Java Programming – CSA0988

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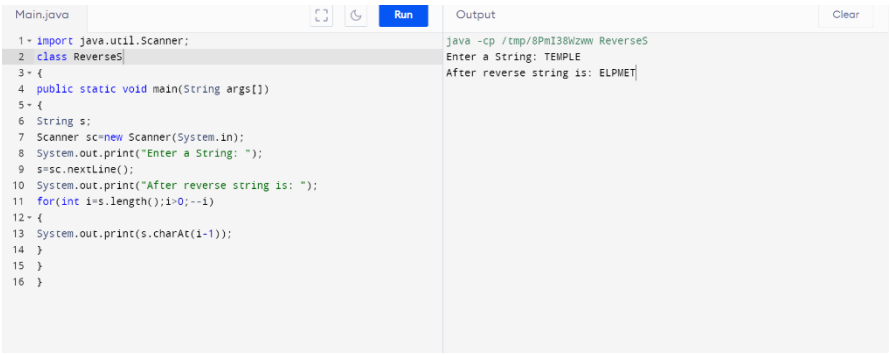
1. Write a program to reverse a word using loop? (Not to use inbuilt functions)
   Sample Input:
   String: TEMPLE
   Sample Output:
   Reverse String: ELPMET

Code:

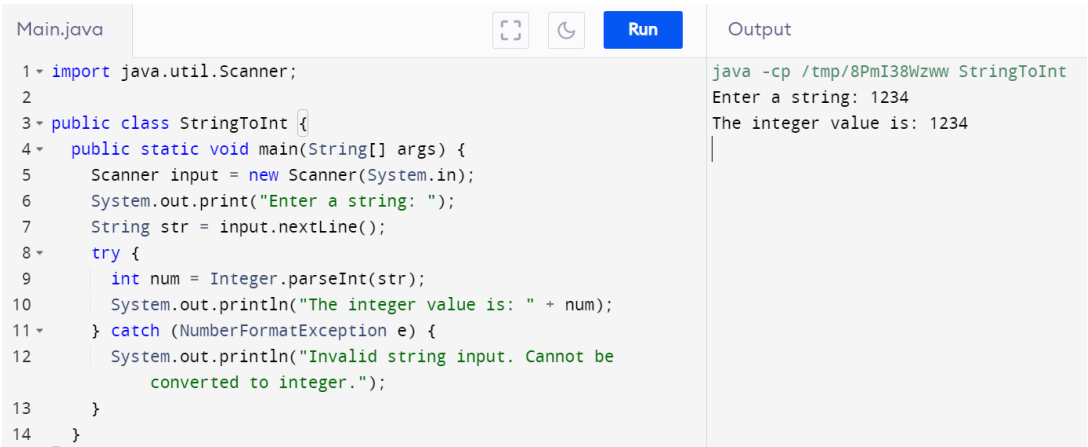
```
import java.util.Scanner;

class ReverseS

{

public static void main(String args[])

{

String s;

Scanner sc=new Scanner(System.in);

System.out.print("Enter a String: ");

s=sc.nextLine();

System.out.print("After reverse string is: ");

for(int i=s.length();i>0;--i)

{

System.out.print(s.charAt(i-1));

}

}

}
```



2. Write a program to convent the given string to integer?
   Sample Input:
   String: 1234
   Sample Output:
   Out put String: 1234

Code:

```
import java.util.Scanner;

public class StringToInt {

  public static void main(String[] args) {

    Scanner input = new Scanner(System.in);

    System.out.print("Enter a string: ");

    String str = input.nextLine();

    try {

      int num = Integer.parseInt(str);

      System.out.println("The integer value is: " + num);

    } catch (NumberFormatException e) {

      System.out.println("Invalid string input. Cannot be converted to integer.");

    }

  }

}
```



3. Write a program to check the entered user name is valid or not. Get both the inputs from the user.

Code:

```
import java.util.Scanner;

public class UserNameValidation {

  public static void main(String[] args) {

    Scanner input = new Scanner(System.in);

    System.out.print("Enter a user name: ");

    String username = input.nextLine();

    if (username.matches("^[a-zA-Z0-9]+$")) {

      System.out.println("Valid user name");

    } else {

      System.out.println("Invalid user name");

    }

  }

}
```

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

   Sample Input:

   Banana
   Carrot
   Radish
   Apple
   Jack
   Order(A/D) : A

   Sample Output:

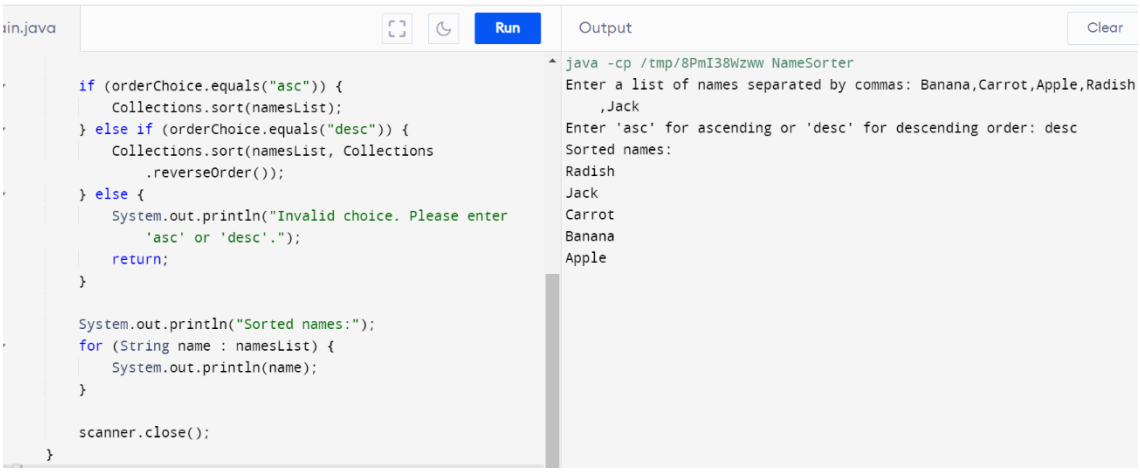
   Apple
   Banana

Carrot
Jack
Radish

Code:

```
import java.util.ArrayList;
import java.util.Collections;
import java.util.List;
import java.util.Scanner;

public class NameSorter {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a list of names separated by commas: ");
        String input = scanner.nextLine();
        String[] namesArray = input.split(",");
        List<String> namesList = new ArrayList<>();
        for (String name : namesArray) {
            namesList.add(name.trim());
        }

        System.out.print("Enter 'asc' for ascending or 'desc' for descending order: ");
        String orderChoice = scanner.nextLine();

        if (orderChoice.equals("asc")) {
            Collections.sort(namesList);
        } else if (orderChoice.equals("desc")) {
            Collections.sort(namesList, Collections.reverseOrder());
        } else {
            System.out.println("Invalid choice. Please enter 'asc' or 'desc'.");
            return;
```

```
        }

        System.out.println("Sorted names:");
        for (String name : namesList) {
            System.out.println(name);
        }

        scanner.close();
    }
}
```

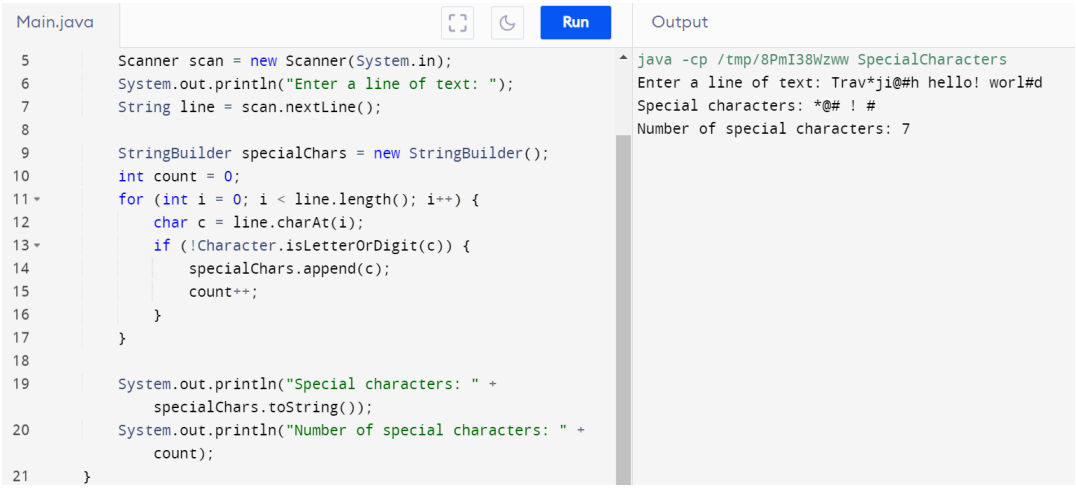


5. Write a program to print the special characters separately and print number of Special characters in the line?

Code:

```
import java.util.Scanner;

public class SpecialCharacters {

    public static void main(String[] args) {

        Scanner scan = new Scanner(System.in);

        System.out.println("Enter a line of text: ");

        String line = scan.nextLine();

        StringBuilder specialChars = new StringBuilder();

        int count = 0;
```

```
        for (int i = 0; i < line.length(); i++) {
            char c = line.charAt(i);
            if (!Character.isLetterOrDigit(c)) {
                specialChars.append(c);
                count++;
            }
        }
        System.out.println("Special characters: " + specialChars.toString());
        System.out.println("Number of special characters: " + count);
    }
}
```

