# Git Case-Study

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Problem Statement: You work as a Devops Architect in Zendriix Softwares. The company has been struggling to manage their product releases. The releases should happen on 25th of every month. Suggest a Git Workflow Architecture for this requirement. Simulate this workflow, by creating a pseudo code files and branches, and upload the same to your GitHub Account. As a part of solution, share the link to your GitHub repository.

Approach – GitFlow-Workflow
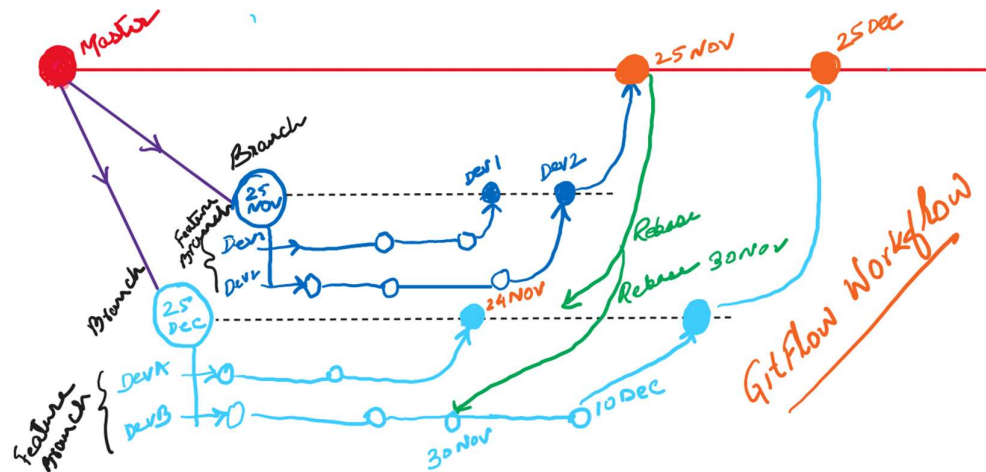
Explanation –

Gitflow-Workflow will be the approach to implement in this scenario.

1. There will be two parallel branch open for 2 consecutive months (25 Nov and 25 Dev in this example).
2. Further developers will create their own feature branch and will start working and doing respective commit.
3. 25Nov branch will get completed and hence will be merged to Main (in GitHub) branch.

4. 25Dec branch which is still open and developers are working on it will have to rebase their branch and continue their work.
5. On 25th Dec, this branch will be deployed in production and will be baselined (merged to Main branch in GitHub)

Below is the demonstration –

Git Project – branchingproj

Git URL - https://github.com/verma-raj/branchingproj.git

<mark>PART 1. Development for 25 Nov release</mark>

Below are the initial content of the file –

⑂ Main ▾   branchingproj / fruit.txt

👤 verma-raj Update fruit.txt

👥 1 contributor

7 lines (7 sloc) | 45 Bytes

```
1    Mango
2    Orange
3    Banana
4    Cherry
5    Berry
6    Litchi
7    Plum
```

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⑂ Main ▾   branchingproj / UpdateFile.txt

👤 verma-raj Merge branch 'feature-branch' into dev1branch

👥 1 contributor

4 lines (3 sloc) | 104 Bytes

```
1    I am Developer 3 adding a new class file here
2    Pushing this after Rebasing by Dev2
3
4    Adding after Rebase .
```

