

Write a Java program that reads a list of integers from the user and throws an exception if any numbers are duplicates.

Sample Solution:

Java Code:

```
import java.util.*;

public class Duplicate_Number_Check {
    public static void main(String[] args) {
        try {
            List < Integer > numbers = readNumbersFromUser();
            checkDuplicates(numbers);
            System.out.println("No duplicate numbers!");
        } catch (Duplicate_Number_Exception e) {
            System.out.println("Error: " + e.getMessage());
        }
    }

    public static List < Integer > readNumbersFromUser() {
        List < Integer > numbers = new ArrayList < > ();
        Scanner scanner = new Scanner(System.in);

        System.out.print("How many numbers do you want to input? ");
        int count = scanner.nextInt();

        System.out.println("Input the integers:");
        for (int i = 0; i < count; i++) {
            int num = scanner.nextInt();
            numbers.add(num);
        }

        scanner.close();
        return numbers;
    }

    public static void checkDuplicates(List < Integer > numbers) throws Duplicate_Number_Exception {
        Set < Integer > uniqueNumbers = new HashSet < > ();

        for (int num: numbers) {
```

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```
        if (uniqueNumbers.contains(num)) {
            throw new Duplicate_Number_Exception("Duplicate number found: " + num);
        }
        uniqueNumbers.add(num);
    }
}

class Duplicate_Number_Exception extends Exception {
    public Duplicate_Number_Exception(String message) {
        super(message);
    }
}
```

Sample Output:

```
How many numbers do you want to input? 5
Input the integers:
1
2
3
4
5
No duplicate numbers!
```

```
How many numbers do you want to input? 6
Input the integers:
1
2
3
3
4
5
Error: Duplicate number found: 3
```

Explanation: