Assignment 1 Name -Shraddha Tripathi

1. What is Version Control? Write elaborately.

ANS-Version Control System is a software that helps software developers to work together and maintain a complete history of their work.

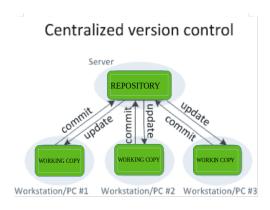
Purpose - 1-Multiple people can work simultaneously on a single project. Everyone works on and edits their own copy of the files and it is up to them when they wish to share the changes made by them with the rest of the team. 2-Version control provides insurance against computer crashes or data loss. If any mistake is made, you can easily roll back to a previous version.

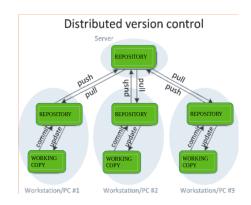
Why VCS is Important-A version control system is a kind of software that helps the developer team to efficiently communicate and manage(track) all the changes that have been made to the source code along with the information like who made and what change has been made.

Benefits of the VCS: 1-Enhances the project development speed by providing efficient collaboration, 2- Reduce possibilities of errors and conflicts meanwhile project development through traceability to every small change, Helps in recovery. 3- contributor of the project can contribute from anywhere irrespective of the different geographical locations through this VCS. A most popular example is Git, Helix core, Microsoft TFS.

Types of VCS-

1- Centralized Version Control Systems 2-Distributed Version Control Systems:





2. For LOTUS project would you recommend CVCS or DVCS? Justify your answer.

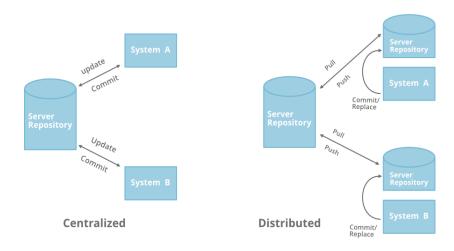
Ans- DVCS is faster than CVCS because don't need to communicate with the remote server for each and every command. You do everything locally which gives you benefit to work faster than CVCS. Reason to recommend DVCS in LOTUS Project-1-DVCS has the biggest advantage that it allows you to work offline and gives flexibility, but this is not in case of CVCS.

2-Working on branches is easy in DVCS. Every developer has an entire history of the code in DVCS, so developers can share their changes before merging all the 'set of changes' to the remote server In CVCS it's difficult and requires to communicate with the server directly.

3-If the main server goes down or crashes in DVCS, you can still get the backup or entire history of code from your local repository or server where the full revision of the code is already saved it's not in case of CVCS.

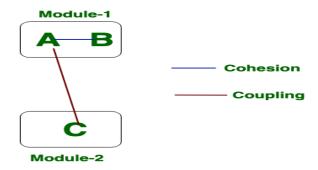
4-Merge conflicts with other developers code are less in DVCS. Because of every developer work on their own piece of code. Merge conflicts are more in CVCS in comparison of DVCS.

From all the above points, it's clear that DVCS has more advantages and it's convenient than CVCS.



3. Explain Coupling and cohesion with suitable example/use cases.

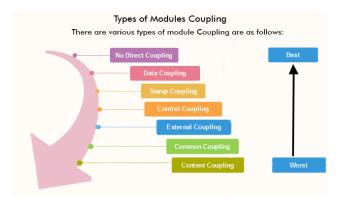
Ans-Cohesion and Coupling deal with the quality of Software design.Good Software are based on the idea of "Loose coupling and high cohesion".



Coupling is also the indication of the relationships between modules. It is concept of Inter-module ,Low coupling is good for software. **Exp-:**Coupling is the degree to which one class knows about another class. Let us consider two classes class A and class B. If class A knows class B through its interface only i.e. it interacts with class B through its API then class A and class B are said to be loosely coupled.

If on the other hand class A apart from interacting class B by means of its interface also interacts through the non-interface stuff of class B then they are said to be tightly coupled. Suppose the developer changes the class B's non-interface part i.e. non API stuff then in case of loose coupling class A does not breakdown but tight coupling causes the class A to break.

Types of Coupling-



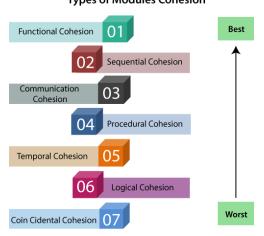
Cohesion is the indication of the relationship within module It is concept of intra-module, highly cohesion is good for software.exp-Cohesion means sticking together. If your group of friends heads to the lunchroom as a team and sits all together, you're demonstrating strong cohesion.Benefits of Higher Cohesion:

- Highly cohesive classes are much easier to maintain and less frequently changed.
- Such classes are more usable than others as they are designed with a well-focused purpose.

