

Merge & Conflict Resolution

Scenario – we have a project **git-practice**, repository name “git-practice”. DevOps team create a new branch and makes it ready for the developer to work for their forthcoming release. There are 3 developers working on the newly created branch and finally Devops team merges the branch to “main” and baseline the code.

Baseline – the piece of ready code which is getting deployed in production.

The project/repository contains 4 files, README.md, flower.txt, fruit.txt, test.txt which was released in previous release and is baselined.

Repository

verma-raj / **git-practice** Public

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Main 1 branch 0 tags

Go to file Add file Code

verma-raj Merge branch 'feature-branch' of https://github.com/verma-raj/git-pra... 0c1c353 10 hours ago 10 commits

README.md	Initial commit	21 hours ago
flower.txt	commit done by Dev3 , modified flower	20 hours ago
fruit.txt	after resolving conflict between Dev1 and Dev2	11 hours ago
test.txt	commit done by Dev4 added new file	20 hours ago

README.md

git-practice

About

No description, website, or topics provided.

Readme

0 stars

1 watching

0 forks

Releases

No releases published

Create a new release

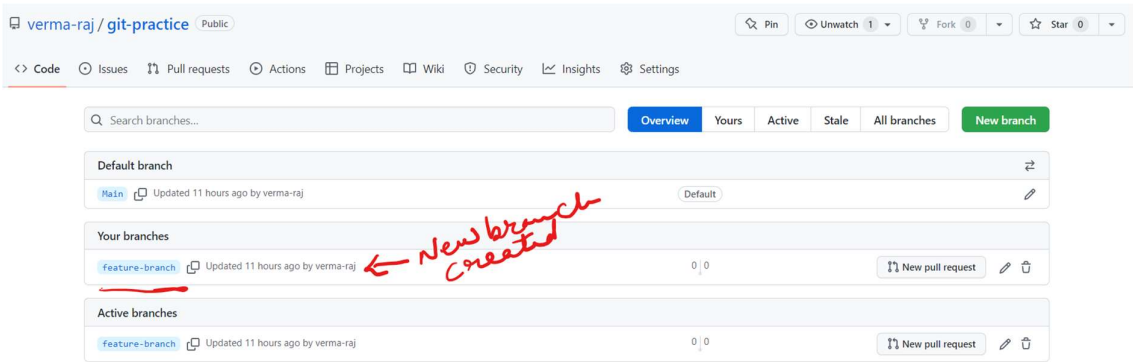
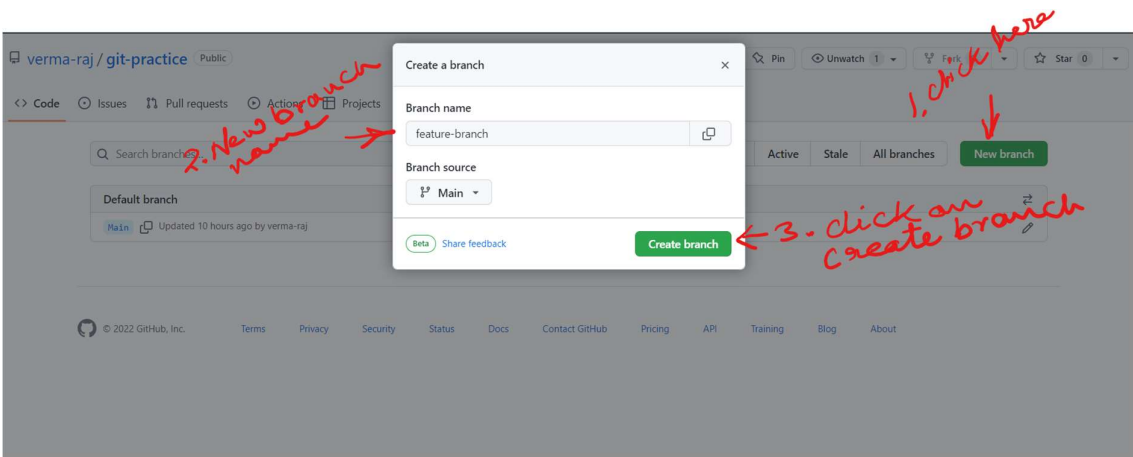
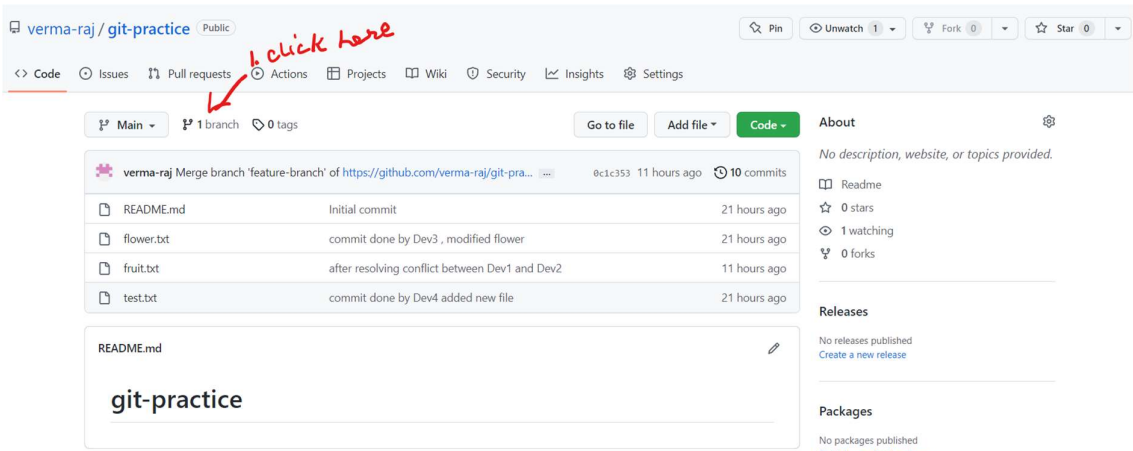
Packages

