**Lab 3 Pre-Lab**

**The following exercises must be completed before you come to lab. Your instructor will check your pre-lab exercises at the beginning of the lab period. Completion of the pre-lab is worth 10 points of the total 50 points for the lab.**

Write the declaration statements for two variables called meter and kilometer. Both variables are of type int and both are to be initialized to zero in the declaration.

Answer) int meter = 0;

int kilometer = 0;

Write the declaration statements for two variables called counter and measure. counter is of type int and is initialized to zero. measure is of type double and is initialized to 1.5.

Answer) int counter = 0;

double measure = 1.5

Declare two variables of type char. Assign the letter ***a*** to the first char variable named letter1 and ***t*** to the second variable named letter2.

char letter1 = ‘a’;

char letter2 = ‘b’;

Write a Java assignment statement that will set the value of variable seconds to the value of the variable time multiplied by 60. All variables are of type int. (Assume the declaration for time has been made and a value assigned.)

int seconds;

time = (seconds \* 60);

System.out.println(“time” + time);

Write a Java assignment statement that will set the value of the variable interest to the value of the variable balance multiplied by the value of the variable rate. The variables are of type double. (Assume declarations have been made for all of the variables and that values have been assigned as needed.)

balance = (interest \* rate);

Predict the answers to the following division problems. A number without a decimal is an integer and a number with a decimal is a double.

6. 1 / 2 \_\_\_\_0\_\_\_

7. 7 / 2 \_\_\_3\_\_\_\_

8. 2 / 3 \_\_\_0\_\_\_\_

9. 1 / 2.0 \_\_\_\_0.5\_\_\_

10. 3.0 / 2 \_\_\_\_1.5\_\_\_

Predict the answers to the following modulus problems.

11. 5 % 3 \_\_\_2\_\_\_\_

12. 12 % 4 \_\_\_\_0\_\_\_

13. 3 % 7 \_\_\_3\_\_\_\_

What do the following expressions evaluate to?

14. (0 % 5) + 3 + (0 / 5.0) \_\_\_\_\_3.0\_\_\_\_\_\_

15. (3.0 + 5 / 2) / 10 \* 5 \_\_\_\_\_\_2.5\_\_\_\_\_

16. 6 – 4 / 2 + (3 + 2 \* 5) \_\_\_\_\_17\_\_\_\_\_\_

**Questions 17 – 19 Arithmetic Expressions** will be used in Lab Problem 2

**For each problem do the following:**

1. Create a valid meaningful name for the answer and determine what data type the result of each expression should be. In some cases, alternatives may exist, so choose what you think is the ***best*** data type for the result. Write the declaration statement for each.

Well according to me the data type for the 14 and 15 should be double.

double calculateEquation = (0 % 5) + 3 + (0 / 5.0);

double calculateEquation = (3.0 + 5 / 2) / 10 \* 5;

double calculateEquation = 6 – 4 / 2 + (3 + 2 \* 5);

1. Write the arithmetic expression(s) using the given variables in Java. Values for each of the variables used on the right hand sides of the expressions are in the table below; determine the result of each expression using these values.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Data Type** | **Value** | **Constant** | **Data Type** | **Value** |
| height | double | 9.0 | FREEZING | int | 32 |
| base1 | double | 5.0 |  |  |  |
| base2 | double | 10.0 |  |  |  |
| fahrenheit | int | 78 |  |  |  |
| expected | int | 89 |  |  |  |
| observed | int | 78 |  |  |  |

Problems

17.

1. Declaration statement of result name:

double area = 0;

b. Assignment statement:

area = (height/2) \* (base1 + base2);

1. Predicted value of result:

area = 67.5;

18.

a. Declaration statement of result name:

double celsius = 0;

b. Assignment statement:

celsuis = (5/9) \* (fahrenheit – freezing);

c. Predicted value of result:

celcius = 25.5555

19. percentage of difference =

a. Declaration statement of result name:

double percentageOfDifference= 0;

b. Assignment statement:

percentageOfDifference = (expected – observed)/ (expected) \* 100;

1. Predicted value of result:

percentageOfDifference = 12.358