• Single Responsibility principle aims at creating highly cohesive classes.

Types of Cohesion-

Types of Modules Cohesion



4 -Create directory in your name. Initialize Git. Capture os-release, git version, hostname and the git directory structure. Create a branch, create a file in the branch and save in repository.

Ans-

Given code & Screenshot is soln -

shubham@Shraddha tripathi:~\$ cd Desktop/Assignment/SE/

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ mkdir Shraddha tripathi

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ cat /etc/os-release

NAME="Ubuntu"

VERSION="18.04.5 LTS (Bionic Beaver)"

ID=ubuntu

ID LIKE=debian

PRETTY_NAME="Ubuntu 18.04.5 LTS"

VERSION ID="18.04"

HOME_URL="https://www.ubuntu.com/"

```
SUPPORT URL="https://help.ubuntu.com/"
```

BUG REPORT URL="https://bugs.launchpad.net/ubuntu/"

PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"

VERSION CODENAME=bionic

UBUNTU CODENAME=bionic

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ cat /proc/version

Linux version 5.4.0-66-generic (buildd@lgw01-amd64-016) (gcc version 7.5.0 (Ubuntu 7.5.0-3ubuntu1~18.04)) #74~18.04.2-Ubuntu SMP Fri Feb 5 11:17:31 UTC 2021

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ uname -a

Linux Shraddha_tripathi 5.4.0-66-generic #74~18.04.2-Ubuntu SMP Fri Feb 5 11:17:31 UTC 2021 x86_64 x86_64 x86_64 GNU/Linux

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ hostname

Shraddha tripathi

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ uname -a

Linux Shraddha_tripathi 5.4.0-66-generic #74~18.04.2-Ubuntu SMP Fri Feb 5 11:17:31 UTC 2021 x86_64 x86_64 x86_64 GNU/Linux

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ pwd

/home/shubham/Desktop/Assignment/SE

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ git --version

git version 2.31.1

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ which git

/usr/bin/git

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ whereis git

git: /usr/bin/git /usr/share/man/man1/git.1.gz

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ git config --global user.name "ShraddhaCDAC"

```
shubham@Shraddha_tripathi:~/Desktop/Assignment/SE$ git config --global
user.email shraddha@gmail.com
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git config --list
user.name=ShraddhaCDAC
user.email=shraddha@gmail.com
color.ui=true
use.name=SHraddha
core.repositoryformatversion=0
core.filemode=true
core.bare=false
core.logallrefupdates=true
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ ^C
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git commit -m 'Hello'
On branch master
Untracked files:
 (use "git add <file>..." to include in what will be committed)
       Shraddha tripathi/
nothing added to commit but untracked files present (use "git add" to track)
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git status
On branch master
Untracked files:
 (use "git add <file>..." to include in what will be committed)
```

Shraddha_tripathi/

nothing added to commit but untracked files present (use "git add" to track) shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ git log

commit 913b6597fe1b72730940ec39de0ad58c6d37cef0 (HEAD -> master)

Author: STCDAC <shraddhatripathi1470@gmail.com>

Date: Sat May 15 18:52:11 2021 +0530

initial filee

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ git branch

* master

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ git branch st

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ git add text2.txt

fatal: pathspec 'text2.txt' did not match any files

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ git add text1.txt

fatal: pathspec 'text1.txt' did not match any files

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ clear

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ git status

On branch master

Untracked files:

(use "git add <file>..." to include in what will be committed)

Shraddha tripathi/

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

```
shubham@Shraddha_tripathi:~/Desktop/Assignment/SE$ ls -lart total 28
```

drwxr-xr-x 5 shubham shubham 4096 May 15 16:21 ...

