(**ArrayIndexOutOfBoundsException**) Write a program that meets the following requirements:

- Creates an array with **100** randomly chosen integers.
- Prompts the user to enter the index of the array, then displays the corresponding element value.

If the specified index is out of bounds, display the message **Out of Bounds**.

(**IllegalTriangleException**) Define **Triangle** class with three sides. The **Triangle** class should have **getArea()** and **getPerimeter()** methods. In a triangle, the sum of any two sides is greater than the other side. The **Triangle** class must adhere to this rule. Create the **IllegalTriangleException** class, and modify the constructor of the Triangle class to throw an **IllegalTriangleException** object if a triangle is created with sides that violate the rule.

```
/** Construct a triangle with the specified sides */
public Triangle(double side1, double side2, double side3) throws IllegalTriangleException {
// Implement it
}
```

Hint: Area of a triangle is:

$$s = (side1 + side2 + side3)/2$$

$$area = \sqrt{s(s - side1)(s - side2)(s - side3)}$$

Write a test class to test the methods **getArea()** and **getPerimeter()** in the **Triangle** class that you've defined in the question above.

Write a test class to test the methods **getBMI** and **getStatus** in the **BMI** class in "**Class Materials/Lecture Examples/chapter10/BMI.java**" directory of the team **22B_CSE 102T_Computer Programming II_Ö_1**.

Write a test class to test the methods **length**, **charAt**, **substring**, and **indexOf** in the **java.lang.String** class.