**ASSIGNMENT -4**

**CSA0985**

**PROGRAMMING IN JAVA**

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1. **Write a java program to print the perfect number?**

import java.util.Scanner;

public class PerfectNumberExample1

{

public static void main(String args[])

{

long n, Sum=0;

Scanner sc=new Scanner(System.in);

System.out.print("Enter the number: ");

n=sc.nextLong();

int i=1;

while(i <= n/2)

{

if(n % i == 0)

{

Sum = Sum + i;

}

i++;

}

if(Sum==n)

{

System.out.println(n+" is a perfect number.");

}

else

System.out.println(n+" is not a perfect number.");

}

}

**Output:**

Enter the number: 4

4 is not a perfect number.

**2.Write a java program for the tax given following**

**a) if income is less than or equal to 1,50000 no tax**

**b) if taxable income is 1,50,001 to 3,00,000 charge is 10%**

**c) if taxable income is 3,00,001 to 5,00,000 charge is 20%**

**d) above 5,00,000 the charge is 30%?**

import java.util.Scanner;

public class Income{

public static void main(String args[]){

double tax=0,it;

Scanner sc=new Scanner(System.in);

System.out.println("Enter income ");

it=sc.nextDouble();

if(it<=150000)

tax=0;

else if(it>=150001 & it<=300000)

tax=0.1\*(it-150000);

else if(it<=500000 & it>=300001)

tax=(0.2\*(it-300000))+(0.1\*100000);

else

tax=(0.3\*500000)+(0.2\*200000)+(0.1\*100000);

System.out.println("Income tax amount is "+tax);}}

**Output:**

Enter income

50000

Income tax amount is 0.0

**3.write a java program to calculate factorial using recursive function?**

import java.util.Scanner;

public class FactorialRecursive {

public static int factorial(int n) {

if (n == 0 || n == 1) {

return 1;

} else {

return n \* factorial(n - 1);}}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a non-negative integer: ");

int num = scanner.nextInt();

if (num < 0) {

System.out.println("Factorial is not defined for negative numbers.");

} else {

int result = factorial(num);

System.out.println("Factorial of " + num + " is: " + result); }

scanner.close();}}

**Output:**

Enter a non-negative integer: 4

Factorial of 4 is: 24

**4.write a java program to print the composite numbers from a to b?**

import java.util.Scanner;

public class Composite\_Number

{

int flag,n,i,j;

Composite\_Number()

{

System.out.print("Enter range to find the composite numbers: ");

Scanner in=new Scanner(System.in);

n=in.nextInt();

for(i=2;i<=n;i++ )

{

flag=0;

for(j=2;j<i;j++)

{

if(i % j == 0)

flag++;

}

if(flag!=0)

System.out.println("one of the composite number is:" + i);

}

}

public static void main(String args[])

{

Composite\_Number ob=new Composite\_Number();

}

}

**Output:**

Enter range to find the composite numbers: 20

one of the composite number is:4

one of the composite number is:6

one of the composite number is:8

one of the composite number is:9

one of the composite number is:10

one of the composite number is:12

one of the composite number is:14

one of the composite number is:15

one of the composite number is:16

one of the composite number is:18

one of the composite number is:20

**5.write a java program to print inverted full pyramid pattern?**

public class ReversePyramid{

public static void main(String[] args) {

int numberOfRows=6;

for (int i= 0; i<= numberOfRows-1; i++){

for (int j=0; j<=i; j++) {

System.out.print(" ");

}

for (int k=0; k<=numberOfRows-1-i; k++){

System.out.print("\*" + " ");

}

System.out.println();

}

}

}

**Output:**

\* \* \* \* \* \*

\* \* \* \* \*

\* \* \* \*

\* \* \*

\* \*

**6.write a java program to print the pattern?**

**%**

**% %**

**% % %**

public class RightTrianglePattern

{

public static void main(String args[])

{

int i, j, row=3;

for(i=0; i<row; i++)

{

for(j=0; j<=i; j++)

{

System.out.print("% ");

}

System.out.println();

}

}

}

**Output:**

%

% %

% % %

**7. write a java program for square and cube of the given decimal number?**

import java.util.Scanner;

import java.lang.\*;

class threenum {

public static void main(String args[]) {

int num, a, b, c;

Scanner sc = new Scanner(System.in);

System.out.print("Enter The Number :\n\n");

num = sc.nextInt();

a = num;

b = num \* num;

c = num \* num \* num;

System.out.println("\nOutput Is = " + a + " ," + b + " ," + c+"\n\n");

}

}

**Output:**

Enter The Number :

3

Output Is = 3 ,9 ,27

**8.write a java program for matrix multiplication?**

import java.util.\*;

import java.util.Scanner;

class matrixmul {

public static void main(String[] args)

{

try

{

Scanner input=new Scanner(System.in);

System.out.print("Enter no.of rows:");

int r=input.nextInt();

System.out.print("Enter no.of columns:");

int c=input.nextInt();

System.out.println("enter matrix 1");

int mat1[][]=new int[r][c];

int mat2[][]=new int[r][c];

for(int i=0;i<r;i++)

{

for(int j=0;j<c;j++)

{

mat1[i][j]=input.nextInt();

} }

System.out.println("enter matrix 2");

for(int i=0;i<r;i++) {

for(int j=0;j<c;j++)

{

mat2[i][j]=input.nextInt();

} }

System.out.println("Multiplied matrix");

int sum[][]=new int[r][c];

for(int i=0;i<r;i++) {

for(int j=0;j<c;j++) {

sum[i][j]=0;

for(int k=0;k<c;k++)

{

sum[i][j] = sum[i][j] +(mat1[i][k]\*mat2[k][j]);

}

System.out.print(sum[i][j] + "\t");

}

System.out.println();

}

}

catch(Exception e)

{

System.out.println(" enter valid");

}

}}

**Output:**

Enter no.of rows:2

Enter no.of columns:2

enter matrix 1

1

2

3

4

3

4

enter matrix 2

1

2

3

3

4

3

2

Multiplied matrix

10 8

15 14