-rw----- 1 shubham shubham 12288 May 15 16:35 .test1.txt.swp

drwxrwxr-x 4 shubham shubham 4096 May 16 07:28.

drwxrwxr-x 2 shubham shubham 4096 May 16 07:43 Shraddha tripathi

drwxrwxr-x 8 shubham shubham 4096 May 16 07:55 .git

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ git log

commit 913b6597fe1b72730940ec39de0ad58c6d37cef0 (HEAD -> master, st)

Author: STCDAC <shraddhatripathi1470@gmail.com>

Date: Sat May 15 18:52:11 2021 +0530

initial filee

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ git branch test-branch1-st shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ git status

On branch master

Untracked files:

(use "git add <file>..." to include in what will be committed)

Shraddha_tripathi/

nothing added to commit but untracked files present (use "git add" to track) shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ git log commit 913b6597fe1b72730940ec39de0ad58c6d37cef0 (HEAD -> master, test-branch1-st, st)

Author: STCDAC <shraddhatripathi1470@gmail.com>

Date: Sat May 15 18:52:11 2021 +0530

```
initial filee
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ ls -lart
total 28
drwxr-xr-x 5 shubham shubham 4096 May 15 16:21 ...
-rw----- 1 shubham shubham 12288 May 15 16:35 .test1.txt.swp
drwxrwxr-x 4 shubham shubham 4096 May 16 07:28.
drwxrwxr-x 2 shubham shubham 4096 May 16 07:43 Shraddha tripathi
drwxrwxr-x 8 shubham shubham 4096 May 16 07:56 .git
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git branch -a
* master
 st
 test-branch1-st
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git checkout test-branch1-st
Switched to branch 'test-branch1-st'
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git status
On branch test-branch1-st
Untracked files:
 (use "git add <file>..." to include in what will be committed)
       Shraddha tripathi/
nothing added to commit but untracked files present (use "git add" to track)
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git log
```

commit 913b6597fe1b72730940ec39de0ad58c6d37cef0 (HEAD -> test-branch1-st, st, master)

Author: STCDAC <shraddhatripathi1470@gmail.com>

Date: Sat May 15 18:52:11 2021 +0530

initial filee

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ ls -lart

total 28

drwxr-xr-x 5 shubham shubham 4096 May 15 16:21 ..

-rw----- 1 shubham shubham 12288 May 15 16:35 .test1.txt.swp

drwxrwxr-x 4 shubham shubham 4096 May 16 07:28.

drwxrwxr-x 2 shubham shubham 4096 May 16 07:43 Shraddha tripathi

drwxrwxr-x 8 shubham shubham 4096 May 16 07:57 .git

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ git checkout test-branch1-st

A Shraddha_tripathi/test1.txt

A Shraddha tripathi/test2.txt

Already on 'test-branch1-st'

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ git status

On branch test-branch1-st

Changes to be committed:

(use "git restore --staged <file>..." to unstage)

new file: Shraddha_tripathi/test1.txt

new file: Shraddha tripathi/test2.txt

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ git log

commit 913b6597fe1b72730940ec39de0ad58c6d37cef0 (HEAD -> test-branch1-st, st, master)

Author: STCDAC <shraddhatripathi1470@gmail.com>

Date: Sat May 15 18:52:11 2021 +0530

initial filee

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ ls -lart

total 28

drwxr-xr-x 5 shubham shubham 4096 May 15 16:21 ...

-rw----- 1 shubham shubham 12288 May 15 16:35 .test1.txt.swp

drwxrwxr-x 4 shubham shubham 4096 May 16 07:28.

drwxrwxr-x 2 shubham shubham 4096 May 16 08:04 Shraddha tripathi

drwxrwxr-x 8 shubham shubham 4096 May 16 08:08 .git

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE\$ touch file2

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ ls -lart

total 28

drwxr-xr-x 5 shubham shubham 4096 May 15 16:21 ..

-rw----- 1 shubham shubham 12288 May 15 16:35 .test1.txt.swp

drwxrwxr-x 2 shubham shubham 4096 May 16 08:04 Shraddha tripathi

drwxrwxr-x 8 shubham shubham 4096 May 16 08:08 .git

-rw-rw-r-- 1 shubham shubham 0 May 16 08:09 file2

drwxrwxr-x 4 shubham shubham 4096 May 16 08:09.

