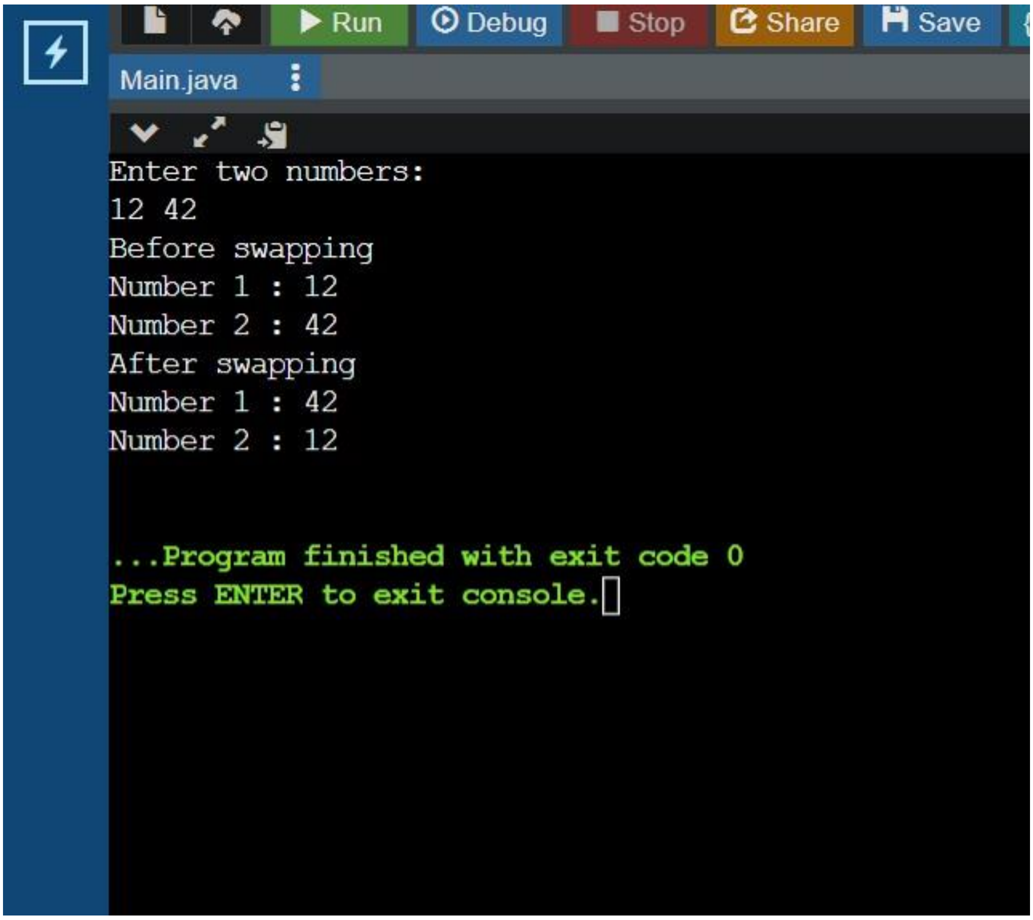
Q1. Write a program in java to swap two numbers.

CODE:

```
import java.util.*;
public class Main
{
        public static void main(String[] args)
        {
           Scanner sc = new Scanner(System.in);
           System.out.println("Enter two numbers: ");
           int n1=sc.nextInt();
           int n2=sc.nextInt();
           System.out.println("Before swapping");
           System.out.println("Number 1 : "+n1+"\nNumber 2 : "+n2);
           int temp=n1;
           n1=n2;
           n2=temp;
           System.out.println("After swapping");
           System.out.println("Number 1 : "+n1+"\nNumber 2 : "+n2);
        }
}
```

OUTPUT:

