

COMP 1828: TIPS FOR THE COURSEWORK

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1. TASK 3

In the coursework specification, “... To get a higher mark, you may NOT use the example of the table/graphic idea but use something else of your own.”

GUI may be acceptable but may not yield a mark as high as that of an algorithm different from those of Tasks 1 and 2.

2. DATA:

“The travel times taken between any two successive stations are determined already based on previously collected data and are provided in the accompanying excel spreadsheet called “London Underground Data.xlsx”. This data : 1. has not been quality checked and may contain errors or omissions. You are to decide how you will report and act on these as part of your study. 2. does not include the waiting time at a station or the (dis)embarking of passengers.”

You may focus on making the right choices of data structures and algorithms suitable for Task 1, 2 and 3, each of which could be completed first with simple and smaller data that are artificially made. The tasks completed with only the simple data may still lead to reasonable marks. Although importing the underground data into Python is eventually necessary, especially for higher marks, you may not unnecessarily overspend time on (cleverly) importing them. You may note that there is no task for correcting errors or omissions in the data and thus you may not unnecessarily overspend time on them.

3. JUSTIFICATION OF THE CHOICE OF THE DATA STRUCTURES AND ALGORITHMS [10 MARKS]

The suitability of the data structures and algorithms per task may be discussed in terms of theory and concept. For instance, Task 1: a stack is chosen since the task requires reversing an order of a list of the station names and the first-in-last-out property of a stack fits it well. Push and pop algorithms of a stack implemented as an array are chosen, each of which has a time complexity of $O(1)$, respectively. Note that the stack and the associated algorithms are merely provided as examples but they are not necessarily recommended for the task. Similarly so for other examples.

4. CRITICAL EVALUATION OF THE PERFORMANCE OF THE DATA STRUCTURES AND ALGORITHMS USED [10 MARKS]

The evaluation may be done mainly empirically. For instance, if a binary search tree (BTS) and its search algorithm are chosen for, say, Task 2, artificially generated data of various sizes may be used to empirically show the time efficiency (e.g. elapsed time in microseconds vs data size). A comparison between the empirical and theoretical performances may be discussed. For instance, whether the code used for the search algorithm yields $O(\log n)$ or similar performance as predicted by the theory (for the best case).

5. DISCUSSION FOR THE CHOICE OF TEST DATA YOU PROVIDE AND A TABLE DETAILING THE TESTS PERFORMED (MAX 2 PAGES) [10 MARKS]

Test or demonstrate whether your code returns the outputs as expected. For Task 1a, for instance, you may manually work out a list of stations showing how the customer will travel from one starting station (x) to a destination station (y) as well as how long the journey will take in total. Then, you may compare these against the outputs from your code to test whether they coincide.

6. SCREEN-CAPTURED DEMONSTRATION OF YOUR WORKING SOURCE CODE (MAX 3 PAGES) [20 MARKS]

Demonstrate that your code is actually working by screen-capturing the outputs of the code. For Task 1a, for instance, you may screen-capture the outputs of your code (i.e. a list of stations showing how the customer will travel and how long the journey will take in total), given from one starting station (x) to a destination station (y). You may vary x and y for additional tests. For Task 2a, you may screen-capture the list of closed lines between immediate neighbouring stations (e.g. Piccadilly Circus – Green Park, ...) or something equivalent.

7. OUTCOMES OF TASK 1, 2, AND 3 (MAX 2 PAGES) [20 MARKS]

You may show the outcome of Task 1b, the histogram of the shortest inter-station distances. For the outcome of Task 2b, you may show the histogram after the closure and compare this and that of Task 1b.

8. CONCLUSION AND CRITICAL DISCUSSION ON THE LIMITATION OF THE WORK DONE (MAX 1 PAGE) [20 MARKS]

You may focus on the critical discussion on the limitation and better alternative solutions but less on a summary of the work done.

9. WEEKLY LOG OF PROGRESS, INDIVIDUAL CONTRIBUTION TOWARD THE FINAL
OUTCOME BY EACH TEAM MEMBER (MAX 2 PAGES) [10 MARKS]

You may ensure to include all of the group members including an additional member assigned by the module leader if any. If there are inactive members (and thus lower credits are allocated for them), some evidence of related communications with them or attempts may be included.