shubham@Shraddha tripathi:~/Desktop/Assignment/SE\$ git status

On branch test-branch1-st

Changes to be committed:

```
(use "git restore --staged <file>..." to unstage)
       new file: Shraddha tripathi/test1.txt
       new file: Shraddha tripathi/test2.txt
Untracked files:
 (use "git add <file>..." to include in what will be committed)
       file2
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git add file2
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git commit -m "file2"
[test-branch1-st 310d6f0] file2
3 files changed, 2 insertions(+)
create mode 100644 Shraddha tripathi/test1.txt
create mode 100644 Shraddha_tripathi/test2.txt
create mode 100644 file2
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git checkout master
Switched to branch 'master'
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git branch
* master
 st
 test-branch1-st
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ ls -lart
total 24
drwxr-xr-x 5 shubham shubham 4096 May 15 16:21 ...
-rw----- 1 shubham shubham 12288 May 15 16:35 .test1.txt.swp
```

```
drwxrwxr-x 8 shubham shubham 4096 May 16 08:11 .git
drwxrwxr-x 3 shubham shubham 4096 May 16 08:11.
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git merge ^C
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ git merge test-branch1-st
Updating 913b659..310d6f0
Fast-forward
Shraddha tripathi/test1.txt | 1 +
Shraddha tripathi/test2.txt | 1 +
file2
                 0
3 files changed, 2 insertions(+)
create mode 100644 Shraddha tripathi/test1.txt
create mode 100644 Shraddha tripathi/test2.txt
create mode 100644 file2
shubham@Shraddha_tripathi:~/Desktop/Assignment/SE$ git status
On branch master
nothing to commit, working tree clean
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ ls -lart
total 28
drwxr-xr-x 5 shubham shubham 4096 May 15 16:21 ...
-rw----- 1 shubham shubham 12288 May 15 16:35 .test1.txt.swp
drwxrwxr-x 2 shubham shubham 4096 May 16 08:13 Shraddha tripathi
                               0 May 16 08:13 file2
-rw-rw-r-- 1 shubham shubham
drwxrwxr-x 4 shubham shubham 4096 May 16 08:13.
drwxrwxr-x 8 shubham shubham 4096 May 16 08:13 .git
shubham@Shraddha_tripathi:~/Desktop/Assignment/SE$ cd ~/.git
```

```
shubham@Shraddha tripathi:~/.git$ ls -l
total 32
drwxr-xr-x 2 shubham shubham 4096 Nov 3 2020 branches
-rw-r--r-- 1 shubham shubham 92 Nov 3 2020 config
-rw-r--r-- 1 shubham shubham 73 Nov 3 2020 description
-rw-r--r-- 1 shubham shubham 23 Nov 3 2020 HEAD
drwxr-xr-x 2 shubham shubham 4096 Nov 3 2020 hooks
drwxr-xr-x 2 shubham shubham 4096 Nov 3 2020 info
drwxr-xr-x 4 shubham shubham 4096 Nov 3 2020 objects
drwxr-xr-x 4 shubham shubham 4096 Nov 3 2020 refs
shubham@Shraddha tripathi:~/.git$ cd branches
shubham@Shraddha tripathi:~/.git/branches$ cd ...
shubham@Shraddha tripathi:~/.git$ cd
shubham@Shraddha tripathi:~$ realpath file2
/home/shubham/file2
shubham@Shraddha tripathi:~$ cd Desktop/Assignment/SE/
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ rm test1.txt file2
rm: cannot remove 'test1.txt': No such file or directory
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ ls
Shraddha tripathi
shubham@Shraddha tripathi:~/Desktop/Assignment/SE$ cd Shraddha tripathi/
shubham@Shraddha tripathi:~/Desktop/Assignment/SE/Shraddha tripathi$ rm
test1.txt file2
rm: cannot remove 'file2': No such file or directory
shubham@Shraddha tripathi:~/Desktop/Assignment/SE/Shraddha tripathi$ rm
```

test1.txt file2.txt

rm: cannot remove 'test1.txt': No such file or directory

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE/Shraddha_tripathi\$ rm test1.txt file2.txt

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE/Shraddha_tripathi\$ git status

On branch master

Changes not staged for commit:

```
(use "git add/rm <file>..." to update what will be committed)
```

(use "git restore <file>..." to discard changes in working directory)

deleted: test1.txt

deleted: ../file2

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

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE/Shraddha_tripathi\$ git log

commit 310d6f00ba5676e59e4ed33e2eb4138e898a19a2 (HEAD -> master, test-branch1-st)

Author: ShraddhaCDAC <shraddha@gmail.com>

Date: Sun May 16 08:10:41 2021 +0530

file2

commit 913b6597fe1b72730940ec39de0ad58c6d37cef0 (st)

Author: STCDAC <shraddhatripathi1470@gmail.com>

Date: Sat May 15 18:52:11 2021 +0530

initial filee

shubham@Shraddha tripathi:~/Desktop/Assignment/SE/Shraddha tripathi\$ ls -lart

```
total 12
```

-rw-rw-r-- 1 shubham shubham 23 May 16 08:13 test2.txt

drwxrwxr-x 4 shubham shubham 4096 May 16 08:20 ...

drwxrwxr-x 2 shubham shubham 4096 May 16 08:22.

