Exno:1a)	Mastering Git & GitHub: Command-Line Essentials
11.07.2025	

Aim:

To gain hands-on experience with Git and GitHub by learning and practicing essential command-line operations used for version control, repository management, branching, collaboration, and synchronization between local and remote repositories.

Git & GitHub Commands:

1. git

Description: Git is a tool that tracks changes in your code so you can collaborate, undo mistakes, and manage versions easily.

Syntax:git

Output:

```
Microsoft Windows [Version 10.0.26100.4652]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Asus>git
usage: git [-v | --version] [-h | --help] [-C <path>] [-c <name>=<value>]
           [--exec-path[=<path>]] [--html-path] [--man-path] [--info-path]
           [-p | --paginate | -P | --no-pager] [--no-replace-objects] [--no-lazy-fetch]
           [--no-optional-locks] [--no-advice] [--bare] [--git-dir=<path>]
           [--work-tree=<path>] [--namespace=<name>] [--config-env=<name>=<envvar>]
           <command> [<args>]

These are common Git commands used in various situations:

start a working area (see also: git help tutorial)
   clone      Clone a repository into a new directory
   init       Create an empty Git repository or reinitialize an existing one

work on the current change (see also: git help everyday)
   add        Add file contents to the index
   mv         Move or rename a file, a directory, or a symlink
   restore    Restore working tree files
   rm         Remove files from the working tree and from the index

examine the history and state (see also: git help revisions)
   bisect     Use binary search to find the commit that introduced a bug
   diff       Show changes between commits, commit and working tree, etc
   grep       Print lines matching a pattern
   log        Show commit logs
   show       Show various types of objects
   status     Show the working tree status
```

2. git config

Description:git config is used to view or set configuration options for Git (like username, email, editor).With --global it applies to all repos; without it, it applies only to the current repository.

Syntax:git config --global user.name "Your Name"

git config --global user.email "your@email.com"

Output:

```
C:\Users\Asus>git config --global user.name "jerina9558"

C:\Users\Asus>git config --global user.email "2312021@nec.edu.in
```

3. git clone

Description: Copies a remote repository to your local machine.

Syntax:git clone https://github.com/user/repo.git

Output:

```
C:\Users\Asus>git clone https://github.com/jerina9558/Git.git
Cloning into 'Git'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.
```

4. git branch

Description:git branch is used to create, list, or delete branches in a Git repository.Branches allow you to work on new features without affecting the main code.Running git branch shows all local branches and highlights the current one.

Syntax:git branch

Output:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  powershell

PS C:\Users\Asus\Desktop\memory-matching-game.git\memory-matching-game> git branch
* main
```

5.git checkout -b

Description:git checkout is used to switch between branches or restore files in a Git repository.

Syntax:git checkout <branch-name>

Output:

```
PS C:\Users\Asus\Desktop\memory-matching-game.git\memory-matching-game> git checkout
-b frontend
Switched to a new branch 'frontend'
```

6.git add

Description:git add is used to stage changes (new, modified, or deleted files) for the next commit.

Syntax:git add <filename>

Output:

```
PS C:\Users\Asus\Desktop\memory-matching-game.git\memory-matching-game> git add index
.html
```

```
PS C:\Users\Asus\Desktop\memory-matching-game.git\memory-matching-game> git add game.
js
```

7.git commit

Description:git commit is used to save staged changes in the local repository. Each commit creates a snapshot of the project with a unique ID.

Syntax:git add <filename>

Output:

```
PS C:\Users\Asus\Desktop\memory-matching-game.git\memory-matching-game> git commit -m
"add html"
[frontend da60783] add html
 1 file changed, 47 insertions(+)
 create mode 100644 index.html
```

8. git push

Description:Pushes commits to a remote branch.

Syntax:git push origin <branch-name>

Output:

```
PS C:\Users\Asus\Desktop\memory-matching-game.git\memory-matching-game> git push orig
in frontend
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 12 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 722 bytes | 361.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
```

9. git status

Description:git status is used to show the current state of your working directory and staging area.It tells you which files are modified, staged, untracked, or ready to commit.

Syntax:git status

Output:

