



Department of Information Technology

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Experiment No. 2

Aim: To perform installation of Git and work on local and remote Git repositories.

GIT is a Version Control System (VCS) (aka Revision Control System (RCS), Source Code Manager (SCM)). A VCS serves as a Repository (or repo) of program codes, including all the historical revisions. It records changes to files at so-called commits in a log so that you can recall any file at any commit point.

To issue a command, start a "Terminal" (for Ubuntu/Mac) or "Git Bash" (for Windows):

```
$ git <command> <arguments>
```

The commonly-used commands are:

1. **init, clone, config**: for starting a Git-managed project.
2. **add, mv, rm**: for staging file changes.
3. **commit, rebase, reset, tag**:
4. **status, log, diff, grep, show**: show status
5. **checkout, branch, merge, push, fetch, pull**

Getting Started with Local Repo

There are 2 ways to start a Git-managed project:

1. Starting your own project;
2. Cloning an existing project from a GIT host.

Git uses two stages to commit file changes:

1. "git add <file>" to stage file changes into the staging area, and
2. "git commit" to commit ALL the file changes in the staging area to the local repo.

You need to setup Git on your local machine, as follows:

Step1: Download & Install:

For Ubuntu, issue command "`sudo apt-get install git`".

Step 2.

Create a repository on local machine

```
mkdir Sumit
```

Initiate that directory to make it a git repository (.git file must be added inside that folder after initiation)

```
Git init Sumit
```

Step 3: Customize and configure your Git Account:

```
// Set up your username and email (to be used in labeling your commits)
```

```
$ git config --global user.name "your-name"
```

```
$ git config --global user.email "your-email@youremail.com"
```

You can issue "git config --list" to list the settings:

```
$ git config --list
```

```
user.email=xxxxxx@xxxxxx.com
```

```
user.name=xxxxxx
```

Step 4: Create and Add one file in that folder and write some content inside it

```
gedit sumit.txt
```

```
git add sumit.txt
```

Step 5: To start first commit

```
git commit -m "my first commit"
```

Step 6: To push local repository on git account

```
git push origin master or git push origin main
```