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE/Shraddha_tripathi\$ git checkout master

D Shraddha_tripathi/test1.txt

D file2

Already on 'master'

shubham@Shraddha tripathi:~/Desktop/Assignment/SE/Shraddha tripathi\$ git status

On branch master

Changes not staged for commit:

```
(use "git add/rm <file>..." to update what will be committed)
```

(use "git restore <file>..." to discard changes in working directory)

deleted: test1.txt

deleted: ../file2

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

shubham@Shraddha tripathi:~/Desktop/Assignment/SE/Shraddha tripathi\$ git log

commit 310d6f00ba5676e59e4ed33e2eb4138e898a19a2 (HEAD -> master, test-branch1-st)

Author: ShraddhaCDAC <shraddha@gmail.com>

Date: Sun May 16 08:10:41 2021 +0530

commit 913b6597fe1b72730940ec39de0ad58c6d37cef0 (st)

Author: STCDAC <shraddhatripathi1470@gmail.com>

Date: Sat May 15 18:52:11 2021 +0530

initial filee

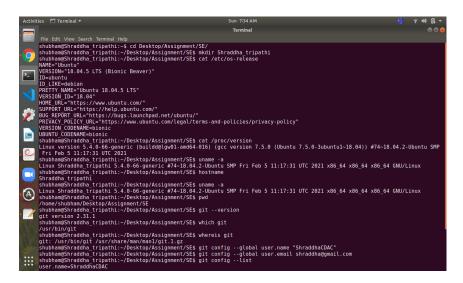
shubham@Shraddha_tripathi:~/Desktop/Assignment/SE/Shraddha_tripathi\$ ls -lart total 12

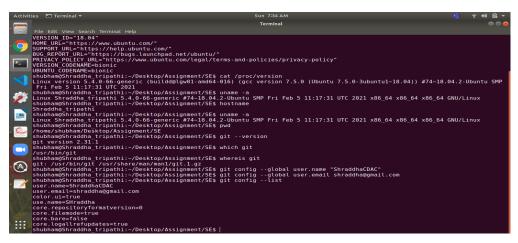
-rw-rw-r-- 1 shubham shubham 23 May 16 08:13 test2.txt

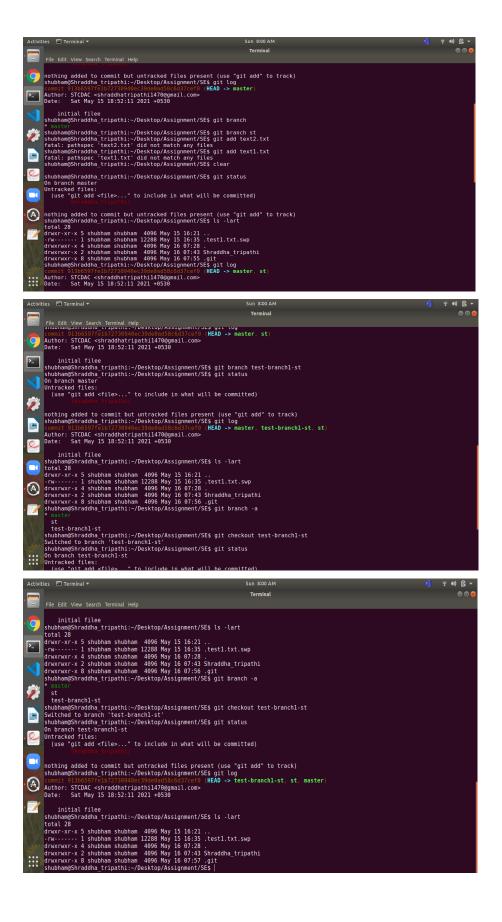
drwxrwxr-x 4 shubham shubham 4096 May 16 08:20 ...

