1. Verify if master is in clean state

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git checkout master
Already on 'master'
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)

salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git status
On branch master
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean
```

2. Create branch GitWork and add hello.xml

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git checkout -b GitWork
Switched to a new branch 'GitWork'

salma@salmali_laptop MINGW64 ~/GitDemo (GitWork)
$ echo "<greeting>Hello from branch</greeting>" > hello.xml

salma@salmali_laptop MINGW64 ~/GitDemo (GitWork)
$ git status
On branch GitWork
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        hello.xml

nothing added to commit but untracked files present (use "git add" to track)
```

3. Update the content of hello.xml and observe status

```
salma@salmali_laptop MINGW64 ~/GitDemo (GitWork)
$ echo "<greeting>Hello from GitWork branch - updated</greeting>" > hello.xml

salma@salmali_laptop MINGW64 ~/GitDemo (GitWork)
$ git status
On branch GitWork
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        hello.xml

nothing added to commit but untracked files present (use "git add" to track)
```

4. Commit the changes to reflect in the branch

```
salma@salmali_laptop MINGW64 ~/GitDemo (GitWork)
$ git add hello.xml
warning: in the working copy of 'hello.xml', LF will be replaced by CRLF the nex
t time Git touches it

salma@salmali_laptop MINGW64 ~/GitDemo (GitWork)
$ git commit -m "Update hello.xml in GitWork branch"
[GitWork 92b2030] Update hello.xml in GitWork branch
 1 file changed, 1 insertion(+)
 create mode 100644 hello.xml
```

5. Switch to master

```
salma@salmali_laptop MINGW64 ~/GitDemo (GitWork)
$ git checkout master
Switched to branch 'master'
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)
```

6. Add hello.xml to master with *different* content

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ echo "<greeting>Hello from master branch</greeting>" > hello.xml
```

7. Commit the changes to master

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git add hello.xml
warning: in the working copy of 'hello.xml', LF will be replaced by CRLF the nex
t time Git touches it

salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git commit -m "Add hello.xml in master branch"
[master 7d1a123] Add hello.xml in master branch
 1 file changed, 1 insertion(+)
 create mode 100644 hello.xml
```

8. Observe the log

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git log --oneline --graph --decorate --all
* 7d1a123 (HEAD -> master) Add hello.xml in master branch
| * 92b2030 (GitWork) Update hello.xml in GitWork branch
|/
* 4fa74cf Add branchfile.txt in GitNewBranch
* 92f20d5 (origin/master) Add .gitignore to ignore .log files and log folder
* e445875 Add welcome.txt
* eda8263 Added welcome.txt file with welcome message
```

9. Check the differences using Git diff

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git diff master GitWork
diff --git a/hello.xml b/hello.xml
index 2d8d754..437ce01 100644
--- a/hello.xml
+++ b/hello.xml
@@ -1 +1 @@
-<greeting>Hello from master branch</greeting>
+<greeting>Hello from GitWork branch - updated</greeting>
```
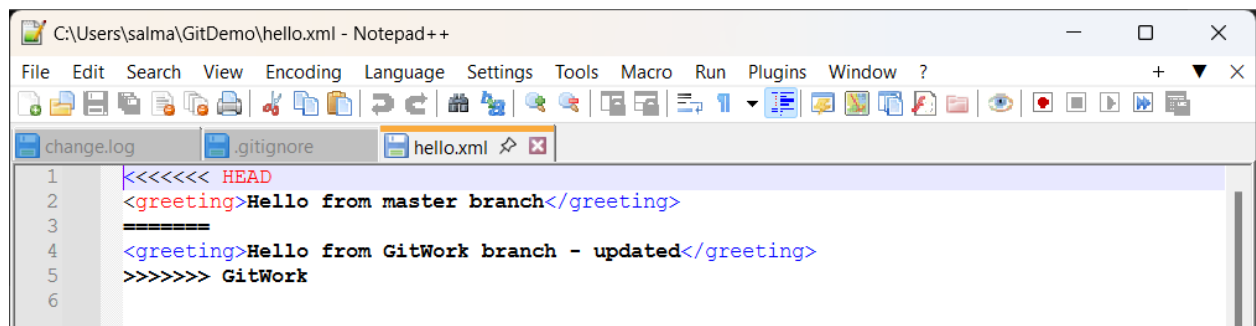
10. Use P4Merge tool to visualize

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git mergetool master GitWork
No files need merging
```

11. Merge the branch into master

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git checkout master
Already on 'master'
Your branch is ahead of 'origin/master' by 2 commits.
  (use "git push" to publish your local commits)

salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git merge GitWork
Auto-merging hello.xml
CONFLICT (add/add): Merge conflict in hello.xml
Automatic merge failed; fix conflicts and then commit the result.
```

12. Observe Git markup in hello.xml

```
C:\Users\salma\GitDemo\hello.xml - Notepad++
File  Edit  Search  View  Encoding  Language  Settings  Tools  Macro  Run  Plugins  Window  ?

change.log    .gitignore    hello.xml
1  <<<<<<< HEAD
2  <greeting>Hello from master branch</greeting>
3  =======
4  <greeting>Hello from GitWork branch - updated</greeting>
5  >>>>>>> GitWork
6
```

13. Use 3-way merge tool (P4Merge) to resolve

```
salma@salmali_laptop MINGW64 ~/GitDemo (master|MERGING)
$ git mergetool
Merging:
hello.xml

Normal merge conflict for 'hello.xml':
  {local}: created file
  {remote}: created file
The merge tool p4merge is not available as 'p4merge'
```

14. Commit the merge resolution

```
salma@salmali_laptop MINGW64 ~/GitDemo (master|MERGING)
$ git add hello.xml

salma@salmali_laptop MINGW64 ~/GitDemo (master|MERGING)
$ git commit -m "Merge GitWork into master - resolved conflict"
[master 9f3dc4a] Merge GitWork into master - resolved conflict
```

15. Check status and add backup files to .gitignore

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ echo "*.orig" >> .gitignore

salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git status
On branch master
Your branch is ahead of 'origin/master' by 4 commits.
  (use "git push" to publish your local commits)

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   .gitignore

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        hello_BACKUP_1402.xml
        hello_BASE_1402.xml
        hello_LOCAL_1402.xml
        hello_REMOTE_1402.xml

no changes added to commit (use "git add" and/or "git commit -a")
```

16. Commit the .gitignore changes

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git add .gitignore
git commit -m "Ignore merge backup files"
warning: in the working copy of '.gitignore', LF will be replaced by CRLF the ne
xt time Git touches it
[master e8a4f50] Ignore merge backup files
 1 file changed, 1 insertion(+), 1 deletion(-)
```

17. List all branches

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git branch -a
  GitWork
* master
  remotes/origin/master
```

18. Delete the merged branch

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git branch -d GitWork
Deleted branch GitWork (was 92b2030).
```

19. View the updated log

```
salma@salmali_laptop MINGW64 ~/GitDemo (master)
$ git log --oneline --graph --decorate
* e8a4f50 (HEAD -> master) Ignore merge backup files
*   9f3dc4a Merge GitWork into master - resolved conflict
|\
| * 92b2030 Update hello.xml in GitWork branch
* | 7d1a123 Add hello.xml in master branch
|/
* 4fa74cf Add branchfile.txt in GitNewBranch
* 92f20d5 (origin/master) Add .gitignore to ignore .log files and log folder
* e445875 Add welcome.txt
* eda8263 Added welcome.txt file with welcome message
```