No packages published

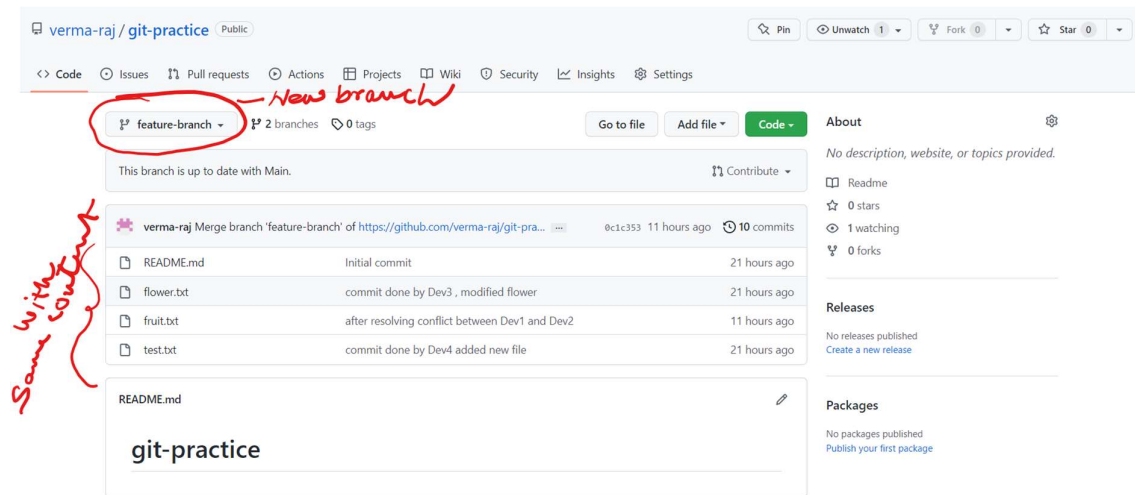
Publish your first package

only one main branch

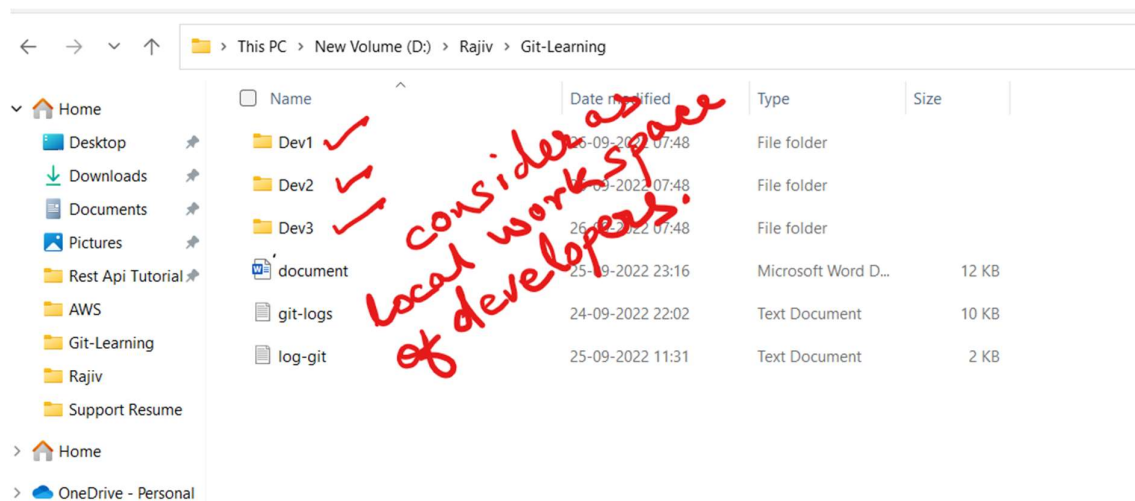
Create a new branch



Below screen shot shows new feature-branch with the same content as of main branch.



Now Developer1, Developer2 and Developer 3 is cloning the same branch and will start working on it.



Developer1 starts cloning the branch and so does other developer. They are using **visual studio code** for their development needs.

```
PS D:\Rajiv\Git-Learning\Dev1> git clone -b feature-branch https://github.com/verma-raj/git-practice.git
```

Cloning into 'git-practice'...

remote: Enumerating objects: 28, done.

remote: Counting objects: 100% (28/28), done.

remote: Compressing objects: 100% (18/18), done.

remote: Total 28 (delta 8), reused 17 (delta 5), pack-reused 0

Receiving objects: 100% (28/28), done.

