Connecting Intelligence

Institute of Computer Engineering Technology

iCET Certified Developer

ASSIGNMENT

Assignement	Programming Fundamentals
Batch No	iCM 111
Name	Flow Control with JAVA Conditional Statement
Ass. Date	24th August 2024

01. Input two numbers and check whether the first number is greater than the second number. If so add the two numbers otherwise display the two numbers.

02. Write a Java program to find the absolute number of a given integer number.

03. Enter marks Obtained by a student for Chemistry, Physics, and Combined Maths. Calculate the total and average. If the average is greater than 75 then display "Pass" otherwise "Fail". Write a Java program to perform the above task.

04. Enter the unit price and amount bought from a product. Calculate the total. If the total is greater than Rs.1500/- display "You are entitled to the super draw. Otherwise, display "Try again".

05. Enter the unit price and amount bought from a product. Calculate the total. If the total is more than Rs.500/- give 5% discount. Calculate the discount and new total and display those. Otherwise, display "No discount given".

06. Write a Java program to get a Year from user input and find whether it is a leap year or not.

07. Write a Java program to find the maximum number of three integer numbers input by the keyboard and print results as follows
"Maximum number is: 45

08. Which of the following lines can be legally inserted at line 10?

```
class Example{
    public static void main(String[] args) {
        int x = 10;
        //Insert code here//Line 10
    }
}
```

A. if(x){}
B. if(x=10){}
C. if(x==10){}
D. if(x=100!=10){}
E. if((x=100)!=10){}
F. if((x=100)>0==true){}

09. Which of the following lines can be legally inserted at line 10?

```
class Example{
    public static void main(String[] args) {
        int x = 10;
```

```
            boolean b=true;
            //Insert code here//Line 10
        }
    }
```

A. if(b){}
B. if(b=false){}
C. if(b==false){}
D. if(b=false==false){}
E. if((b=false)==false){}
F. if(b=(false==true)){}

10. Write a Java program to input an integer number from the keyboard and print whether the number is odd or even.

11. Write the outputs for the following code lines.

```
boolean b=true;
```

A. System.out.println(b);
B. System.out.println(b=true);
C. System.out.println(b==true);
D. System.out.println(b!=true);
E. System.out.println(b=true==true);
F. System.out.println((b=true)==false);
G. System.out.println(b=(true!=false));

12. Write the outputs for the following code lines.

```
int x = 10;
```

A. System.out.println(x=9);
B. System.out.println(x==9);
C. System.out.println(x=9!=10);
D. System.out.println((x=9)==10);
E. System.out.println((x=9)<=10);

13. What are the outputs of the following commands?

```
int x=20,y=60;
boolean bool;
System.out.println(x=10);              //Line 1
System.out.println(bool=true);         //Line 2
System.out.println(x=10>0);            //Line 3
System.out.println((x=10)>0);          //Line 4
System.out.println(bool=(x=10)>0);     //Line 5
System.out.println(bool=x+y>100);      //Line 6
```

14. What are the outputs of the following commands?

```
byte b = 10;
short s = 100;
int x = 125;
long l = 15000;
float f = 1.5f;
double d = 21.231;
char c = 'c';
boolean bool = 10>9;
System.out.println(b+s+x+""+f+d+c+bool);    //Line 1
System.out.println(""+b+s+x+f+d+c+bool);    //Line 2
System.out.println(b+s+x+f+d+c+""+bool);    //Line 3
System.out.println(b+s+x+f+d+c+bool+"");    //Line 4
System.out.println(bool+b+f+d+c+""+x+l);    //Line 5
```

15. Assume that i = 1, j = 2, k = 3 and m = 2. What does each of the following statements print?

```
System.out.println( i ==1);                    //Line 1
System.out.println( j ==3);                    //Line 2
System.out.println( ( i >=1) && ( j <4) );     //Line 3
System.out.println( ( m <=99) & ( k < m ) );   //Line 4
System.out.println( ( j >= i ) || ( k == m ) ); //Line 5
System.out.println( ( k + m < j )|(3- j>= k)); //Line 6
System.out.println( !( k > m ) );              //Line 7
```

16. Given:

```
class Example{
    public static void main(String args[]){
        //line 5
        switch(x){
            default: System.out.print("4 ");
            case 1   : System.out.print("1 ");
            case 2   : System.out.print("2 ");
            case 3   : System.out.print("3 ");
        }
    }
}
```

What will be the outputs when you insert the following codes at line 5?

A. int x=1; B. int x=2; C. int x=3;

D. int x=4; E. int x=0; F. int x=5;

17. Given Code:

```
class Example{
    public static void main(String args[]){
        int a=-5;
        int b=-2;
        a%=b;
        a/=b;
        b=a>0?0:a;
        System.out.println(a+" "+b);
    }
}
```

Select one option.

