Tutorial 2

You will be expected to engage with the tutor and discuss solutions to the problems presented here.

1. What is a class?

2. The Role of Java Symbols
Explain the role or roles each of the following can play in Java programs:

i. xxx

ii. int

iii. %

iv. =

v. .

vi. { and }

vii. ,

viii. (and)

ix. ;

3. Variables Types

i. When a variable is declared it must be given a type. Only values of this type can be stored in the variable.
What is a type?

ii. List all the primitive types.

iii. What other types are there? Check though the lecture notes for type names which have appeared as part of variable declarations.

iv. Explain why the following code does not swap the values of the variables `x` and `y`.

```
y = x;
x = y;
```

4. Division Operators
Given the following declarations, what result is stored in each of the listed assignment statements?

```
int iResult, num1 = 25, num2 = 40, num3 = 17, num4 = 5;
double dResult, val1 = 17.0, val2 = 12.78;
```

a. iResult = num1 / num4;

b. dResult = num1 / num4;

c. iResult = num3 / num4;

d. dResult = num3 / num4;

e. dResult = val1 / num4;

f. dResult = val1 / val2;

g. iResult = num1 / num2;

h. dResult = (double) num1 / num2;

i. dResult = num1 / (double) num2;

j. dResult = (double) (num1 / num2);

k. iResult = (int) (val1 / num4);

l. dResult = (int) (val1 / num4);

m. dResult = (int) ((double) num1 / num2);

n. iResult = num3 % num4;

o. iResult = num 2 % num3;

p. iResult = num3 % num2;

q. iResult = num2 % num4;

5. Write four different program statements to increment the value of an integer variable `total`.

6. Why is white space important when writing computer programs?

7. What is the difference between variable *assignment* and variable *initialisation*?

8. For each of the following expressions, indicate the order in which the operators will be evaluated by writing a number beneath each operator.

a. $a - b - c - d$

b. $a - b + c - d$

c. $a + b \;/\; c \;/\; d$

d. $a + b \;/\; c * d$

e. $a \;/\; b * c * d$

f. $a \;\%\; b \;/\; c * d$

g. $a \;\%\; b \;\%\; c \;\%\; d$

h. $a - (b - c) - d$

i. $(a - (b - c)) - d$

j. $a - ((b - c) - d)$

k. $a \;\%\; (b \;\%\; c) * d * e$

l. $a + (b - c) * d - e$

m. $(a + b) * c + d * e$

n. $(a + b) * (c \;/\; d) \;\%\; e$

9. Write a program that reads three whole numbers and displays the average of the three numbers.

10. Explain how variables representing objects and variables representing primitive types are different

11. In Java what is an alias? Write the statements required to create an alias.