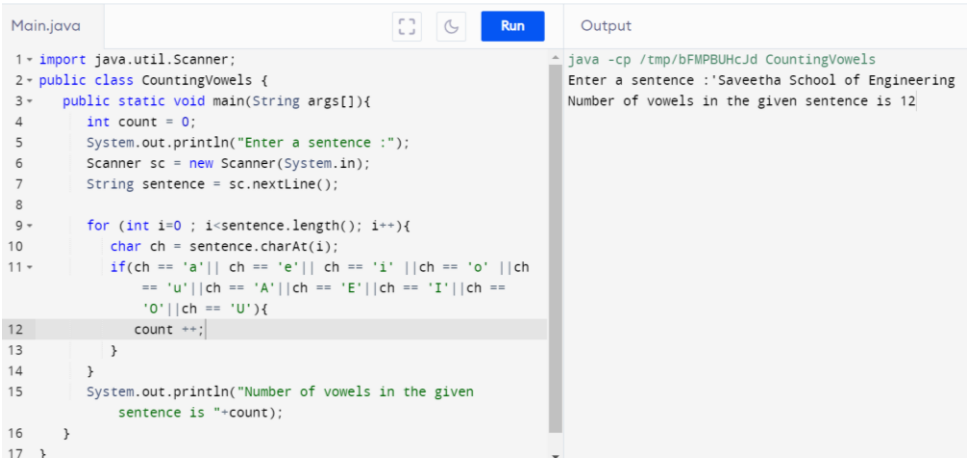


6. Write a program to print the number of vowels in the given statement?
Sample Input:
Saveetha School of Engineering
Sample Output:
Number o vowels = 12

Code:

```
import java.util.Scanner;

public class CountingVowels {

  public static void main(String args[]){

    int count = 0;

    System.out.println("Enter a sentence :");
```

```
    Scanner sc = new Scanner(System.in);
    String sentence = sc.nextLine();


    for (int i=0 ; i<sentence.length(); i++){
      char ch = sentence.charAt(i);
      if(ch == 'a'|| ch == 'e'|| ch == 'i' ||ch == 'o' ||ch == 'u'||ch == 'A'||ch == 'E'||ch == 'I'||ch == 'O'||ch == 'U'){
        count ++;
      }
    }
    System.out.println("Number of vowels in the given sentence is "+count);
  }
}
```

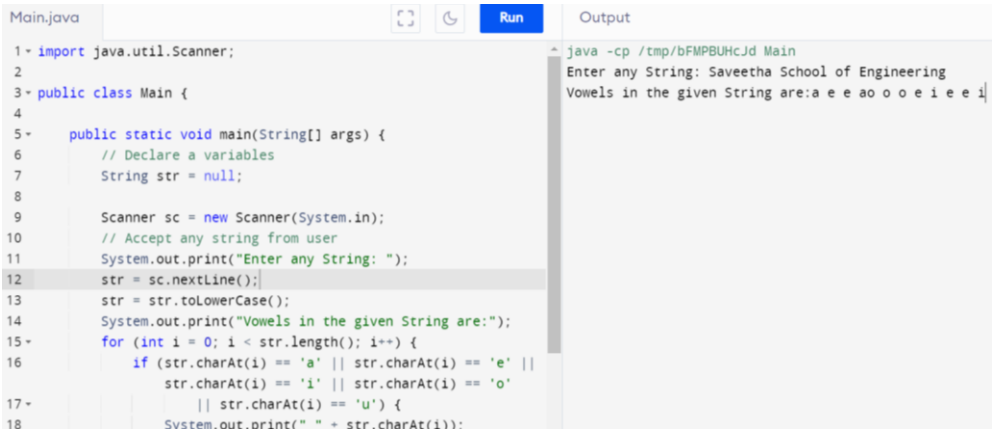


7. Write a program to print consonants and vowels separately in the given word
   Sample Input:
      Given Word: Engineering
   Sample Output:
      Consonants: n g n r n g
      Vowels: e i e ei

Code:

```
import java.util.Scanner;

public class Main {

        public static void main(String[] args) {

                String str = null;
```

```
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter any String: ");
        str = sc.nextLine();
        str = str.toLowerCase();
        System.out.print("Vowels in the given String are:");
        for (int i = 0; i < str.length(); i++) {
        if (str.charAt(i) == 'a' || str.charAt(i) == 'e' || str.charAt(i) == 'i' || str.charAt(i) == 'o'
                                    || str.charAt(i) == 'u') {
                            System.out.print(" " + str.charAt(i));
                }
        }

}
```



8. Write a program that finds whether a given character is present in a string or not. In case it is present it prints the index at which it is present. Do not use built-in find functions to search the character.

Sample Input:

Enter the string: I am a programmer

Enter the character to be searched: p

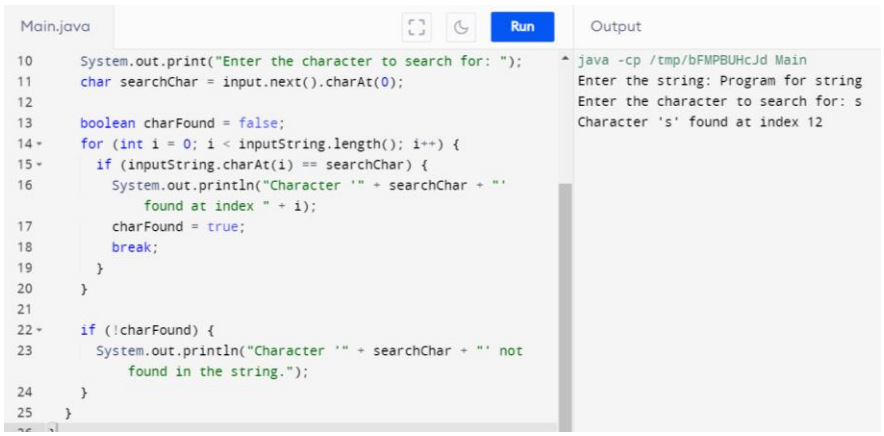
Sample Output:

P is found in string at index: 8

Code:

```
import java.util.Scanner;

public class Main {

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

```
    Scanner input = new Scanner(System.in);
    System.out.print("Enter the string: ");
    String inputString = input.nextLine();
    System.out.print("Enter the character to search for: ");
    char searchChar = input.next().charAt(0);
    boolean charFound = false;
    for (int i = 0; i < inputString.length(); i++) {
      if (inputString.charAt(i) == searchChar) {
        System.out.println("Character '" + searchChar + "' found at index " + i);
        charFound = true;
        break;
      }
    }
    if (!charFound) {
      System.out.println("Character '" + searchChar + "' not found in the string.");
    }
  }
}
```



9. Write a program to arrange the letters of the word alphabetically in reverse order

Sample Input:

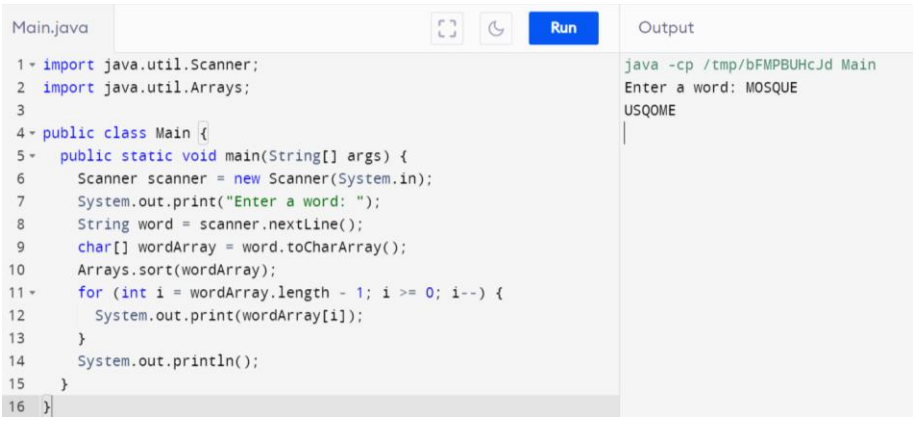
Enter the word: MOSQUE

Sample Output:

Alphabetical Order: U S Q O M E

Code:

```
import java.util.Scanner;
import java.util.Arrays;
public class Main {
  public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    System.out.print("Enter a word: ");
    String word = scanner.nextLine();
    char[] wordArray = word.toCharArray();
    Arrays.sort(wordArray);
    for (int i = wordArray.length - 1; i >= 0; i--) {
      System.out.print(wordArray[i]);
    }
    System.out.println();
  }
}
```



10. Write a program that accepts a string from user and displays the same string after removing vowels from it.

Sample Input & Output:

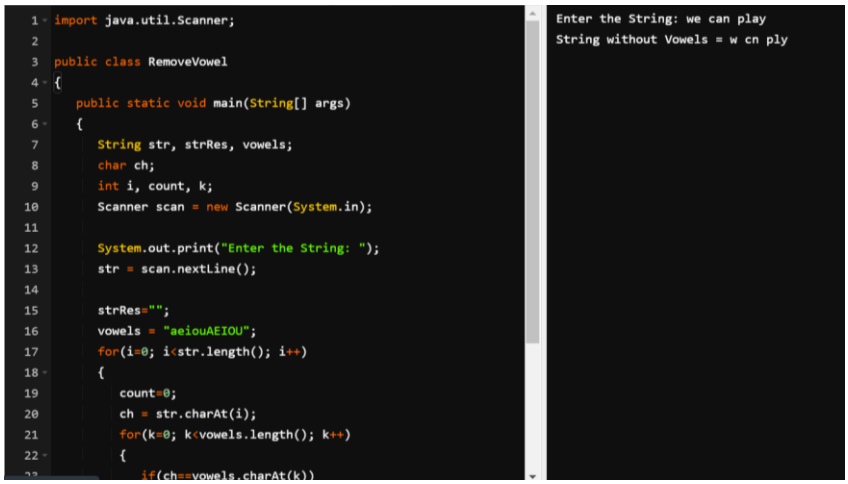
Enter a string: we can play the game

The string without vowels is: w cn ply thgm

Code:

```
import java.util.Scanner;

public class RemoveVowel

{

  public static void main(String[] args)

  {

    String str, strRes, vowels;

    char ch;

    int i, count, k;

    Scanner scan = new Scanner(System.in);

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

    str = scan.nextLine();

    strRes="";

    vowels = "aeiouAEIOU";

    for(i=0; i<str.length(); i++)

    {

      count=0;

      ch = str.charAt(i);

      for(k=0; k<vowels.length(); k++)

      {

        if(ch==vowels.charAt(k))

          count++;

      }

      if(count==0)

        strRes = strRes + ch;

    }

    System.out.println("\nString without Vowels = " +strRes);

  }
```

}



```
import java.util.Scanner;

public class RemoveVowel
{
   public static void main(String[] args)
   {
      String str, strRes, vowels;
      char ch;
      int i, count, k;
      Scanner scan = new Scanner(System.in);

