development -> FETCH_HEAD
Already up to date.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge feature/login
Auto-merging f1.txt
CONFLICT (content): Merge conflict in f1.txt
Automatic merge failed; fix conflicts and then commit the result.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git commit -m "Resolved merge conflict between development and feature/login"
[development 6f6d2ef] Resolved merge conflict between development and feature/login
tasneem@DESKTOP-0VT5601:~/banking-login-system$
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin development
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Writing objects: 100% (3/3), 333 bytes | 333.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
```

Step 4: Merge Feature

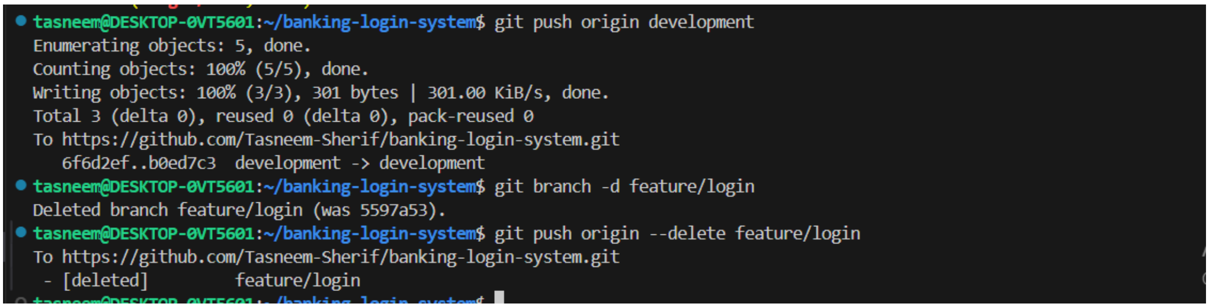
Merge the feature branch into the development branch and keep the commit history clear

Delete the feature branch after merging

git merge feature/login --no-ff -m "Merge feature/login into development"= git rebase feature/login



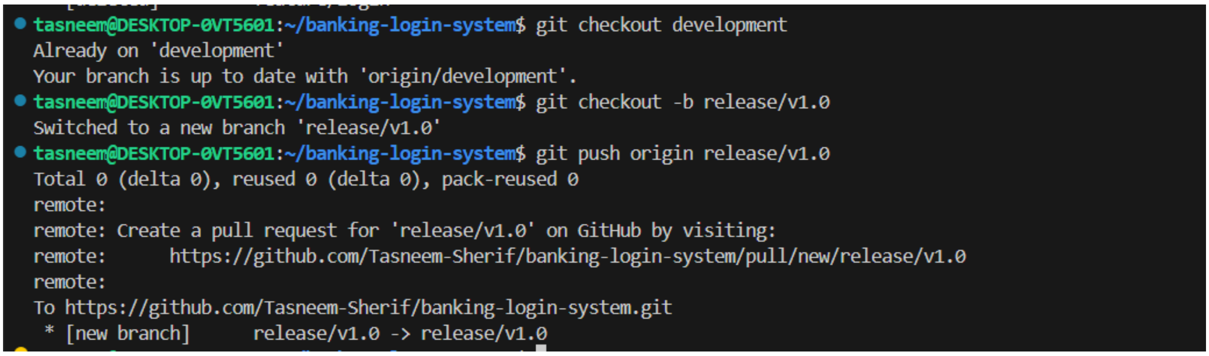
```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge feature/login
Already up to date.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge feature/login --no-ff -m "Merge feature/login into development"
Already up to date.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git log --oneline --graph --all
* b0ed7c3 (HEAD -> development) Update f1 in development
*   6f6d2ef (origin/development) Resolved merge conflict between development and feature/login
|\
| * 5597a53 (origin/feature/login, feature/login) Added login feature implementation
* | 2bfe34c Change from development branch
|/
*   82e58fa Merge branch 'feature/login' into development
|\
| * 056cd21 Change from feature branch
* | 11ed6b8 Change from development branch
* | 2f48a2b Update f1 in development
* | 44797fb Merge pull request #1 from Tasneem-Sherif/feature/login
```



```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin development
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Writing objects: 100% (3/3), 301 bytes | 301.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Tasneem-Sherif/banking-login-system.git
   6f6d2ef..b0ed7c3  development -> development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git branch -d feature/login
Deleted branch feature/login (was 5597a53).
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin --delete feature/login
To https://github.com/Tasneem-Sherif/banking-login-system.git
 - [deleted]         feature/login
```

Step 5: Release Feature

Create a release branch from the development branch



```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Already on 'development'
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout -b release/v1.0
Switched to a new branch 'release/v1.0'
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin release/v1.0
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'release/v1.0' on GitHub by visiting:
remote:      https://github.com/Tasneem-Sherif/banking-login-system/pull/new/release/v1.0
remote:
To https://github.com/Tasneem-Sherif/banking-login-system.git
 * [new branch]      release/v1.0 -> release/v1.0
```

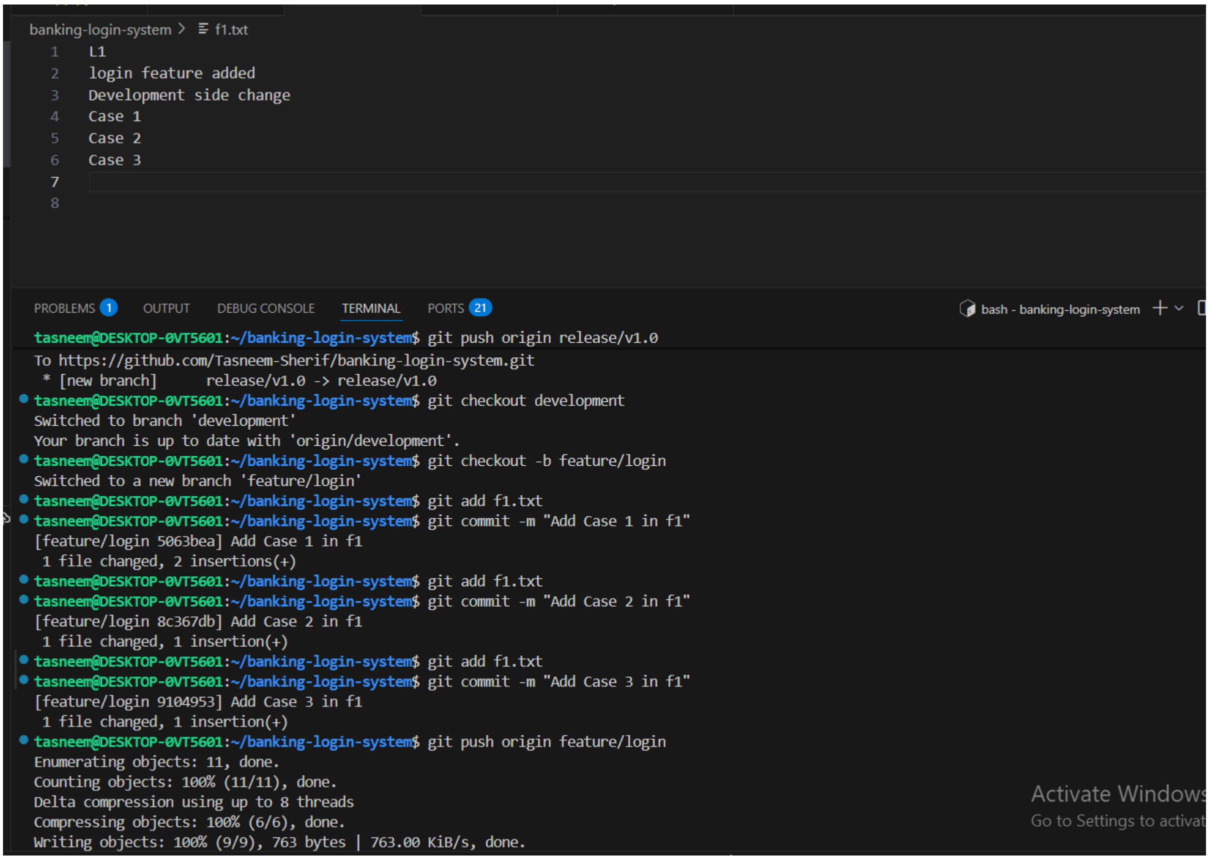
Step 7 :

Go to feature branch and Add 3 commits:

Add 'Case 1' in f1

Add 'Case 2' in f1

Add 'Case 3' in f1



banking-login-system > f1.txt
PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS 21
bash - banking-login-system
Activate Windows
Go to Settings to activat

```
L1
login feature added
Development side change
Case 1
Case 2
Case 3

```

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin release/v1.0
To https://github.com/Tasneem-Sherif/banking-login-system.git
 * [new branch]      release/v1.0 -> release/v1.0
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Switched to branch 'development'
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout -b feature/login
Switched to a new branch 'feature/login'
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git commit -m "Add Case 1 in f1"
[feature/login 5063bea] Add Case 1 in f1
 1 file changed, 2 insertions(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git commit -m "Add Case 2 in f1"
[feature/login 8c367db] Add Case 2 in f1
 1 file changed, 1 insertion(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git commit -m "Add Case 3 in f1"
[feature/login 9104953] Add Case 3 in f1
 1 file changed, 1 insertion(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin feature/login
Enumerating objects: 11, done.
Counting objects: 100% (11/11), done.
Delta compression using up to 8 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (9/9), 763 bytes | 763.00 KiB/s, done.
```

