Lab #1 - LO3 Elementary Programming

Before beginning any of the programs, create a new project and call it Lab1. You will create all of your programs inside this project. Be sure to follow ALL instructions regarding creating various objects for each question.

Exercise 1. Write a program to output the sum of any two integer numbers.

- Create a new package - call it Lab1_program1
- Create a new Java class within the above package - call it Program1
- Add your public static void main method
- Inside of the main method, add a System.out.println call to output the sum of 234 and 23

Correct Output:
```
257
```

Exercise 2. Write a program to divide two numbers and output the result.

- Create a new package - call it Lab1_program2
- Create a new Java class within the above package - call it Program2
- Add your public static void main method
- create two variables, x and y, both of type int
- initialize x to 100, y to 5
- Inside of the main method, add a System.out.println call containing x divided by y

Correct Output:
```
20
```

Exercise 3. Write a program to output the results of the following mathematical operations.
a. -8 - 10 + 12 * 6
b. (34 + 9) * 4
c. 6 / 8 + 20 + -3
d. 15 + 6 / 3 * 7 - 8 % 8

- Create a new package - call it Lab1_program3
- Create a new Java class within the above package - call it Program3
- Add your public static void main method
- Inside of the main method, add a System.out.println call for each of the four equations, without using variables.

Correct Output :
```
54
172
```

```
17
29
```

Exercise 4. Use variables and the concatenation operator to produce the following output.

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- Create a new package - call it Lab1_program4
- Create a new Java class within the above package - call it Program4
- Add your public static void main method
- Add four variables, text1, courseName, courseNum and text2. Declare them as String, String, int, String
- Assign values to them as follows:
    text1 -> "This is"
    courseName -> "COSC"
    courseNum -> 600
    text2 -> " - Intro Programming"
- Add a single System.out.println call to output the above text.

Correct Output:

```
This is COSC600 - Intro Programming
```

Exercise 5. Write a program to input a String value and output the value back to the user.

- Create a new package - call it Lab1_program5
- Create a new Java class within the above package - call it Program5
- Add your public static void main method
- Add a variable, myString, declared as a String type
- Declare your scanner object. Call it stringInput
- Add a line to import the Scanner class.
- use stringInput to assign the value of myString
- Add a System.out.println to output the value of myString

Correct Output:

```
Input a string: This is a string
This is a string
```

Exercise 6. Write a program that prompts the user to input two numbers and displays the product of them.

- Create a new package - call it Lab1_program6
- Create a new Java class within the above package - call it Program6
- Add your public static void main method
- Add three variables, firstNum, secondNum and result. Declare them as int

- Declare your scanner object. Call it myInput
- Add a line to import the Scanner class.
- use myInput to assign the value of firstNum - note the required output below
- use myInput to assign the value of secondNum - note the required output below
- assign result as the product of firstNum and secondNum
- output the result as below ensuring that all variables are part of the output using the concatenation operator.

Correct Output:

```
Input first number: 25
Input second number: 5
Product : 25 x 5 = 125
```

Exercise 7. Write a program to input a decimal number, multiply it by 10 and output the result.

- Create a new package - call it Lab1_program7
- Create a new Java class within the above package - call it Program7
- Add your public static void main method
- Add two variables, inputNum and result. Declare them as float
- Declare your scanner object. Call it numInput
- Add a line to import the Scanner class.
- use numInput to assign the value of inputNum - note the required output below
- assign result as the product of firstNum and 10
- output the result as below ensuring that all vavriables are part of the output using the concatenation operator.

Correct Output:

```
Input number: 25.5
Product : 25.5 x 10 = 255
```

Exercise 8. Write a program to input two numbers and then output the sum, product, difference, quotient and remainder of the two numbers. Ensure the quotient retains the decimal portion.

- Create a new package - call it Lab1_program8
- Create a new Java class within the above package - call it Program8
- Add your public static void main method
- Add three variables, firstNum, secondNum and result. Declare them as int
- Declare your scanner object. Call it myCalcInput
- Add a line to import the Scanner class.
- use myInput to assign the value of firstNum - note the required output below
- use myInput to assign the value of secondNum - note the required output below
- assign result as the sum of firstNum and secondNum

- assign result as the difference of firstNum and secondNum
- assign result as the product of firstNum and secondNum
- assign result as the quotient of firstNum and secondNum
- assign result as the modulus of firstNum and secondNum
- output the result as below ensuring that your variables are part of the output using the concatenation operator.

Correct Output:

```
Input first number: 25
Input second number: 5
25 + 5 = 30
25 - 5 = 20
25 x 5 = 125
25 / 5 = 5
25 mod 5 = 0
```

Exercise 9. Write a program that takes a number as input and outputs its multiplication table up to 10.

- Create a new package - call it Lab1_program9
- Create a new Java class within the above package - call it Program9
- Add your public static void main method
- Add a variable, multTableNum. Declare it as int
- Declare your scanner object. Call it myMultInput
- Add a line to import the Scanner class.
- use myMultInput to assign the value of multTableNum - note the required output below
- Add a System.out.println for each line from 1 to 10 to multiply myMultInput by that number.
- output the results as below ensuring that myMultInput is part of the output using the concatenation operator.

Correct Output :

```
Input a number: 5
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
```