IS2104 - Rapid Application Development 2020

Activity 12

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Question 01

```java
import java.util.Scanner;
class MyException extends Exception{
    public MyException(){

    }
}
public class ExceptionHandling {
    public static void main(String[] args){
        System.out.println("Enter your number ");
        Scanner scan=new Scanner(System.in);
        try{
            int number=scan.nextInt();
            switch(number){
                case 1 : throw new ArithmeticException("/ by zero");
                case 2 : throw new NullPointerException();
                case 3 : throw new NumberFormatException(" For input stirng : \"abc\"");
                case 4 : throw new ArrayIndexOutOfBoundsException("/ by zero");
                case 5 : throw new StringIndexOutOfBoundsException(" Sting index out of range: 10");
                case 6 : throw new MyException();
                case 7 : break;
            }

        }
        catch(ArithmeticException e){
            System.out.println("ArithmeticException occured! "+e);
        }
        catch(NullPointerException e){
            System.out.println("NullPointerException occured! "+e);
        }
        catch(NumberFormatException e){
            System.out.println("NumberFormatException occured! "+e);
        }
        catch(ArrayIndexOutOfBoundsException e){
            System.out.println("ArrayIndexOutOfBoundsException occured! "+e);
        }
        catch(StringIndexOutOfBoundsException e){
            System.out.println("StringIndexOutOfBoundsException occured! "+e);
        }
        catch(MyException e){
            System.out.println("My exception occured! MyException : My Exception");
        }
    }
}
```

```
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C:\Users\Hansika>cd Desktop

C:\Users\Hansika\Desktop>javac ExceptionHandling.java

C:\Users\Hansika\Desktop>java ExceptionHandling
Enter your number
1
ArithmeticException occured! java.lang.ArithmeticException: / by zero

C:\Users\Hansika\Desktop>java ExceptionHandling
Enter your number
2
NullPointerException occured! java.lang.NullPointerException

C:\Users\Hansika\Desktop>java ExceptionHandling
Enter your number
3
NumberFormatException occured! java.lang.NumberFormatException:  For input stirng : "abc"

C:\Users\Hansika\Desktop>java ExceptionHandling
Enter your number
4
ArrayIndexOutOfBoundsException occured! java.lang.ArrayIndexOutOfBoundsException: / by zero

C:\Users\Hansika\Desktop>java ExceptionHandling
Enter your number
5
StringIndexOutOfBoundsException occured! java.lang.StringIndexOutOfBoundsException:  Sting index out of range: 10

C:\Users\Hansika\Desktop>java ExceptionHandling
Enter your number
6
My exception occured! MyException : My Exception
```

Question 2

```java
1    import java.util.Scanner;
2    class MyException extends Exception{
3    }
4    public class Calc{
5        public static void main(String[] args){
6            System.out.println("Enter number 1,number 2 and operator");
7            try{
8                Scanner scan=new Scanner(System.in);
9                int number1=Integer.parseInt(scan.next());
10               int number2=Integer.parseInt(scan.next());
11               char operator=scan.next().charAt(0);
12               if(operator =='+' || operator =='-' || operator =='*' || operator =='/'){
13                       if(operator=='+')
14                           System.out.println(number1+number2);
15                       else if(operator == '/'){
16                           try{
17                               System.out.println(number1/number2);
18                           }
19                           catch(ArithmeticException e){
20                               System.out.println("Arithmetic exception occured! : "+e);
21                           }
22                       }
23                       else if(operator=='-'){
24                           try{
25                               if(number1>number2)
26                                   System.out.println(number1-number2);
27                               else throw new MyException();
28                           }
29                           catch(MyException e){
30                               System.out.println("Negative result exception occured! :negative_result: Negative Results!");
31                           }
32                       }
33                       else System.out.println(number1*number2);
34                   }
35               else {
36                   throw new MyException();
37               }
38               }
39           catch(NumberFormatException e){
40               System.out.println("Number format exception occured! : "+e);
41           }
42           catch(MyException e){
43               System.out.println("Invalid Operator Exception Occured! :invalid_operator:Invalid Operator");
44           }
```

```
C:\Users\Hansika>cd Desktop

C:\Users\Hansika\Desktop>javac Calc.java

C:\Users\Hansika\Desktop>java Calc
Enter number 1,number 2 and operator
b 10 +
Number format exception occured! : java.lang.NumberFormatException: For input string: "b"

C:\Users\Hansika\Desktop>java Calc
Enter number 1,number 2 and operator
10 5 @
Invalid Operator Exception Occured! :invalid_operator:Invalid Operator

C:\Users\Hansika\Desktop>java Calc
Enter number 1,number 2 and operator
10 20 -
Negative result exception occured! :negative_result: Negative Results!

C:\Users\Hansika\Desktop>java Calc
Enter number 1,number 2 and operator
20 0 -
20

C:\Users\Hansika\Desktop>java Calc
Enter number 1,number 2 and operator
20 0 /
Arithmetic exception occured! : java.lang.ArithmeticException: / by zero

C:\Users\Hansika\Desktop>java Calc
Enter number 1,number 2 and operator
20 5 +
25

C:\Users\Hansika\Desktop>java Calc
Enter number 1,number 2 and operator
20 5 -
15

C:\Users\Hansika\Desktop>java Calc
Enter number 1,number 2 and operator
20 5 *
100

C:\Users\Hansika\Desktop>java Calc
Enter number 1,number 2 and operator
20 5 /
4
```

