COSC 501

Lab 10

(30 points)Program 1: Structure

Write a C++ program that asks user's first name, last name, and date of birth, and stores the information in the structure data type 'Person'. The data type 'Person' has four member variables: first name, last name, date of birth, and age. First name and last name are string types, age is an integer type, and date of birth is another structure type 'Date'. The data type 'Date' has three member variables: year, month, day as integer. Age, a member variable of the structure 'Person', should be calculated based on the current date. For example, if the user's birth year is 1995 and the birthday has not passed yet, the user's age would be 21. As an output, the program should print user's name and the calculated age.

```cpp
#include <iostream>
#include <string>
using namespace std;

struct Date{
    // You need to complete
};

struct Person{
    // You need to complete
};

int calculateAge(Person,Date);  // function to calculate the current age
void printInfo(Person);          // function to print personal information

int main() {
    Person p;
    Date today = {4, 19, 2017};
    // You need to implement
}
```

Sample Output: Red colored texts are user inputs. Other texts are the output of the program.

```
First name: John
Last name: Doe
Birth year: 1995
Birth month: 11
Birth day: 10

Name: John Doe
Age: 21
```

(50 points)Program 2: Class

Consider a class Movie that contains information about a movie. The class has the following attributes:

- The movie name
- The MPAA rating (for example, G, PG, PG-13, R)
- The number of people that have rated this movie as a 1 (Terrible)
- The number of people that have rated this movie as a 2 (Bad)
- The number of people that have rated this movie as a 3 (OK)
- The number of people that have rated this movie as a 4 (Good)
- The number of people that have rated this movie as a 5 (Great)

Implement the class with accessor and mutator functions for the movie name and MPAA rating. Write a function `addRating` that takes an integer as an input parameter. The function should verify that the parameter is a number between 1 and 5, and if so, increment the number of people rating the movie that match the input parameter. For example, if 3 is the input parameter, then the number of people that rated the movie as a 3 should be incremented by 1. Write another function, `getAverage`, that returns the average value for all of the movie ratings. Finally, add a constructor that allows the programmer to create the object with a specified name and MPAA rating. The number of people rating the movie should be set to 0 in the constructor.

Input: Information of two movies

Movie Name	Interstellar	Toy Story 3
MPAA Rating	PG-13	G
Rate 1 (Terrible)	1	1
Rate 2 (Bad)	2	2
Rate 3 (OK)	3	4
Rate 4 (Good)	3	4
Rate 5 (Great)	5	4

Sample Output: Red colored texts are user inputs. Other texts are the output of the program. (Output the movie name, MPAA rating, and average rating for each movie object.)

```
Interstellar    PG-13      3.64286
Toy Story 3     G          3.53333
```

Submission:

You should submit your source files (.cpp). Please name your files to include the lab number and program number, e.g. Lab0Program1.cpp. Also create a word or pdf document for the answers to the lab questions.