

## **UCCD1004 PROGRAMMING CONCEPTS AND PRACTICES**

### **ASSIGNMENT 1**

**DUE DATE FOR ASSIGNMENT 1: WEEK 6, FRIDAY BEFORE 5.00PM**

Please **READ** and **FOLLOW** all the **INSTRUCTIONS** carefully. You can reuse the code covered in the lectures or from the text book.

#### **1. EQUIPMENT**

Hardware: The PCs in the lab for conducting your practical.

Software: The Microsoft Visual Studio 2017 / 2019. Your programming will be tested by the markers using Visual Studio 2017 / 2019.

#### **2. PROJECT:**

This is an **INDIVIDUAL** assignment. NO help should be obtained from any other persons, as well as the Internet.

#### **3. DESCRIPTION OF PROJECT:**

The assignment focuses on some important aspects of structured programming practices. The aim of this assignment is to provide an opportunity to demonstrate that you have acquired the skills and ability to be proficient in the area of developing C++ application program using modular approach.

#### **4. ACADEMIC HONESTY AND COLLABORATION**

Cooperation is recommended **ONLY** in understanding various concepts and system features. However, the actual solution of the assignment, the programming and debugging must be your individual work, except for what you specifically credit to other sources. (Your grade will be based on your own contribution.) For example, copying without attribution any part of someone's program is plagiarism, even if you modify it and even if the source is a textbook. You can document the credit to other sources at the start of your program code listing. Offenders will be awarded with zero mark for this assignment.

#### **5. PENALTY**

Penalties such as downgrade or reduction of marks will be given to empty or late submissions unless legitimate reasons are provided.

### A. Objective

Write a C++ program (without using any library functions other than **iostream**, **string** and **iomanip**) which enable an admin to book a ZOOM account (on behalf of lecturers) for a particular course to conduct online classes.

### B. Conditions of Booking

1. There are only two ZOOM accounts available: ZOOM A and ZOOM B;
2. Only two time slots, 11 a.m. – 1 p.m. and 2 p.m. – 4 p.m. are available.
3. ZOOM A is able to accept more than 250 students per session while ZOOM B is **limited to** 250 students per session.
4. A lecture class **with less than or equal to 250 students** are allowed to use ZOOM A and however, a lecture class with more than 250 students are not allowed to use ZOOM B.
5. More than 1 reservations are allowed for a course as long as the slot is empty.
6. Name of courses and also number of students must be provided while booking is carried out.
7. A ZOOM account is not available if it is already booked.
8. If a slot is occupied, the system will show the name of course and ask the admin whether to update (or cancel the booking) or not.
9. This booking system will continue for another booking after a reservation is made.
10. All the bookings including new bookings, update bookings and cancel bookings are calculated.
11. It is assumed that this system will refresh every midnight and it is only controlled by an admin.

### C. Sample of Pseudocode

**Declare all the variable with suitable data types.**

**REPEAT**

**INPUTS** course code and name, number of students, slots

**IF** number of students > 250

**IF** a particular slot is selected

**IF** the slot is occupied

**DISPLAY** course code and name that occupied the slot

**Ask to update (or release booking) or exit**

**IF** yes

**INPUT** course code and name, number of students

**UPDATE** all the bookings

**ELSE**

**store** course Code and name, number of students

**UPDATE** all the bookings

**ELSE** number of students < 250

    .....

**\*\*\* (PLEASE TRY TO FILL IN THE REST OF THE PSEUDOCODE) \*\*\***

**UNTIL** no booking is continued

**DISPLAY** total of bookings calculated

**D. Bonus of the program**

If the program is,

1. Decorated
2. The codes are neat e.g. proper indentation
3. Input Validation (cover 30%), e.g. the input for number of students only accept figures instead of string or character.
4. Precise

Do not include input validations into the pseudocode; provide precise description of the flow of the program is sufficient.

### 1. Assignment's Instructions:

- a. This is an **individual assignment**.
- b. You are recommended to read this assignment several times before coding.
- c. Cover the lecture topics from **Week 1 till Week 5, introduction till iteration**. However, it is not limited to all of the topics within the course scopes.
- d. The only C/C++ library you can include is **iostream, string and iomanip**. You cannot include any other libraries and headers.
- e. Please take note that **your submitted assignment must be within the course scopes**. Any submission which is **OUT OF THE TOPICS** (such as Class, Linked List, Pointer, Enum,...) will be awarded with **ZERO MARK**.
- f. If you decide to develop the program without following the provided pseudocode, write your own pseudocode which match with your program.

### 2. Report Submission

- Submit your softcopy of **\*.pdf file** (report), **\*.cpp file** (source codes) and also **\*.exe file** (executable file as demonstrated in practical 1) (**put all in zip**) to WBLE before the due date (which is posted in WBLE). Rename your file name to **fullName\_studentID.zip**.
- Submit a report in softcopy which consists of the following items:
  - i Cover page: Your name, student ID, programme name (e.g. Bachelor of Computer Science), course code and name (to make sure the correct assignment is submitted by the correct student), and email address (optional).
  - ii The assignment objective. Just copy from Section A.
  - iii Pseudocode. Can refer to Section C (no bonus), OR provide own pseudocode.
  - iv Flowchart of your program. It must align with your pseudocode.
  - v Test cases (screenshot of your program output). Please use 3 to 5 different inputs. Each test case should address a particular feature. Note that your test cases should be consistent with your chosen objective.
  - vi Source code, which is exactly the same as in .cpp file that submitted to WBLE.
- You are not expected to use more than **30 pages**.

### 3. Grading

Grading will be based on the following items:

- a) Correctness of the program according to the given pseudocode.
- b) Report structure: completeness, and quality of presentation of each item.
- c) Documentation of codes (how easy to understand your codes); However, avoid excessive comments, such as commenting every line of your code.
- d) Goodness of test cases.