Assignment 4 – Strings/User-Defined Classes

Deadline: **Sunday Nov. 11 by 11:59pm.**
Type: **Group Assignment**
Weight: **This assignment is worth 5% of your final grade**

Notes:
- Please do not submit exe files
- All submissions must be done through Moodle

Marking Scheme:
- Program correctness (80%)
- Program clarity (output format, comments, completeness, readability) (20%)

Questions:

1. **(25 marks)** We want to create a class called **Flight**, which represents flights of an airline company. A flight is defined with the following attributes: number (**int**), departure time (**string**), departure date (**string**), departure city (**string**), destination city (**string**). The member functions of the class **Fight** must perform the following operations:

- Return the flight number
- Return the departure time
- Return the departure date
- Modify the departure time
- Modify the departure date
- Return the departure city
- Return the destination city

To test your class, you need to create, a driver, which is the cpp file that contains the main function. Let's call this, **testflight.cpp**. In the main function, you should prompt the user to enter information about two flights, create two objects of the class **Flight** with the information entered by the user, and finally, test the member functions of the class.

Deliverables:

- A file called **flight.h** that contains the specification of the class.
- A file called **flight.cpp** that contains the implementation of the member functions of the class.
- A file called **testflight.cpp** that contains the main function.

2. **(25 marks)** We want to create a class called **Car**, which represents cars of a car rental company. A Car is defined with the following attributes: id (**int**), brand (**string**), type(**stirng**). The member functions of the class **Car** must perform the following operations:

- Return the car id
- Return the car brand
- Return the car type

Test your class by prompting the user to enter information about two cars. Create two objects of the class **Car** with the information entered by the user, and finally, test the member functions of the class.

Deliverables:

- A file called **car.h** that contains the specification of the class.
- A file called **car.cpp** that contains the implementation of the member functions of the class.
- A file called **testcar.cpp** that contains the main function.

3. **(25 marks)** We want to create a class called **Student**, which represents the students of a university. A student is defined with the following attributes: id number (**int**), first name (**string**), last name (**string**), date of birth (**string**), address (string), and telephone (area code (**int**) and 7-digit telephone number(**string**)). The member functions of the class **Student** must perform the following operations:

- Return the id number.
- Return the first name of the student.
- Modify the first name of the student.
- Return the last name of the student
- Modify the last name of the student
- Return the full name, i.e., first name and last name.
- Return the date of birth.
- Modify the date of birth.
- Return the age of the student.
- Return the address of the student.
- Modify the address of the student.
- Return the telephone number.
- Modify the telephone number.
- Return true if two given students have the same last name. Return false otherwise.
- Return true if two given students are roommates, i.e., they live in the same address.

Test your class by prompting the user to enter information about two particular students. Create two objects of the class **Student** with the information entered by the user, and finally, and test the member functions of the class.

Deliverables:

- A file called **student.h** that contains the specification of the class.
- A file called **student.cpp** that contains the implementation of the member functions of the class.
- A file called **teststudent.cpp** that contains the main function.

4. **(25 marks)** We want to create a class called **Course**, which represents the course offered at ECE. A course is defined with the following attributes: code (**string**), name (**string**), description (**string**), and a list of students registered in the course (array of type Student from previous question). You can assume that a course cannot have more than 20 registered students. The member functions of the class **Course** must perform the following operations:

- Return the course code
- Return the course name
- Modify the course name
- Return the course description
- Modify the course description
- Add a student to the course
- Remove student from a course
- Search if a student with a certain id number is registered in the course
- Output list of student
- Output the number of registered students

Test your class by prompting the user to enter information about one course and four students. Create the course object four objects of the class Students. Register the students in the course**.** Test the member functions of the class.

Deliverables:

- A file called **student.h** that contains the specification of the class.
- A file called **student.cpp** that contains the implementation of the member functions of the class.
- A file called **course.h** that contains the specification of the class.
- A file called **course.cpp** that contains the implementation of the member functions of the class.
- A file called **testcourse.cpp** that contains the main function.