INTE2512 Object-Oriented Programming

Lab - Exceptions & File I/O

1. What is the output of the following code?

```
public class Test {
     public static void main(String[] args) {
          try {
               int value = 30;
               if (value < 40) throw new Exception("value is too small");
          } catch (Exception ex) { System.out.println(ex.getMessage());
          }
          System.out.println("Continue after the catch block");
     }
}
```

What would be the output if the line int value = 30; were changed to int value = 50.

Solution:

- value = 30: Output shows:

  value is too small

  Continue after the catch block

- value = 50: Output shows:

  Continue after the catch block

2. What RuntimeException will the following programs throw, if any?

`public class Test {`
`     public static void main(String[] args) {int[]`
`          list = new int[5];`
`          System.out.println(list[5]);`
`     }`
`}`
ArrayIndexOutOfBoundsException
	`public class Test {`
	`     public static void main(String[] args) {String`
	`          s = "abc";`
	`          System.out.println(s.charAt(3));`
	`     }`
	`}`
	StringIndexOutOfBoundsException

`public class Test {`
`     public static void main(String[] args) {Object`
`          o = new Object();`
`          String d = (String) o;`
`     }`
`}`
ClassCastException
	`public class Test {`
	`     public static void main(String[] args) {Object`
	`          o = null;`
	`          System.out.println(o.toString());`
	`     }`
	`}`
	NullPointerException

`public class Test {`
`     public static void main(String[] args) {`
`          System.out.println(1.0 / 0);`
`     }`
`}`
No error. It shows "Infinity".
	`public class Test {`
	`     public static void main(String[] args) {`
	`          System.out.println(1 / 0);`
	`     }`
	`}`
	ArithmeticException

3. Suppose that statement2 causes an exception in the following try-catch block:

```
try {
     statement1;
     statement2;
     statement3;
} catch (Exception1 ex1) {
} catch (Exception2 ex2) {
}
statement4;
```

a. Will statement3 be executed? No

b. If the exception is not caught, will statement4 be executed? No

c. If the exception is caught in the catch block, will statement4 be executed? Yes

4. Suppose that statement2 causes an exception in the following statement:

```
try {
     statement1;
     statement2;
     statement3;
} catch (Exception1 ex1) {
} finally {
     statement4;
}
statement5;
```

a. If no exception occurs, will statement4 be executed, and will statement5 be executed?

Yes for statement4 and statement5.

b. If the exception is of type Exception1, will statement4 be executed, and will statement5 be executed?

Yes for statement4 and statement5.

c. If the exception is not of type Exception1, will statement4 be executed, and will statement5 be executed?

Yes for statement4 and No for statement5.

5. Suppose that statement2 causes an exception in the following statement:

```
try {
     statement1;
     statement2;
     statement3;
} catch (Exception1 ex1) {
} catch (Exception2 ex2) {
     throw ex2;
} finally {
     statement4;
}
statement5;
```

a. If no exception occurs, will statement4 be executed, and will statement5 be executed?

Yes for statement4 and statement5.

b. If the exception is of type Exception1, will statement4 be executed, and will statement5 be executed?

Yes for statement4 and statement5.

c. If the exception is of type Exception2, will statement4 be executed, and will statement5 be executed?

Yes for statement4 and statement5.

d. If the exception is not Exception1 nor Exception2, will statement4 be executed, and will statement5 be executed?

Yes for statement4 and No for statement5.

6. Write a program that:

- Creates an array with 10 randomly chosen integers.
- Prompts the user to enter the index of an element of the array, then displays the corresponding element value.
- If the specified index is out of bounds, displays the message Array Index Out of Bounds.

7. Your program should use try-catch block to handle the exception rather than checking the array index prior to accessing. Write the bin2Dec(String binaryString) method to convert a binary string into a decimal number. The method throws a NumberFormatException (a subclass of RuntimeException) if the string is not a binary string. Write a program to test this method. Write a test program to test this method with a number of different arguments.

8. Write a program that converts the Java source code from the Allman's brace style (next line) to Kernighan & Ritchie's brace style (end-of-line). For example, the following Java source on the left side uses the Allman's brace style. Your program converts it to the Kernighan & Ritchie's brace style on the right side.

```
public class Test
{
    public static void main(String[] args)
    {
        // Some statements
    }
}
```

```
public class Test {
    public static void main(String[] args) {
       // Some statements
    }
}
```

Your program should get the ***input file name*** and ***output file name*** from the command line. It converts the Java source code to a new format.