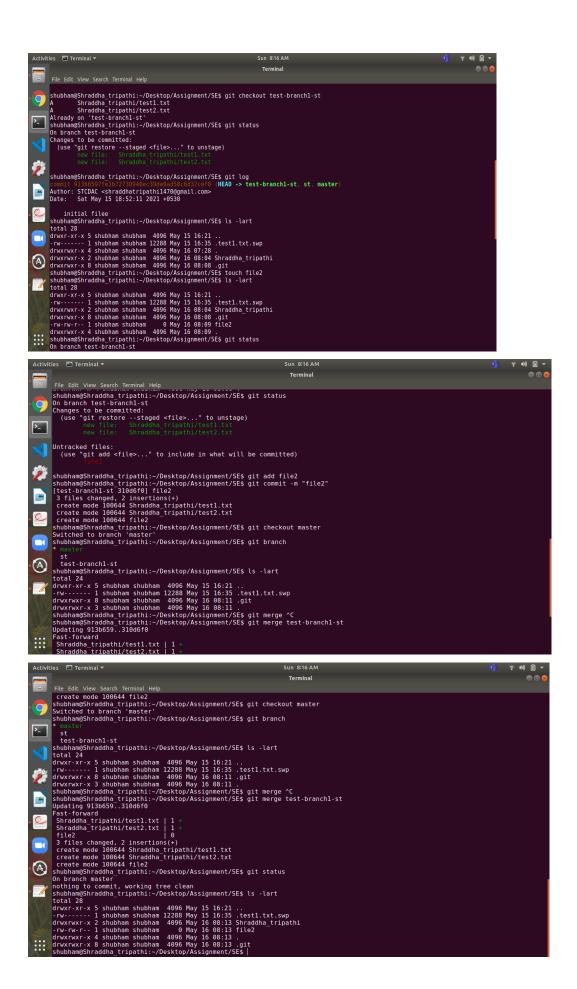
drwxrwxr-x 2 shubham shubham 4096 May 16 08:22.

shubham@Shraddha_tripathi:~/Desktop/Assignment/SE/Shraddha_tripathi\$









```
Activities Terminal * Sun 829 AM

Terminal

Terminal

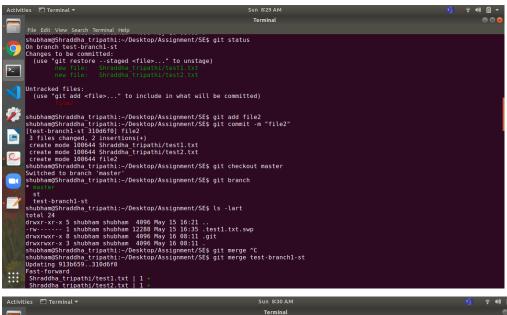
File Edit View Search Terminal Help

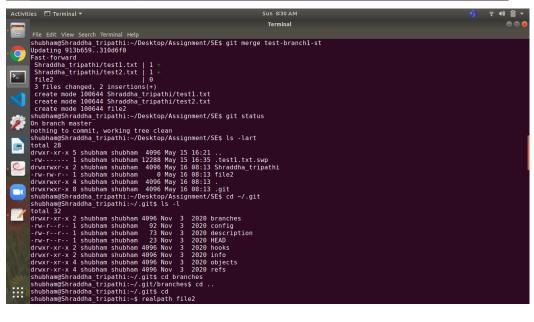
Shubham@Shraddha_tripathi/testl.txt
A Shraddha_tripathi/testl.txt
A Shraddha_tripathi/testl.txt
A Shraddha_tripathi/testl.txt
Changes to be committed:

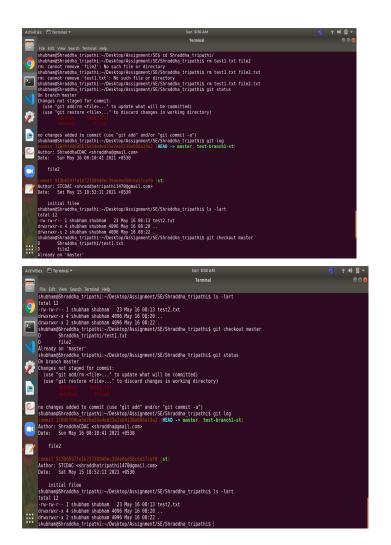
(use "git restore --staged file>..." to unstage)

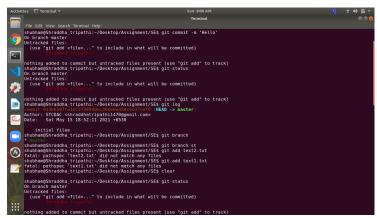
no file: Shraddha_tripathi/testl.txt
now file: Shraddha_tripathi/testl.txt
now file: Shraddha_tripathi/testl.txt
shubham@Shraddha_tripathi-/Desktop/Assignment/SEs git log

control to the stage of the stage
```









Submitted To: -Divya Ma'am - Submitted By: Shraddha Tripathi