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

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.

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
|-- 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