

## PA 8: Exception Handling in JAVA

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**Problem Description:** Task is to rewrite the grade distribution ADA program in Java. In the Java version, we must change the second half of the first loop so that all assignments to the counting Array "Freq()" are updated in the Exception portion of the code. There should be no valid updates to "Freq ()" anywhere else in the loop.

### **Code in Java:**

```
//PA 8: Exception Handling in JAVA
//Author: Indronil Bhattacharjee
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import java.util.*;
class GradeDistribution
{
public
    static void main(String[] args)
    {
        // Creating a scanner object
        Scanner s = new Scanner(System.in);

        // Declared the required variable and array here.
        int[] freq = new int[11]; // The array has been declared of size 11.
        int limit_1, limit_2, index;
        int new_grade;

        /* Getting into the loop.
        * The loop will run unlimited times unless there is a negative number
        in the input.
        */
        for (;;)
        {
            // Scanning input
            new_grade = s.nextInt();
            // This try and catch will help to break from loop, whenever a
            negative number is inputed.
            try
            {
                if (new_grade < 0)
                {
                    throw new ArithmeticException();
                }
            }
        }
    }
}
```

```

        catch (ArithmeticException e)
        {
            break;
        }
        index = new_grade / 10 + 1;
        // Taking every input grade as an exception.
        try
        {
            if (new_grade >= 0)
            {
                throw new ArithmeticException();
            }
        }
        // As part of the logic the freq[] updating is done in the catch
section.
        catch (ArithmeticException e)
        {
            if (new_grade < 100)
                freq[index] = freq[index] + 1;
            if (new_grade == 100)
                freq[10] = freq[10] + 1;
            if (new_grade > 100)
                System.out.println("Error -- new grade: " + new_grade + "
is out of range");
        }
    }
    System.out.println("\nLimits Frequency");
    // Printing out the values
    for (index = 0; index < 10; index++)
    {
        limit_1 = 10 * index;
        limit_2 = limit_1 + 9;
        if (index == 9)
            limit_2 = 100;
        System.out.print(limit_1 + " ");
        System.out.print(limit_2 + " ");
        System.out.print(freq[index + 1]);
        System.out.println("");
    }
}

```

### Input:

```

22
40
90
85

```

```
60
73
69
80
77
72
95
88
99
105
-1
```

### **Output:**

```
Error -- new grade: 105 is out of range

Limits Frequency
0 9 0
10 19 0
20 29 1
30 39 0
40 49 1
50 59 0
60 69 2
70 79 3
80 89 3
90 100 3
```

The above output shows the program can take any amount of positive number numbers, and it terminates whenever a negative number comes. It outputs the number of occurrences of grades within the specific range.

### **Program description:**

The array `freq[]` has declared of size 11, so it can have 1 to 10 as indexes. I am using try catch to exception handling the cases whenever the index is out of bound or almost out of bound. Taking everything as an exception, I have put all the operations done on the `freq[]` array into the catch section of the code with some logic.