A. Prints 1 0
B. Prints -1 -1
C. Prints -2 -2
D. Prints 0 0

18. Which of the following lines are legal?

```
import java.util.*;
class Example{
    public static void main(String args[]){
        int x=100;
        System.out.println(x);          //Line 1
        {
            int y=200;
            {
                int z=300;
                System.out.println(x);  //Line 2
                System.out.println(y);  //Line 3
                System.out.println(z);  //Line 4
            }
            System.out.println(x);      //Line 5
            System.out.println(y);      //Line 6
            System.out.println(z);      //Line 7
        }
        System.out.println(x);          //Line 8
```

```
            System.out.println(y);          //Line 9
            System.out.println(z);          //Line 10
        }
    }
```

A. Line 1 B. Line 2 C. Line 3
D. Line 4 E. Line 5 F. Line 6
G. Line 7 H. Line 8 I. Line 9
K. Line 10

19. Given:

```
class Example{
    public static void main(String args[]){
        //Line 5
        switch(x){
            default   : System.out.print("Wrong  ");break;
            case 2    : System.out.print("2  ");
            case 3    : System.out.print("3  ");
            case 1    : System.out.print("1  ");break;
        }
    }
}
```

What will be the outputs when you insert the following codes at line 5?

A. int x=1; B. int x=2; C. int x=3;
D. int x=4; E. int x=0; F. int x=5;

20. Write a Java program that accepts an integer and checks whether it is a negative integer, zero, or positive integer.

21. Develop a Java program to find the absolute difference between two numbers.

22. Given:

```
//Insert code here //line 4
```

```
switch(x){
      case 'A'   : System.out.println("65  ");break;
      case 'B'   : System.out.println("66  ");break;
      case 'C'   : System.out.println("67  ");break;
      default    : System.out.println("wrong  ");
}
```

Which of the following codes can be inserted legally at line 4 ?

A. char x='A';	B. int x=65;	C. int x=65536;
D. byte x=65;	E. short x=66 ;	F. boolean x =true;
G. String x="A";	H. double x=65.0;	

23. Write a Java program to compare two numbers given by the user.

    Expected Output when user input 25 and 39:-
    The first number is less than the second number
    Expected Output when user input 39 and 25:-
    The first number is greater than the second number
    Expected Output when user input 25 and 25:- Both are equal

24. Write a Java program that accepts three positive integers from the keyboard input and print true if two or more of those integers have the same rightmost digit.

25. Write a Java program that takes three integer values by the user and prints true if one of them is more than the subtractions of others. Otherwise, print false.

26. Write a Java program to display profit or loss based on the user input selling price and cost of the product.
    - Profit = selling price - cost of product -> "Profit"
    - Loss = cost of product - selling price -> "Loss"
    - cost of product = selling price -> "No Profit No Loss"

27. Write a program that asks the user to input three numbers and prints
    - "Increasing" if the numbers are in increasing order
    - "Decreasing" if the numbers are in decreasing order
    - "Neither increasing nor decreasing order" otherwise

28. Write a Java program to check whether someone is eligible for blood donation based on age and weight. A person should weigh at least 50 kg and be over 18 years of age to donate blood.

29. Write a Java program that accepts two numbers and prints "true" if both numbers are

negative or positive.

30. Write a Java program to check whether a user-entered character is lowercase (a to z) or uppercase (A to Z) without using a predefined Java class.

31. Write a program in Java that checks if a number entered by a user is a Buzz Number or not. (A number is said to be Buzz Number if it ends with 7 or is divisible by 7)
32. Write a Java program to calculate the attendance percentage for PRF classes and check the eligibility for the PRF exam. A student will not be allowed to sit for the exam if his/her attendance is less than 70%. However, the student can sit for the exam whose attendance is less than 70% if he/she has medical causes.

    - Take the following input from the user: number of classes held and number of classes attended.
    - Ask the user whether he/she has a medical cause or not ('Y' or 'N'), if the student has insufficient attendance

33. ABC Company decided to give a bonus to the employee if he/she is a permanent employee. The bonus amount of a permanent employee depends on his/her year of service. Write a Java program that asks the user their salary and year of service and prints the total salary with the bonus.

Year of service	bonus
< 5 years	10%
< 10 years	15%
>10 years	25%

34. A bookshop will give a discount of 10% if the cost of the purchased quantity is more than 5000. Write a Java program to print the bill. The program should ask the user for the number of books. Suppose, one book will cost 100.