Step 8 :

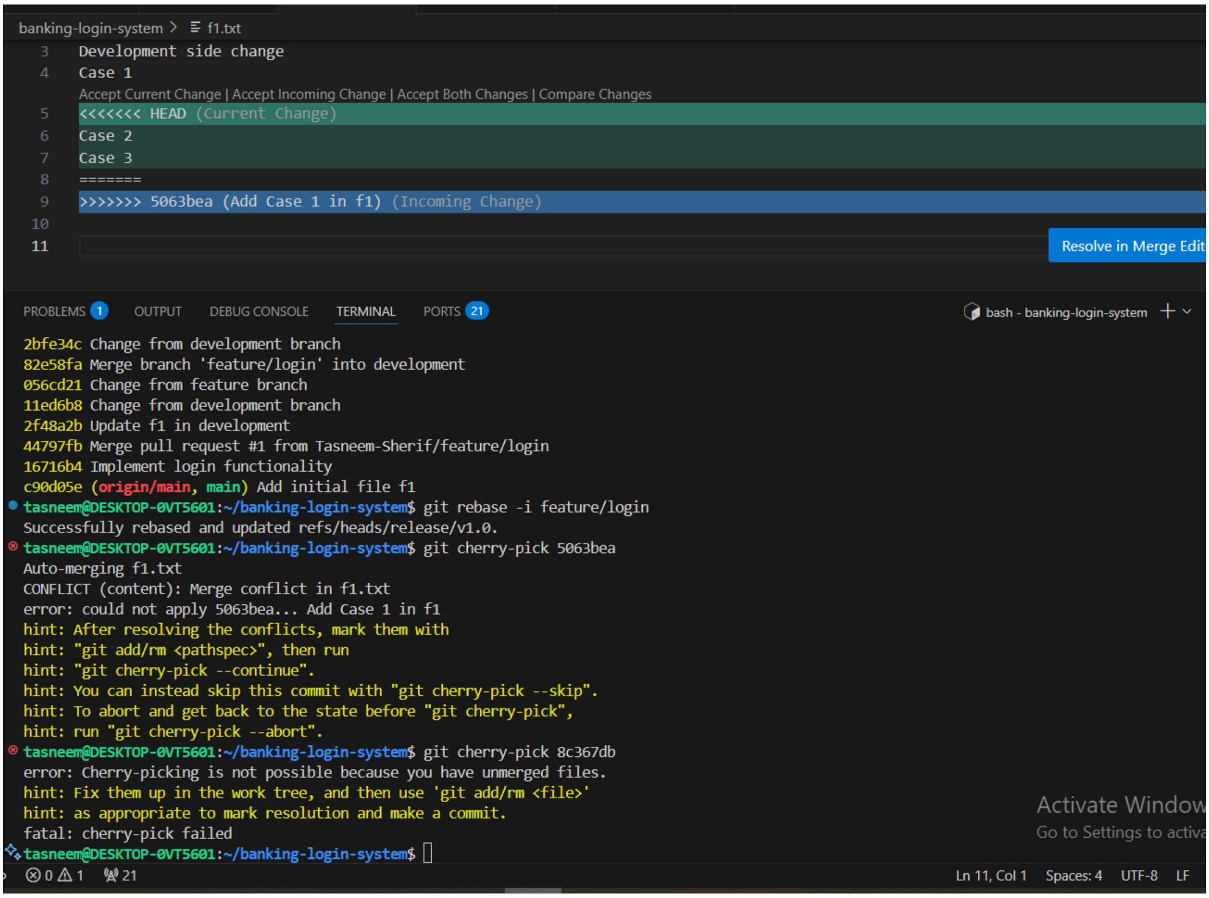
Go Back to the Release branch

Merge only Case1 and case2 to the release branch

Merge the release branch into the main branch

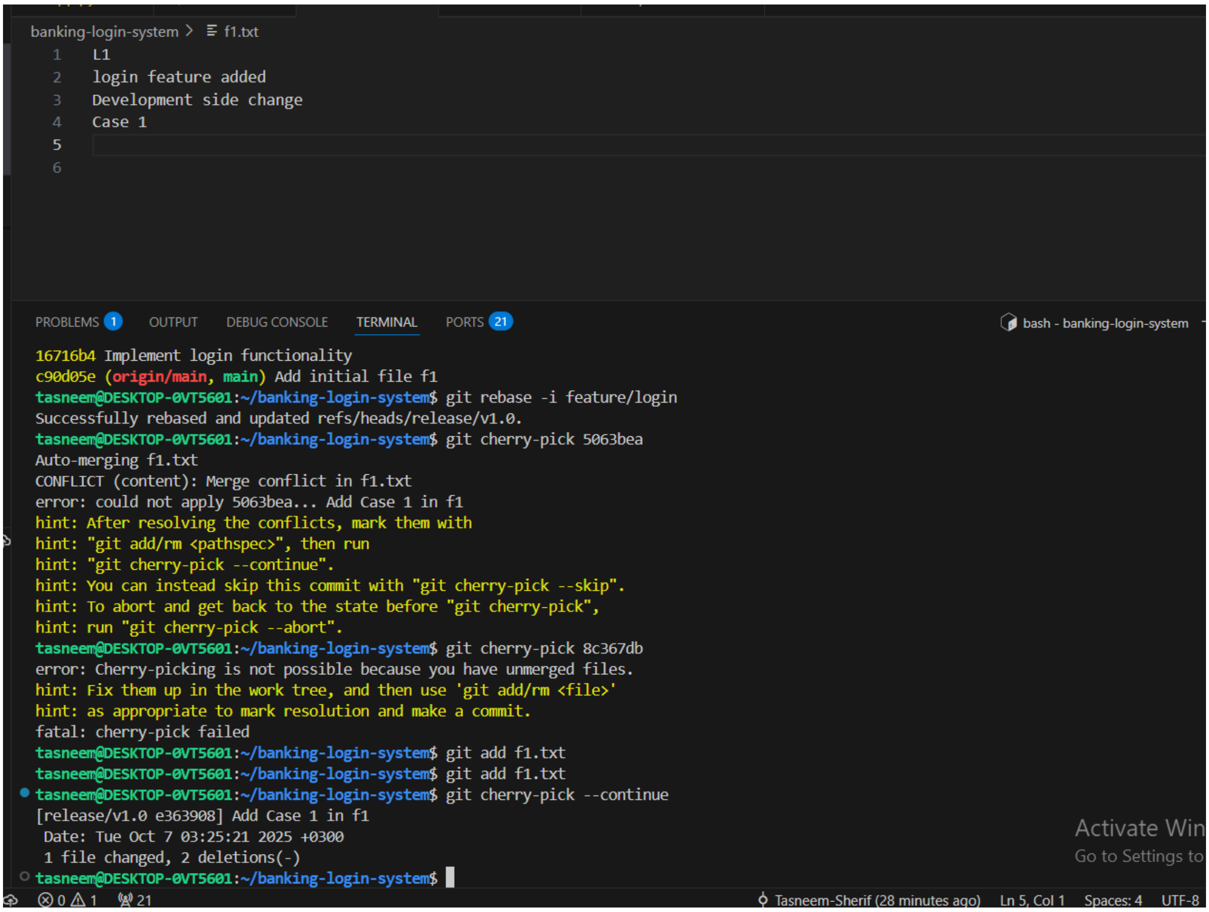
Merge the release branch back into the development branch

Delete the release branch after merging


banking-login-system > f1.txt
Accept Current Change | Accept Incoming Change | Accept Both Changes | Compare Changes
Resolve in Merge Edit
PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS 21
bash - banking-login-system
Activate Window
Go to Settings to activa
⊗ 0 ⚠ 1
21
Ln 11, Col 1
Spaces: 4
UTF-8
LF

