Source Code Management with Git

Assignment 1:

Initialize a new Git repository in a directory of your choice. Add a simple text file to the repository and make the first commit.

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c
$ cd wiprogit

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit (master)
$ cd linuxassign

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ git init
Initialized empty Git repository in C:/wiprogit/linuxassign/.git/

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ echo "This is my First Git Repository" > file1.txt

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        file1.txt

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

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ git add file1.txt
warning: in the working copy of 'file1.txt', LF will be replaced by CRLF the nex
t time Git touches it

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ git commit -m "file1.txt is created"
[master (root-commit) 8813a1d] file1.txt is created
 1 file changed, 1 insertion(+)
 create mode 100644 file1.txt

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ git log
commit 8813a1d3e80a71c1b150376e42830ba0bb773f59 (HEAD -> master)
Author: NEELAM <neelamnisha117@gmail.com>
Date:   Tue Dec 16 14:11:16 2025 +0530

    file1.txt is created

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ cat file1.txt
This is my First Git Repository
```

Assignment 2: Branch Creation and Switching

Create a new branch named 'feature' and switch to it. Make changes in the 'feature' branch and commit them.

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ git branch feature

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ git branch -l
  feature
* master

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ git checkout feature
Switched to branch 'feature'

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ git branch -l
* feature
  master

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ vi file2.txt

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ git add file2.txt
warning: in the working copy of 'file2.txt', LF will be replaced
by CRLF the next time Git touches it

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ git status
On branch feature
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   file2.txt


Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ git commit -m "Updated file2.txt in feature branch"
[feature c92e3f3] Updated file2.txt in feature branch
 1 file changed, 2 insertions(+)
 create mode 100644 file2.txt
```

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ git status
On branch feature
nothing to commit, working tree clean

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ cat file2.txt
this is my 2nd assignment on branch creation and switching


Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ git branch -l
* feature
  master
```

Assignment 3: Feature Branches and Hotfixes

Create a 'hotfix' branch to fix an issue in the main code. Merge the 'hotfix' branch into 'main' ensuring that the issue is resolved.

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ git checkout master
Switched to branch 'master'

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (maste
r)
$ git branch hotfix

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (maste
r)
$ git checkout hotfix
Switched to branch 'hotfix'

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (hotfi
x)
$ echo "Critical bug fixed in hotfix branch." >> f1.txt

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (hotfi
x)
$ git status
On branch hotfix
Untracked files:
  (use "git add <file>..." to include in what will be commit
ted)
        f1.txt

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

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (hotfi
x)
$ git add f1.txt
warning: in the working copy of 'f1.txt', LF will be replace
d by CRLF the next time Git touches it

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (hotfi
x)
$ git commit -m "Hotfix resolved critical issue in main bran
ch"
[hotfix dee3392] Hotfix resolved critical issue in main bran
ch
 1 file changed, 1 insertion(+)
 create mode 100644 f1.txt
```

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (hotfi
x)
$ git checkout master
Switched to branch 'master'

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (maste
r)
$ git ls-files
file1.txt

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (maste
r)
$ git merge hotfix
Updating 8813a1d..dee3392
Fast-forward
 f1.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 f1.txt

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (maste
r)
$ git log --oneline
dee3392 (HEAD -> master, hotfix) Hotfix resolved critical is
sue in main branch
8813a1d file1.txt is created
```

2.Shell Scripting with Bash

Assignment 1:

Ensure the script checks if a specific file (e.g., myfile.txt) exists in the current directory. If it exists, print "File exists", otherwise print "File not found".

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c
$ cd wiprogit

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit (master)
$ cd linuxassign

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ ls
f1.txt  file1.txt

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ echo hello > myfile.txt

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ pwd
/c/wiprogit/linuxassign
```

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ #!/bin/bash

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ if [ -f myfile.txt ]
then
    echo "File exists"
else
    echo "File not found"
fi
File exists

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ ls
f1.txt  file1.txt  myfile.txt
```

Checking with other directory :

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit (master)
$ cd decwip

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/decwip (main)
$ if [ -f myfile.txt ]; then     echo "File exists"; else     echo "File not found"; fi
File not found
```

Assignment 2:

Write a script that reads numbers from the user until they enter '0'. The script should also print whether each number is odd or even.

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ vi evenodd.sh

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ cat evenodd.sh
#!/bin/bash
echo "enter a number"
read n
while [ "$n" -ne 0 ]
do
        if [ $((n%2)) -eq 0 ]
        then
                echo "Even"
        else
                echo "Odd"
        fi

        echo "enter a number (0 to stop):"
        read n
done


Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ chmod 777 evenodd.sh

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$ ./evenodd.sh
enter a number
2
Even
enter a number (0 to stop):
3
Odd
enter a number (0 to stop):
6
Even
enter a number (0 to stop):
8
Even
enter a number (0 to stop):
13
Odd
enter a number (0 to stop):
0

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (feature)
$
```

Assignment 3:

Create a function that takes a filename as an argument and prints the number of lines in the file. Call this function from your script with different filenames.

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ cat > f2.txt
hello
This is one file
of linux scripting


Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ cat > f3.txt
Twinkle, twinkle, little star,
How I wonder what you are,
Up above the world so high,
Like a diamond in the sky, twinkle, twinkle, little star,
How I wonder what you are.


Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ vi func.sh

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ chmod 777 func.sh
```