Question 03

```java
import java.util.Scanner;

public class Fifth {
    public static void main(String[] args){
        System.out.println("Enter your string: ");
        Scanner scan=new Scanner(System.in);
        String word=scan.next();
        try {
          System.out.println(word.charAt(4));
          System.out.println(word.charAt(9));
          System.out.println(word.charAt(14));
          System.out.println(word.charAt(19));
        } catch (StringIndexOutOfBoundsException e) {
           System.out.println("StringIndexOutOfBoundsException occured! "+e);
        }
    }
}
```

```
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C:\Users\Hansika>cd Desktop

C:\Users\Hansika\Desktop>javac Fifth.java

C:\Users\Hansika\Desktop>java Fifth
Enter your string:
thequickbrownfoxjump
u
r
o
p

C:\Users\Hansika\Desktop>java Fifth
Enter your string:
thequick
u
StringIndexOutOfBoundsException occured! java.lang.StringIndexOutOfBoundsException: String index out of range: 9

C:\Users\Hansika\Desktop>java Fifth
Enter your string:
thequickbrown
u
r
StringIndexOutOfBoundsException occured! java.lang.StringIndexOutOfBoundsException: String index out of range: 14

C:\Users\Hansika\Desktop>java Fifth
Enter your string:
thequickbrownfox
u
r
o
StringIndexOutOfBoundsException occured! java.lang.StringIndexOutOfBoundsException: String index out of range: 19

C:\Users\Hansika\Desktop>
```

Question 04

```java
import java.util.Scanner;
class MyException extends Exception{
    public MyException(String error){
        super(error);
    }
}
public class Inventory{
    public static void main(String[] args){
        Scanner scan=new Scanner(System.in);
        int[] inventory={0,0,0,0,0,0,0,0,0,0};
        int count=0;
        while(count<6){
            try{
                System.out.println(Arrays.toString(inventory));
                System.out.println("Enter action, index and quantity : ");
                String action=scan.next();
                int index=scan.nextInt();
                int quantity=scan.nextInt();
                if(!action.equals("add") && !action.equals("remove")){
                    System.out.println("action");
                    throw new MyException("Invalid Action Exception Occured! :invalid_action: Invalid Action!");
                }
                else{if(index>=inventory.length){
                    throw new ArrayIndexOutOfBoundsException(index);
                }
                    else{if(action.equals("add")){
                        inventory[index]=inventory[index]+quantity;
                    } else if(action.equals("remove") && inventory[index]<quantity){
                        throw new MyException("Negative quantity Exception occured! :negative_quantity: Negative quantity at "+index+"!");
                    }else{inventory[index]=inventory[index]-quantity;
                    }
                }
            }
        }
        catch(MyException e){
            System.out.println(e);
        }
        catch(ArrayIndexOutOfBoundsException e){
            System.out.println("ArrayIndexOutOfBoundsException occured! : "+e);
        }
        count++;
        }
    }
}
```

```
Microsoft Windows [Version 10.0.18362.175]
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C:\Users\Hansika>cd Desktop

C:\Users\Hansika\Desktop>javac Inventory.java

C:\Users\Hansika\Desktop>java Inventory
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
Enter action, index and quantity :
add 0 20
[20, 0, 0, 0, 0, 0, 0, 0, 0, 0]
Enter action, index and quantity :
add 1 40
[20, 40, 0, 0, 0, 0, 0, 0, 0, 0]
Enter action, index and quantity :
test 1 40
action
MyException: Invalid Action Exception Occured! :invalid_action: Invalid Action!
[20, 40, 0, 0, 0, 0, 0, 0, 0, 0]
Enter action, index and quantity :
add 50 50
ArrayIndexOutOfBoundsException occured! : java.lang.ArrayIndexOutOfBoundsException: Array index out of range: 50
[20, 40, 0, 0, 0, 0, 0, 0, 0, 0]
Enter action, index and quantity :
remove 0 10
[10, 40, 0, 0, 0, 0, 0, 0, 0, 0]
Enter action, index and quantity :
remove 1 100
MyException: Negative quantity Exception occured! :negative_quantity: Negative quantity at 1!

C:\Users\Hansika\Desktop>
```