**SCHOOL OF COMPUTER SCIENCES**
**UNIVERSITI SAINS MALAYSIA**
**ACADEMIC SESSION: 2021/2022**

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# CPT 111 – PRINCIPLES OF PROGRAMMING
## Assignment 1 Part B: Hackathon

### Recommendation System for Device Purchasing

Your friends are surveying the market for portable device to buy for themselves. However, they cannot make a decision due to too much information available. Because you are more technical savvy, they asked for your help to find the most suitable device for them. You wanted to write a program to help your friends and possibly other people to choose the best device to buy and suggest the best three options available for them. Before you can write the program, they must first listed all the available devices they consider buying into a file.

Given that the file contains the specifics of available devices for the program to select from, identify the most suitable device to buy based on a series of device specification set by your friends, from the most required features to the least important features. You are free to determine how many features to be included to determine suitable device to match (minimum 3). However, the program may allow flexibility to the user so they can have only one preference (instead of 3). You also need to obtain the order of the preferences and how important the features are. Based on that, the system should be able to suggest the best three devices from the input file list.

You may define your own constraint in the code to make it feasible for the program to find the most probable devices.

Under usual circumstances, there must be at least three devices to propose. If nothing match, the program MUST propose at least one possible device.

Upon completion, allow user to select the most preferred device and using their define ceiling value to spend, you may provide suitable menus by the system to select additional accessories for the device. Use your creativity to design the accessories options. However the selection must not exceed the ceiling value the user has set.

The input file is organised as follow:

| | | | | | |
|---|---|---|---|---|---|
| i. | Model | v. | Processor speed | ix. | Front camera |
| ii. | Make | vi. | ROM size | x. | Battery capacity |
| iii. | Price | vii. | RAM size | | |
| iv. | Processor | viii. | Main camera | | |

All columns are separated with tab.

Additional program specifications:

- You must only open the file, once.
- You must not change the content of the input file.

- You must only close the file once.
- **You need to clearly state your assumption in your report**. For example: It does not matter what is the making of the processor chipset (Kyro or Cortex or Mongoose), you determine one speed superior over the other by looking at the value of the speed GHz.

The sample of input file's content is in the attachment.

You program must have the following features:

i. Interactive – menu to aid user, easy to follow
ii. Meaningful comments in the source codes

Your documentation need to have:

i. The details of the report in the cover:

   Course: CPT111
   Assignment: 1
   Report for: Hackathon Part B
   Group Number: <Your group number **Please refer to the Google Spreadsheet in eLearning**>
   Member List : <Members full name (Matric Number)>
   Lecturer's Name: Dr Nur Hana Samsudin

ii. Table of Content
iii. Description of the question requirements
   a. Analysis of the problem
   b. Identify the specification of the requirements
   c. Design of the program in pseudocode **or** flowchart
   d. Make sure you include inputs, outputs, process and your own constraints and assumptions
iv. The code
v. Sample of cases tested on your program (use print screen with clear print)

Restriction for this Hackathon Part B:

- You **must not** add any Artificial Intelligence (AI) component.
- You **must not** use array, function, pointers or any other topics which only will be covered after Week 7.
- You **must not** use global variable.
- You **must not** use vector, list, queue, or any possible data structure provided by the built-in C++ library.
- You **must not** use <vector>, <stdio>, <list>, <linkedlist>, <queue>, <stack> and any other preprocessor never used before during your lab session. **You may use all the directives** in your programme's pre-processor which you have been exposed to during your class and lab sessions.

How to Submit:

i. You need to compress/zipped all documents into one file. Make sure you have:
   a. The code in .cpp file

b. The input file (even if it is exactly the same with the one provided)
c. Your report in .pdf file
d. List of the team member in .txt file **with the link for your video**

ii. **Short video presentation** (must not exceed 15 mins) describing the flow of how you implement the program (not describing your flowcharts) and showing the system running using input file sample.
iii. Upload your zipped folder in the submission link provided in the e-Learning.
iv. Name the folder containing the files in the form of **<Group Number>** only.
v. There is not specific writing font to use. If you need a relative or comparable size, you may use **Times New Roman** or **Calibri** with **size 11 or 12** for the main content. You may use other font size for sub-title / sub-heading. Just be consistent about it. Please do it in MS Word or Open Office or Google Doc or any comparable document type and convert to pdf. **Do not write your report in MS Powerpoint.**
vi. **If** you are using any version **MS Visual Studio** for your program, remember to
   a. Create a folder with suffix: _VS
      For example, if you are from Group 99, from the very beginning you are to create a folder **Group 99_VS**.
   b. Never change the location of the files, modify any unknown file during or after you complete. Any simplest modification can render the folder unreadable.
   c. Put all file input and output in within the folder you created.
   d. Zipped everything the way you program.
vii. You **must not** use other IDE (because I don't have them in my machines and afraid I cannot run your program).

Hackathon Duration

i. This question is released at 16:00 on 10th December 2021 (Friday) and is due to be submitted at 19:00 on 11th November 2021 (Saturday).
ii. Submission outside e-Learning platform will not be accepted. Failure to submit using the platform will render you not getting any marks.
iii. Late submission via the system will be penalised.

Additional Notes

i. **The team allowing their program or report to be copied** by another team will also get '**F**' **together with the group they shared their program or report** with.
ii. Please refer to rubric to know more about penalties deduction.
**iii. I will not answer your questions if you ghosted your Telegram ID.**
**iv. Time extended is not a mistake. You can finish within the allocated time. In case you need the extra time, please use it.**

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