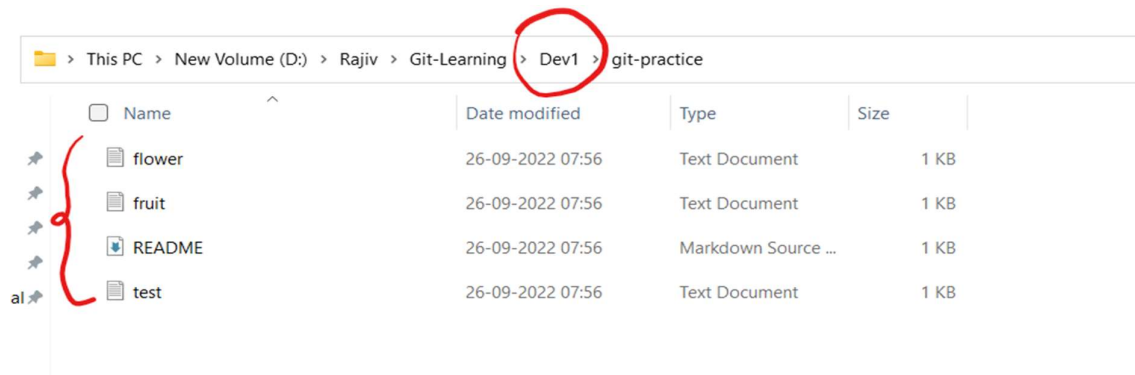
Resolving deltas: 100% (8/8), done.

```
PS D:\Rajiv\Git-Learning\Dev1> cd ..\Dev2\
```

```
PS D:\Rajiv\Git-Learning\Dev2> git clone -b feature-branch https://github.com/verma-raj/git-practice.git
```

```
PS D:\Rajiv\Git-Learning\Dev3> git clone -b feature-branch https://github.com/verma-raj/git-practice.git
```

Below screenshot show that the branch has cloned in local workspace, same for other developers.



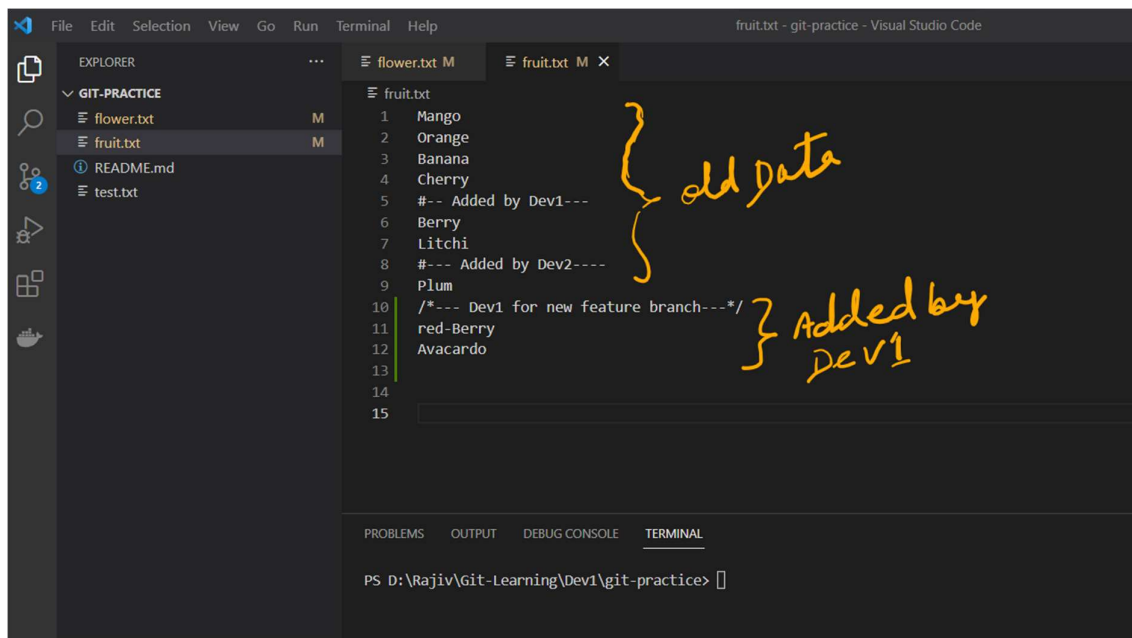
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS D:\Rajiv\Git-Learning\Dev1\git-practice> git status
On branch feature-branch
Your branch is up to date with 'origin/feature-branch'.

nothing to commit, working tree clean
PS D:\Rajiv\Git-Learning\Dev1\git-practice> 
```

← local GIT is in sync with remote repo

Development starts.....



```
fruit.txt - git-practice - Visual Studio Code

fruit.txt
1  Mango
2  Orange
3  Banana
4  Cherry
5  #-- Added by Dev1--
6  Berry
7  Litchi
8  #--- Added by Dev2---
9  Plum
10 /*--- Dev1 for new feature branch---*/
11 red-Berry
12 Avacardo
13
14
15
```

old data

Added by Dev1

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS D:\Rajiv\Git-Learning\Dev1\git-practice> 
```

A screenshot of the Visual Studio Code editor. The Explorer sidebar on the left shows a project named 'GIT-PRACTICE' with files 'flower.txt' (marked with an 'M'), 'fruit.txt' (marked with an 'M'), 'README.md', and 'test.txt'. The main editor area displays 'flower.txt' with the following content:

```
1 Rose
2 china rose
3 Jasmine
4 marigold
5 #----- Dev3-----
6 Lotus
7 /*--- Added code for new feature-branch by Dev1---*/
8 Lilly
9
```

Handwritten yellow notes are present: a bracket on lines 1-4 is labeled 'old data', and an arrow points to line 8 with the text 'newly added by Dev1'. The bottom panel shows the 'TERMINAL' tab with the command prompt: 'PS D:\Rajiv\Git-Learning\Dev1\git-practice>'.

