Name – Sanjay Raghuwanshi | mail – raghu1c.sanjay@gmail.com

Project – Create and Work with a Local Git Repository

DESCRIPTION

Performing a local Git workflow via the command line

Background of the problem statement:

Your organization has been planning to adopt Git as a code management standard. Being a project manager and a DevOps practitioner, you have been advised to train your team on Git to accomplish the work in a consistent and productive manner.

You must use the following:

Git: To create and work with a local Git repository

Following requirements should be met:

A directory and a repository must be created.

1. Start with the Production branch (master branch), and then create a HotFix and Integration branch

➢ Create a directory and initiate git.

```
labsuser@ubuntu1804:~$
labsuser@ubuntu1804:~$ mkdir git_project
labsuser@ubuntu1804:~$ cd git_project/
labsuser@ubuntu1804:~/git_project$ ls -ltrh
total 0
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git init
Initialized empty Git repository in /home/labsuser/git_project/.git/
labsuser@ubuntu1804:~/git_project$
```

➢ Create a file in the local repos-

```
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ vi project.txt
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$
```

➢ Add the file and perform first commit.

```
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git add .
labsuser@ubuntu1804:~/git_project$ git commit -am "First Commit"
[master (root-commit) 695fcae] First Commit
 1 file changed, 1 insertion(+)
 create mode 100644 project.txt
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$
```

➤ Create another branch hotfix –

```
labsuser@ubuntu1804:~/git_project$ git checkout -b hotfix
Switched to a new branch 'hotfix'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ ls -latrh
total 16K
-rw-r--r--  1 labsuser labsuser   58 May 30 16:45 project.txt
drwxrwx--- 26 labsuser          48 4.0K May 30 16:45 ..
drwxr-xr-x  3 labsuser labsuser 4.0K May 30 16:45 .
drwxr-xr-x  8 labsuser labsuser 4.0K May 30 16:50 .git
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$
```

➤ Created Integration branch –

```
labsuser@ubuntu1804:~/git_project$ git checkout -b Integration
Switched to a new branch 'Integration'
labsuser@ubuntu1804:~/git_project$
```

2. Subsequently, create Feature 1 and 2 branches that integrate to the Integration branch as shown in the above figure

```
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git checkout -b Feature1
Switched to a new branch 'Feature1'
labsuser@ubuntu1804:~/git_project$ git checkout Integration
Switched to branch 'Integration'
labsuser@ubuntu1804:~/git_project$ git checkout -b Feature2
Switched to a new branch 'Feature2'
labsuser@ubuntu1804:~/git_project$
```

3. Commit some changes in the Feature 2 branch and merge it into the Integration branch. Delete this branch once merging is complete

```
labsuser@ubuntu1804:~/git_project$ git branch
  Feature1
  Feature2
  Integration
  hotfix
* master
labsuser@ubuntu1804:~/git_project$ git checkout Feature2
Switched to branch 'Feature2'
labsuser@ubuntu1804:~/git_project$
```

➤ Did some changes and performed commit –

```
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ vi project.txt
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git commit -am "Feature2 commit"
[Feature2 7317c4d] Feature2 commit
 1 file changed, 1 insertion(+)
```

➤ Checkout Integration branch again and merge Feature2 into Integration –

```
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git checkout Integration
Switched to branch 'Integration'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git merge Feature2
Updating 695fcae..7317c4d
Fast-forward
 project.txt | 1 +
 1 file changed, 1 insertion(+)
labsuser@ubuntu1804:~/git_project$
```

➢ Delete the branch Feature2 once merge completed –

```
labsuser@ubuntu1804:~/git_project$ git branch Feature2 -d
Deleted branch Feature2 (was 7317c4d).
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$
```

4. Commit some changes in the Feature 1 branch and rebase it to the Integration branch.

```
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git checkout Feature1
Switched to branch 'Feature1'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ ls -latrh
total 16K
drwxrwx--- 26 labsuser          48 4.0K May 31 13:38 ..
drwxr-xr-x  3 labsuser labsuser 4.0K May 31 13:47 .
-rw-r--r--  1 labsuser labsuser   58 May 31 13:47 project.txt
drwxr-xr-x  8 labsuser labsuser 4.0K May 31 13:47 .git
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git status
On branch Feature1
nothing to commit, working tree clean
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ vim project.txt
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git commit -am "Feature1 commit"
[Feature1 bcd06aa] Feature1 commit
 1 file changed, 1 insertion(+)
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git lo
bcd06aa (HEAD -> Feature1) Feature1 commit
695fcae (origin/master, hotfix) First Commit
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$
```