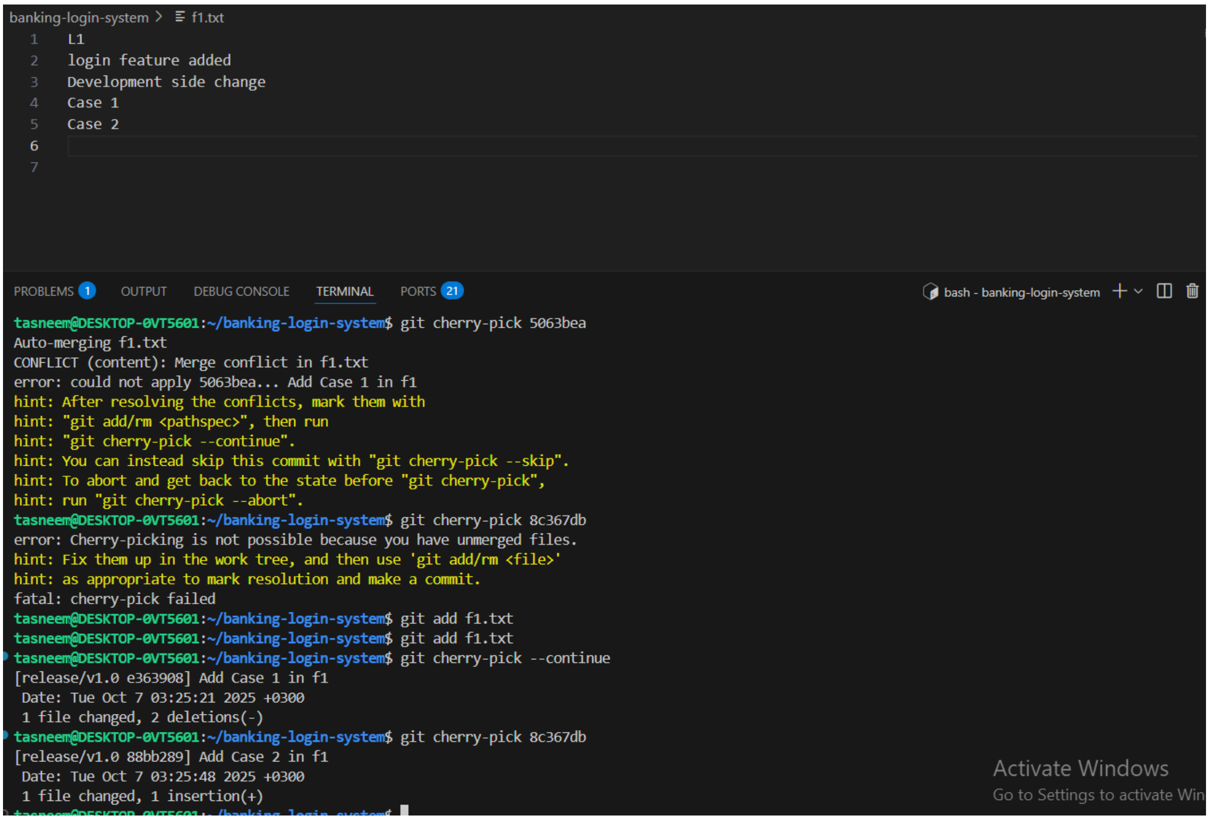
```
Development side change
Case 1
<<<<<<< HEAD (Current Change)
Case 2
Case 3
=======
>>>>>>> 5063bea (Add Case 1 in f1) (Incoming Change)

```

```
2bfe34c Change from development branch
82e58fa Merge branch 'feature/login' into development
056cd21 Change from feature branch
11ed6b8 Change from development branch
2f48a2b Update f1 in development
44797fb Merge pull request #1 from Tasneem-Sherif/feature/login
16716b4 Implement login functionality
c90d05e (origin/main, main) Add initial file f1
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git rebase -i feature/login
Successfully rebased and updated refs/heads/release/v1.0.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git cherry-pick 5063bea
Auto-merging f1.txt
CONFLICT (content): Merge conflict in f1.txt
error: could not apply 5063bea... Add Case 1 in f1
hint: After resolving the conflicts, mark them with
hint: "git add/rm <pathspec>", then run
hint: "git cherry-pick --continue".
hint: You can instead skip this commit with "git cherry-pick --skip".
hint: To abort and get back to the state before "git cherry-pick",
hint: run "git cherry-pick --abort".
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git cherry-pick 8c367db
error: Cherry-picking is not possible because you have unmerged files.
hint: Fix them up in the work tree, and then use 'git add/rm <file>'
hint: as appropriate to mark resolution and make a commit.
fatal: cherry-pick failed
tasneem@DESKTOP-0VT5601:~/banking-login-system$
```



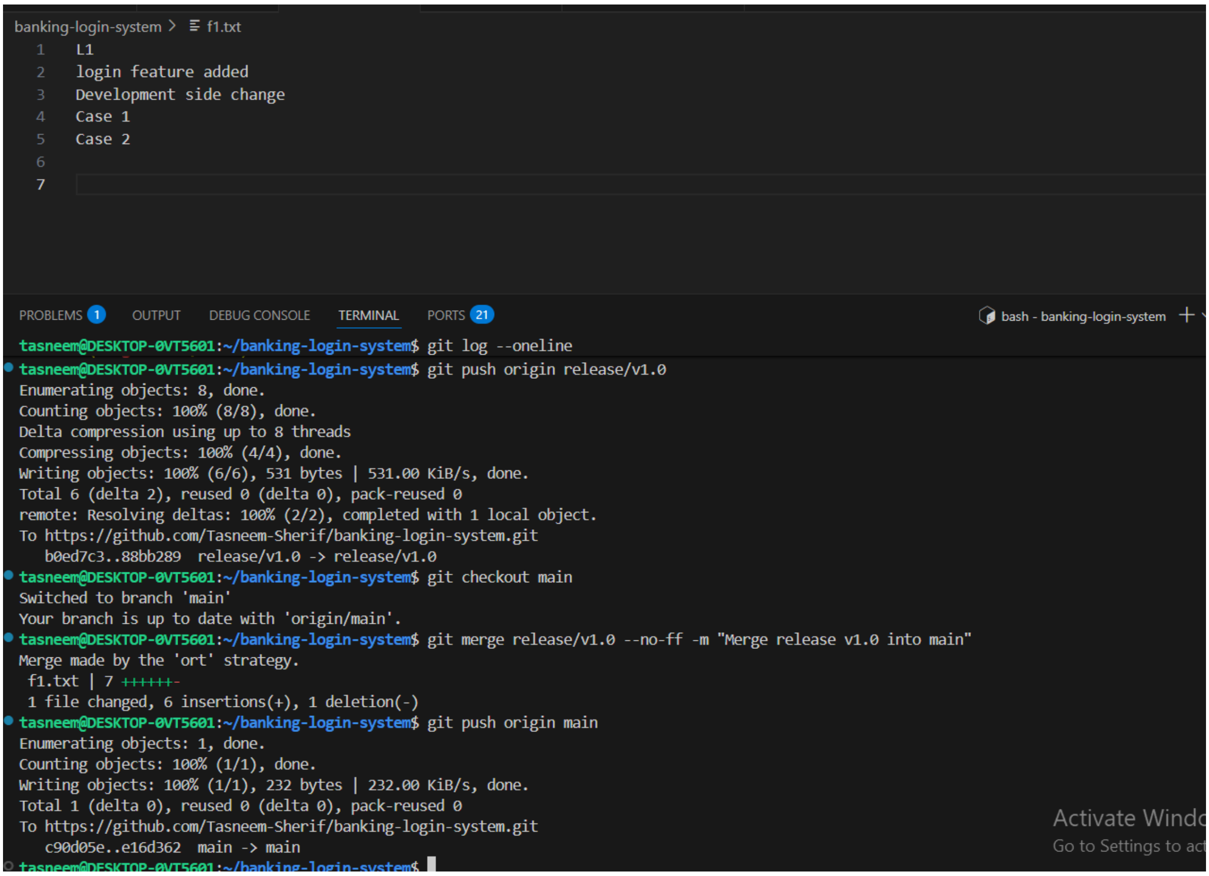
```
L1
login feature added
Development side change
Case 1


```

```
16716b4 Implement login functionality
c90d05e (origin/main, main) Add initial file f1
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git rebase -i feature/login
Successfully rebased and updated refs/heads/release/v1.0.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git cherry-pick 5063bea
Auto-merging f1.txt
CONFLICT (content): Merge conflict in f1.txt
error: could not apply 5063bea... Add Case 1 in f1
hint: After resolving the conflicts, mark them with
hint: "git add/rm <pathspec>", then run
hint: "git cherry-pick --continue".
hint: You can instead skip this commit with "git cherry-pick --skip".
hint: To abort and get back to the state before "git cherry-pick",
hint: run "git cherry-pick --abort".
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git cherry-pick 8c367db
error: Cherry-picking is not possible because you have unmerged files.
hint: Fix them up in the work tree, and then use 'git add/rm <file>'
hint: as appropriate to mark resolution and make a commit.
fatal: cherry-pick failed
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git cherry-pick --continue
[release/v1.0 e363908] Add Case 1 in f1
 Date: Tue Oct 7 03:25:21 2025 +0300
 1 file changed, 2 deletions(-)
tasneem@DESKTOP-0VT5601:~/banking-login-system$
```


banking-login-system > f1.txt
PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS 21
bash - banking-login-system
Activate Windows
Go to Settings to activate Win