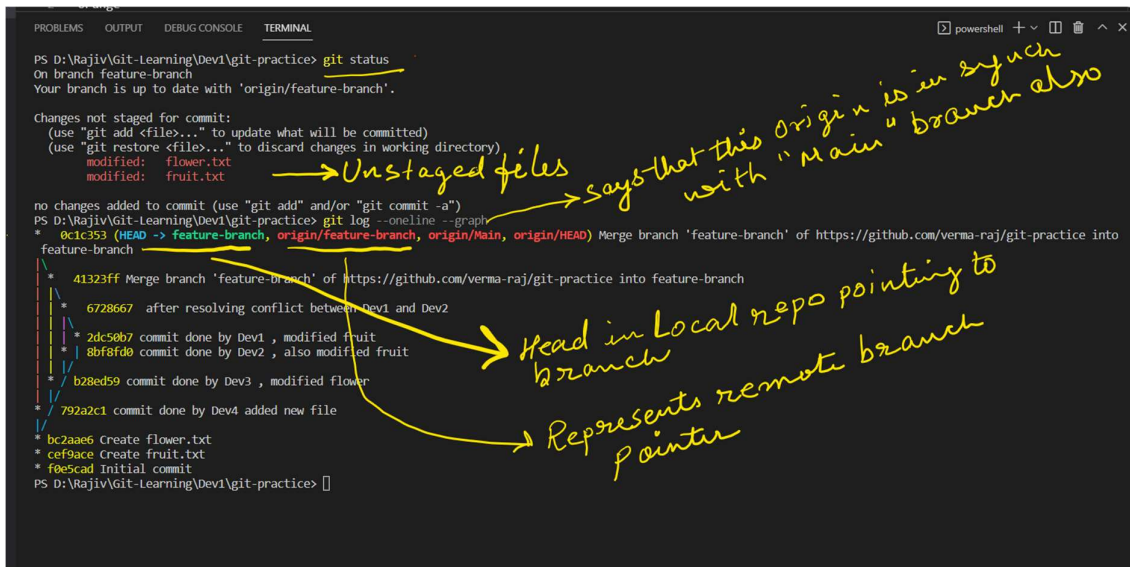
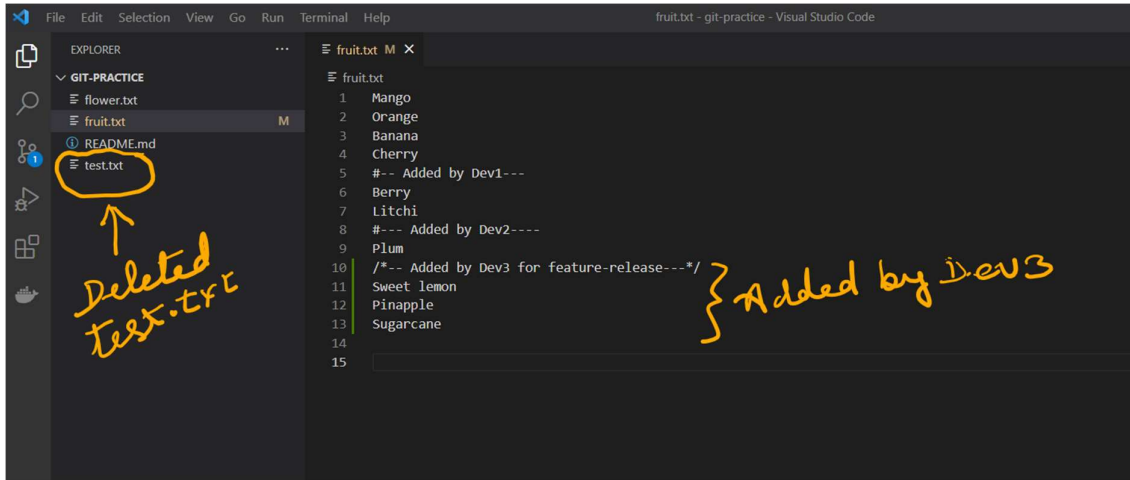
Below done by Dev2

A screenshot of the Visual Studio Code editor. The Explorer sidebar shows the same 'GIT-PRACTICE' project. The main editor area displays 'fruit.txt' with the following content:

```
1 Mango
2 Orange
3 Banana
4 Cherry
5 #-- Added by Dev1---
6 Berry
7 Litchi
8 #--- Added by Dev2----
9 Plum
10 /* Added by Dev2 for new feature-branch */
11 Sugarcane
12
13
```

Handwritten yellow notes are present: 'Dev2 worked only on fruit.txt' with a checkmark next to line 10. The bottom panel shows the 'TERMINAL' tab with the command prompt: 'PS D:\Rajiv\Git-Learning\Dev2\git-practice>'.

Below done by Dev3.



