1. (4 pts) What is **Exception** in Java?

2. (6 pts) FileNotFoundException is a ***Checked*** exception and NullPointerException is an ***Unchecked*** Exception. What is the difference between checked and unchecked exceptions?

3. (20 pts) What is difference between **throw** and **throws** keyword in Java? Provide an example of code that uses both **throw** and **throws**.

4. (20 pts) Define a custom exception class named **SensorException** and default its exception message to "*Error Reading Sensor*"

5. Demonstrate your ability to Handle Exceptions.   The code below may generate:
   ArrayIndexOutOfBoundsException when "58" is entered or
   NumberFormatException when "one" is entered.

```
1 import java.util.*;
2 public class TestMyException
3 {
4     public static void main(String []args)
5     {
6
7         Scanner kb = new Scanner(System.in);
8
9         int[] numbers = {10, 20, 30};
10
11        int index;
12        System.out.print("Enter index value: ");
13
14        String str = kb.nextLine();
15        index = Integer.parseInt(str);
16
17        System.out.printf("numbers[%d] = %d\n", index, numbers[index]);
18
19        System.out.println("Finished");
20    }
21 }
```

 (30 pts)
Display the message "*Error: Array Index Out Of Bounds*" when an **ArrayIndexOutOfBoundsException**
occurs and the message "*Error: Number Format Exception*" when a **NumberFormatException**
occurs.

(15 pts) Loop until a valid index value has been entered:

     Enter index value: **one**
      Error: Number Format Exception
     Enter index value: **58**
      Error: Array Index Out Of Bounds
     Enter index value: **2**
     numbers[2] = 30
     Finished

(5 pts) Call the exception's **getMessage**() method when a NumberFormatException occurs:

     Enter index value: one
       Error: Number Format Exception: **For input string: "one"**

```java
import java.util.*;
public class TestMyException
{
    public static void main(String []args)
    {
        Scanner kb = new Scanner(System.in);
        int[] numbers = {10, 20, 30};
        int index;




        System.out.print("Enter index value: ");


        String str = kb.nextLine();


        index = Integer.parseInt(str);



        System.out.printf("numbers[%d] = %d\n", index, numbers[index]);









        System.out.println("Finished");

    }
}
```