      System.out.print("Enter the String: ");
      str = scan.nextLine();

      strRes="";
      vowels = "aeiouAEIOU";
      for(i=0; i<str.length(); i++)
      {
         count=0;
         ch = str.charAt(i);
         for(k=0; k<vowels.length(); k++)
         {
            if(ch==vowels.charAt(k))
```

```
Enter the String: we can play
String without Vowels = w cn ply
```

11. Write a program for matrix multiplication?

Sample Input:

Mat1 = 1 2
5 3

Mat2 = 2 3
4 1

Sample Output:

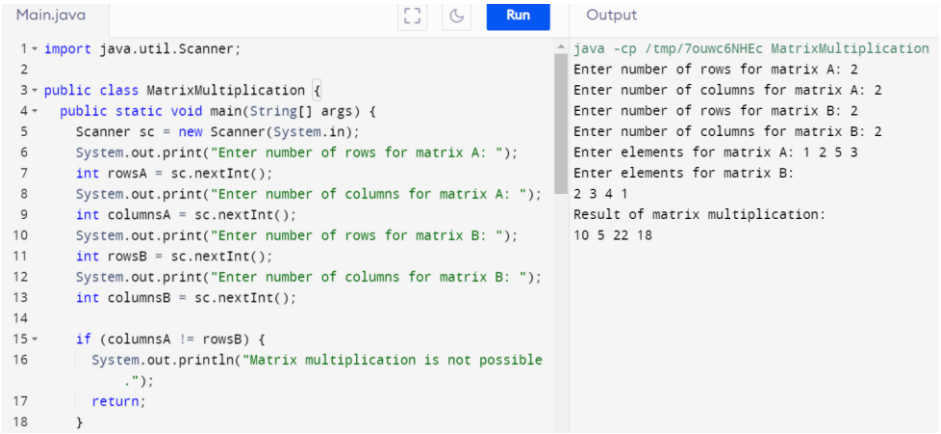
Mat Sum = 10 5
22 18

Code:

```
import java.util.Scanner;

public class MatrixMultiplication {

  public static void main(String[] args) {

    Scanner sc = new Scanner(System.in);

    System.out.print("Enter number of rows for matrix A: ");

    int rowsA = sc.nextInt();

    System.out.print("Enter number of columns for matrix A: ");

    int columnsA = sc.nextInt();

    System.out.print("Enter number of rows for matrix B: ");

    int rowsB = sc.nextInt();

    System.out.print("Enter number of columns for matrix B: ");

    int columnsB = sc.nextInt();
```

```
if (columnsA != rowsB) {
  System.out.println("Matrix multiplication is not possible.");
  return;
}
int[][] matrixA = new int[rowsA][columnsA];
int[][] matrixB = new int[rowsB][columnsB];
int[][] result = new int[rowsA][columnsB];
System.out.println("Enter elements for matrix A: ");
for (int i = 0; i < rowsA; i++) {
  for (int j = 0; j < columnsA; j++) {
    matrixA[i][j] = sc.nextInt();
  }
}
System.out.println("Enter elements for matrix B: ");
for (int i = 0; i < rowsB; i++) {
  for (int j = 0; j < columnsB; j++) {
    matrixB[i][j] = sc.nextInt();
  }
}
for (int i = 0; i < rowsA; i++) {
  for (int j = 0; j < columnsB; j++) {
    for (int k = 0; k < columnsA; k++) {
      result[i][j] += matrixA[i][k] * matrixB[k][j];
    }
  }
}
System.out.println("Result of matrix multiplication: ");
for (int i = 0; i < rowsA; i++) {
  for (int j = 0; j < columnsB; j++) {
    System.out.print(result[i][j] + " ");
  }
```

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



12. Write a program for matrix addition?

Sample Input:

Mat1 = 1 2
5 3

Mat2 = 2 3
4 1

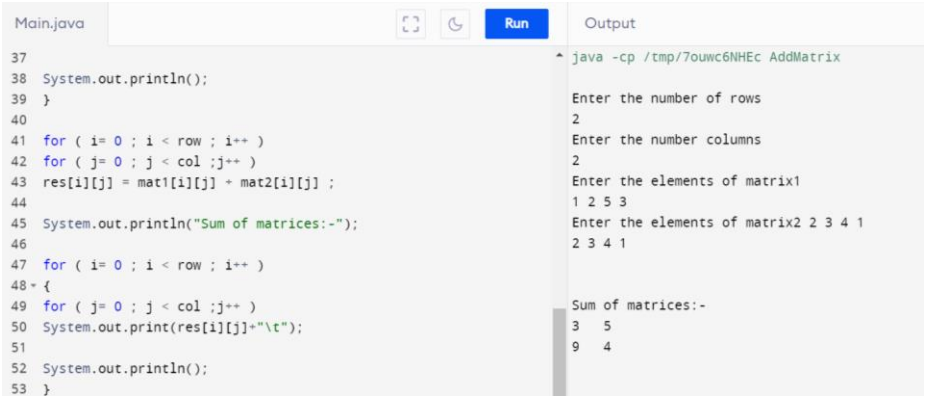
Sample Output:

Mat Sum = 3 5
9 4

Code:

```
import java.util.Scanner;

class AddMatrix

{

public static void main(String args[])

{

int row, col,i,j;

Scanner in = new Scanner(System.in);

System.out.println("Enter the number of rows");

row = in.nextInt();