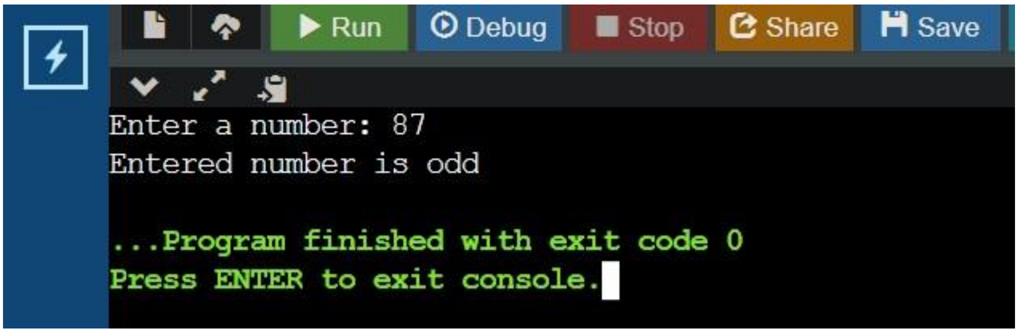


```
Enter two numbers:
12 42
Before swapping
Number 1 : 12
Number 2 : 42
After swapping
Number 1 : 42
Number 2 : 12


...Program finished with exit code 0
Press ENTER to exit console.
```

Q2. Write a java program to check whether given number is even or odd.

CODE:

```
import java.util.*;
public class Main {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter a number: ");
		int a=sc.nextInt();
		if(a%2==0)
			System.out.print("Entered number is even");
		else
			System.out.print("Entered number is odd");
	}
}
```



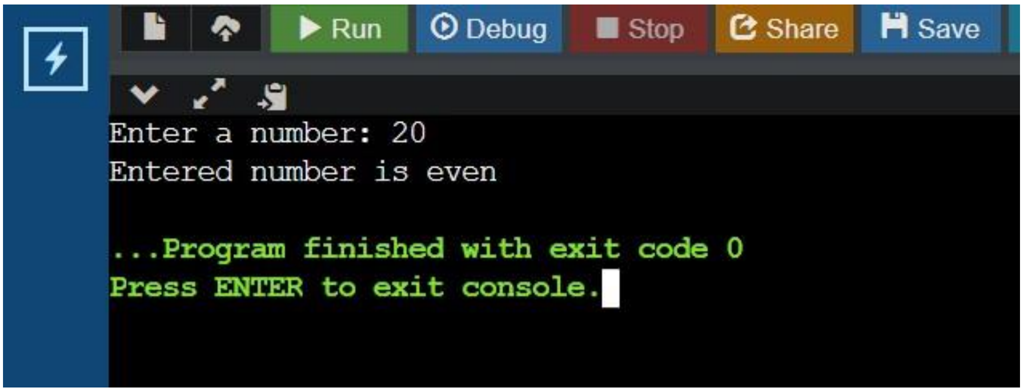
```
Enter a number: 87
Entered number is odd

...Program finished with exit code 0
Press ENTER to exit console.
```

OUTPUT:

Q3. Write a java program to find factorial of a number.

CODE:

```
import java.util.*;
public class Main {
        public static void main(String[] args) {
           Scanner sc = new Scanner(System.in);
           System.out.print("Enter a number: ");
           int n=sc.nextInt();
```