1. Two new parallel branch created
   a. 25Nov2022
   b. 25Dec2022
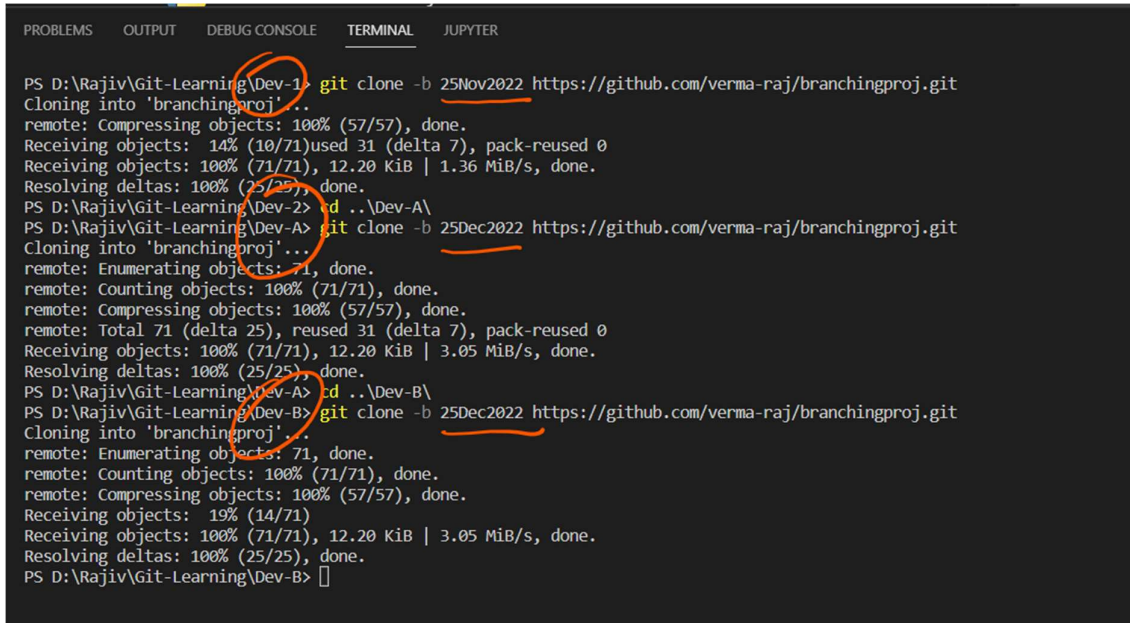
2. Developers are cloning their respective branch and will start working.

For Dev-1 and Dev-2

git clone -b 25Nov2022 https://github.com/verma-raj/branchingproj.git

For Dev-A and Dev-B

git clone -b 25Dec2022 https://github.com/verma-raj/branchingproj.git
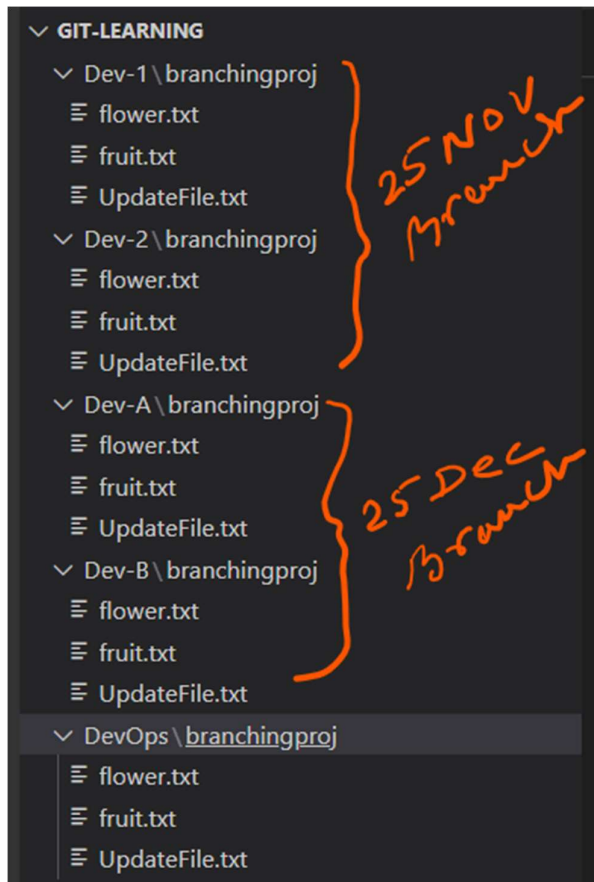
3. Dev-1 and Dev-2 starts working for 25Nov release and does few commit

   Git command used -
           git add .
           git commit -m "Added Tulip for assignment"

   Branch created -
           PS D:\Rajiv\Git-Learning\Dev-1\branchingproj> git branch
               25Nov2022
               * dev-1
           PS D:\Rajiv\Git-Learning\Dev-1\branchingproj>

Code pushed by Dev-1 to remote branch 25Nov2022 (GitHub)

