

# Lab: Exceptions and Error Handling

This document defines the lab for the ["Java Advanced" course @ Software University](#). Please submit your solutions (source code) of all below described problems in [Judge](#).

## 1. Number in Range

Write a program to **enter an integer** in a **certain range**. Until the number is not **valid**, enter a **new number** from the **console**. When the number is **valid** - end the program.

### Input

- Read a **range** - two numbers, separated by a space.
- On the next line, read the **String**.

### Output

- Print the range in the following format: **"Range: [{startIndex}...{endIndex}]"**.
- When an **invalid number** is entered, **String** or the number is **out of range**, print **"Invalid number: {num}"**.
- When the entered number is **valid**, print **"Valid number: {num}"**.

### Examples

Input	Output	Comment
10 20 5 xx 20	Range: [10...20] Invalid number: 5 Invalid number: xx Valid number: 20	Set the interval from the console and print it: <b>Range: [10...20]</b> . The first String is <b>5</b> , which is <b>invalid</b> and out of range. Enter a <b>new</b> String. The second <b>String</b> is <b>xx</b> , which is also <b>invalid</b> . Enter a <b>new</b> String. The third <b>String</b> is <b>20</b> , which is <b>valid</b> . End the program.
-5 50 hi -6 -1	Range: [-5...50] Invalid number: hi Invalid number: -6 Valid number: -1	

## 2. Square Root

Write a program that reads an integer **number** and **calculates** and **prints** its **square root** (with **2 digits** after the decimal point). If the number is invalid, print **"Invalid number"**. In all cases finally, print **"Goodbye"**. Use **try-catch-finally**.

Input	Output
9	3.00 Goodbye
20	4.47 Goodbye

Xx	Invalid Goodbye
-5	Invalid Goodbye

### 3. Enter Numbers

Write a method `readNumber(int start, int end)` that enters an integer number in a given range `[start...end]`, **excluding** the numbers `start` and `end`. If an **invalid number** or a **non-number** text is entered, the method should **throw an exception**. Using this method, write a program that enters **10 numbers**: `a1, a2, ... a10`, **such that** `1 < a1 < ... < a10 < 100`. If the user enters an invalid number, continue while there are 10 valid numbers entered. Print the array elements, separated with **comma and space** ", ".

### Hints

- When the entered input holds a non-integer value, print **"Invalid Number!"**.
- When the entered input holds an integer that is out of range, print **"Your number is not in range {currentNumber} - 100!"**.

### Examples

Input	Output
2 3 4 5 6 7 8 9 10 11	2, 3, 4, 5, 6, 7, 8, 9, 10, 11
1 2 1 3 p 4 5 6 7 8 9 10 11	Your number is not in range (1 - 100) Your number is not in range (2 - 100) Invalid Number! 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

## 4. Fixing

This program is throwing an **ArrayIndexOutOfBoundsException**. Using your skills, fix this problem using a try-catch block. (without Judge)

```
public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    String[] weekdays = new String[5];

    weekdays[0] = "Monday";
    weekdays[1] = "Tuesday";
    weekdays[2] = "Wednesday";
    weekdays[3] = "Thursday";
    weekdays[4] = "Friday";

    for (int i = 0; i <= weekdays.length; i++) {
        System.out.println(weekdays[i]);
    }

    scanner.nextLine();
}
```