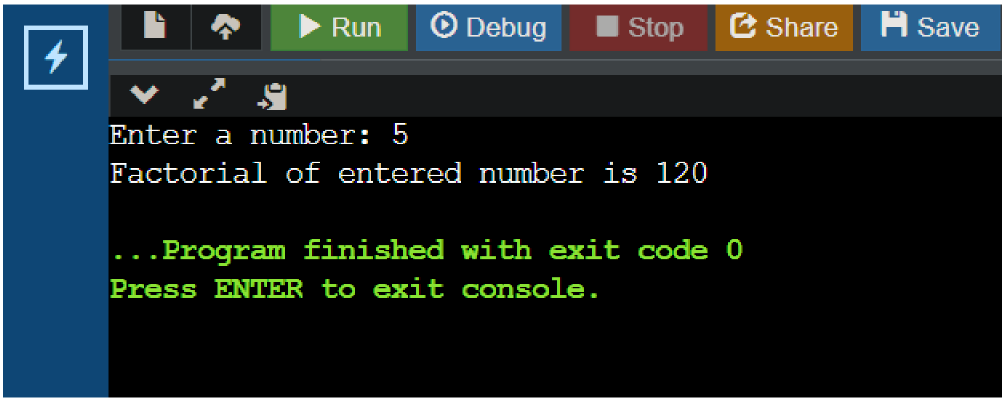


```
Enter a number: 20
Entered number is even

...Program finished with exit code 0
Press ENTER to exit console.
```

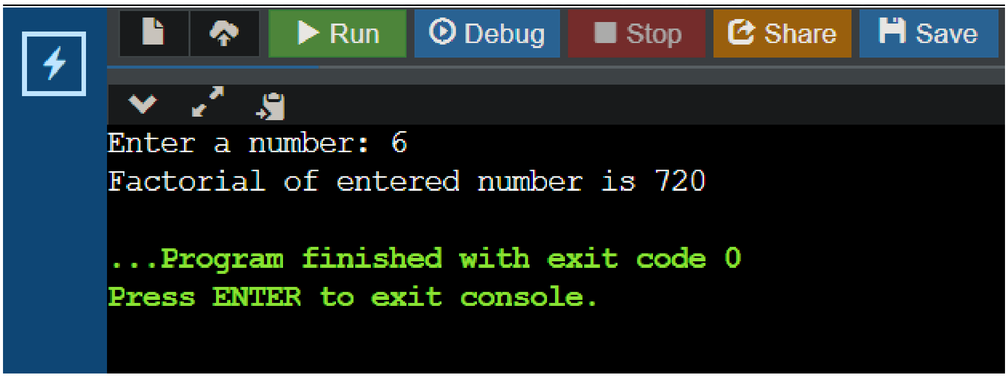
```
           int fact=1;
```

```
            for(int i=1;i<=n;i++)
                fact=fact*i;
            System.out.print("Factorial of entered number is "+fact);
        }
}
```

OUTPUT:



```
Enter a number: 5
Factorial of entered number is 120

...Program finished with exit code 0
Press ENTER to exit console.
```



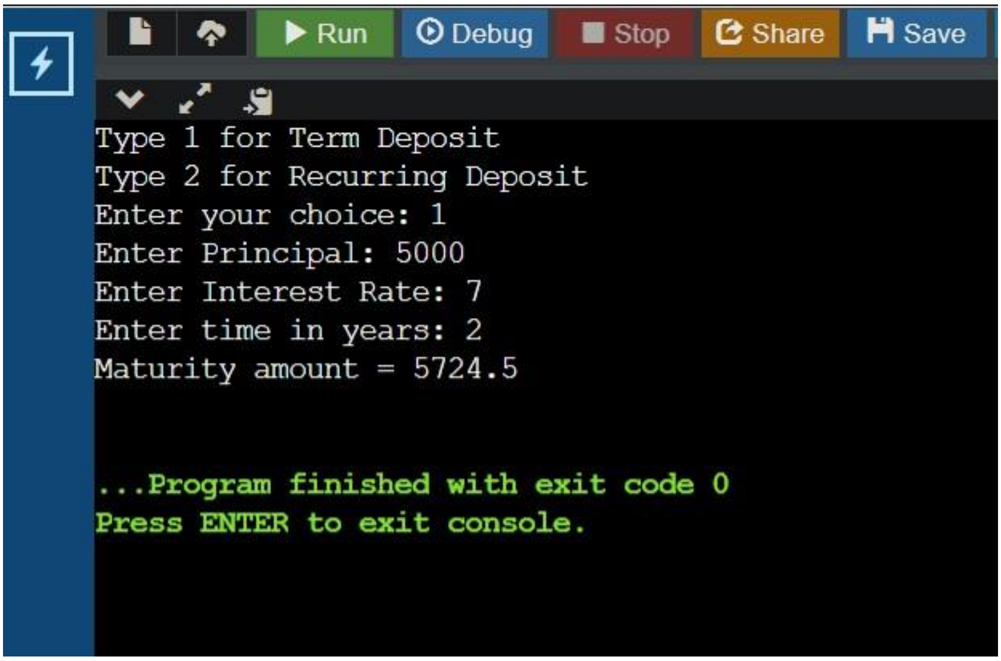
```
Enter a number: 6
Factorial of entered number is 720

...Program finished with exit code 0
Press ENTER to exit console.
```

