National University of Computer and Emerging Sciences

Lab Manual 08
Object Oriented Programming

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Objectives

After performing this lab, students shall be able to perform:
Operator overloading.

- Subtraction as a unary and binary operator.
- Addition and multiplication operations.
- Pre and post increment and decrement operations.
- Stream insertion and extraction operator.

TASK 1:

Implement a class called **Fraction**. The **Fraction** class will have two data members:

- int num; // Numerator
- int denum; //Denominator. (Should never be zero)

You need to implement default constructor, overloaded constructor, setter, getters, destructor and overload the operators.

Write a suitable main() for your class to show the functionality of all your functions.

Your project must have fraction.h, fraction.cpp and main.cpp.

```
class fraction
{
	int num, denum;

public:
	fraction(int = 0, int = 1); //Constructor
	void operator!(void) const; // print the fraction
	fraction operator-(void) const; // negative of fraction
	fraction operator*(void) const; // reciprocal of fraction

	//Fraction's Arithematic Operators
	fraction& operator+=(const fraction&); //frac1 +=frac2
	fraction& operator-=(const fraction&); //frac1 -=frac2
	fraction& operator*=(const fraction&); //frac1 *=frac2
	fraction& operator/=(const fraction&); //frac1 /=frac2

	// Fraction's Relational Operators.
	bool operator>(const fraction&) const;
	bool operator<(const fraction&) const;
	bool operator==(const fraction&) const;
	bool operator!=(const fraction&) const;

	// Overload insertion operator

	// Overload extraction operator
```

TASK 2:

Implement a class named **Month**.

The class should have the following private members:

- **name** A string object that holds the name of a month, such as “January,” “February,” etc.
- **monthNumber** An integer variable that holds the number of the month. For example, January would be 1, February would be 2, etc. Valid values for this variable are 1 through 12.

In addition, provide the following member functions:

• A **default constructor** that sets monthNumber to 1 and name to “January.”

• A **constructor** that accepts the name of the month as an argument. It should set name to the value passed as the argument and set monthNumber to the correct value.

• **Prefix and postfix overloaded** ++ operator functions that increment monthNumber and set name to the name of next month. If monthNumber is set to 12 when these functions execute, they should set monthNumber to 1 and name to “January.”

• **Prefix and postfix overloaded** − − operator functions that decrement monthNumber and set name to the name of previous month. If monthNumber is set to 1 when these functions execute, they should set monthNumber to 12 and name to “December.” .