➢ Git logs output from Integration before performing git rebase –

```
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git checkout Integration
Switched to branch 'Integration'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git lo
7317c4d (HEAD -> Integration) Feature2 commit
695fcae (origin/master, hotfix) First Commit
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$
```

➢ Performed git rebase on Integration branch which results into adding Feature1 commits onto Integration.

```
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git rebase Feature1 Integration
First, rewinding head to replay your work on top of it...
Fast-forwarded Integration to Feature1.
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git lo
246470b (HEAD -> Integration, Feature1) Feature1 commit
7317c4d Feature2 commit
695fcae (origin/master, hotfix) First Commit
labsuser@ubuntu1804:~/git_project$
```

5. Merge the Integration branch into Hotfix and Production branch to update these branches
➢ Merge the Integration branch into Hotfix -

```
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git checkout hotfix
Switched to branch 'hotfix'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git merge Integration
Updating 695fcae..246470b
Fast-forward
 project.txt | 2 ++
 1 file changed, 2 insertions(+)
```

➢ Merge the Integration branch into master (resolve the conflicts and perform merge) -

```
labsuser@ubuntu1804:~/git_project$ git checkout master
Switched to branch 'master'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git merge Integration
Auto-merging project.txt
CONFLICT (content): Merge conflict in project.txt
Automatic merge failed; fix conflicts and then commit the result.
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git commit -am "merge conflicts"
[master 7e5734a] merge conflicts
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git merge Integration
Already up to date.
labsuser@ubuntu1804:~/git_project$
```

6. Commit some changes in Feature 1 branch, and then merge it into Integration, Hotfix, and Production branch. Delete this branch once merging is complete.

```
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git checkout Feature1
Switched to branch 'Feature1'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ vim project.txt
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git commit -am "step6 commit"
[Feature1 3f7146c] step6 commit
 1 file changed, 1 insertion(+)
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git checkout Integration
Switched to branch 'Integration'
labsuser@ubuntu1804:~/git_project$ git merge Feature1
Updating 246470b..3f7146c
Fast-forward
 project.txt | 1 +
 1 file changed, 1 insertion(+)
labsuser@ubuntu1804:~/git_project$ git checkout hotfix
Switched to branch 'hotfix'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git merge Feature1
Updating 246470b..3f7146c
Fast-forward
 project.txt | 1 +
 1 file changed, 1 insertion(+)
labsuser@ubuntu1804:~/git_project$ git checkout master
Switched to branch 'master'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git merge Feature1
Merge made by the 'recursive' strategy.
 project.txt | 1 +
 1 file changed, 1 insertion(+)
labsuser@ubuntu1804:~/git_project$ git branch Feature1 -d
Deleted branch Feature1 (was 3f7146c).
labsuser@ubuntu1804:~/git_project$
```

7. Commit some changes in the Hotfix branch and merge it into the Production as well as the Integration branch

```
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git checkout hotfix
Switched to branch 'hotfix'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ vim project.txt
labsuser@ubuntu1804:~/git_project$ git commit -am "hotfix commit"
[hotfix 00a9a45] hotfix commit
 1 file changed, 1 insertion(+)
labsuser@ubuntu1804:~/git_project$ git checkout Integration
Switched to branch 'Integration'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git merge hotfix
Updating 3f7146c..00a9a45
Fast-forward
 project.txt | 1 +
 1 file changed, 1 insertion(+)
labsuser@ubuntu1804:~/git_project$ git checkout master
Switched to branch 'master'
labsuser@ubuntu1804:~/git_project$
labsuser@ubuntu1804:~/git_project$ git merge hotfix
Merge made by the 'recursive' strategy.
 project.txt | 1 +
 1 file changed, 1 insertion(+)
labsuser@ubuntu1804:~/git_project$
```