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS D:\Rajiv\Git-Learning\Dev1\git-practice> git add .
PS D:\Rajiv\Git-Learning\Dev1\git-practice> git log --online --graph
* 0c1c353 (HEAD -> feature-branch, origin/feature-branch, origin/Main, origin/HEAD) Merge branch 'feature-branch' of https://github.com/verma-raj/git-practice into feature-branch
* 41323ff Merge branch 'feature-branch' of https://github.com/verma-raj/git-practice into feature-branch
* 6728667 after resolving conflict between Dev1 and Dev2
* 2dc50b7 commit done by Dev1 , modified fruit
* 8bf8fd0 commit done by Dev2 , also modified fruit
* b28ed59 commit done by Dev3 , modified flower
* 792a2c1 commit done by Dev4 added new file
* bc2aae6 Create flower.txt
* cef9ace Create fruit.txt
* f0e5cad Initial commit
PS D:\Rajiv\Git-Learning\Dev1\git-practice> git status
On branch feature-branch
Your branch is up to date with 'origin/feature-branch'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   flower.txt
        modified:   fruit.txt
PS D:\Rajiv\Git-Learning\Dev1\git-practice> 
```

← Staging Done

} Staged Now

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS D:\Rajiv\Git-Learning\Dev1\git-practice> git commit -m "initial commit by Dev1 for feature-branch"
[feature-branch 7fcec7a] initial commit by Dev1 for feature-branch
2 files changed, 6 insertions(+)
PS D:\Rajiv\Git-Learning\Dev1\git-practice> git log --online --graph
* 0c1c353 (origin/feature-branch, origin/Main, origin/HEAD) Merge branch 'feature-branch' of https://github.com/verma-raj/git-practice into feature-branch
* 41323ff Merge branch 'feature-branch' of https://github.com/verma-raj/git-practice into feature-branch
* 6728667 after resolving conflict between Dev1 and Dev2
* 2dc50b7 commit done by Dev1 , modified fruit
* 8bf8fd0 commit done by Dev2 , also modified fruit
* b28ed59 commit done by Dev3 , modified flower
* 792a2c1 commit done by Dev4 added new file
* bc2aae6 Create flower.txt
* cef9ace Create fruit.txt
* f0e5cad Initial commit
PS D:\Rajiv\Git-Learning\Dev1\git-practice> 
```

→ After new commit

This is your local GIT repo log and status.

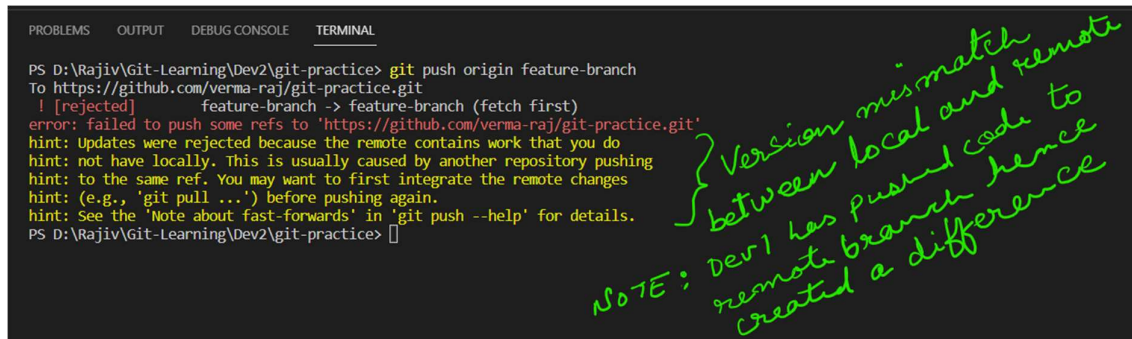
Similarly all other developer has also committed their code to GIT. There is no change in the remote repository (GitHub) branch as no push has been done yet.

First developer pushed his code to remote branch.

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS D:\Rajiv\Git-Learning\Dev1\git-practice> git push origin feature-branch
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 6 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 582 bytes | 582.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/verma-raj/git-practice.git
  0c1c353..7fcec7a feature-branch -> feature-branch
PS D:\Rajiv\Git-Learning\Dev1\git-practice> 
```

← Pushing to origin (GitHub) remote branch

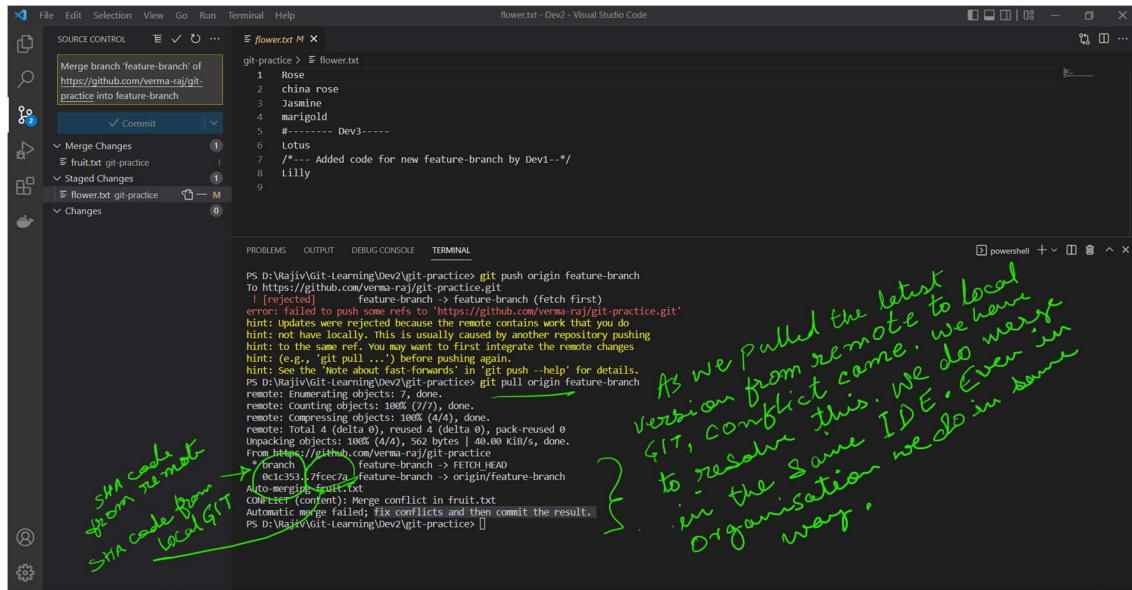
Now when the second developer tries to push the code issue came as there is a mismatch in versions.