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    JUPYTER

PS D:\Rajiv\Git-Learning\Dev-1\branchingproj> git branch
* 25Nov2022
  dev-1
PS D:\Rajiv\Git-Learning\Dev-1\branchingproj> git push origin 25Nov2022
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 6 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 387 bytes | 387.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/verma-raj/branchingproj.git
   a218627..bde1da0  25Nov2022 -> 25Nov2022
PS D:\Rajiv\Git-Learning\Dev-1\branchingproj> []
```
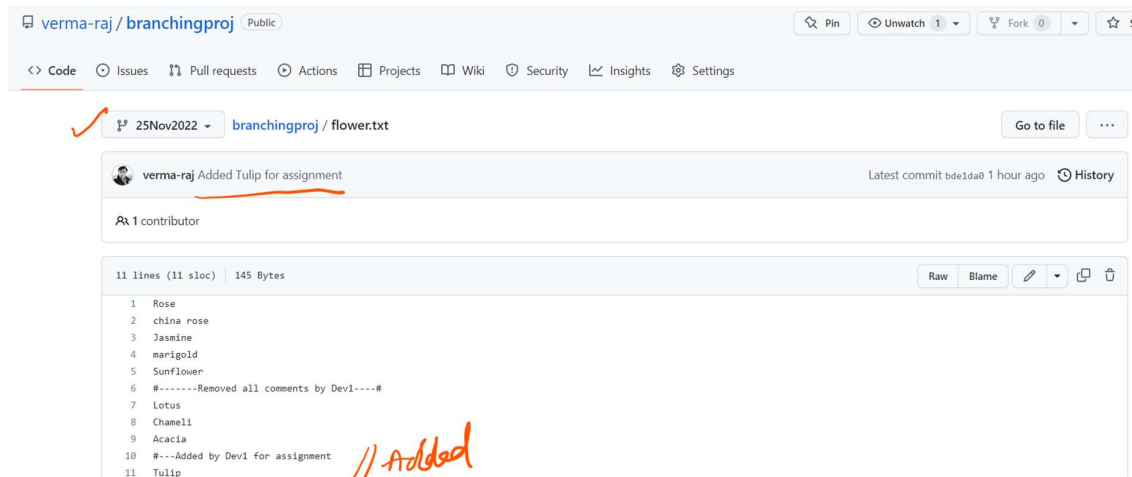

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ᵖ 25Nov2022 ▾   branchingproj / flower.txt   Go to file   ⋯

verma-raj Added Tulip for assignment   Latest commit bde1da0 1 hour ago   ⊙ History

1 contributor

11 lines (11 sloc)   145 Bytes   Raw   Blame   ✎ ▾ ⎘ �🗑

```
 1   Rose
 2   china rose
 3   Jasmine
 4   marigold
 5   Sunflower
 6   #-------Removed all comments by Dev1----#
 7   Lotus
 8   Chameli
 9   Acacia
10   #---Added by Dev1 for assignment          // Added
11   Tulip
```

4. After Dev-2 Commit to Dev-2 branch and further merged to local 25Nov2022 branch


```
commit 3d337aad06e3650d1c0cbd64407920220ab88c16 (HEAD -> Dev-2)   ← Dev-2 commit
PS D:\Rajiv\Git-Learning\Dev-2\branchingproj> git log --graph --pretty=oneline
* 3d337aad06e3650d1c0cbd64407920220ab88c16 (HEAD -> Dev-2) Added by Dev-2 for 25Nov2022 release
* a21862705866070e030c5bcea410d08a561759f5 (origin/Main, origin/HEAD, origin/25Nov2022, origin/25Dec2022, 25Nov2022) Update fruit.txt
* a4664ed89c541be0b945d4ea3e1225b8bd45e77c Delete previousreleasecode.txt
```

5. Dev-2 commit to 25Nov2022 branch as its development got completed.


