National University Of Computer and Emerging Sciences

Course	Object Oriented Analysis & Design
Section	C & D
Instructor	Mr Farooq Ahmad

Assignment No. 1
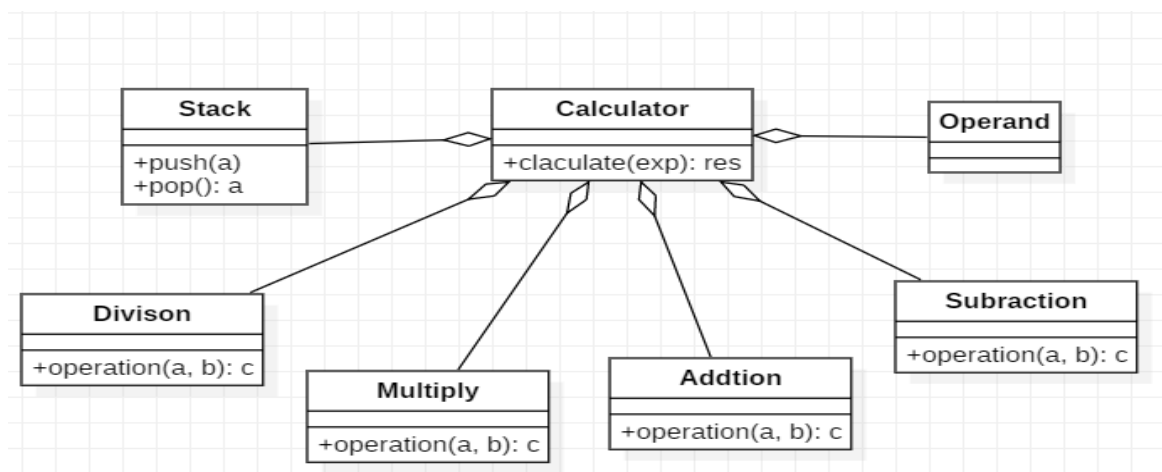**Deadline: 24/09/2018 5 PM**

You are familiar with the core concept of Object Oriented Programming, so, let revise those concepts by building build a small system. This assignment includes the concepts of association, inheritance and polymorphism.

You have to design a calculator system, in which basic math operations like (Addition, Subtraction, Multiplication and Division) should be catered. A user will give expression in form of String and system should output the result.

Here is example code:

```java
class Calculator{

    public String calculate(String expression){
        // Here your logic goes
    }

}

public static void main(String []args){
    Calculator calculator = new Calculator()
    System.out.println("The result is :"+ Calculator.calculate("2+3*5-3"));
        //The result is : 14
}
```

Here is a rough design of this system

For this assignment, you can use any language. You can use any Prefix or Postfix expression.

Note: You have to think about where Polymorphism and Inheritance could be applied. Do proper thinking before implementing. Proper design will get full marks.

Bonus: Implement calculator in such way that it catered bracket in expression too.

Some useful language:
- http://interactivepython.org/runestone/static/pythonds/BasicDS/InfixPrefixandPostfix Expressions.html
- http://www.ntu.edu.sg/home/ehchua/programming/java/j3b_oopinheritancepolymorph ism.html