```
PS D:\Rajiv\Git-Learning\Dev2\git-practice> git push origin feature-branch
To https://github.com/verma-raj/git-practice.git
 ! [rejected]        feature-branch -> feature-branch (fetch first)
error: failed to push some refs to 'https://github.com/verma-raj/git-practice.git'
hint: Updates were rejected because the remote contains work that you do
hint: not have locally. This is usually caused by another repository pushing
hint: to the same ref. You may want to first integrate the remote changes
hint: (e.g., 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.
PS D:\Rajiv\Git-Learning\Dev2\git-practice>
```

*Version mismatch between local and remote
NOTE: Dev1 has pushed code to remote branch hence created a difference*

Conflict arises

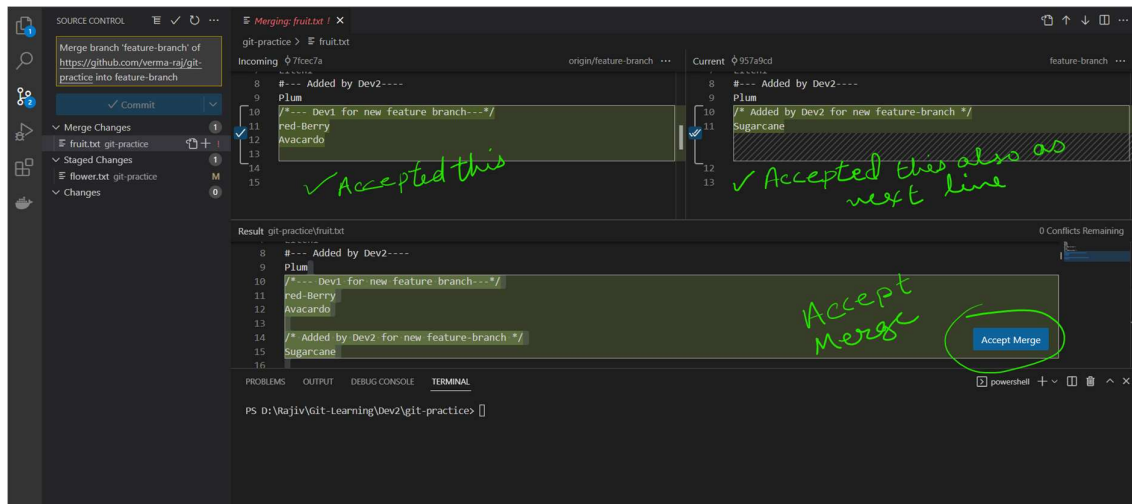


```
git-practice M x flower.txt
1 Rose
2 china rose
3 Jasmine
4 marigold
5 #----- Dev3-----
6 Lotus
7 /*--- Added code for new feature-branch by Dev1---*/
8 Lilly
9

