## 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://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@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://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@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 dbc00fbfbcf7e74150e317605cba22977876a4cb (HEAD -> main, origin/main, origin/HEAD)
Author: SHRAVANI0164 <sawantshanu01@gmail.com>
Date:   Mon Jul 29 09:44:38 2024 +0530

    First Python File

commit f2b83cdf88638382c302e707b5d285061718d4df
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.