Contents

5.4 Exercises for lab

Students are provided the Checklist and they must identify and explore each type of general errors that may arise during inspection session. Inspection Checklist of Errors: Data Reference

Computation Errors:

Code:

CheckProgram.java

Source | History

```
1   package computation;
2
3   public class CheckProgram {
4
5       public static void main(String[] args) {
6
7           String x = "Hello";
8           int result1 = 5 + x.length();
9
10          int integerVariable = 10;
11          double doubleVariable = 5.5;
12          double result2 = integerVariable + doubleVariable;
13
14          short shortVariable = 100;
15          int intVariable = 1000;
16          int result3 = shortVariable + intVariable;
17
            int[] array = new int[5];
19          array[0] = 10;
20          int maxValue = Integer.MAX_VALUE;
21          int result4 = maxValue + 1;
22
23          int denominator = 0;
24          int result5 = 10 / denominator;
25
26          double base2Error = 0.1 + 0.2;
27          int value = -5;
28          if (value < 0 || value > 100) {
```

```
        int value = -5;
        if (value < 0 || value > 100) {
            System.out.println("Error: Value outside of range");
        }
        int precedenceResult = 5 + 3 * 2;

        double divisionResult = 10 / 3;
        // Print results
        System.out.println("Result 1: " + result1);
        System.out.println("Result 2: " + result2);
        System.out.println("Result 3: " + result3);
        System.out.println("Result 4: " + result4);
        System.out.println("Result 5: " + result5);
        System.out.println("Base-2 Error: " + base2Error);
        System.out.println("Precedence Result: " + precedenceResult);
        System.out.println("Division Result: " + divisionResult);
    }
}
```

Solution:

Checklist	Error found
1. Computations on no arithmetic variables	int result1 = 5 + x.length(); // Error: mixing arithmetic with non-arithmetic

2. Mixed-mode computations	int integerVariable = 10;
	double doubleVariable = 5.5;
	double result2 = integerVariable + doubleVariable; // Error: mixing integer with double

3. Computations on variables of different lengths	short shortVariable = 100;
	int intVariable = 1000;
	int result3 = shortVariable + intVariable; // Error: mixing short with int

4. Target size less than size of assigned value	int[] array = new int[5]; array[0] = 10; // Error: target size is less than assigned value

5. Division by zero	int denominator = 0; int result5 = 10 / denominator; // Error: division by zero

6. Variable's value outside of meaningful range	int value = -5;
	if (value < 0 || value > 100) {
	System.out.println("Error: Value outside of meaningful range");
	}

7. Operator precedence understood	int precedenceResult = 5 + 3 * 2;
8. Integer divisions correct	double divisionResult = 10 / 3; // Error: integer division, should be 3.33333

Test cases

Test ID	Test Case Description	Input Data	Actual	Expected	Verdict
1	Computations on non arithmetic variables	"Hello"	Error	Error	Pass
2	Mixed-mode computations	integerVariable = 10, doubleVariable = 5.5	Error	Error	Pass
3	Computations on variables of different lengths	shortVariable = 100, intVariable = 1000	Error	Error	Pass
4	Target size less than size of assigned value	array = new int[5]; array[0] = 10;	Error	Error	Pass
5	Division by zero	denominator = 0	Error	Error	Pass

6	Variable's value outside of meaningful range	value = -5	Error	Error	Pass
7	Operator precedence understood	No specific input	16	11	Fail
8	Integer divisions correct	No specific input	3	3.33333	Fail