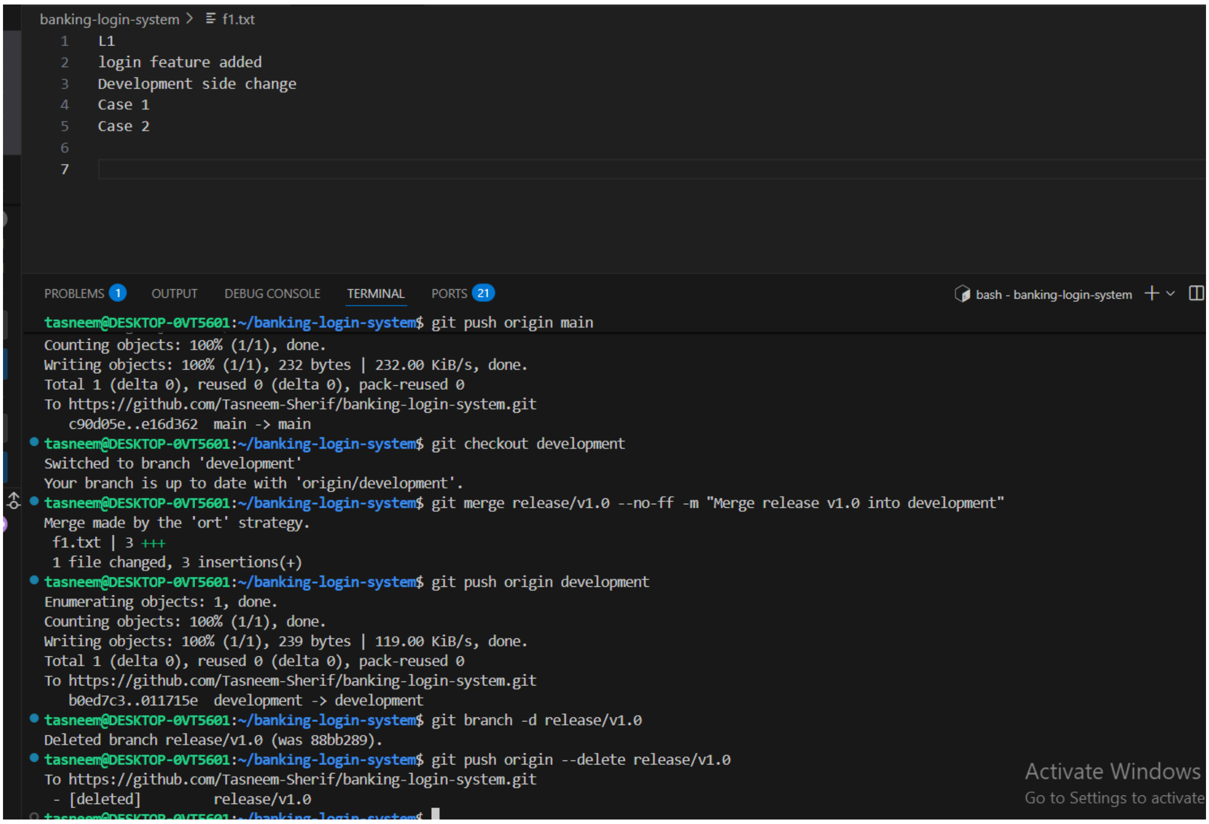
```
L1
login feature added
Development side change
Case 1
Case 2

```

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git cherry-pick 5063bea
Auto-merging f1.txt
CONFLICT (content): Merge conflict in f1.txt
error: could not apply 5063bea... Add Case 1 in f1
hint: After resolving the conflicts, mark them with
hint: "git add/rm <pathspec>", then run
hint: "git cherry-pick --continue".
hint: You can instead skip this commit with "git cherry-pick --skip".
hint: To abort and get back to the state before "git cherry-pick",
hint: run "git cherry-pick --abort".
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git cherry-pick 8c367db
error: Cherry-picking is not possible because you have unmerged files.
hint: Fix them up in the work tree, and then use 'git add/rm <file>'
hint: as appropriate to mark resolution and make a commit.
fatal: cherry-pick failed
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git cherry-pick --continue
[release/v1.0 e363908] Add Case 1 in f1
 Date: Tue Oct 7 03:25:21 2025 +0300
 1 file changed, 2 deletions(-)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git cherry-pick 8c367db
[release/v1.0 88bb289] Add Case 2 in f1
 Date: Tue Oct 7 03:25:48 2025 +0300
 1 file changed, 1 insertion(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$
```



```
L1
login feature added
Development side change
Case 1
Case 2


```

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git log --oneline
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin release/v1.0
Enumerating objects: 8, done.
Counting objects: 100% (8/8), done.
Delta compression using up to 8 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (6/6), 531 bytes | 531.00 KiB/s, done.
Total 6 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 1 local object.
To https://github.com/Tasneem-Sherif/banking-login-system.git
   b0ed7c3..88bb289  release/v1.0 -> release/v1.0
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge release/v1.0 --no-ff -m "Merge release v1.0 into main"
Merge made by the 'ort' strategy.
 f1.txt | 7 ++++++-
 1 file changed, 6 insertions(+), 1 deletion(-)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin main
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 232 bytes | 232.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Tasneem-Sherif/banking-login-system.git
   c90d05e..e16d362  main -> main
tasneem@DESKTOP-0VT5601:~/banking-login-system$
```


banking-login-system > f1.txt
PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS 21
bash - banking-login-system
Activate Windows
Go to Settings to activate

```
L1
login feature added
Development side change
Case 1
Case 2


