

Task 2.

Q1) Write a java program to perform a basic calculator operations.

→ import java.util.Scanner;

```
public class Calculator
{
```

```
    public static void main (String [] args)
    {
```

```
        double num1, num2;
```

```
        Scanner sc = new Scanner (System.in);
```

```
        System.out.print ("Enter first number: ");
```

```
        num1 = sc.nextDouble();
```

```
        System.out.print ("Enter second number: ");
```

```
        num2 = sc.nextDouble();
```

```
        System.out.print ("Enter an operator  
(+, -, *, /): ");
```

```
        char operator = sc.next().charAt(0);
```

```
        sc.close();
```

```
        double output;
```

```
        switch (operator)
```

```
{
```

```
    case '+':
```

```
        output = num1 + num2;
```

```
        break;
```

```
    case '-':
```

```
        output = num1 - num2;
```

```
        break;
```

```
    case '*':
```

```
        output = num1 * num2;
```

```
        break;
```

case '/':

 output = num1 / num2 ;
 break;

default:

 System.out.println("You have
 entered wrong operator");
 return;

System.out.println("num1 + " "operator"
 " " + num2": " + output);

}

}

Output : Enter first number : 40

Enter second number : 4

Enter an operator (+, -, *, /) : /

40.0 / 4.0 : 10.0

Q. ②. 12e,

Q. @ Write a Java program to calculate Fibonacci Series up to n numbers.

```
→ import java.util.*;  
class fiboN  
{  
    public static void main (String [ ] args)  
    {  
        int i, c = 0, n;  
        Scanner sc = new Scanner (System.in);  
        System.out.println ("Enter a number to  
        generate fibonacci series up to nth  
        term");  
        n = sc.nextInt();  
        int a = 0;  
        int b = 1;  
        System.out.println ("fibonacci series upto " + n +  
                           " is :- ");  
        while (c <= n)  
        {  
            System.out.print (c + " ");  
            a = b;  
            b = c;  
            c = a + b;  
        }  
    }  
}
```

Output :- Enter a number to generate fibonacci series
upto nth term 30
fibonacci series up to 30 is :-

0 1 1 2 3 5 8 13 21

Q.③ Write a Java program to calculate a factorial of a number.

→ class Factorial

```
{ public static void main (String [] args)
```

```
    int i, fact = 1;
```

```
    int number = 5;
```

```
    for (i=1; i<=number; i++)
```

```
{
```

```
    fact = fact * i;
```

```
}
```

```
System.out.println ("Factorial of " + number +  
" is : " + fact);
```

```
}
```

```
{
```

Output :- Factorial of 5 is : 120.

Q. ④ Write a Java program to find out whether the given string is Palindrome or not.

→ public class Palindrome

{ public static void main (String [] args)

String a, b = " ";

Scanner sc = new Scanner (System.in);

System.out.print ("Enter the string you want to check: ");

a = sc.nextLine();

for (int i = n - 1; i >= 0; i--)

{

b = b + a.charAt (i);

}

if (a.equalsIgnoreCase (a + b))

{

System.out.println ("The string is Palindrome.");

}

else

{

System.out.println ("The string is not Palindrome.");

}

Output :- Enter the string you want to check : radar

radar is

The string is Palindrome.

Q. 5) Write a Java program to calculate Permutation and Combination of 2 numbers.

Permutation = nPr and Combination = nCr

Formula for find permutation & combination :-

$$nPr = \text{factorial}(n) / \text{factorial}(n-t)$$

$$nCr = \text{factorial}(n) / [\text{factorial}(n-t) * \text{factorial}(r)]$$

Import java.util.Scanner;

public class PermutationCombination

{

 public static int fact (int num)

 {

 int fact = 1, i;

 for (i=1; i <= num; i++)

 {

 fact = fact * i;

 }

 return fact;

}

 public static void main (String args[])

 {

 int n, t;

 Scanner sc = new Scanner (System.in);

 System.out.print ("Enter Value of n :");

 n = sc.nextInt();

 System.out.print ("Enter Value of t :");

 t = sc.nextInt();

 System.out.print ("NCR is " + (fact(n)/(fact(n-t) * fact(t))));

