

Software Systems Development

Lab Activity 1

August 7, 2025

Introduction to Git

Instructions

- Ensure that Git is installed on your system.
- Create a GitHub account if you do not already have one.
- Submission for this activity must be done on Moodle.

1 Configure Git

- 1.1 Configure the global Git username.
- 1.2 Configure the global Git email.
- 1.3 Verify the Git configuration.

2 Distance Finder

Write a program to calculate the distance between two points in a 2D plane.

Note: You may use any programming language of your choice. However, **C or C++ is preferred** for this activity.

Important: Include a file named `README.md` in the `dist/` folder. This file should clearly mention the language used in the following format:

Language: C

- 2.1 Work within a new directory named `dist`.
- 2.2 Define a struct `Point` with two members, `x` and `y`, of type `int`. Save the definition in a file named `point.h`.

- 2.3 Define a function `distance` that takes two `Point` arguments and returns the Euclidean distance between them. Save the implementation in a file named `distance.c`.
- 2.4 Complete the subtasks described below. Save the output of each subtask in file named `<subtask>.txt` (e.g., `subtask2.1.1.txt`).

2.1 Checkpoint 1: Save Your Progress

- 2.1.1 Initialize a Git repository.
- 2.1.2 Add the files to the staging area. (No output required)
- 2.1.3 Check the repository status.
- 2.1.4 Commit the changes.
- 2.1.5 Verify that the commit was successful.

2.2 Experimentation: Calculate Manhattan Distance

Switch to finding the Manhattan distance instead of the Euclidean distance.

- 2.2.1 Create a new branch named `manhattan`. (No output required)
- 2.2.2 Switch to the `manhattan` branch.
- 2.2.3 Verify the branch creation and switch.
- 2.2.4 Modify the `distance` function to calculate the Manhattan distance. (No output required)
- 2.2.5 Compare the changes.
- 2.2.6 Add the modified files to the staging area. (No output required)
- 2.2.7 Check the repository status.
- 2.2.8 Commit the changes.

2.3 Revert Changes: Start Fresh

Revert to the previous commit and discard the Manhattan distance implementation.

- 2.3.1 Reset the repository to the previous commit. Experiment with or without the `--hard` option.
 - 2.3.2 Verify the repository status and history.
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Hit Submit

Zip the `dist` directory, ensuring it adheres to the provided file structure. Submit the zip file on Moodle.

`dist/` File Tree

```
dist
|-- distance.c
|-- point.h
|-- README.md
|-- subtask2.1.1.txt
|-- subtask2.1.3.txt
|-- subtask2.1.4.txt
|-- subtask2.1.5.txt
|-- subtask2.2.2.txt
|-- subtask2.2.3.txt
|-- subtask2.2.5.txt
|-- subtask2.2.7.txt
|-- subtask2.2.8.txt
|-- subtask2.3.1.txt
|-- subtask2.3.2.txt
```

1 directory, 13 files