# Software Engineering Report

| Subject Code: CS16106 | Tool Name: Git  |
|---|---|

## Purpose of Tool

Git is a free, open source and distributed version control system which can manage from small to very large projects efficiently by tracking changes, coordinating work among the collaborators and maintaining the integrity of the codebase.
Git can be accessed through the command line interface (CLI) as well as through graphical user interface (GUIs) available such as Github Desktop, Sourcetree etc.

## Status of Tool

Git has evolved and matured to be easy to use and yet retain the initial qualities . It is amazingly fast and very efficient with large projects.
It has an incredible branch system for non-linear development such as Git Branching.Now the tool is in **working status**.

## Specific Use of Git in SDLC Phases

Git plays a pivotal role in managing source code, effective collaboration, and ensuring software security throughout the Software Development Life Cycle (SDLC).Git finds its primary usage in the developmental stages of the Software Development Life Cycle (SDLC), and its application extends to various other stages, as listed below:

**Planning**: At this stage teams may structure projects preliminarily and define tasks.

**Development**: Git helps developers to create branches for features, bug fixes or experiments. Normally, each developer works on their own branch where changes can be merged back into the main codebase (usually master branch) when ready using git. Thus, everyone's work is separated and putting it together does not cause any problem.

**Testing**: Developers commit the changes into a shared repository. This is where Continuous Integration tools come in handy as they execute tests on these changes to make sure that the codebase remains stable and operational.

**Deployment**: Git makes it easy to tell exactly what updates are being deployed so that rollbacks can be done smoothly if needed.

**Maintenance and Update**: Through branching and merging capabilities of Git, all bug fixes, feature enhancements and changes are well handled.

# Minimum System Requirements

| Software Requirements | Hardware Requirements |
|---|---|
| **OS**: Windows 10 or newer ,Linux, macOS 10.13 or later<br>64-bit OS is required for running Git Desktop app. | There is no any minimum hardware requirement as such but some specifications are recommended |
| **Browser**: Chrome, Edge, Safari, Firefox | **RAM**: At least 1GB<br>**Internal Memory:** Minimum of 50 MB of disk space,additional space for repository. |

# Inputs and Outputs

**Git init**

This command sets up a new git repository in a current directory, allowing users to track changes to the file.


**Git add**

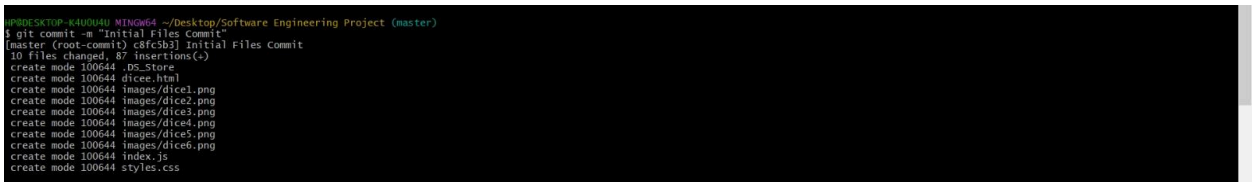
“Git add” stages changes made to the file, preparing them to be added in the next commit.

**Git status**

It displays what is happening in your repository, shows which files have been modified, and what changes are staged for the next commit.


**Git commit**

It records the changes that have been made to the repository, creates a commit with a unique identifier and a message describing the committed changes.




**Git branch**

This command lets us see, create, delete, list, switch, rename branches with the help of various flags in a project. It allows users to organize branches effectively.


**Git remote**

This command helps users to manage remote repositories. It allows them to add, rename and remove remote repositories which are associated with local repositories.

**Sub-commands: git remote add**
**git remote remove**
**git remote rename**


**Git push**

This command pushes or sends users local changes to the remote repository.

**Git checkout**

It allows users to switch between different branches in the repository or restore files to previous state.It helps users to navigate in the project history.


**Git clone**

This command created a copy of a git repository from a remote source to your local system.


# References

- Git Documentation ( https://git-scm.com/doc )
- Github GUI ( https://github.com )
- Github Repository ( https://github.com/Vaibhav05kansal/Software-Engineering-Project )
- Plagiarism Check Tool ( https://www.duplichecker.com )

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