1. write a program for matrix addition:

```
Public class Matrix addition {
Scanner input = new Scanner (System.in);
int Mat 1[][] = {{1,2},{5,3}};
int Mat 2[][] = {{2,3},{4,1}};
int Mat_sum[][] = new int [2][2];
int len = Mat 1.length;
for (int i=0;i<len;i++)
{
  for (int j=0;j<len;j++)
  {
  Mat_sum[i][j] = mat1[i][j] + Mat2[i][j];
  System.out.print (mat_sum[i][j] + "\t");
  }
System.out.println();
}
```

Sample Input:

Mat 1 = 1 2
5 3

Mat 2 = 2 3
4 1

sample output:

Mat Sum = 3 5
9 4

5. write a program to print rectangle symbol pattern. Get the symbol as input from user.

```
import java.util.Scanner;
public class rectangle pattern {
  public static void void main (String[] args) {

Scanner scanner = new Scanner (System.in);
System.out.print (" Enter the symbol you
        want to use for the rectangle pattern:");
char symbol = scanner.next().charAt(0);
int rows = 5;
  int columns = 10;
  for (int i = 0; i < rows; i++) {
    for (int j = 0; j < columns; j++) {
    System.out.print (symbol + " ");
      }
    System.out.println ();
```

Input: 3

output:

```
3
3
3
```

```
3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3
```

3. write a program that would sort a list of names in alphabetical order Ascending or Descending. choice get from the user?

```
public class namesorted {
    public static void main (string [] args) {
     Arraylist <string > names = new Arraylist <>();
    Scanner scanner = new Scanner [ system.in ];
string arr[] = {"Banana"; "Apple", "carrot", "Radish", "Oat"}
int len = arr.length;
char order = input.next().charAt(0);
if (order == 'A') {
   for (int i=0; i<len; i++) {
      for (int j = i+1; j<arr.length; j++){
        if (arr[i] compareto (arr[j]) >0) {
         string temp = arr[i];
         arr[i] = arr[j];
         arr[j] = temp;
}
}
}
system.out.println (Arrays.tostring (arr)); }
else if (order == 'D'){
  for (int i = 0; i < len; i++){
```

```
for (int j=i+1;j<arr.length;j++){
if (arr[i].compareTo(arr[j])>0){
String temp = arr[i];
arr[i] = arr[j];
arr[j] = temp;}}}
System.out.println(Arrays.toString(arr));
}
```

sample Input:

Banana
Carrot
Radish
Apple
Jack

sample output:

Apple
Banana
Carrot
Jack
Radish

4. write a program for matrix multiplication?

```
public matrix multiplication {
  public void matrix void
    Scanner input = new Scanner (System.in);
    int r = input.nextInt();
    int c = input.nextInt();
    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();
      }
    }
    for (int i = 0; i < r; i++)
    {
      for (int j = 0; j < c; j++)
      {
        mat2[i][j] = input.nextInt();
      }
    }
    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();
}
```

sample input: mat 1 = 1 2 mat 2 = 2 3
5 3 4 1

sample output:

mat sum = 10 5
22 18

15. write a program to print the following pattern.

```
public pattern {
    public void pattern main(system.in)
    Scanner input = new Scanner(system.in);
system.out.print("enter the number to be printed :");
int n = input.nextInt();
system.for(int i=1; i<=n; i++)
{
    for(int j=1; j<=i; j++)
    {
        System.out.print(n);
    }
}
```

```
System.out.println();
}
for (int i=n-1; i>=1; i--)
{
 for (int j=i; j<=i; j++)
 {
 System.out.print(n);
 }
 System.out.println();
    }
```

Sample input:

Enter the number to be printed : 1

How number of time printed : 3

1

11

111

11

1

6. write a program to print the special characters separately and print number of special characters in the line:

```
public special characters
public void special main
scanner = new scanner (system.in);
string s = input.nextline();
int len = s.length();
cha a[] = new cha [len];
int sp = 0;
for (int i = 0; i < len; i++)
{
a[i] = s.charAt(i);
if (a[i] >= 65 && a[i] <= 90 || a[i] >= 97
    && a[i] <= 122 || a[i] >= 48 && a[i] <= 57
{
}
else
{
sp++;
system.out.print(a[i]);
}
}
system.out.println("\n"+sp);
}
```

17. write a program to print all the composite number between a and b?

```
public Composite number
    publi .void Composite number
    {
    Scanner input =new Scanner (System.in);
    int a = input .next Int();
    int b = input .next int();
    for (int i= a+1; i<=b; i++)
    {
      int c=0;
      for (int j=1;j<=b;j++)
      {
        if (i%. j ==0)
          c++;
      }
      if (c>2)
      System .out .print (i+" ");
        }
```

sample input:

A= 12

B = 19

sample output:

14, 15, 16, 18

18. write

18. write a program to print the inverted

```
public inverted print
    public void inverted main
scanner input = new scanner (system.in);
int n = input.nextInt();
for (int i = n; i >= 1; i--)
{
for (int j = 0; j < n-i; j++)
{
system.out.print(" ");
}
for (int k = 1; k <= i; k++)
{
system.out.print("*");
}
system.out.println();
}
```

19. find the Mean, Median, Mode of the array of numbers?

```
scanner input = new scanner (system.in);
int a[] = {16,18, 27, 16, 23, 21, 19};
int len = a.length;
int sum = 0;
for (int i=0; i < length; i.
int sum = 0;
for (int i=0; i<len; i++)
```

```
{
    sum = sum + a[i]; }
int mean = sum / len;
System.out.println("mean: "+mean);
for (int i=0; i<len; i++)
  { for (int i = j = i+1; j < len; j++)
    {
      if (a[i] > a[j])
      {
        int temp=a[i];
        a[i] = a[j]
        a[j] = temp;
      }
    }
  }
for(int i=0; i<len; i++)
{
if ((len % 2 == 0)
  {
    int mid = len/2;
    System.out.printf("median:"+a[mid-1]);
    break;
  }
else
{
int mid = (len+1)/2;
System.out.println(mid);
System.out.println("Median:"+a[mid-1]);
break;
}}
```

```
for (int
  {
    for (
      {
        if
        {
      bre
      }
      }
      }
```

Sample inpu

Array of

Sample out

mean

median

mode =

10. find the

Scanner in

int

int

for

```
for (int i=0 ;i <len : i ++)
  {
    for (int j= i+1 ;j<len ;j ++)
     {
      if (a[i] ==a[j])
      {
       system .out .println ("mode:" +a[i]);
      break:
      }
    }
  }
```

sample input :

Array of elements = { 16, 18, 27, 16, 23, 21, 19 }

sample output :

mean = 20

median = 19

mode = 16

10. find the factorial of n?

```
Scanner input =new Scanner (system.in);
  int n= input .nextInt ();
  int fact =1;
    for (int i=1 ;i <=n; i ++)
      { fact = fact * i }
```

sample input
N=1

sample output:
N = 0
N = -5
N = 1
N = 0
N = 3 A