```
PS D:\Rajiv\Git-Learning\Dev-2\branchingproj> git branch
* 25Nov2022
  Dev-2
PS D:\Rajiv\Git-Learning\Dev-2\branchingproj> git merge Dev-2
Updating a218627..3d337aa
Fast-forward                                        Dev2 merge
 flower.txt | 2 ++                                  with local 25Nov22
 1 file changed, 2 insertions(+)                    branch
PS D:\Rajiv\Git-Learning\Dev-2\branchingproj> git log --graph --pretty=oneline
* 3d337aad06e3650d1c0cbd64407920220ab88c16 (HEAD -> 25Nov2022, Dev-2) Added by Dev-2 for 25Nov2022 release
* a21862705866070e030c5bcea410d08a561759f5 (origin/Main, origin/HEAD, origin/25Nov2022, origin/25Dec2022) Update fruit.txt
* a4664ed89c541be0b945d4ea3e1225b8bd45e77c Delete previousreleasecode.txt
```

6. Dev-2 pushes code to remote branch and gets conflict

7. Conflict resolution

```
PS D:\Rajiv\Git-Learning\Dev-2\branchingproj> git status
On branch 25Nov2022
Your branch and 'origin/25Nov2022' have diverged,
and have 1 and 1 different commits each, respectively.
  (use "git pull" to merge the remote branch into yours)

You have unmerged paths.
  (fix conflicts and run "git commit")
  (use "git merge --abort" to abort the merge)

Unmerged paths:
  (use "git add <file>..." to mark resolution)
        both modified:   flower.txt

no changes added to commit (use "git add" and/or "git commit -a")
PS D:\Rajiv\Git-Learning\Dev-2\branchingproj> git add .
PS D:\Rajiv\Git-Learning\Dev-2\branchingproj> git commit -m " Accepted both the changes from Dev-1 and 2"
[25Nov2022 207fa7f]  Accepted both the changes from Dev-1 and 2
PS D:\Rajiv\Git-Learning\Dev-2\branchingproj> []
```

Committed after conflict resolution in Local branch

```
PS D:\Rajiv\Git-Learning\Dev-2\branchingproj> git branch
* 25Nov2022
  Dev-2
PS D:\Rajiv\Git-Learning\Dev-2\branchingproj> git push origin 25Nov2022
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), 862 bytes | 431.00 KiB/s, done.
Total 6 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), done.
To https://github.com/verma-raj/branchingproj.git
    bde1da0..207fa7f  25Nov2022 -> 25Nov2022
PS D:\Rajiv\Git-Learning\Dev-2\branchingproj> []
```

Code Pushed

<> Code   ⊙ Issues   ⇅ Pull requests   ⊙ Actions   ⊞ Projects   ▥ Wiki   ⊙ Security   ⮑ Insights   ⚙ Settings

ⵙ 25Nov2022 ▾   branchingproj / flower.txt   Go to file   ···

verma-raj Accepted both the changes from Dev-1 and 2   Latest commit 207fa7f 4 minutes ago   ⓘ History

⚑ 1 contributor

16 lines (16 sloc)   266 Bytes   Raw   Blame   ✎ ▾   ▢ 🗑

```
 1   Rose
 2   china rose
 3   Jasmine
 4   marigold
 5   Sunflower
 6   #-------Removed all comments by Dev1----#
 7   Lotus
 8   Chameli
 9   Acacia
10   <<<<<<< HEAD
11   #--- Added by Dev-2 for 25Nov2022 release
12   Lavender
13   =======
14   #---Added by Dev1 for assignment
15   Tulip
16   >>>>>>> bde1da0d25e58e18ba376ff86e4e923167d04e3f
```

Both Changes

8. Code will not be merged to Main branch in GitHub post deployment in Production.

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   JUPYTER

PS D:\Rajiv\Git-Learning\DevOps\branchingproj> git push origin Main
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/verma-raj/branchingproj.git
   a218627..207fa7f  Main -> Main
PS D:\Rajiv\Git-Learning\DevOps\branchingproj> []
```

Pushed code to remote

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<> Code   ⊙ Issues   ⁐ Pull requests   ⊙ Actions   ⊞ Projects   ▭ Wiki   ⊘ Security   ⟋ Insights   ⚙ Settings

