Flood Emergency Planning

Report for the CEGE0096: 2nd assignment

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Group Name

Alpaca

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Your GitHub Repo Link

# Introduction

Use the text highlighted in orange as a guideline and delete it before submitting the report.

Describe your assignment. This section should answer the following questions:

* What does your software do? Which part of the assignment have you completed?
* What are the limitations of your software?
* How did you develop it?
* How long did it take to develop it?
* On which part(s) did you struggle?

Describe how you divided the work among the members of your group, and clearly state who did what.

The software is designed to take a users input as British national grid coordinates, find the nearest high point within a 5km buffer and calculate and display the shortest route to the location.

**Limitations**

**Which parts we struggled**

The project was developed in a group with three members; Table 1 depicts how the task was divided for development, relative task difficulty of each stage and which parts of the assessment were completed. Lead, and Secondary is the method we used for software development, the team brainstormed individually, wrote pseudocode in a Microsoft Teams call. The Lead would then be tasked with generating the code; the secondary would look over the code, improve its efficiency, and the secondary or the third member would prepare for the next stage. Through this process, it took two weeks to design the software.

Table , The process of developing the software

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task | Team member | | Assessed Tasks | Difficulty |
| Lead | Secondary |
| Created Github repository | Tanveer |  |  | Basic |
| Task 1: User Input | Titilayo | Tanveer | Completed | Basic |
| Task 2: Highest Point Identification | Tanveer | Quinton | Completed | Challenging |
| Task 3: Nearest Integrated Transport Network | Quinton | Titilayo | Completed | Intermediate |
| Task 4: Shortest Path | Tanveer | Quinton | Completed | Intermediate |
| Task 5: Map Plotting | Quinton | Titilayo | Completed | Intermediate |
| Task 6: Extend the Region | Tanveer | Titilayo | Completed | Challenging |
| Creativity marks | Quinton | Tanveer |  | Intermediate |

# Project Description

Explain here how to use your software. This section should answer the following questions:

* What are the prerequisite of your software? Is Python 3.8 enough or should I install additional libraries?
* How can I run your software? What should I execute? Is your script expecting the presence of any file in the same directory?

Add files needed for the directory to the table

Add how to run the software which file should be executed

Check all libraries which were imported

Table Prerequisites for the software

|  |
| --- |
| Programming Language |
| Python 3.7 |
| Packages and libraries |
| shapely |
| rasterio |
| numpy |
| json |
| os |
| rtree |
| networkx |
| geopandas |
| matplotlib.pyplot |

# Software

In this section, you should write about how you developed some of the tasks in the marking scheme. You can copy and paste the functions/methods/classes here and describe how they work. Delete the sections that you have not completed.

## Task 1: User Input

## Task 2: Highest Point Identification

## Task 3: Nearest Integrated Transport Network

* Import JSON file load into variable
* Create a variable with node variables loaded into it
* Initialize rtree
* Iterate through road node variables
* Create a Point object with the coordinates of each road node point, append the coordinate fid into a list
* Use a conditional to check if the buffer contains the locations coordinate id it does append it along with the fid into the rtree
* Iterate through rtree and use the nearest method to find the closest point to the input of the users point and the highest point, returning the nodes fid

## Task 4: Shortest Path

## Task 5: Extend the Region

## Task 6: Map Plotting

## Task 7: Creativity

# Git Log

Copy and paste here the output of git log.