System.out.println("Enter the number columns");

col = in.nextInt();

int mat1[][] = new int[row][col];
```

```
int mat2[][] = new int[row][col];
int res[][] = new int[row][col];
System.out.println("Enter the elements of matrix1");
for ( i= 0 ; i < row ; i++ )
{
for ( j= 0 ; j < col ;j++ )
mat1[i][j] = in.nextInt();
System.out.println();
}
System.out.println("Enter the elements of matrix2");
for ( i= 0 ; i < row ; i++ )
{
for ( j= 0 ; j < col ;j++ )
mat2[i][j] = in.nextInt();
System.out.println();
}
for ( i= 0 ; i < row ; i++ )
for ( j= 0 ; j < col ;j++ )
res[i][j] = mat1[i][j] + mat2[i][j] ;
System.out.println("Sum of matrices:-");
for ( i= 0 ; i < row ; i++ )
{
for ( j= 0 ; j < col ;j++ )
System.out.print(res[i][j]+"\t");
System.out.println();
}
}
}
```

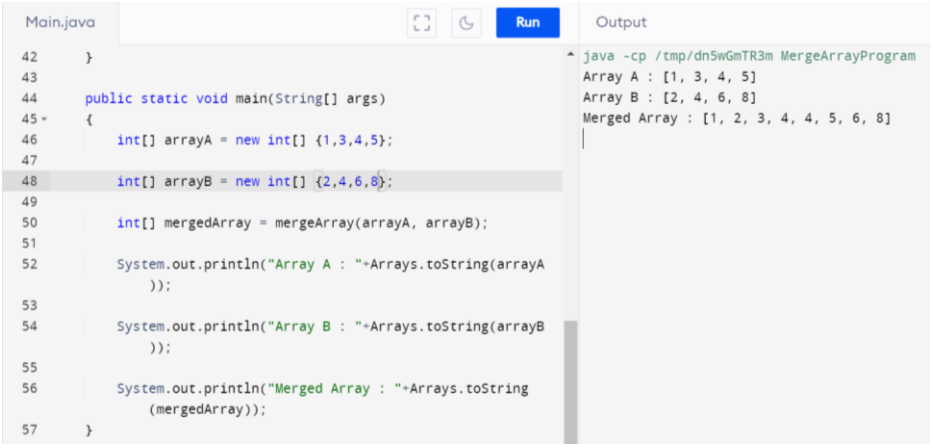


13. Write a program for Merge two sorted arrays using Array list
Input: arr1[] = { 1, 3, 4, 5}, arr2[] = {2, 4, 6, 8}
Output: arr3[] = {1, 2, 3, 4, 4, 5, 6, 8}

Code:

```
import java.util.Arrays;

public class MergeArrayProgram

{

   private static int[] mergeArray(int[] arrayA, int[] arrayB)

   {

      int[] mergedArray = new int[arrayA.length + arrayB.length];

      int i=0, j=0, k=0;

      while (i < arrayA.length && j < arrayB.length)

      {

         if (arrayA[i] < arrayB[j])

         {

            mergedArray[k] = arrayA[i];

            i++;

            k++;

         }

         else

         {

            mergedArray[k] = arrayB[j];

            j++;

            k++;

         }
```

```
        }
        while (i < arrayA.length)
        {
            mergedArray[k] = arrayA[i];
            i++;
            k++;
        }
        while (j < arrayB.length)
        {
            mergedArray[k] = arrayB[j];
            j++;
            k++;
        }
        return mergedArray;
    }
    public static void main(String[] args)
    {
        int[] arrayA = new int[] {1,3,4,5};
        int[] arrayB = new int[] {2,4,6,8};
        int[] mergedArray = mergeArray(arrayA, arrayB);
        System.out.println("Array A : "+Arrays.toString(arrayA));
        System.out.println("Array B : "+Arrays.toString(arrayB));
        System.out.println("Merged Array : "+Arrays.toString(mergedArray));
    }
}
```

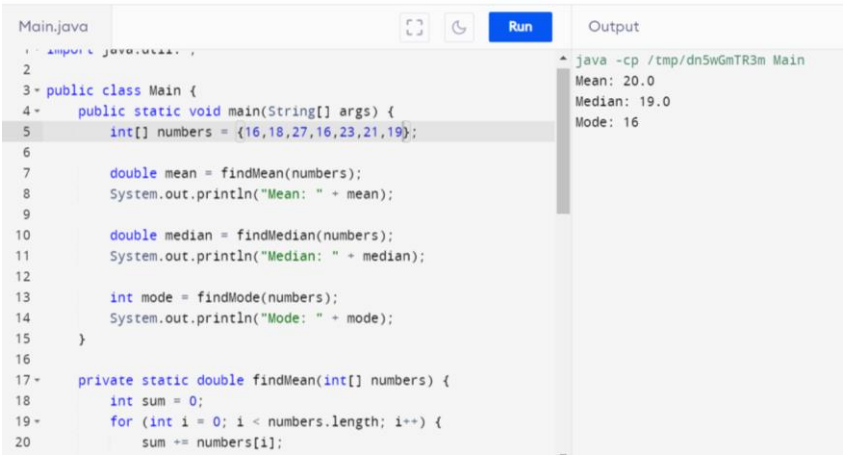


14. Find the Mean, Median, Mode of the array of numbers?
Sample Input;:
Array of elements = {16, 18, 27, 16, 23, 21, 19}
Sample Output:
Mean = 20
Median = 19
Mode = 16

Code:

```
import java.util.*;

public class Main {

   public static void main(String[] args) {

      int[] numbers = {16,18,27,16,23,21,19};

      double mean = findMean(numbers);

      System.out.println("Mean: " + mean);

      double median = findMedian(numbers);

      System.out.println("Median: " + median);

      int mode = findMode(numbers);

      System.out.println("Mode: " + mode);

   }

   private static double findMean(int[] numbers) {

      int sum = 0;

      for (int i = 0; i < numbers.length; i++) {

         sum += numbers[i];

      }

      return (double) sum / numbers.length;

   }
```

```
    private static double findMedian(int[] numbers) {
        Arrays.sort(numbers);
        if (numbers.length % 2 == 0) {
            return (double) (numbers[numbers.length / 2] + numbers[numbers.length / 2 - 1]) / 2;
        } else {
            return (double) numbers[numbers.length / 2];
        }
    }
    private static int findMode(int[] numbers) {
        HashMap<Integer, Integer> frequency = new HashMap<>();
        int maxValue = 0;
        int mode = -1;
        for (int i = 0; i < numbers.length; i++) {
            if (frequency.containsKey(numbers[i])) {
                frequency.put(numbers[i], frequency.get(numbers[i]) + 1);
            } else {
                frequency.put(numbers[i], 1);
            }
            if (frequency.get(numbers[i]) > maxValue) {
                maxValue = frequency.get(numbers[i]);
                mode = numbers[i];
            }
        }
        return mode;
    }
}
```



15. Write a program to print Right Triangle Star Pattern

Sample Input:: n = 5

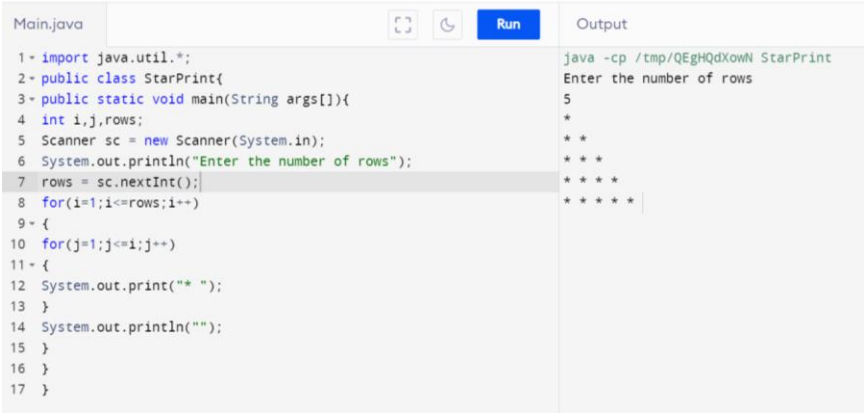
Output:

```
*
* *
* * *
* * * *
* * * * *
```

Code:

```
import java.util.*;

public class StarPrint{

public static void main(String args[]){

int i,j,rows;

Scanner sc = new Scanner(System.in);

System.out.println("Enter the number of rows");

rows = sc.nextInt();

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

{

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

{

System.out.print("* ");

}

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

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



16. Write a program to print the below pattern?

```
                1
            1       1
        1       2       1
    1       3       3       1
1       4       6       4       1
```

Code:

```
import java.util.Scanner;
public class MainClass
{
   public static void main(String[] args)
   {
      Scanner sc = new Scanner(System.in);
      System.out.println("Enter number of rows: ");
      int noOfRows = sc.nextInt();
      int rowCount = 1;
```

```
        System.out.println("Here Is Your Pyramid");
        for (int i = noOfRows; i > 0; i--)
        {
            for (int j = 1; j <= i*2; j++)
            {
                System.out.print(" ");
            }
            for (int j = 1; j <= rowCount; j++)
            {
                System.out.print(j+" ");
            }
            for (int j = rowCount-1; j >= 1; j--)
            {
                System.out.print(j+" ");
            }
            System.out.println();
            rowCount++;
        }
    }
```

```
Enter number of rows: 5
Here Is Your Pyramid
          1
        1 2 1
      1 2 3 2 1
    1 2 3 4 3 2 1
  1 2 3 4 5 4 3 2 1
```

17. Write a program to print rectangle symbol pattern.
Get the symbol as input from user

Code:

```
import java.util.Scanner;

public class RectangleStar {

        private static Scanner sc;

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

```
        {
                int rows, columns, i, j;
                sc = new Scanner(System.in);

                System.out.print(" Please Enter Number of Rows : ");
                rows = sc.nextInt();

                System.out.print(" Please Enter Number of Columns : ");
                columns = sc.nextInt();

                for(i = 1; i <= rows; i++)
                {
                        for(j = 1; j <= columns; j++)
                        {
                                System.out.print("* ");
                        }
                        System.out.print("\n");
                }
        }
}
```

```
Please Enter Number of Rows : 3
Please Enter Number of Columns : 5
* * * * *
* * * * *
* * * * *
```

18. Write a program to print the Inverted Full Pyramid pattern?

Code:

```
import java.util.Scanner;

public class InvPyr

{

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

```
{

        Scanner sc=new Scanner(System.in);
        System.out.println("Enter N : ");
        int n=sc.nextInt();
        System.out.print("Enter Symbol : ");

      char c = sc.next().charAt(0);

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

              {
                    System.out.print(" ");
              }
              for(int j=0;j<(i*2)-1;j++)

              {
                    System.out.print(c);
              }
             System.out.println();
        }
}
```

```
Enter N :
5
Enter Symbol : *
*********
 *******
  *****
   ***
    *
```

19. Write a program to print the following pattern

Sample Input:

Enter the Character to be printed: %

Max Number of time printed: 3

%

% %

% % %

Code:

```
import java.util.Scanner;

public class CharNumberPattern {

   public static void main(String args[]) {

      Scanner scanner = new Scanner(System.in);


      System.out.println("Enter the character to be printed: ");

      char ch = scanner.next().charAt(0);


      System.out.println("Max number of times to be printed '" + ch + "' : ");

      int num = scanner.nextInt();


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

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

            System.out.print(ch);

         }

         System.out.println();

      }

   }
```

20. Write a program to reverse a number using loop?(Get the input from user)

Sample Input:

Number: 14567

Sample Output:

Reverse Number: 76541

```
public class ReverseNumber
{
public static void main(String[] args)
{
int number = 14567, reverse = 0;
while(number != 0)
{
int remainder = number % 10;
reverse = reverse * 10 + remainder;
number = number/10;
}
System.out.println("The reverse of the given number is: " + reverse);
}
}
```

```
perl

The reverse of the given number is: 76541
```

21. Write a program to find whether the person is eligible for vote or not. And if that particular person is not eligible, then print how many years are left to be eligible.

Sample Input:

Enter your age: 7

Sample output:

You are allowed to vote after 11 years

```
import java.util.Scanner;

public class Voting {
```

```
 public static void main(String[] args)
{
   int age, diff;
   Scanner scan = new Scanner(System.in);
   System.out.println("Please enter your age: ");
   age = scan.nextInt();
   if(age>=18)
   {
      System.out.println("You are eligible for voting.");
   }
   else
   {
     diff = (18 - age);
   System.out.println("You can vote after: "+ diff + " years");
   }
 }
}
```

```yaml
Please enter your age:
16
You can vote after: 2 years
```

22. Find the LCM and GCD of n numbers?

Sample Input:

N value = 2

Number 1 = 16

Number 2 = 20

Sample Output:

LCM = 80

GCD = 4

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

```
        int a, b, t, aTemp, bTemp, lcm, gcd;
        Scanner scanner;
        scanner = new Scanner(System.in);
        System.out.println("Enter Two Number");
        a = scanner.nextInt();
        b = scanner.nextInt();
        aTemp = a;
        bTemp = b;
        while (bTemp != 0) {
            t = bTemp;
            bTemp = aTemp % bTemp;
            aTemp = t;
        }
        gcd = aTemp;
        lcm = (a * b) / gcd;
        System.out.println("LCM = " + lcm);
        System.out.println("GCD = " + gcd);
    }
}
```

makefile

```
LCM = 80
GCD = 4
```

23. Write a program to print the Fibonacci series.

Sample Input:

Enter the n value: 6

```
import java.util.Scanner;

public class Fibonacci

{

   public static void main(String[] args)

   {
```

```
        int n, a = 0, b = 0, c = 1;
        Scanner s = new Scanner(System.in);
        System.out.print("Enter value of n:");
        n = s.nextInt();
        System.out.print("Fibonacci Series:");
        for(int i = 1; i <= n; i++)
        {
           a = b;
           b = c;
           c = a + b;
           System.out.print(a+" ");
        }
    }
}
```

```
mathematica
Fibonacci Series:0 0 1 1 2 3
```

24. Write a program to print all the composite numbers between a and b?
Sample Input:
A = 12
B = 19

```
import java.util.Scanner;

public class CompositeNumbers {

    static boolean isComposite(int num) {
        if (num <= 1) {
            return false;
        }
        for (int i = 2; i <= Math.sqrt(num); i++) {
            if (num % i == 0) {
                return true;
```

```
        }
      }
      return false;
   }
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter value of a: ");
      int a = scanner.nextInt();
      System.out.print("Enter value of b: ");
      int b = scanner.nextInt();
      System.out.println("Composite Numbers between " + a + " and " + b + ":");
      for (int i = a; i <= b; i++) {
         if (isComposite(i)) {
            System.out.print(i + " ");
         }
      }
      scanner.close();
   }
}
```

```
Composite Numbers between 10 and 30:
10 12 14 15 16 18 20 21 22 24 25 26 27 28 30
```

25. Find the factorial of n?

Sample Input:

N = 4

Sample Output:

4 Factorial = 24

```
class Factorial{
 public static void main(String args[]){
  int i,fact=1;
  int number=5;//It is the number to calculate factorial
```

```
 for(i=1;i<=number;i++){
    fact=fact*i;
 }
 System.out.println("Factorial of "+number+" is: "+fact);
}
}
```

```
Factorial of 4 is: 24
```