    Example Output 1:-

    ```
    Subtotal :   2500.00
    Discount :          -
    TOTAL    :   2500.00
    ```

    Example Output 2:-

    ```
    Subtotal :   6000.00
    Discount :    600.00
    TOTAL    :   5400.00
    ```

35. As below activity directory below at Lake Resort, write a Java program that prompts the user for a temperature and displays the appropriate activity for guests based on the temperature.

    If temp >= 80 -> Swimming

If 60= temp < 80 -> Tennis
If 40 <= temp < 60 -> Golf
If temp < 40 -> Skiing

36. Write a Java program that determines if a given alphabet is a vowel or consonant.

37. Write a Java program to calculate the raise and new salary for an employee. The input to the program includes the current annual salary and a number indicating the performance rating (1=excellent, 2=good, and 3=poor). An employee with a rating of 1 will receive a 6% raise, an employee with a rating of 2 will receive a 4% raise, and one with a rating of 3 will receive a 1.5% raise.

38. A student who is eligible to sit for the O/L examination, should have more than 80% attendance and more than 50% average marks for the final term test in grade 11. Write a Java program to check the eligibility of a student for the O/L examination, taking the attendance and average marks.

39. Write a Java program to display a greeting message based on the time input by the user.
"Good morning"-(00:00 to 12:00)
"Good afternoon" – (12.00 to 16.00)
"Good evening" – (16:00 to 19.00)
"Good night" – (19:00 to 24.00)

40. Write a program that prompts the user to enter a year and a month (as a String) and then prints the days of the month. The program should also check if a given year is a leap year or not.

41. Write a Java program for a print shop that will take the number of copies to be printed as input from the user and then prints the price per copy and the total price for the printing copies.
    - 0 – 99 : Rs.30.00 per copy
    - 100 – 499 : Rs.28.00 per copy
    - 500 – 799 : Rs.27.00 per copy
    - 800 – 1000 : Rs.26.00 per copy
    - over 1000 : Rs.25.00 per copy

42. Men's trousers/jeans UK size chart is given below.

	X-small	Small	Medium	Large	X-Large
Inches	28-29	30-31	32-34	36-38	40-42

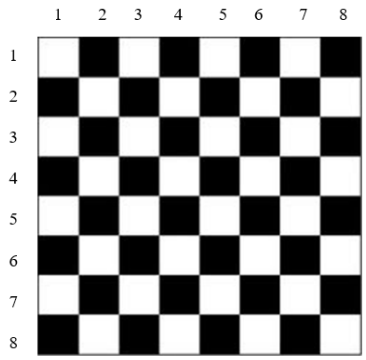
Write a Java program that prints XS, S, M, L, and XL according to the waist size given in the above table to help the user to measure for a great fit.

43. Write a program in Java to create a calculator to do the following arithmetic operations:
    Addition +
    Subtraction –
    Multiplication *
    Division /
    Remainder %
    Power of the number ^

    Expected Output:-
    Enter the first number : 5
    Enter the second number : 2
    Enter the operator (+,-,*,/,%,^) : ^
    5 ^ 2 = 25

44. Write a Java program that takes a number from 1 to 28 by the user and displays the name of the day of the week as Sunday or Monday likewise using the month of February 2022.

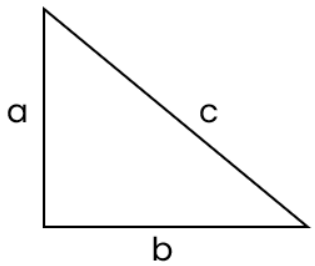
45. Assume that you have a checkboard which is 160 by 160 pixels and each square in the checkerboard is 20 by 20 pixels such that it contains 8 rows of squares and 8 columns. The squares are white and black as below.



Write a Java program that prints the color of the square (White/Black), if the user inputs the row number and column number of the square.

(Hint: If the row number and the column number are either both even or both odd, then the square is white. Otherwise, it is black.)

46. Write a program that takes three integer inputs from the user and uses an if statement to determine if they form a Pythagorean triple.



$a^2 + b^2 = c^2$

47. Write a program in Java that reads two integers representing a month and day and prints the season for that month and day.

