Connecting Intelligence

Institute of Computer Engineering Technology

iCET Certified Master

ASSIGNMENT

Assignement	WEEK 03 - Programming Fundamentals
Name	Data Representation in Computer Memory
Ass. Date	25th November 2023

01. Given :

```
class Demo {
    public static void main(String args[]) {
        int tot = 971;
        double avg;
        //insert code here //Line 4
        System.out.println("Average : " + avg);
    }
}
```

Which of the following statements can be inserted at "Line 4" to get output as "Average: 97.1"

A. avg = (double) tot/10;
B. avg = tot/(double)10;
C. avg = (double)(tot/10)
D. avg = tot/10

02. What will be the result of attempting to compile and run the following program?

```
class Example{
    public static void main(String asrg[]){
        double d;
        d=5/2+5/2;
        System.out.println(d);
        d=5/2.0+5/2;
        System.out.println(d);
        d=5/2+5.0/2;
        System.out.println(d);
        d=5/2.0+5/2.0;
        System.out.println(d);
    }
}
```

A. 4.0 4.0 4 5.0
B. 4.0 4.5 4.5 5.0
C. 4 4.0 4.0 5.0
D. 4.5 4.5 4 5.0
E. 4 4.5 4.5 5

03. Write the outputs for the following code lines.

Given Code: int a=10, b=7, c=-10, d=-7;

A. System.out.println(a%b);
B. System.out.println(-a%b);
C. System.out.println(a%-b);
D. System.out.println(-a%-b);
E. System.out.println(+a%+b);
F. System.out.println(c%d);
G. System.out.println(-c%d);

04. Write the outputs for the following code lines.

Given: int x=10,y=7;

A. System.out.println(x+y);
B. System.out.println(-x);
C. System.out.println(-x-y);
D. System.out.println(-(x-y));
E. System.out.println(+y);
F. System.out.println(+y-x);

05. Write the outputs for the following code lines.

```
int x=-100;
x=+x;
System.out.println(x);
x=-x;
System.out.println(x);
x=-x;
System.out.println(x);
x=x+x;
System.out.println(x);
x=-x-x;
System.out.println(x);
x=x-x;
System.out.println(x);
```

06. Write the outputs for the following code lines.

```
int x=100;
System.out.print(x++);
System.out.println(x++);
x++;
System.out.println(++x);
System.out.println(x++);
```

07. Write the outputs for the following code lines.

```
int x=100,y;
y=x++;
System.out.println(x+" "+y);
y=x++;
System.out.println(x+" "+y);
y=x++;
System.out.println(x+" "+y);
```

08. Write the outputs for the following code lines.

```
int x=100,y;
y=++x;
System.out.println(x+" "+y);
y=++x;
System.out.println(x+" "+y);
y=++x;
System.out.println(x+" "+y);
```

09. Write the outputs for the following code lines.

```
int x=100;
x=x++;
System.out.println(x);
x=x++;
System.out.println(x);
x=x++;
System.out.println(x);
x=++x;
System.out.println(x);
x=++x;
System.out.println(x);
x=++x;
System.out.println(x);
```

10. Explain the evaluation of the following expressions

```
int a=10,b=20;
int x;
```

A. x= a + b;
B. x= a +- b;
C. x= ++a + b;
D. x= a + b++;
E. x= ++a + b++;
F. x= a++ + b++;
G. x= ++a + ++ b;
H. x= a++ + ++b;

11. What will be the result of attempting to compile and run the following program? Explain your answers.

```
class Example{
    public static void main(String[] args) {
        int x;
        x= 12 - 4 * 2;
        System.out.println("12 - 4 * 2   : "+x);
        x= (12 - 4) * 2;
        System.out.println("(12 - 4) * 2 : "+x);
        x= 12 - (4 * 2);
        System.out.println("12 - (4 * 2) : "+x);
    }
}
```

12. Explain the evaluation of the following expressions

```
int x;
```

A. x= 7 % 10 / 2 * 2;
B. x= 7 % (10 / 2) * 2;
C. x= 7 % 10 / (2 * 2);
D. x= 7 % (10 / (2 * 2));
E. x= 7 % ((10 / 2) * 2);

13. Write a Program in Java to compute the quotient and remainder from the given dividend and divisor.

14. Write a Java program to print the addition, multiplication, subtraction, division, and remainder of two numbers.

15. Write a Java program to calculate the area and perimeter of a circle when the user inputs the radius of the circle.

16. Taking the price of a product and discount rate (%) as the inputs through the Scanner class, write a Java program to calculate the discount.

17. Write a Java program to calculate the import tax. Import tax is applicable at a rate of 15% on all imported goods. The program asks the user to enter the total amount of purchase.

18. Write a Java program that can able to convert the bytes to Kilobyte (KB), Megabyte (MB), and Gigabyte (GB).

    1 KB = 1024 Bytes
    1 MB = 1024 Kilobytes
    1 GB = 1024 Megabytes

19. Write a program in Java to convert the given no. of days into months and days. (Assume that each month is of 30 days)

    Sample Output: -

    Number of days - 69

    69 days = 2 Months and 9 days

20. Write a Java program to convert a given time in seconds into hours: minutes: seconds format.

    Sample Output:

    Input seconds: 82790

    22:59:50

21. Write a program in Java that asks the user how many eggs he/she has and then prints how many gross, how many dozen he/she has, and how many extra eggs are left over.

    A gross of eggs = 144 eggs

    A dozen of eggs = 12 eggs

    Expected outputs:-

    How many eggs do you have: 1342

    Your number of eggs is 9 gross, 3 dozen, and 10

22. Write a Java program to get the remainder of the division of two numbers without using any inbuilt modulus operator.

23. Write a Java program to compute body mass index (BMI) when the user input body mass in kilograms and height in meters. The BMI is defined as the body mass (kg) divided by the square of the body height (m^2).

    Expected Output:-

    Body Mass Index is 19.25

24. Write a program in Java that reads the basic salary of an employee from the user and calculate the employee, employer, and pension contribution of the provident fund.

    Employee Fund = 12.0%

    Employer Fund = 3.5%;

    Pension Fund = 8.3%;

25. A sales tax of 10% is levied on all goods consumed and all price tags include this sales tax. For example, if an item has a price tag of $110, the actual price is $100 and $10 goes to the sales tax. Write a Java program that takes the tax-inclusive price as the input and computes the actual price and the sales tax.

    Sample output: -

    Enter the tax-inclusive price in dollars: 110
    Actual Price is: $100.00
    Sales Tax is: $10.00