⑂ **Main** ▾   ⑂ **3 branches**   ◇ **0 tags**   Go to file   Add file ▾   Code ▾

	verma-raj Accepted both the changes from Dev-1 and 2	207fa7f 22 minutes ago	⟳ 29 commits
UpdateFile.txt	Merge branch 'feature-branch' into dev1branch		13 days ago
flower.txt	Accepted both the changes from Dev-1 and 2		22 minutes ago
fruit.txt	Update fruit.txt		10 days ago

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PART 2.   25Dec release

Dev-B did his commit and similarly Dev-A also did commit to their local branch.

```
PS D:\Rajiv\Git-Learning\Dev-B\branchingproj> git branch
  25Dec2022
* Dev-B
PS D:\Rajiv\Git-Learning\Dev-B\branchingproj> git add .
PS D:\Rajiv\Git-Learning\Dev-B\branchingproj> git commit -m "Addded by Dev-B for 25 Dec release"
[Dev-B f91b055] Addded by Dev-B for 25 Dec release
 1 file changed, 2 insertions(+)
PS D:\Rajiv\Git-Learning\Dev-B\branchingproj> []
```

Since the remote Main branch has been updated with 25Nov release . The local branch need to be rebased .

```
PS D:\Rajiv\Git-Learning\Dev-B\branchingproj> git branch
  25Dec2022
* Dev-B
PS D:\Rajiv\Git-Learning\Dev-B\branchingproj> git push origin Dev-B:25Dec2022
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 6 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 406 bytes | 406.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/verma-raj/branchingproj.git
   a218627..f91b055  Dev-B -> 25Dec2022
PS D:\Rajiv\Git-Learning\Dev-B\branchingproj> []
```
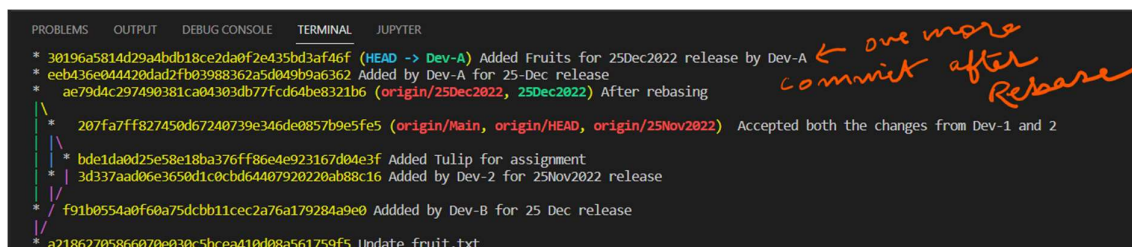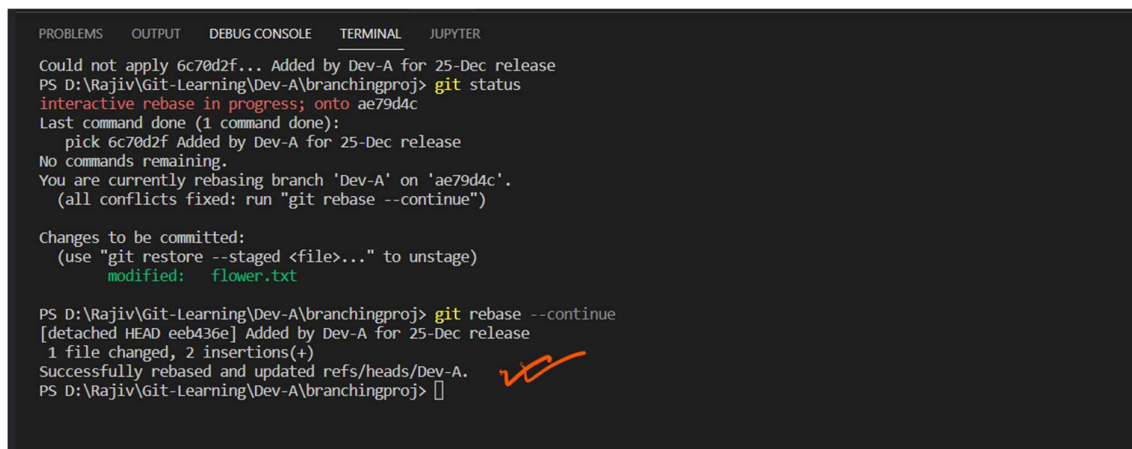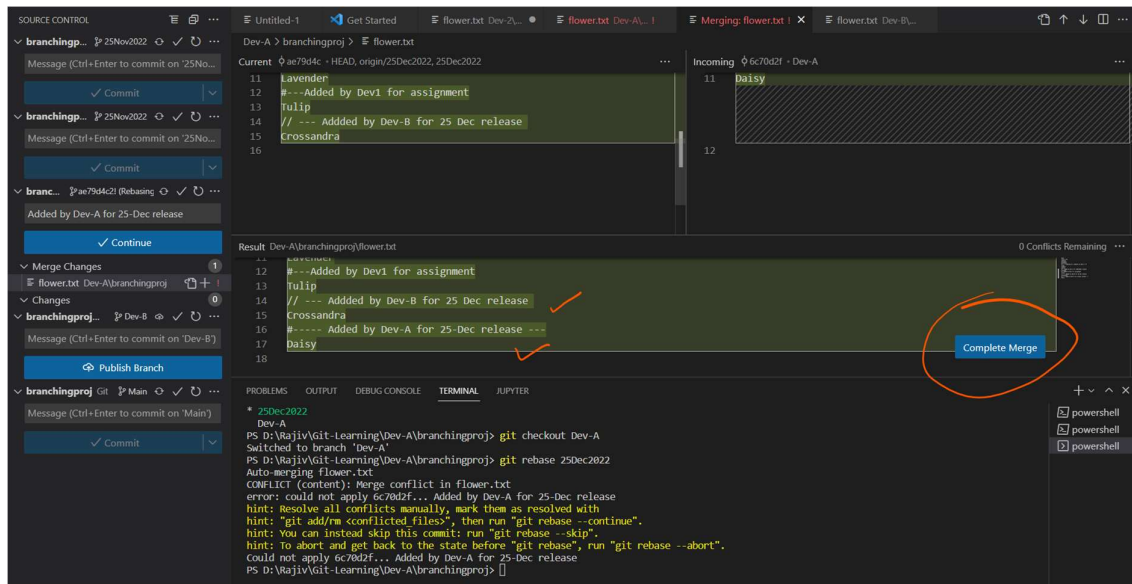
Dev - B Pushed code to remote branch