 System.out.print ("NPR is " + (fact(n)/(fact(n-t))));

}

Output :-

Enter Value of n : 8

Enter Value of t : 4

NCR is 70

NPR is 1680

- ⑥ Write a Java program in Java to print Diamond Pattern.

```
→ import java.util.Scanner;  
public class Diamond  
{  
    public static void main (String [] args)  
    {  
        int n, i, j, space = 1;  
        System.out.print ("Enter the number of rows : ");  
        Scanner sc = new Scanner (System.in);  
        n = sc.nextInt ();  
        space = n - 1;  
        for (j = 1; j <= n; j++)  
        {  
            for (i = 1; i <= space; i++)  
            {  
                System.out.print (" ");  
            }  
            space --;  
            for (i = 1; i <= 2 * j - 1; i++)  
            {  
                System.out.print ("*");  
            }  
            System.out.println ();  
        }  
    }  
}
```

```
space = 1;
```

```
for (j=1; j<=n-1; j++)
```

{

```
for (i=1; i<=space; i++)
```

{

```
System.out.print(" ");
```

{

```
space++;
```

```
for (i=1; i<=2*(n-j)-1; i++)
```

{

```
System.out.print("*");
```

{

```
System.out.println();
```

{

{

@

Output is:

Enter the number of rows : 5

```
*
```

```
* *
```

```
* * *
```

```
* * * *
```

```
* * * * *
```

```
* * * * *
```

```
* * *
```

```
*
```

Q.⑦ Write a Java program to reverse the letters present in the given string.

```
→ import java.util.*;  
public class StringReverse  
{  
    public static void main (String [] args)  
    {  
        String initial , rev = " " ;  
        Scanner sc = new Scanner (System.in);  
        System.out.println ("Enter the string to  
reverse.");  
        initial = sc.nextLine ();  
        int length = initial.length ();  
        for (int i = length - 1 ; i >= 0 ; i--)  
        {  
            rev = rev + initial.charAt (i);  
        }  
        System.out.println ("Reversed string : " + rev);  
    }  
}
```

Output :-

Enter the string to reverse

HELLO WORLD

Reversed string : DLROW OLLEH

Q.8 Write a java Program to check whether the given array is Mirror Inverse or not.

→ public class MirrorInverse

```
static boolean isMirrorInverse (int arr[])
{
    for (int i=0; i< arr.length; i++)
    {
        if (arr [arr[i]] != i)
            return false;
    }
    return true;
}
```

public static void main (String [] args)

```
{ int arr [] = { 1, 2, 3, 0, * };
    if (isMirrorInverse (arr))
        System.out.println ("Yes");
    else
```

```
    System.out.println ("No");
}
```

Output :- No.

Q9 Write a Java program to remove elements from an ArrayList.

```
→ import java.util.ArrayList;
import java.util.List;
public class ABArrayList
{
    public static void main(String[] args)
    {
        List <Integer> a1 = new ArrayList <>();
        a1.add(10);
        a1.add(20);
        a1.add(30);
        a1.add(1);
        a1.add(2);
        System.out.println(a1);
        a1.remove(1);
        a1.remove(1);
        System.out.println(a1);
    }
}
```

Output :-

[10, 20, 30, 1 , 2]

[10, 1, 2]

a ⑩ Write a Java program to find the Transpose of a given Matrix.

→ public class TransposeMatrix

{ public static void main (String [] args)

int original [][] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};

int transpose [] [] = new int [3] [3];

for (int i=0; i<3; i++)

{

for (int j=0; j<3; j++)

{

transpose [i] [j] = original [j] [i];

}

System.out.println ("Printing Matrix Without transpose");

for (int i=0; i<3; i++) {

for (int j=0; j<3; j++) {

System.out.print (original [i] [j] + " ");

System.out.println ("Printing Matrix After transpose:");

for (int i=0; i<3; i++) {

for (int j=0; j<3; j++) {

System.out.print (transpose [i] [j] + " ");

System.out.println ();

}

Output :- Printing

Output :-

Pointing Matrix without transpose:

1 3 4

2 4 3

3 4 5

Pointing Matrix After transpose:

1 2 3

3 4 4

4 3 5