PS D:\Rajiv\Git-Learning\Dev2\git-practice> git push origin feature-branch
To https://github.com/verma-raj/git-practice.git
 ! [rejected]        feature-branch -> feature-branch (fetch first)
error: failed to push some refs to 'https://github.com/verma-raj/git-practice.git'
hint: Updates were rejected because the remote contains work that you do
hint: not have locally. This is usually caused by another repository pushing
hint: to the same ref. You may want to first integrate the remote changes
hint: (e.g., 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.
PS D:\Rajiv\Git-Learning\Dev2\git-practice> git pull origin feature-branch
remote: Enumerating objects: 7, done.
remote: Counting objects: 100% (7/7), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 4 (delta 0), reused 4 (delta 0), pack-reused 0
Unpacking objects: 100% (4/4), 562 bytes | 40.00 KiB/s, done.
From https://github.com/verma-raj/git-practice
   feature-branch -> FETCH_HEAD
   0c1c353..7fcec7a feature-branch -> origin/feature-branch
Auto-merging fruit.txt
CONFLICT (content): Merge conflict in fruit.txt
Automatic merge failed; fix conflicts and then commit the result.
PS D:\Rajiv\Git-Learning\Dev2\git-practice>
```

*SHA code from remote
SHA code from local GIT*

As we pulled the latest version from remote to local GIT, conflict came. We have to resolve this. We do merge in the same IDE. Even in Organisation we do in same way.



After Accept Merge “push” to origin feature-branch

PS D:\Rajiv\Git-Learning\Dev2\git-practice> **git push origin feature-branch**

Enumerating objects: 10, done.

Counting objects: 100% (10/10), done.

Delta compression using up to 6 threads

Compressing objects: 100% (6/6), done.

Writing objects: 100% (6/6), 669 bytes | 669.00 KiB/s, done.

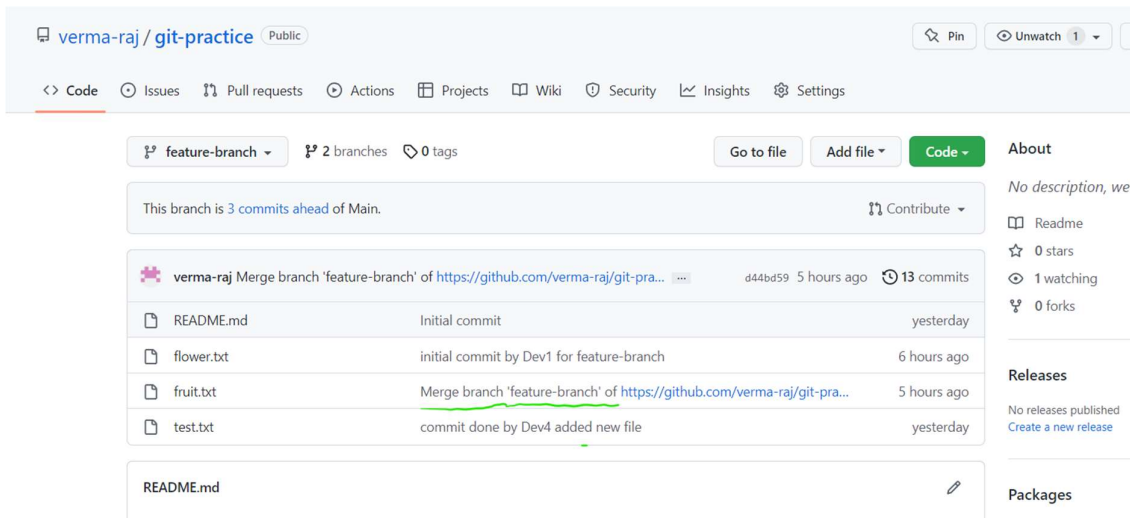
Total 6 (delta 4), reused 0 (delta 0), pack-reused 0

remote: Resolving deltas: 100% (4/4), completed with 3 local objects.

To https://github.com/verma-raj/git-practice.git

7fcec7a..d44bd59 feature-branch -> feature-branch

Now the remote branch is updated with the merged file by dev 2.



Now by Dev3 : This is not yet pushed to remote hence Head-→feature-branch and origin/feature-branch are not in synch

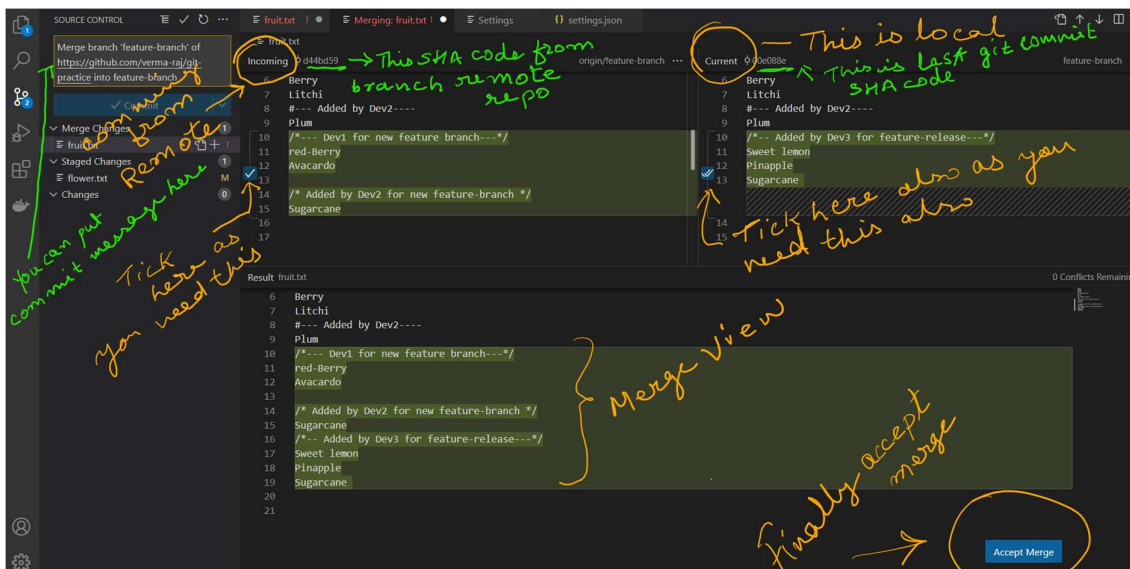
```

