An-Najah Nation University

Faculty of Engineering and Information Tech.

جامعة النجاح الوطنية

كلية الهندسة وتكنولوجيا المعلومات

Computer Engineering Department
Data Structures and Algorithms (10636211)

HW 1

ILOs [3]	**Due to: 13/10/2019**	**10 points**

Write a C++ class named **Date** having three data members:

- **day**
- **month**
- **year**

Your class must have:

1. A default and parameterized constructor. (use the following default date 2000-01-01)
2. A function called **setDate** which takes 3 valid values for day, month, and year (Display an error message to the user when the given values are invalid).
3. 3 functions **getDay(), getMonth(),** and **getYear()** .
4. **Overloaded <<** operator to display the date in the following format (YYYY-MM-DD)
5. **Overloaded >>** operator to read three values for date, month, and year.
6. **Overloaded ++ operator** to add a day to the current date
7. **Overloaded - - operator** to subtract a day from the current date
8. **Overloaded logical operators: (= = , != , > , and <)**

Notes:

- While adding and subtracting a day (Auto-increment and auto-decrement) keep in mind to adjust the date (e.g. adding one day to 2019-12-31 will give 2020-01-01).
- The result of a logical operation is bool (true or false).

Use the following main function to test your code:

```
#include "Date.h"
#include<iostream>
using namespace std;
int main()
{
	Date date1(31 , 1, 2019);
	Date date2(1 , 3 , 2019);
	Date date3(15 , 4 , 2019);
	Date date4(15, 4, 2019);
	Date date5;
	cout << "date1 :";
	cout << "Day =" << date1.getDay();
	cout << " , Month = " << date1.getMonth();
	cout << " , Year = " << date1.getYear() << endl;
	cout << "date1 : " << date1 << endl;
	cout << "date2 : " << date2 << endl;
	cout << "date3 : " << date3 << endl;
	cout << "date4 : " << date4 << endl;
	if (date1 == date2)
		cout << "date1 is equal to date2" << endl;
	if (date1 != date2)
		cout << "date1 is not equal to date2" << endl;
	if (date3 == date4)
		cout << "date3 is equal to date4" << endl;
	if (date3 != date4)
		cout << "date3 is not equal to date4" << endl;
	if (date1 < date2)
		cout << "date1 is before date2" << endl;
	if (date3 > date1)
		cout << "date3 is after date1" << endl;

	cout << "date1 before auto-increment:" << date1 << endl;
	date1++;
	cout << "date1 after auto-increment:" << date1 << endl;
	cout << "date2 before auto-decrement:" << date2 << endl;
	date2--;
	cout << "date2 after auto-decrement:" << date2 << endl;

	cin >> date5;
	cout << "date5 :" << date5 << endl;

	date1.setDate(1, 12, 2020);
	cout << "date1 : " << date1 << endl;
	date1.setDate(29, 2, 2019); //invalid day
	cout << "date1 : " << date1 << endl;
	return 0;
}
```

Output

```
date1 :Day =31 , Month = 1 , Year = 2019
date1 : 2019-01-31
date2 : 2019-03-01
date3 : 2019-04-15
date4 : 2019-04-15
date1 is not equal to date2
date3 is equal to date4
date1 is before date2
date3 is after date1
date1 before auto-increment:2019-01-31
date1 after auto-increment:2019-02-01
date2 before auto-decrement:2019-03-01
date2 after auto-decrement:2019-02-28
Enter a day: 15
Enter a month: 10
Enter a year: 2018
date5 :2018-10-15
date1 : 2020-12-01
Invalid Day
date1 : 2020-12-01
Press any key to continue . . .
```