```

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin main
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 232 bytes | 232.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Tasneem-Sherif/banking-login-system.git
   c90d05e..e16d362  main -> main
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Switched to branch 'development'
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge release/v1.0 --no-ff -m "Merge release v1.0 into development"
Merge made by the 'ort' strategy.
 f1.txt | 3 +++
 1 file changed, 3 insertions(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin development
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 239 bytes | 119.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Tasneem-Sherif/banking-login-system.git
   b0ed7c3..011715e  development -> development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git branch -d release/v1.0
Deleted branch release/v1.0 (was 88bb289).
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin --delete release/v1.0
To https://github.com/Tasneem-Sherif/banking-login-system.git
 - [deleted]         release/v1.0
tasneem@DESKTOP-0VT5601:~/banking-login-system$
```

Step 9: Hotfix

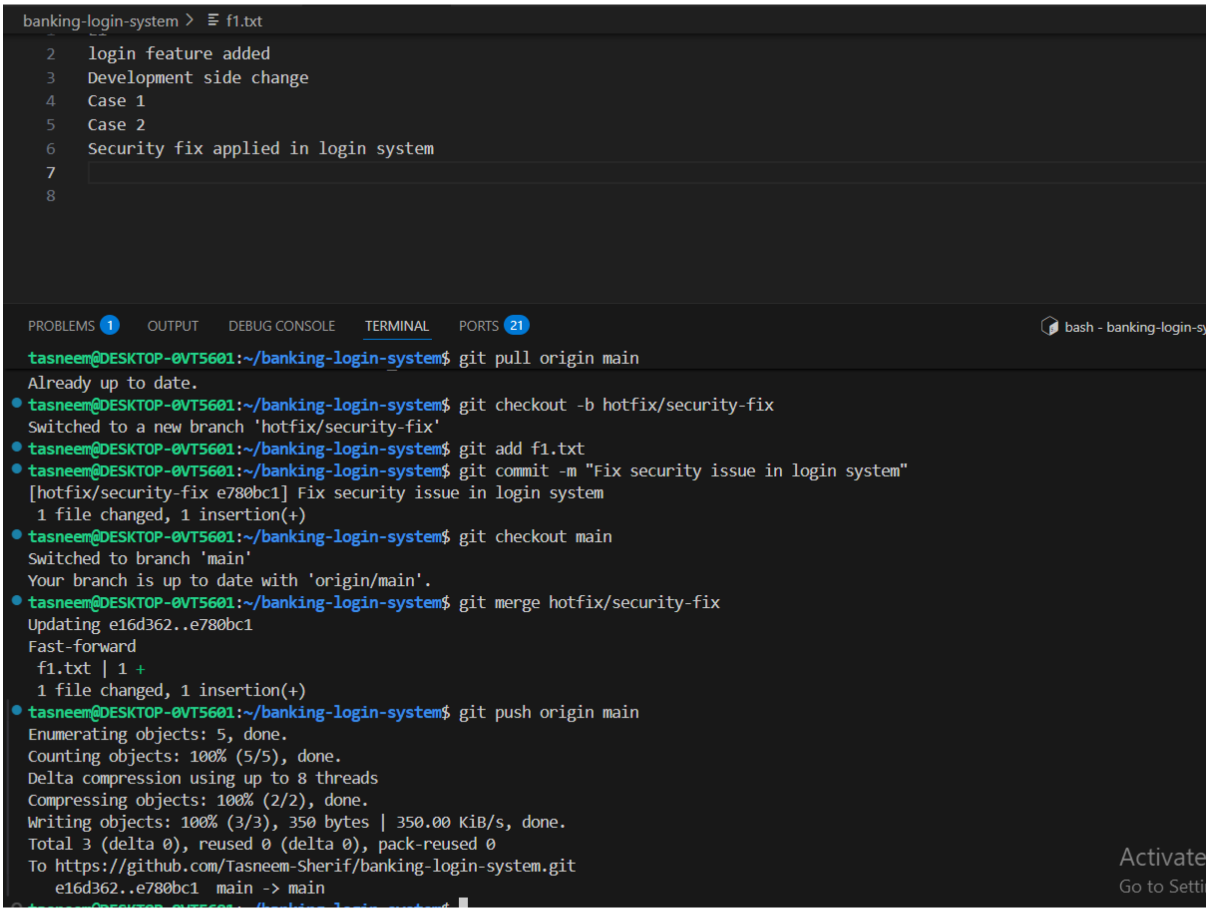
Identify and fix a security issue in the login system

Create a hotfix branch from the main branch

Apply the fix and commit changes

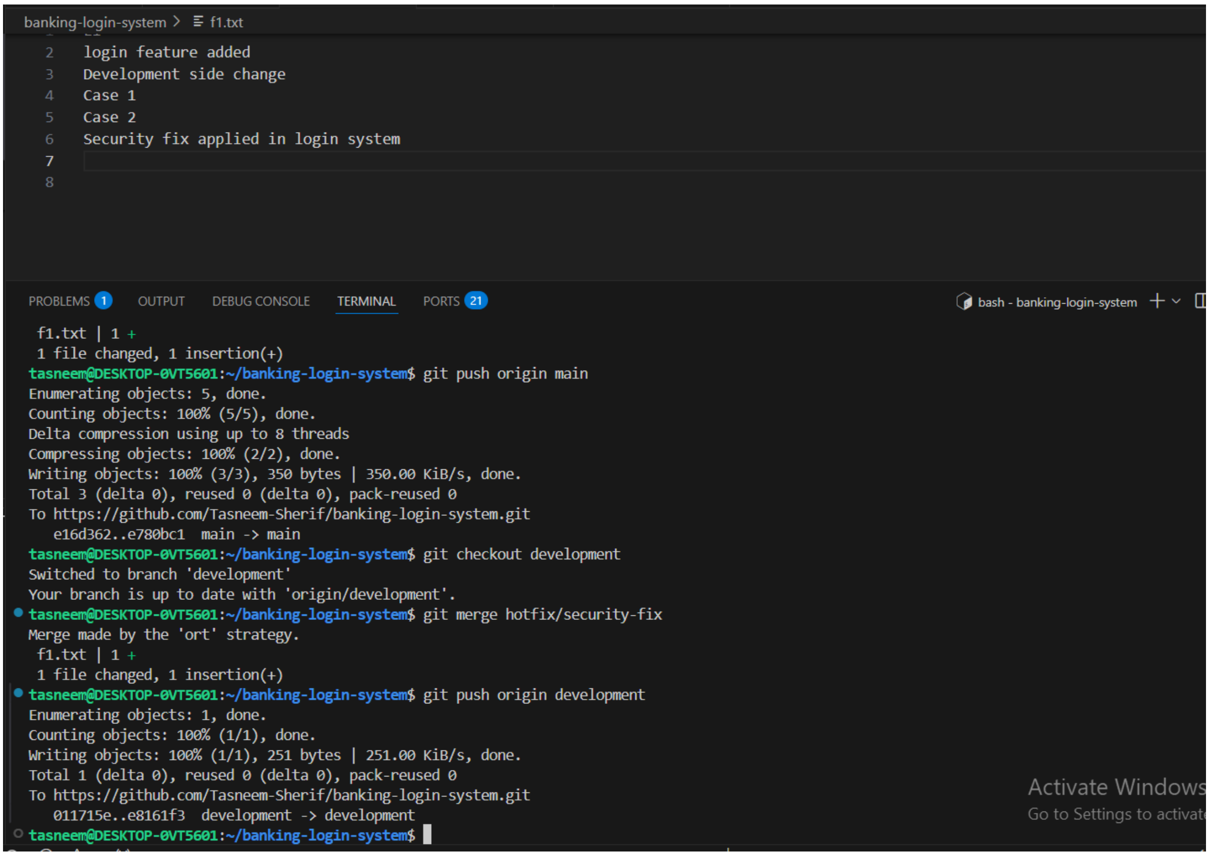
Merge the hotfix branch into both the main and development branches

Delete the hotfix branch after merging



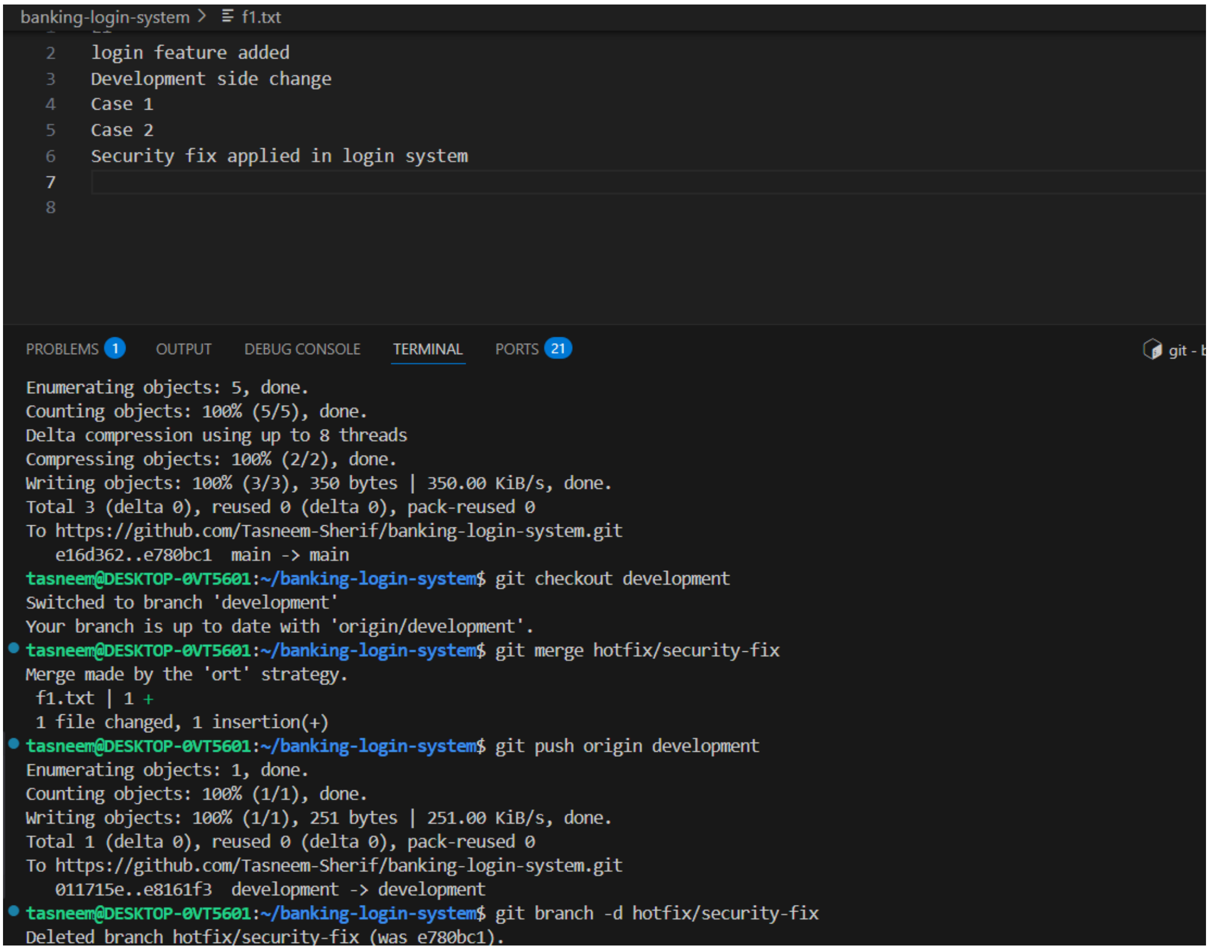
```
login feature added
Development side change
Case 1
Case 2
Security fix applied in login system
```

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git pull origin main
Already up to date.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout -b hotfix/security-fix
Switched to a new branch 'hotfix/security-fix'
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add f1.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git commit -m "Fix security issue in login system"
[hotfix/security-fix e780bc1] Fix security issue in login system
 1 file changed, 1 insertion(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge hotfix/security-fix
Updating e16d362..e780bc1
Fast-forward
 f1.txt | 1 +
 1 file changed, 1 insertion(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin main
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 350 bytes | 350.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Tasneem-Sherif/banking-login-system.git
   e16d362..e780bc1  main -> main
```


banking-login-system > f1.txt
PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS 21
bash - banking-login-system
Activate Windows
Go to Settings to activate

```
login feature added
Development side change
Case 1
Case 2
Security fix applied in login system
```

```
 f1.txt | 1 +
 1 file changed, 1 insertion(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin main
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 350 bytes | 350.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Tasneem-Sherif/banking-login-system.git
   e16d362..e780bc1  main -> main
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Switched to branch 'development'
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge hotfix/security-fix
Merge made by the 'ort' strategy.
 f1.txt | 1 +
 1 file changed, 1 insertion(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin development
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 251 bytes | 251.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Tasneem-Sherif/banking-login-system.git
   011715e..e8161f3  development -> development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ 
```



