

**Name** – Krishna Mitra

**Roll No.** - 60

**Batch** - T13

## **EXPERIMENT 3**

**Aim:** To Perform various GIT operations on local and Remote repositories.

**Theory :**

### **Directory and File Commands**

- `mkdir git`  
Creates a new directory (folder) named "git" in the current working directory. This command is used to create a new directory in Unix-like operating systems.
- `cd git`  
Changes the current working directory to the directory named "git." After executing this command, all subsequent commands or file operations will occur within the "git" directory.  
**Note:** "cd" stands for "change directory."
- `nano index.html`  
Opens the Nano text editor for the file named "index.html." Nano is a simple command-line text editor that allows you to view and edit files directly in the terminal.
- `touch teststatus`  
Creates an empty file named "teststatus" in the current directory. The `touch` command is commonly used to update the timestamps of a file or create an empty file if it doesn't exist.
- `git checkout -- teststatus`  
Discards changes to the file "teststatus" in the working directory. This reverts the file to the state it has in the last commit.

### **Git Configuration**

- `git config --global user.name "Your Name"`  
Sets your global Git username, which will be associated with your commits.
- `git config --global user.email "youremail@example.com"`  
Sets your global Git email address, which will be associated with your commits.
- `git config --list`  
Displays the current configuration settings for Git, including user details and other preferences.

## Staging and Committing Changes

- `git add <file>`  
Stages changes in the working directory for the next commit in Git. It prepares modifications, additions, or deletions to be included in the upcoming commit.
- `git commit -am "commit message"`  
Stages and commits all changes in tracked files with a commit message in a single command. This is a shorthand for `git add <file>` followed by `git commit`.
- `git log`  
Displays the commit history of the Git repository, showing a chronological list of commits, including commit hashes, author information, timestamps, and commit messages.
- `git log --oneline`  
Displays a simplified, one-line representation of the commit history, showing only the commit SHA-1 hash and the commit message.

## Git Remote Operations

- `git clone <repository>`  
Creates a copy of a Git repository. This command duplicates the entire repository (files, commit history, branches) and downloads it to your local machine. It is often the initial step when working with a project hosted on a remote Git repository.
- `git pull`  
Fetches and integrates changes from a remote repository into the current branch of your local repository. It combines two actions: it fetches changes from the remote repository and merges them into your local branch.
- `git push`  
Uploads or pushes local changes from your Git repository to a remote repository. It updates the remote repository with the latest changes made in your local branch.
- `git fetch`  
Retrieves changes from a remote repository, including new branches or changes made since your last interaction. However, it does not automatically merge these changes into your local branches. After using `git fetch`, you can inspect the changes and decide whether to integrate them using `git merge` or `git rebase`.

```

Lab203@203-003 MINGW64 ~/git-dvcs43 (master)
$ git config --global
usage: git config [<options>]

Config file location
  --[no-]global          use global config file
  --[no-]system          use system config file
  --[no-]local           use repository config file
  --[no-]worktree        use per-worktree config file
  -f, --[no-]file <file> use given config file
  --[no-]blob <blob-id> read config from given blob object

Action
  --[no-]get             get value: name [value-pattern]
  --[no-]get-all        get all values: key [value-pattern]
  --[no-]get-regexp      get values for regexp: name-regex [value-pattern]
  --[no-]get-urlmatch    get value specific for the URL: section[.var] URL
  --[no-]replace-all    replace all matching variables: name value [value-pattern]

ern]
  --[no-]add             add a new variable: name value
  --[no-]unset           remove a variable: name [value-pattern]
  --[no-]unset-all      remove all matches: name [value-pattern]
  --[no-]rename-section  rename section: old-name new-name
  --[no-]remove-section  remove a section: name
  -l, --[no-]list        list all
  --[no-]fixed-value     use string equality when comparing values to 'value-pattern'
  -e, --[no-]edit        open an editor
  --[no-]get-color       find the color configured: slot [default]
  --[no-]get-colorbool   find the color setting: slot [stdout-is-tty]

Type
  -t, --[no-]type <type>
                        value is given this type
  --bool                value is "true" or "false"
  --int                 value is decimal number
  --bool-or-int         value is --bool or --int
  --bool-or-str         value is --bool or string
  --path                value is a path (file or directory name)
  --expiry-date         value is an expiry date

Other
  -z, --[no-]null       terminate values with NUL byte
  --[no-]name-only      show variable names only
  --[no-]includes       respect include directives on lookup
  --[no-]show-origin    show origin of config (file, standard input, blob, command line)
  --[no-]show-scope     show scope of config (worktree, local, global, system, command)
  --[no-]default <value>
                        with --get, use default value when missing entry

Lab203@203-003 MINGW64 ~/git-dvcs43 (master)
$ git config --global user.name "meetk"

Lab203@203-003 MINGW64 ~/git-dvcs43 (master)
$ ^C

Lab203@203-003 MINGW64 ~/git-dvcs43 (master)
$ git config --global user.email "meetkadam1812@gmail.com"

Lab203@203-003 MINGW64 ~/git-dvcs43 (master)
$ git config --global --list
user.name=meetk
user.email=meetkadam1812@gmail.com

```

```
15L@203-005 MINGW64 ~/git-dvcs (master)
$ mkdir git-demo-project

15L@203-005 MINGW64 ~/git-dvcs (master)
$ cd git-demo-project/

15L@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ git init
Initialized empty Git repository in C:/Users/15L/git-dvcs/git-demo-project/.git/
```

```
15L@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ ls -a
./ ../ .git/

15L@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ ls -al
total 4
drwxr-xr-x 1 15L 197121 0 Feb 12 11:10 ./
drwxr-xr-x 1 15L 197121 0 Feb 12 11:10 ../
drwxr-xr-x 1 15L 197121 0 Feb 12 11:10 .git/
```

```
15L@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ git add .

15L@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ git status
On branch master
```

```
15L@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ git commit -m "First Commit"
[master (root-commit) 54ca444] First Commit
1 file changed, 1 insertion(+)
create mode 100644 index.html
```

```
15L@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ git status
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        index.htm

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

```
15L@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ git add index.htm

15L@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   index.htm
```

```
15L@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ git commit -am "Express commit"
[master 9404a12] Express commit
1 file changed, 1 insertion(+)
create mode 100644 index.htm

15L@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ git status
On branch master
nothing to commit, working tree clean
```

```
LSL@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ git log
commit 9404a121df804bffa5b7ed0f5304521509dfdc632 (HEAD -> master)
Author: ashvika <ashvikavk@gmail.com>
Date:   Wed Feb 12 11:35:09 2025 +0530

    Express commit

commit 54ca444578d21cdb937f12faa216b08c43bbf9de
Author: meetk <meetkadam1812@gmail.com>
Date:   Wed Feb 12 11:17:55 2025 +0530

    First Commit

LSL@203-005 MINGW64 ~/git-dvcs/git-demo-project (master)
$ git log --oneline
9404a12 (HEAD -> master) Express commit
54ca444 First Commit
```

**Conclusion :** Successfully performed various GIT operations on local and Remote repositories.