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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.

Your 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. Table of Content
- ii. 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
- iii. The code
- iv. 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.