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ cat func.sh
#!/bin/bash
countlines() {
    file=$1
    lines=$(wc -l < "$file")
    echo "Number of lines in $file : $lines"
}
countlines f2.txt
countlines f3.txt


Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ ./func.sh
Number of lines in f2.txt : 3
Number of lines in f3.txt : 5
```

Assignment 4:

Write a script that creates a directory named TestDir and inside it, creates ten files named File1.txt, File2.txt, ... File10.txt. Each file should contain its filename as its content (e.g., File1.txt contains "File1.txt").

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ mkdir TestDir

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign (master)
$ cd TestDir

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ vi Test.sh

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ chmod 777 Test.sh

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ cat Test.sh
#!/bin/bash
for ((i=1;i<=10;i++))
do
        echo "File$i.txt" > File$i.txt
done
```

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ ls
File1.txt   File2.txt  File4.txt  File6.txt  File8.txt  Test.sh*
File10.txt  File3.txt  File5.txt  File7.txt  File9.txt

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ Cat File1.txt
File1.txt

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ cat File10.txt
File10.txt
```

Assignment 5:

Modify the script to handle errors, such as the directory already existing or lacking permissions to create files.

Add a debugging mode that prints additional information when enabled.

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/Test (master)
$ vi assig5.sh

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/Test (master)
$ chmod -x assig5.sh

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/Test (master)
$ ./assig5.sh
Task completed successfully

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/Test (master)
$ ./assig5.sh
Error: Directory 'Test' already exists

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/Test (master)
$ rm -r Test

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/Test (master)
$ ./assig5.sh
Task completed successfully
```

```
#!/bin/bash

DIR="Test"
DEBUG=false

usage() { echo "Usage: $0 [-d] [-n dir_name]"; exit 2; }

log_debug() { [ "$DEBUG" = true ] && echo "[DEBUG] $1"; }

while getopts ":dn:" opt; do
  case "$opt" in
    d) DEBUG=true ;;
    n) DIR="$OPTARG" ;;
    *) usage ;;
  esac
done
shift $((OPTIND - 1)) 2>/dev/null

log_debug "DIR=$DIR"

if [ -d "$DIR" ]; then
  echo "Error: Directory '$DIR' already exists"
  exit 1
fi

mkdir "$DIR" 2>/dev/null
if [ $? -ne 0 ]; then
  echo "Error: Failed to create directory '$DIR' (permission issue?)"
  exit 1
fi
log_debug "Directory created"

cd "$DIR" 2>/dev/null
if [ $? -ne 0 ]; then
  echo "Error: Cannot enter '$DIR'"
  exit 1
fi

for i in {1..10}; do
  FILE="File$i.txt"
  echo "$FILE" > "$FILE" 2>/dev/null
  if [ $? -ne 0 ]; then
    echo "Error: Failed to create '$FILE' (permission issue?)"
    exit 1
  fi
  log_debug "Created $FILE"
done

echo "Task completed successfully"
```

Assignment 6:

Given a sample log file, write a script using grep to extract all lines containing "ERROR". Use awk to print the date, time, and error message of each extracted line.

Data Processing with sed

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (master)
$ vi sample.log

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ vi error.sh

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ chmod 777 error.sh

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ ./error.sh
Date: 2025-12-16 Time: 10:16:01 Message: Failed to load configura
tion
Date: 2025-12-16 Time: 10:17:45 Message: Connection timeout
```

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (master)
$ cat sample.log
2025-12-16 10:15:23 INFO Starting process
2025-12-16 10:16:01 ERROR Failed to load configuration
2025-12-16 10:16:30 INFO Process running
2025-12-16 10:17:45 ERROR Connection timeout
2025-12-16 10:18:00 INFO Process completed


Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (master)
$ cat error.sh
#!/bin/bash

LOGFILE="sample.log"


if [ ! -f "$LOGFILE" ]; then
    echo "Error: Log file $LOGFILE not found."
    exit 1
fi


grep "ERROR" "$LOGFILE" > error_lines.txt


awk '{print "Date: "$1, "Time: "$2, "Message: "$4" "$5" "$6" "$7}' error_lines.txt
```

Assignment 7:

Create a script that takes a text file and replaces all occurrences of "old_text" with "new_text". Use sed to perform this operation and output the result to a new file.

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (master)
$ cat > input.txt
This is old_text
old_text is here


Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ cat > output.txt
This is new_text
new_text is here


Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ vi simple.sh

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ chmod 777 simple.sh

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ ./simple.sh
Text replaced and saved to output.txt

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ cat output.txt
This is new_text
new_text is here

Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (ma
ster)
$ cat input.txt
This is old_text
old_text is here
```

```
Nisha@LAPTOP-E87SF4DL MINGW64 /c/wiprogit/linuxassign/TestDir (master)
$ cat simple.sh
#!/bin/bash

input_file="input.txt"
output_file="output.txt"

sed 's/old_text/new_text/g' "$input_file" > "$output_file"

echo "Text replaced and saved to $output_file"
```