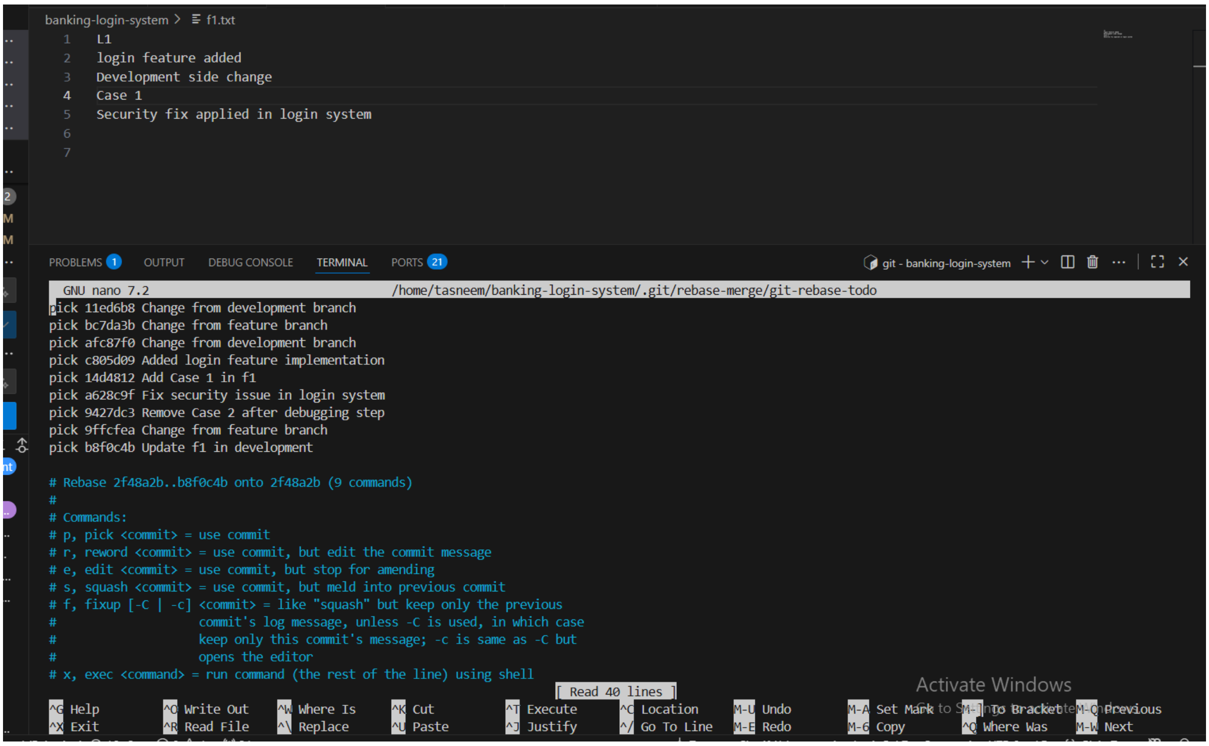
```
login feature added
Development side change
Case 1
Case 2
Security fix applied in login system
```

```
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 350 bytes | 350.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Tasneem-Sherif/banking-login-system.git
   e16d362..e780bc1  main -> main
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout development
Switched to branch 'development'
Your branch is up to date with 'origin/development'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git merge hotfix/security-fix
Merge made by the 'ort' strategy.
 f1.txt | 1 +
 1 file changed, 1 insertion(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git push origin development
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 251 bytes | 251.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Tasneem-Sherif/banking-login-system.git
   011715e..e8161f3  development -> development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git branch -d hotfix/security-fix
Deleted branch hotfix/security-fix (was e780bc1).
```

Step 10: Debugging

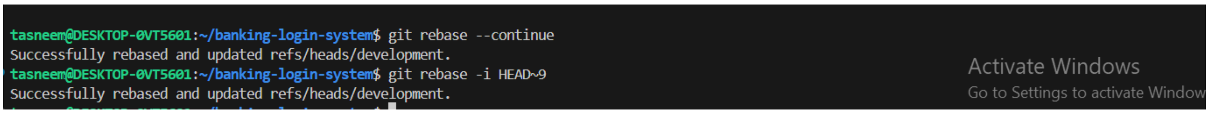
Check commit history

delete case2 Commit from development branch



```
L1
login feature added
Development side change
Case 1
Security fix applied in login system
```

```
  GNU nano 7.2                              /home/tasneem/banking-login-system/.git/rebase-merge/git-rebase-todo
pick 11ed6b8 Change from development branch
pick bc7da3b Change from feature branch
pick afc87f0 Change from development branch
pick c805d09 Added login feature implementation
pick 14d4812 Add Case 1 in f1
pick a628c9f Fix security issue in login system
pick 9427dc3 Remove Case 2 after debugging step
pick 9ffcfea Change from feature branch
pick b8f0c4b Update f1 in development

# Rebase 2f48a2b..b8f0c4b onto 2f48a2b (9 commands)
#
# Commands:
# p, pick <commit> = use commit
# r, reword <commit> = use commit, but edit the commit message
# e, edit <commit> = use commit, but stop for amending
# s, squash <commit> = use commit, but meld into previous commit
# f, fixup [-C | -c] <commit> = like "squash" but keep only the previous
#                    commit's log message, unless -C is used, in which case
#                    keep only this commit's message; -c is same as -C but
#                    opens the editor
# x, exec <command> = run command (the rest of the line) using shell
                                                                              [ Read 40 lines ]
^G Help         ^O Write Out    ^W Where Is     ^K Cut          ^T Execute      ^C Location     M-U Undo        M-A Set Mark    M-] To Bracket  M-Q Previous
^X Exit         ^R Read File    ^\ Replace      ^U Paste        ^J Justify      ^/ Go To Line   M-E Redo        M-6 Copy        ^Q Where Was    M-W Next
```



```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git rebase --continue
Successfully rebased and updated refs/heads/development.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git rebase -i HEAD~9
Successfully rebased and updated refs/heads/development.
```

===

Task 2:

You are working on a new feature but need to switch branches to fix a bug. You haven't committed your changes yet and don't want to lose them.

Task Steps

Explain what git stash does and when it is useful.

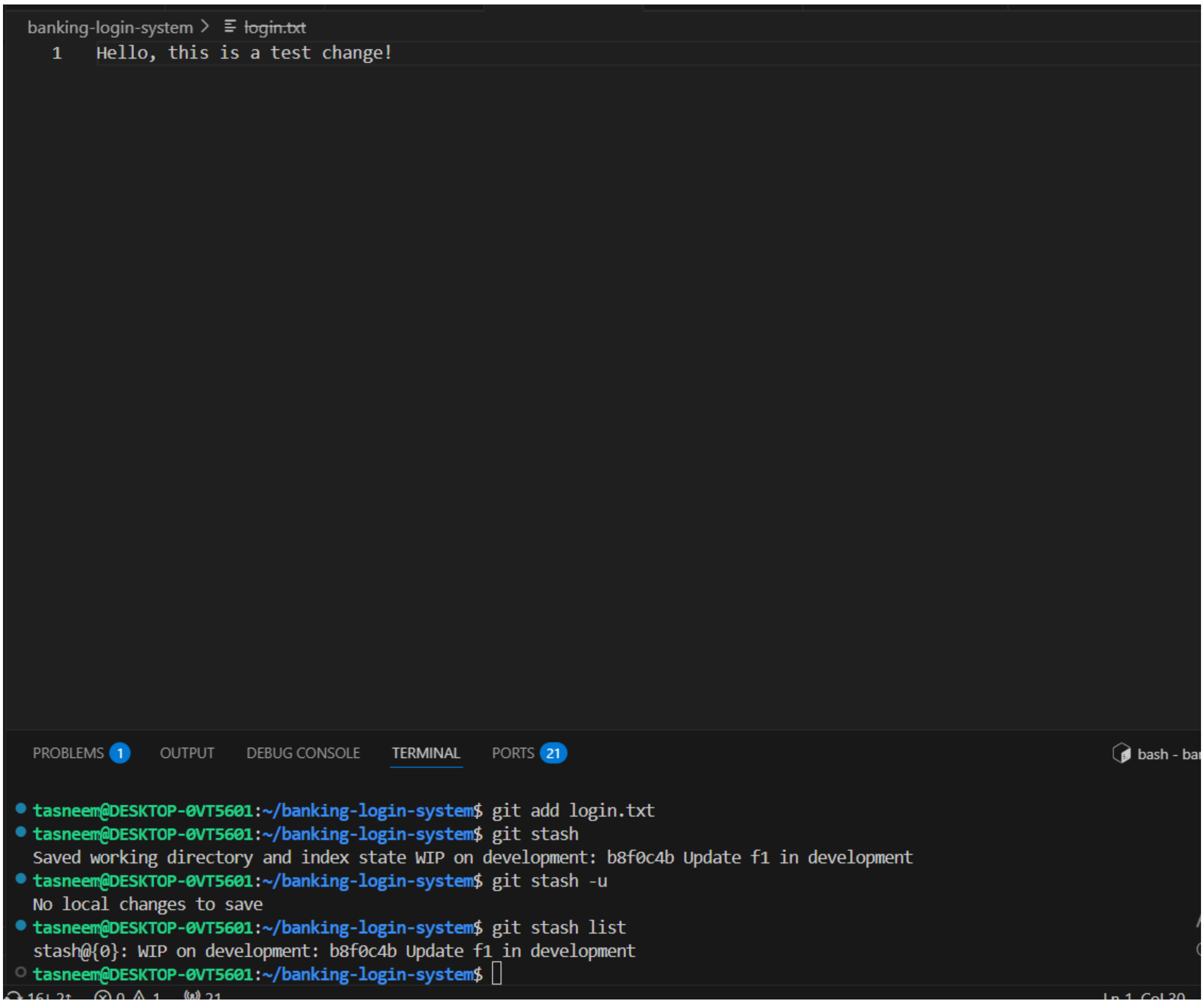
git stash temporarily saves your uncommitted changes (both tracked and optionally untracked files) so you can switch branches or work on something else without committing incomplete work.