```
PS C:\Users\Asus\Desktop\memory-matching-game.git> git status on branch
 frontend
```

10. git remote

Description: Manages remote repository connections.

Syntax:git remote -v (view)

Output:

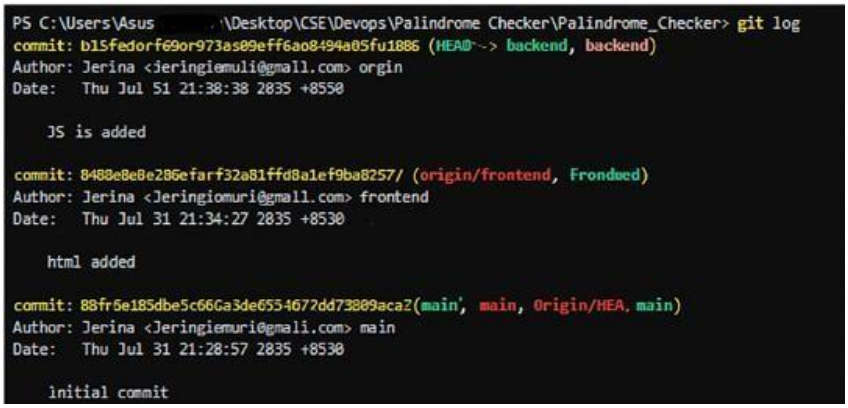
```
PS C:\Users\Asus\Desktop\memory-matching-game.git> git status on branch
 frontend
```

11. git log

Description: Shows a list of recent commits with commit ID, author, date, and message.

Syntax: git log

Output:

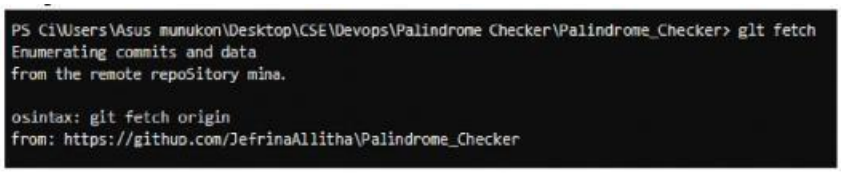


12. git fetch

Description: Downloads commits and data from the remote repository without merging them.

Syntax:git fetch origin

Output:

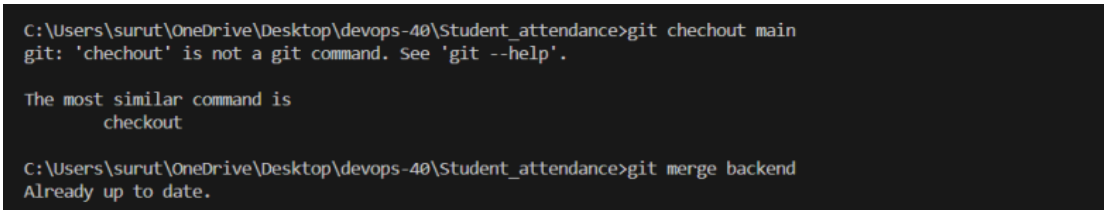


13. git merge

Description: Merges the specified branch into your current branch.

Syntax:git merge <branch_name>

Output:



14. git show-branch

Description: Shows the branches and their commits. Useful to see commit divergence.

Syntax:git show-branch

Output:

```
PS C:\Users\Asus\Desktop\CSE\Devops
Palindrome Chacker\Palindrome_Checker
git show-branch
*  [backend] js isis added
!  [frontend] html added
---
*  [backend] js is added
*  [frontend] html added
+  [main] Initial commit

*  [backend] js is added
*  [frontend] html added
++ [main] Initial commit
```

Rubrics:

GitHub Commands Syntax & Description (5)	**Implementation and Execution (20)**	**Time management (5)**	**Viva (10)**	**Total (40)**

Result:

Thus, the basic Git and GitHub commands were successfully learned, executed, and practiced through hands-on command-line operations.