PS D:\Rajiv\Git-Learning\Dev3\git-practice> git log --online --graph
* 00e088e (HEAD -> feature-branch) Initial commit by Dev3 for feature-branch
* 0c1c353 (origin/feature-branch, origin/Main, origin/HEAD) Merge branch 'feature-branch' of https://github.com/verma-raj/git-practice into feature-branch
* 41323ff Merge branch 'feature-branch' of https://github.com/verma-raj/git-practice into feature-branch
* 6728667 after resolving conflict between Dev1 and Dev2
* 2dc50b7 commit done by Dev1 , modified fruit
* 8bf8fd0 commit done by Dev2 , also modified fruit
* b28ed59 commit done by Dev3 , modified flower
* 792a2c1 commit done by Dev4 added new file
* bc2aa66 Create flower.txt
* cef8ace Create fruit.txt
* fe05cad Initial commit
PS D:\Rajiv\Git-Learning\Dev3\git-practice>

```

Handwritten notes on the left:
 This is not yet pushed hence both the pointers are pointing to separate commit

Remember: This developer has modified fruit.txt and deleted one file test.txt



```
PS D:\Rajiv\Git-Learning\Dev3\git-practice> git push origin feature-branch
```

Enumerating objects: 10, done.

Counting objects: 100% (10/10), done.

Delta compression using up to 6 threads

Compressing objects: 100% (6/6), done.

Writing objects: 100% (6/6), 676 bytes | 676.00 KiB/s, done.

Total 6 (delta 4), reused 0 (delta 0), pack-reused 0

remote: Resolving deltas: 100% (4/4), completed with 3 local objects.

To https://github.com/verma-raj/git-practice.git

d44bd59..2b921a9 feature-branch -> feature-branch

```
PS D:\Rajiv\Git-Learning\Dev3\git-practice>
```

verma-raj / git-practice Public

feature-branch had recent pushes 1 minute ago

feature-branch 2 branches 0 tags

This branch is 5 commits ahead of Main.

Compare & pull request

Go to file Add file Code

Commit	Message	Time
2b921a9	2 minutes ago	15 commits
2b921a9	Merge branch 'feature-branch' from Dev3 after resolving conflict	2 minutes ago
2b921a9	initial commit by Dev1 for feature-branch	7 hours ago
2b921a9	initial commit	yesterday

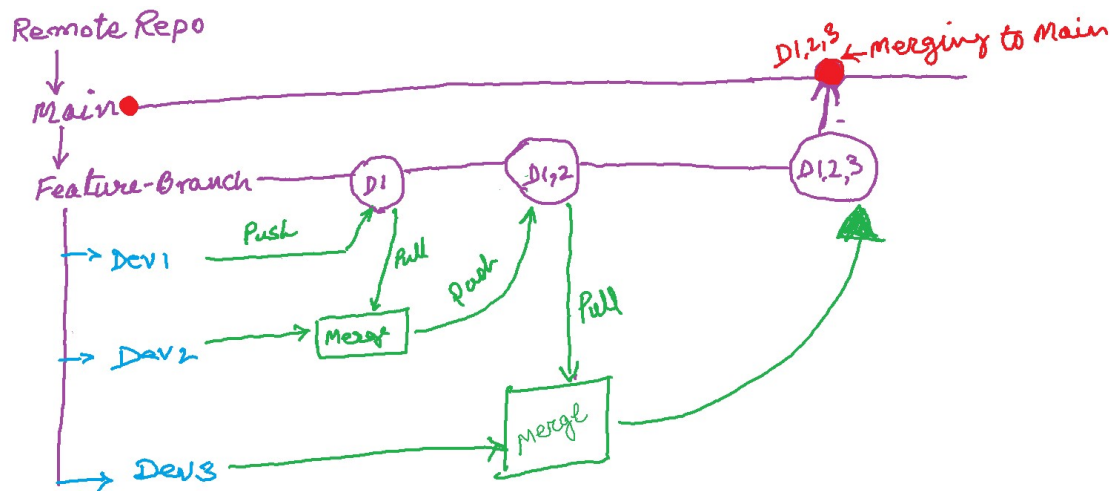
Test.txt is removed after merge

Releases: No releases published. Create a new release

Packages: No packages published. Publish your first package

Now my **feature-branch** is merged with all the developer's work

Pictorially we did the below



Pushing feature branch version to main.

Finally branch is merged with "Main" branch

```

PS D:\Rajiv\Git-Learning\Dev3\git-practice> git push origin feature-branch:Main
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/verma-raj/git-practice.git
 0c1c353..2b921a9 feature-branch -> Main
PS D:\Rajiv\Git-Learning\Dev3\git-practice> git push origin Main
error: src refspec Main does not match any
error: failed to push some refs to 'https://github.com/verma-raj/git-practice.git'
PS D:\Rajiv\Git-Learning\Dev3\git-practice>
  
```

→ origin feature branch is getting pushed to "Main"

← This doesn't work as origin is in feature branch not in main

verma-raj / git-practicePublic

PinUnwatch1Fork0Star

<> CodeIssuesPull requestsActionsProjectsWikiSecurityInsightsSettings

Main2 branches0 tags

Go to fileAdd fileCode

About

verma-raj Merge branch 'feature-branch' from Dev3 after resolving conflict2b921a91 hour ago15 commits

README.mdInitial commityesterday

flower.txtinitial commit by Dev1 for feature-branch8 hours ago

fruit.txtMerge branch 'feature-branch' from Dev3 after resolving conflict1 hour ago

README.mdgit-practice

Merge Done to main

Releases

No releases publishedCreate a new release

Packages

No packages publishedPublish your first package