    Winter : 21st December, January, February, 19th March
    Spring : 20th March, April, May, 20th June
    Summer: 21st June, July, August, 21st September
    Autumn: 22nd September, October, November, 20th December

48. Write a Java program to print an astrological sign for a given date of birth.

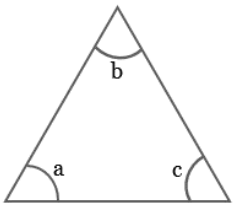
    Capricornus : December 22–January 19
    Aquarius : January 20–February 18
    Pisces : February 19–March 20
    Aries (Ram) : March 21–April 19
    Taurus : April 20–May 20
    Gemini : May 21–June 21
    Cancer : June 22–July 22
    Leo : July 23–August 22

Virgo : August 23–September 22
Libra : September 23–October 23
Scorpius : October 24–November 21
Sagittarius : November 22–December 21

49. Write a Java program to input the basic salary of an employee and calculate gross salary adding Housing Allowance (HA) and Travel Allowance(DA) according to given conditions.
    - Basic Salary <= 10000 : HA = 20%, TA = 60%
    - Basic Salary <= 20000 : HA = 25%, TA = 70%
    - Basic Salary > 20000 : HA = 30%, TA = 75%

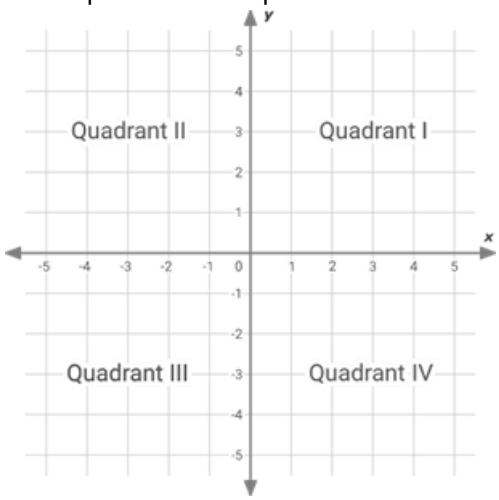
50. Write a Java program to check whether a triangle can be formed by the given value in degrees for 3 angles of the triangle.

    $a + b + c = 180^0$
    $a>0, b>0, c>0$



51. Write a Java program that asks the user to enter his/ her age and classify based on age.
    - age > 65 – Senior
    - 65 >= age >20 – Adult
    - 20 >= age >13 – Teenager
    - 13 >= age > 1 - child
    - age <=1 – infant

52. Write a Java program that takes the coordinate of a point in a X-Y coordinate system as input and prints the Quadrant I / Quadrant II / Quadrant III / Quadrant IV /Origin determining in which quadrant that point lies.



53. Write a Java program that prompts the user to enter systolic blood pressure (SBP) and diastolic blood pressure (DBP) readings then print the status of the patient as Normal, High Pressure, or Low Pressure. Use the table below.

SBP	DBP	Status
>=130	>=90	High Pressure
<=100	<=70	Low Pressure
100 - 130	70 - 90	Normal

54. Write a Java program to find the type of website using the URL below.
    - .com – commercial website
    - .org – organization website
    - .lk – Sri Lankan website

55. Write a Java program to check whether a given number is in the given range. The user input the number, upper bound, and lower bound of the range.

56. Rewrite in Java the following statement without using the NOT operator (!):
    item = !((a<10) || (b>=50))

57. Write a program that takes two dates (month, day, year) as input from the user and uses an if statement to determine which one comes first.
58. Write a Java program that takes year (y), month (m), and day (d) as input and prints the day of the week that date falls on. Based on the d_0, print Sunday for 0, Monday for 1, Tuesday for 2, and so on. Use the following formulas, for the Gregorian calendar:

$$y_o = y - ((14 - m))/12$$

$$x = y_o + y_o/4 - y_o/100 + y_o/400$$

$$m_o = m + 12 \times ((14 - m)/12) - 2$$

$$d_o = (d + x + (31 \times m_0)/12)\%7$$

Example: -

Enter year:2000
Enter month:2
Enter day:14

On what day of the week was February 14, 2000?

y_o = 2000 - 1 = 1999
x = 1999 + 1999/4 - 1999/100 + 1999/400 = 2483
m_o = 2 + 12 X 1 - 2 = 12
d_o = (14 + 2483 + (31X12) / 12) % 7 = 2500 % 7 = 1

Day of the week: Monday

59. Write a Java program that takes three values for R, G, B and calculate and print values of C, M, Y, K for color conversion from RGB format to CMYK format. RGB format specifies the level of red (R), green (G), and blue (B)on an integer scale from 0 to 255. CMYK format specifies the level of cyan (C), magenta(M), yellow (Y), and black (K) on a real scale from 0.0 to 1.0. If the R, G, B values are all 0, then the C, M, Y values are all 0 and the K value is 1; otherwise, use these formulas:

    w = max (r / 255, g / 255, b / 255)
    c = (w - (r / 255)) / w
    m = (w - (g / 255)) / w
    y = (w - (b / 255)) / w
    k = 1 – w

60. Write a Java program to calculate the courier charge based on parcel weight to ship. When the weight of parcel is less than or equal to 5 kg, then the courier charge will be Rs.500. When the weight of the parcel is above 5 kg, then there is an additional charge of Rs.100 for each extra Kilogram.