OUTPUT:

```
apsit@apsit:~$ sudo su
[sudo] password for apsit:
root@apsit:/home/apsit# sudo apt-get update
Ign:2 https://pkg.jenkins.io/debian binary/ InRelease
Hit:3 https://pkg.jenkins.io/debian binary/ Release
Hit:1 https://packages.microsoft.com/repos/code stable InRelease
Hit:5 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:6 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Hit:7 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:8 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:9 https://ppa.launchpadcontent.net/ansible/ansible/ubuntu jammy InRelease
Hit:10 https://ppa.launchpadcontent.net/danielrichter2007/grub-customizer/ubuntu jammy InRelease
Hit:11 https://ppa.launchpadcontent.net/ethereum/ethereum/ubuntu jammy InRelease
Hit:12 https://ppa.launchpadcontent.net/katharaframework/kathara/ubuntu jammy InRelease
Hit:13 http://security.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
root@apsit:/home/apsit# git --version
git version 2.34.1
root@apsit:/home/apsit# git config --global user.name "SHRAVANI0164"
root@apsit:/home/apsit# git config --global user.email "sawantshanu01@gmail.com"root@apsit:/home/apsit# git config --list
user.email=sawantshanu01@gmail.com
user.name=SHRAVANI0164
core.repositoryformatversion=0
core.filemode=true
core.bare=false
core.logallrefupdates=true
root@apsit:/home/apsit# mkdir Shravani
root@apsit:/home/apsit# cd Shravani
root@apsit:/home/apsit/Shravani# git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:   git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:   git branch -m <name>
Initialized empty Git repository in /home/apsit/Shravani/.git/
root@apsit:/home/apsit/Shravani# ls
root@apsit:/home/apsit/Shravani# git clone https://github.com/SHRAVANI0164/hello_test_29072024.git
Cloning into 'hello_test_29072024'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
root@apsit:/home/apsit/Shravani# ls
hello_test_29072024
root@apsit:/home/apsit/Shravani# cd hello_test_29072024
root@apsit:/home/apsit/Shravani/hello_test_29072024# ls
README.md
root@apsit:/home/apsit/Shravani/hello_test_29072024# cat README.md
# hello_test_29072024
Set up of git
```

```
root@apsit:/home/apsit/Shravani/hello_test_29072024# touch hello.py
root@apsit:/home/apsit/Shravani/hello_test_29072024# ls
hello.py  README.md
root@apsit:/home/apsit/Shravani/hello_test_29072024# gedit hello.py
```

```
root@apsit:/home/apsit/Shravani/hello_test_29072024# git status
On branch main
Your branch is up to date with 'origin/main'.

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    hello.py

nothing added to commit but untracked files present (use "git add" to track)
root@apsit:/home/apsit/Shravani/hello_test_29072024# git add hello.py
```

```
root@apsit:/home/apsit/Shravani/hello_test_29072024# git status
On branch main
Your branch is up to date with 'origin/main'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   hello.py

root@apsit:/home/apsit/Shravani/hello_test_29072024# git add hello.py
```

```
root@apsit:/home/apsit/Shravani/hello_test_29072024# git commit -m "First Python File"
[main dbc00fb] First Python File
1 file changed, 1 insertion(+)
 create mode 100644 hello.py
root@apsit:/home/apsit/Shravani/hello_test_29072024# git status
On branch main
Your branch is ahead of 'origin/main' by 1 commit.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean
root@apsit:/home/apsit/Shravani/hello_test_29072024# git push origin main
Username for 'https://github.com': SHRAVANI0164
Password for 'https://SHRAVANI0164@github.com':
remote: Support for password authentication was removed on August 13, 2021.
remote: Please see https://docs.github.com/get-started/getting-started-with-git/about-remote-repositories#cloning-with-https-urls for information on currently recommended modes
of authentication.
fatal: Authentication failed for 'https://github.com:SHRAVANI0164/hello_test_29072024.git/'
root@apsit:/home/apsit/Shravani/hello_test_29072024# git remote set-url origin https://ghp_rb88WCfhkd8ZspeKqvY4XnNhVWMD4i0AhLhP@github.com:SHRAVANI0164/hello_test_29072024
root@apsit:/home/apsit/Shravani/hello_test_29072024# git push origin main
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 12 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 310 bytes | 310.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com:SHRAVANI0164/hello_test_29072024
 f2b83cd..dbc00fb  main -> main
```

```
root@apsit:/home/apsit/Shravani/hello_test_29072024# git remote set-url origin https://ghp_rb88WCfhkd8ZspeKqvY4XnNhVWMD4i0AhLhP@github.com:SHRAVANI0164/hello_test_29072024
root@apsit:/home/apsit/Shravani/hello_test_29072024# git push origin main
Everything up-to-date
root@apsit:/home/apsit/Shravani/hello_test_29072024# git log
commit dbc00fbfbcf7e74150e317605c3a22977876a4cb (HEAD -> main, origin/main, origin/HEAD)
Author: SHRAVANI0164 <sawantshanu01@gmail.com>
Date:   Mon Jul 29 09:44:38 2024 +0530

    First Python File

commit f2b83cdf08638382c302e707b5d285061718d4df
Author: SHRAVANI0164 <142137559+SHRAVANI0164@users.noreply.github.com>
Date:   Mon Jul 29 09:30:44 2024 +0530

    Initial commit
root@apsit:/home/apsit/Shravani/hello_test_29072024# git log --oneline
dbc00fb (HEAD -> main, origin/main, origin/HEAD) First Python File
f2b83cd Initial commit
```



```

root@apsit:/home/apsit/Shravani/hello_test_29072024# git show
commit dbc00fbfbcf7e74150e317605cba22977876a4cb (HEAD -> main, origin/main, origin/HEAD)
Author: SHRAVANI0164 <sawantshanu01@gmail.com>
Date: Mon Jul 29 09:44:38 2024 +0530

    First Python File

diff --git a/hello.py b/hello.py
new file mode 100644
index 0000000..8f72872
--- /dev/null
+++ b/hello.py
@@ -0,0 +1 @@
+print"Hello World"
root@apsit:/home/apsit/Shravani/hello_test_29072024# git diff
root@apsit:/home/apsit/Shravani/hello_test_29072024# git diff dbc00fb f2b83cd
diff --git a/hello.py b/hello.py
deleted file mode 100644
index 8f72872..0000000
--- a/hello.py
+++ /dev/null
@@ -1 +0,0 @@
-print"Hello World"

```

Conclusion:

In this experiment, we have successfully installed git and created a local repository using different git commands.