Untitled-1   Get Started   flower.txt Dev-2\...   flower.txt Dev-A\...   flower.txt Dev-B\... !   Merging: flower.txt ! ✕

Dev-B > branchingproj > flower.txt

Current ⑂207fa7f · HEAD, origin/Main, origin/HEAD, 25Dec2022   Incoming ⑂f91b055 · origin/25Dec2022, Dev-B

```
        Challe11                                           Challe11
 9      Acacia                                     9       Acacia

10      <<<<<<< HEAD (Current Change)             10       // --- Addded by Dev-B for 25 Dec release
11      #--- Added by Dev-2 for 25Nov2022 release 11       Crossandra
12      Lavender
13      =======
14      #---Added by Dev1 for assignment
```

Result Dev-B\branchingproj\flower.txt   0 Conflicts Remaining

```
        Challe11
 9      Acacia
        Manual Resolution | Reset to base
10      #--- Added by Dev-2 for 25Nov2022 release
11      Lavender
12      #---Added by Dev1 for assignment
13      Tulip
14      // --- Addded by Dev-B for 25 Dec release
15      Crossandra
16
```

// conflict resolved

Complete Merge

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**   JUPYTER

```
hint: You can instead skip this commit: run "git rebase --skip".
hint: To abort and get back to the state before "git rebase", run "git rebase --abort".
Could not apply f91b055... Added by Dev-B for 25 Dec release
PS D:\Rajiv\Git-Learning\Dev-B\branchingproj> []
```

powershell
powershell
powershell

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**   JUPYTER

```
interactive rebase in progress; onto 207fa7f
Last command done (1 command done):
    pick f91b055 Addded by Dev-B for 25 Dec release
No commands remaining.
You are currently rebasing branch 'Dev-B' on '207fa7f'.
  (all conflicts fixed: run "git rebase --continue")

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

PS D:\Rajiv\Git-Learning\Dev-B\branchingproj> git commit -m " pulled Main from remote for rebasing"
[detached HEAD 1eb1a2a]  pulled Main from remote for rebasing
 1 file changed, 2 insertions(+), 3 deletions(-)
PS D:\Rajiv\Git-Learning\Dev-B\branchingproj> []
```

Pushing to remote branch as development completes.