Useful when:

You're working on a feature but need to switch to another branch (like a bug fix).

You want a clean working directory but don't want to commit half-done changes.

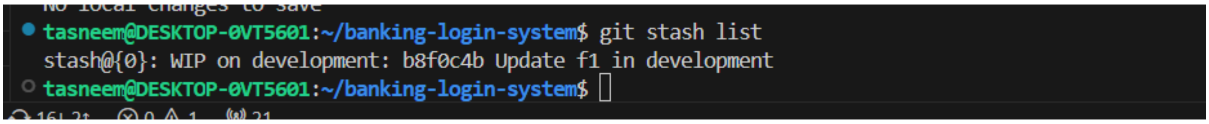
Use git stash to temporarily save uncommitted changes.



```
1   Hello, this is a test change!
```

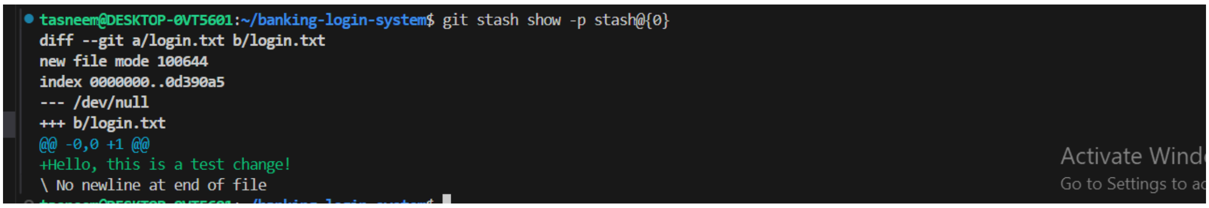
```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add login.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash
Saved working directory and index state WIP on development: b8f0c4b Update f1 in development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash -u
No local changes to save
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash list
stash@{0}: WIP on development: b8f0c4b Update f1 in development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ 
```

List and describe the stashed changes.

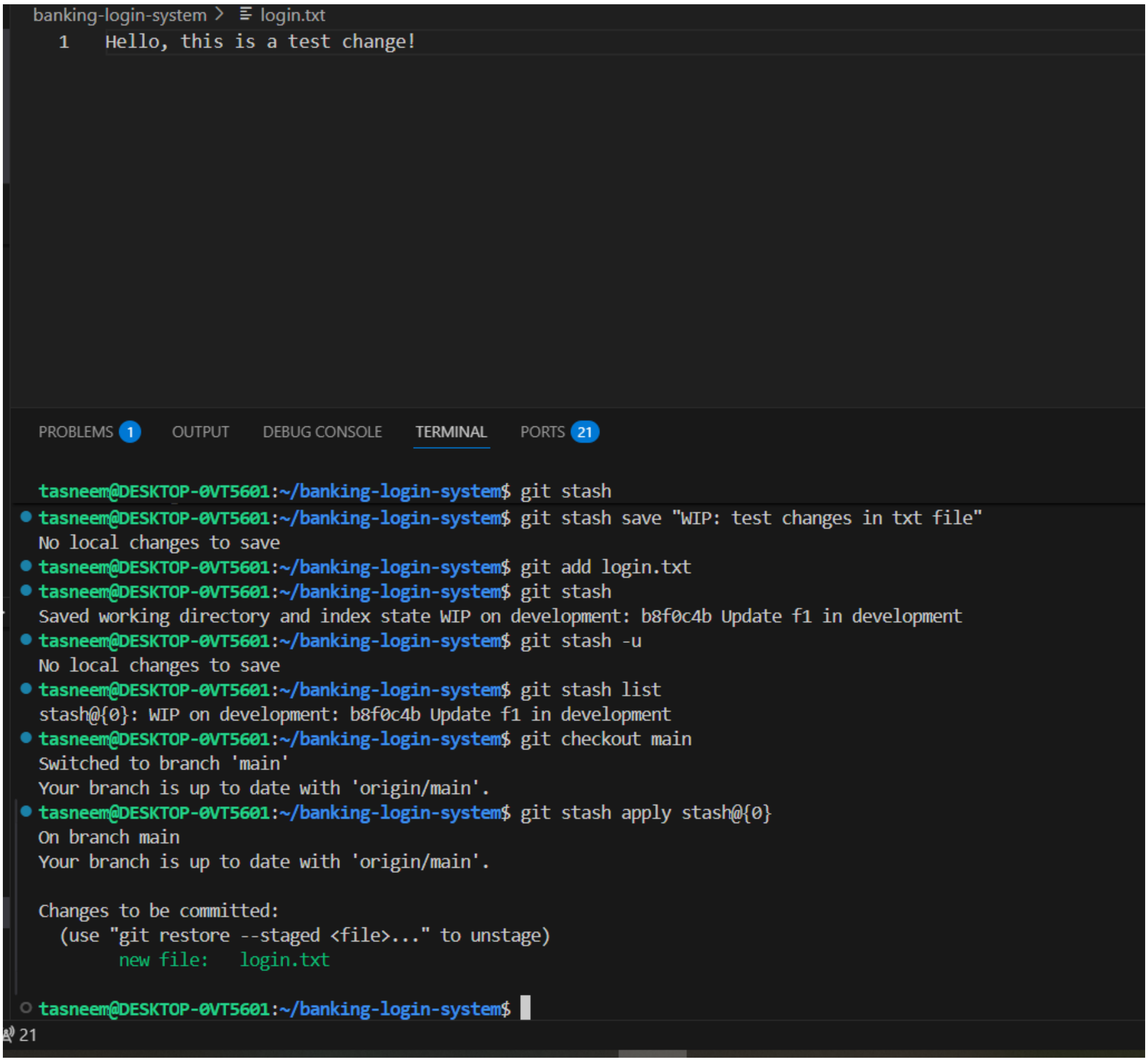


```
No local changes to save
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash list
stash@{0}: WIP on development: b8f0c4b Update f1 in development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ 
```

Restore stashed changes using the appropriate command.



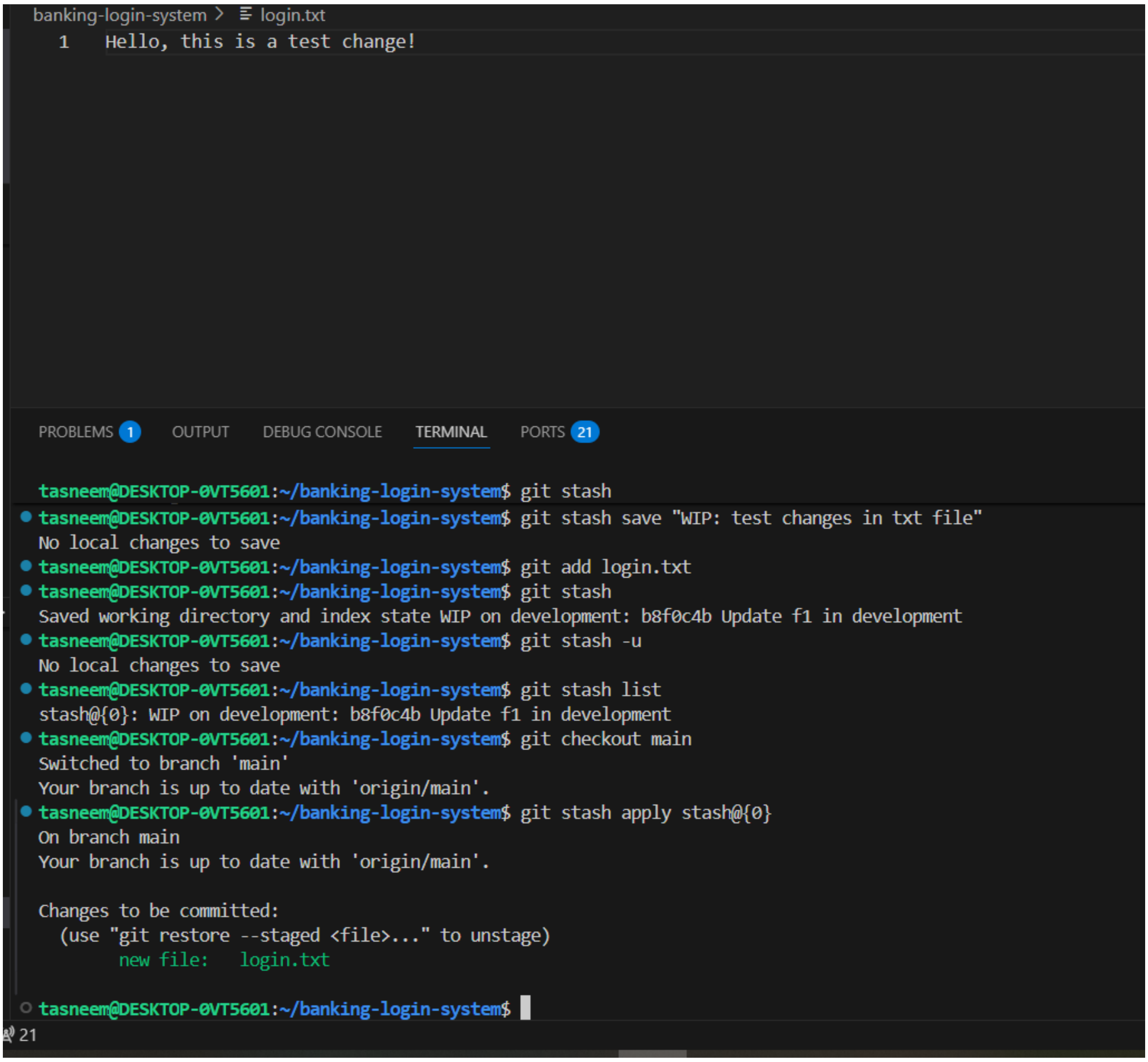
```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash show -p stash@{0}
diff --git a/login.txt b/login.txt
new file mode 100644
index 0000000..0d390a5
--- /dev/null
+++ b/login.txt
@@ -0,0 +1 @@
+Hello, this is a test change!
\ No newline at end of file
```



```
Hello, this is a test change!
```

