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.

Problem 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: **Range: [10...20]**. The first String is **5**, which is **invalid** and out of range. Enter a **new** String. The second **String** is **xx**, which is also **invalid**. Enter a **new** String. The third **String** is **20**, which is **valid**. End the program.
-5 50 hi -6 -1	Range: [-5...50] Invalid number: hi Invalid number: -6 Valid number: -1	

Problem 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

Problem 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**: a_1, a_2, … a_{10}, **such that** $1 < a_1 < … < a_{10} < 100$. 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

Problem 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();
}
```