<> Code   ⊙ Issues   ⑂ Pull requests   ▷ Actions   ⊞ Projects   📖 Wiki   ⊘ Security   ⬭ Insights   ⚙ Settings

⑂ **25Dec2022** had recent pushes 20 minutes ago   **Compare & pull request**

⑂ 25Dec2022 ▾   ⑂ 3 branches   ◇ 0 tags   Go to file   Add file ▾   **Code** ▾

This branch is 2 commits ahead of Main.   ⑂ Contribute ▾

Before Dev-A final Push

👤 verma-raj After rebasing   ae79d4c 21 minutes ago   ⊙ 31 commits

📄 UpdateFile.txt   Merge branch 'feature-branch' into dev1branch   13 days ago
📄 flower.txt   After rebasing   21 minutes ago
📄 fruit.txt   Update fruit.txt   10 days ago

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PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**   JUPYTER

```
PS D:\Rajiv\Git-Learning\Dev-A\branchingproj> git branch
  25Dec2022
* Dev-A
PS D:\Rajiv\Git-Learning\Dev-A\branchingproj> git push origin Dev-A:25Dec2022
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 6 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (6/6), 727 bytes | 727.00 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/verma-raj/branchingproj.git
   ae79d4c..30196a5  Dev-A -> 25Dec2022
PS D:\Rajiv\Git-Learning\Dev-A\branchingproj> []
```

Pushed To Remote

Now 25Dec2022 branch needs to be merged with remote Main branch

```
PS D:\Rajiv\Git-Learning\DevOps\branchingproj> git branch
* Main
  demobranch
PS D:\Rajiv\Git-Learning\DevOps\branchingproj> git merge demobranch
Updating 207fa7f..30196a5
Fast-forward
 flower.txt | 7 ++++---
 fruit.txt  | 3 +++
 2 files changed, 7 insertions(+), 3 deletions(-)
PS D:\Rajiv\Git-Learning\DevOps\branchingproj> git log --graph --pretty=oneline
```

```
PS D:\Rajiv\Git-Learning\DevOps\branchingproj> git log --graph --pretty=oneline
* 30196a5814d29a4bdb18ce2da0f2e435bd3af46f (HEAD -> Main, origin/25Dec2022, demobranch) Added Fruits for 25Dec2022 release by Dev-A
* eeb436e044420dad2fb03988362a5d049b9a6362 Added by Dev-A for 25-Dec release
*   ae79d4c297490381ca04303db77fcd64be8321b6 After rebasing
|\
| *   207fa7ff827450d67240739e346de0857b9e5fe5 (origin/Main, origin/HEAD, origin/25Nov2022)  Accepted both the changes from Dev-1 and 2
| |\
```

```
PS D:\Rajiv\Git-Learning\DevOps\branchingproj> git branch
* Main
  demobranch
PS D:\Rajiv\Git-Learning\DevOps\branchingproj> git push origin Main:Main
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/verma-raj/branchingproj.git
   207fa7f..30196a5  Main -> Main
PS D:\Rajiv\Git-Learning\DevOps\branchingproj> []
```

Pushed after merge

---

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| ⑆ Main ▾ | ⑆ 3 branches | ⬦ 0 tags | | Go to file | Add file ▾ | Code ▾ |

	verma-raj Added Fruits for 25Dec2022 release by Dev-A		30196a5 25 minutes ago	⏱ 33 commits
🗋 UpdateFile.txt	Merge branch 'feature-branch' into dev1branch		13 days ago
🗋 flower.txt	Added by Dev-A for 25-Dec release		30 minutes ago
🗋 fruit.txt	Added Fruits for 25Dec2022 release by Dev-A		25 minutes ago

Merged to Main

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================ THE END ===========================