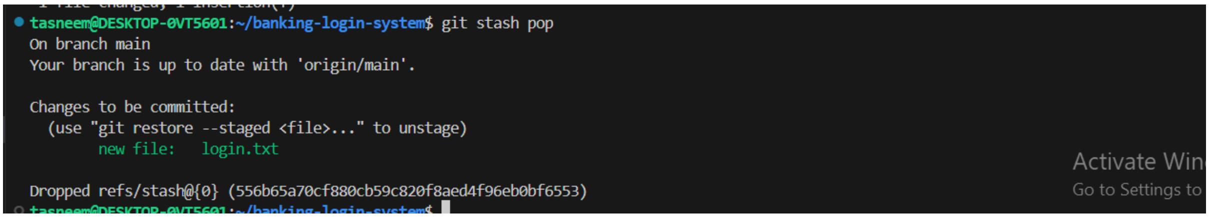
```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash save "WIP: test changes in txt file"
No local changes to save
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add login.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash
Saved working directory and index state WIP on development: b8f0c4b Update f1 in development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash -u
No local changes to save
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash list
stash@{0}: WIP on development: b8f0c4b Update f1 in development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash apply stash@{0}
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:   login.txt

tasneem@DESKTOP-0VT5601:~/banking-login-system$ 
```

Apply and remove a specific stash.



```
Hello, this is a test change!
```

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash save "WIP: test changes in txt file"
No local changes to save
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git add login.txt
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash
Saved working directory and index state WIP on development: b8f0c4b Update f1 in development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash -u
No local changes to save
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash list
stash@{0}: WIP on development: b8f0c4b Update f1 in development
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash apply stash@{0}
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:   login.txt

tasneem@DESKTOP-0VT5601:~/banking-login-system$
```



```
 1 file changed, 1 insertion(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash pop
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:   login.txt

Dropped refs/stash@{0} (556b65a70cf880cb59c820f8aed4f96eb0bf6553)
tasneem@DESKTOP-0VT5601:~/banking-login-system$
```

Drop or clear all stashes from the stash list.

git stash clear

What happens when you use git stash pop vs git stash apply?

Difference:

git stash pop = apply + remove from list.

git stash apply = apply only, stash stays in list.

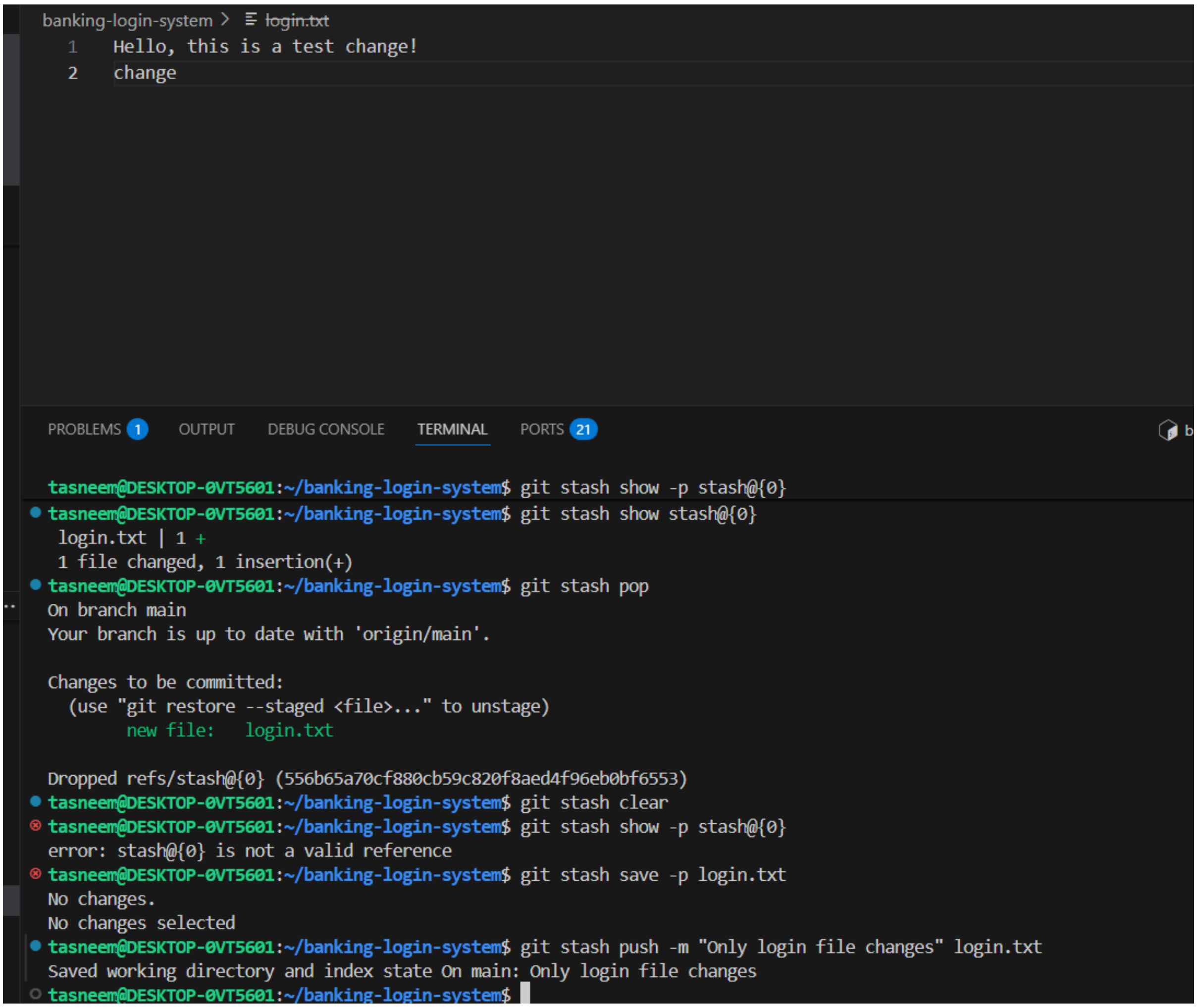
What is the purpose of git stash save "message"?

Adds a custom description to your stash so you can identify it later, especially if you have multiple stashes.

git stash save "WIP: fixing login bug"

How can you stash changes for specific files instead of the entire working directory?

git stash push -m "Only login file changes" login.txt



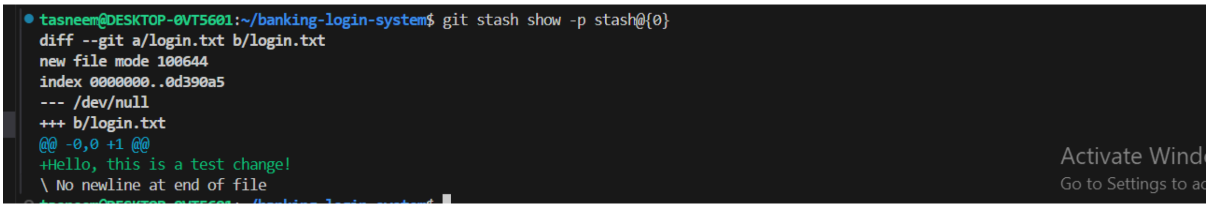
banking-login-system > ~~login.txt~~

```
Hello, this is a test change!
change
```

```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash show -p stash@{0}
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash show stash@{0}
 login.txt | 1 +
 1 file changed, 1 insertion(+)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash pop
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:   login.txt

Dropped refs/stash@{0} (556b65a70cf880cb59c820f8aed4f96eb0bf6553)
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash clear
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash show -p stash@{0}
error: stash@{0} is not a valid reference
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash save -p login.txt
No changes.
No changes selected
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash push -m "Only login file changes" login.txt
Saved working directory and index state On main: Only login file changes
tasneem@DESKTOP-0VT5601:~/banking-login-system$ 
```

How can you check which files were affected in a particular stash?

git stash show -p stash@{0}



```
tasneem@DESKTOP-0VT5601:~/banking-login-system$ git stash show -p stash@{0}
diff --git a/login.txt b/login.txt
new file mode 100644
index 0000000..0d390a5
--- /dev/null
+++ b/login.txt
@@ -0,0 +1 @@
+Hello, this is a test change!
\ No newline at end of file
tasneem@DESKTOP-0VT5601:~/banking-login-system$
```