King Saud University
College of Computer & Information Science
CSC111 – Assignment 11
All Sections

Instructions

1- You must submit your solution using Web-CAT grading system. Web-CAT can be accessed from eclipse using the following IP address (single line):

```
http://10.131.240.28:8080/Web-CAT/WebObjects/Web-CAT.woa/wa/assignments/eclipse
```

2- Due date: Thursday Dec 3rd at 11:59pm

3- You can discuss answers with your colleagues but **cheating is prohibited and there will be extreme consequences**.

Question 1

Design a class named **MyInteger**. The class contains:

- An **int** data field named **value** that stores the **int** value represented by this object.
- A no-arg constructor **MyInteger()** that ***calls the next constructor*** to create a MyInteger object of value 0.
- A constructor **MyInteger(int value)** that creates a MyInteger object for the specified **int** value.
- A setter and getter methods that sets/returns the **int** value.
- The methods **isEven()**, **isOdd()**, and **isPrime()** that return **true** if the value in this object is even, odd, or prime, respectively.

- The static methods **isEven(int)**, **isOdd(int)**, and **isPrime(int)** that return **true** if the specified value is even, odd, or prime, respectively.
- The static methods **isEven(MyInteger n)**, **isOdd(MyInteger n)**, and **isPrime(MyInteger n)** that return **true** if the specified object represents an even, odd, or prime integer, respectively.
- The methods **add(MyInteger n)**, **sub(MyInteger n)**, and **mul(MyInteger n), and div(MyInteger n)** that *returns a new* ***MyInteger*** *object* that stores the result of adding value of current object to value of parameter **n**, subtracting value of parameter object **n** from value of current object, multiplying value of parameter object **n** by value of current object and dividing value of current object by value of parameter object **n** if it is not zero (returns **null** if parameter is zero), respectively.
- The methods **equals(int n)** and **equals(MyInteger n)** that return **true** if the value in this object is equal to the specified value of integer **n** or object **n**.

Draw the UML diagram for the class and then implement the class. Write a client program that tests all methods in the class by

- Creating two objects of type **MyInteger** with values 5 and 24.
- Trying all methods on these two objects as shown in sample run.
- Trying the static method **isPrime**()on number 15.
- Trying the static method **isOdd**() on number 45.

Name your classes `MyInteger` and `TestMyInteger`.

Sample Run:

```
n1 value is 5
n1 is even? false
n1 is prime? true
n2 value is 24
n2 is odd? false
n1 is equal to n2? false
n1 is equal to 5? true
n1 value after n1.add(n2) 29
n2 value after n2.sub(n1) 19
n1 value after n1.mul(n2) 120
n2 value after n2.div(n1) 4
15 is prime? false
45 is odd? true
```