Program 15 :-

Object :- WAP in Java to add two matrices.

```
import java.util.*;
class AddMatrix {
   public static void main (String [] args)
{
 Scanner in = new Scanner (System.in);
int a[][] = new int [3][3];
int [][] b = new int [3][3];
for (int r = 0; r < a.length; r++)
{
System.out.println ("Row :" + (r+1));
for (int c = 0; c < a[0].length; c++)
{
  a [r][c] = in.nextInt();
 }
}
System.out.println ("Matrix B");
for (int r = 0; r < b.length; r++)
{
System.out.println ("Row :" (r+1));
for (int c = 0; c < b[0].length; c++)
 {
  b[r][c] = in.nextInt();
 }
}
int[][] s = new int [3][3];
for (int r = 0; r < s.length; r++)
 {
for (int c = 0; c < s[0].length; c++)
{
  s[r][c] = a[r][c] + b[r][c];
 }
}
```

```
print(a);
print(b);
print(c);
}
static void print (int [][] a)
{
  for (int r=0; r<a.length; r++)
{
  for (int c=0; c<a[c].length; c++)
{
    System.out.print(a[r][c] + "  ");
    }
  }
}
```

Output :-

```
Matrix A
Row 1
1  2  3
Row 2
4  5  6
Row 3
7  8  9
Matrix B
Row 1
2  4  6
Row 2
8  10  12
Row 3
1  2  3
```

A

1	2	3
4	5	6
7	8	9

B

2	4	6
8	10	12
1	2	3

Sum :-

3	6	9
12	15	18
8	10	12

Program 15 :-

Object :- Write a program to transpose a Matrix.

```
import java.util.*;
class Transpose
{
 public static void main (String [] args)
{
 Scanner in = new Scanner (System.in);
 int [][] a = new int [3][2];
 int [][] t = new int [2][3];
 System.out.println ("Matrix A ");
 for (int r = 0; r<a.length ; r++)
 {
 System.out.println ("Row : " (r+1));
 for (int c = 0 ; c < a[0].length ; c++)
 {
  a [r][c] = in.nextInt();
  }
}
System.out.println ("Matrix A ");
print (a);
for (int r=0 ; r < t.length ; r++)
 {
for (int c=0 ; c< t[0].length ; c++) {
  t[r][c] = a[c][r];
  }
}
System.out.println (" Transposed Matrix ");
 print (t);
}
static void print (int [][] a)
 {
```

```
for (int r = 0 ; r< a.length ; r++)
{
  for (int c = 0 ; c< a[0].length ; c++)
{
  System.out.print(a[r][c] + "   ");
  }
System.out.println();
  }
  }
}
```

Output :-

```
Matrix A
Row 1
1
2
Row 2
3
4
Row 3
5
6
Matrix A
1  2
3  4
5  6
Transposed Matrix:
1  3  5
2  4  6
```

Program 17 :-

Object :- Write a program to remove duplicate element in an array.

```
import java.util.*;
class RemoveDuplicates {
   public static void main (String [] args)
{
  int [] a = new int [10];
  int [] b = new int [a.length];
  System.out.println (" Enter elements of array ");
for (int i = 0 ; i< a.length ; i++)
 {
a[i] = new Scanner (System.in).nextInt();
 }
 int size = 0;
 for ( int i =0 ; i< a.length ; i++)
 {
   if ( ! isPresent (a[i], b))
 {
   b[size] = a[i];
  size ++;
 }
}
for (int i = 0 ; i< a.length ; i++)
  {
   System.out.print (a[i] + "   ");
  }
System.out.println ("\n Duplicates removed ");
for (int i = 0 ; i< size ; i++)
 {
System.out.print (b [i] + "   ");
 }
}
```

```
static boolean isPresent(int e, int[] a)
{
  for(int i=0; i<a.length; i++)
  {
    if(a[i]==e)
      return true;
  }
  return false;
}
```

Output :-

Enter elements of array

11
34
45
22
11
34
56
45
32
45

11 34 45 22 11 34 56 45 32 45

Duplicates Removed

11 34 45 22 56 32

Program 18 :-

Object :- Write a program to reverse a String.

```
import java.util.*;
class Reverse {
public static void main (String [] args)
{
String s, r;
Scanner in = new Scanner (System.in);
System.out.println (" Enter a String ");
s = in.nextLine();
for (int i = s.length () - 1; i>=0; i--)
 {
    r = r + s.charAt(i)
 }
 System.out.println (" Reversed String: " + r);
   }
}
```

Output :-

```
Enter a String
What
Reversed String : tahw.
```

Program 19:-

Object:- Write a program to remove white spaces from a String.

```
import java.util.*;
class RemoveSpaces {
   public static void main (String [] args)
  {Scanner in = new Scanner (System.in);
String s, n;
System.out.println ("Enter a string");
s = in.nextLine();
for (int i = 0; i < s.length(); i++)
{if (s.charAt(i) == ' ')
   continue;
  n = n + s.charAt(i);
  }
System.out.println ("Spaces Removed :" + n);
   }
}
```

Output:-

```
Enter a String
Hello World
Spaces Removed : HelloWorld
```

Program 20 :-

Object: Write a program to find 3rd smallest element of an array.

```
public class ThirdSmallestElument
{
public static void thirdSmallestElement (int a[] arrA )
{
if (arrA.length <3)
{
System.out.println (" Invalid Input, array size is less than 3");
}
int a = Integer.Max_Value ;
int b = Integer.Max_Value ;
int c = Integer.Max_Value ;
for (int i = 0; i< arrA.length; i++)
{
int current = arrA[i];
if ( a > current) {
  c = b;
  b = a;
  a = current ;
}
else if ( b > current) {
  c = b;
  b = current;
} else if ( c > current)
{
  c = current;
}
}
System.out.println (" Third Smallest element is :" + c);
}
```

```
public static void main (String [] args)
{
int [] arrA = new int[] { 6, 8, 1, 9, 2, 10};
thirdSmallestElement (arrA);
}
}
```

Output :-

Third smallest element is : 6