Q4. Using a switch statement, write a menu driven program in java to calculate maturity amount of a bank deposit.

CODE:

```
import java.util.*;
public class Main {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Type 1 for Term Deposit");
        System.out.println("Type 2 for Recurring Deposit");
        System.out.print("Enter your choice: ");
        int ch = sc.nextInt();
        double p = 0.0, r = 0.0, a = 0.0;
        int n = 0;
        switch (ch) {
                        case 1:System.out.print("Enter Principal: ");
                                p = sc.nextDouble();
                                System.out.print("Enter Interest Rate: ");
                                r = sc.nextDouble();
                                System.out.print("Enter time in years: ");
                                n = sc.nextInt();
                                a = p * Math.pow(1 + r / 100, n);
                                System.out.println("Maturity amount = " + a);
                                break;
                        case 2: System.out.print("Enter Monthly Installment: ");
                                p = sc.nextDouble();
                                System.out.print("Enter Interest Rate: ");
                                r = sc.nextDouble();
                                System.out.print("Enter time in months: ");
                        n = sc.nextInt();
                        a = p*n + p*((n*(n+1))/2) * (r/100) * (1/12.0);
                        System.out.println("Maturity amount = " + a);
                        break;
                default:System.out.println("Invalid choice");
        }
    }
}
```

OUTPUT:



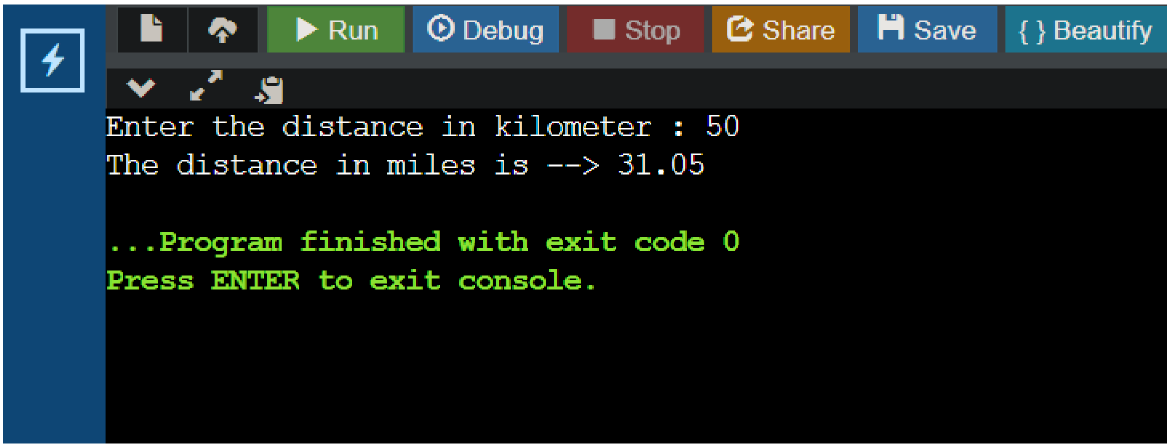
```
Type 1 for Term Deposit
Type 2 for Recurring Deposit
Enter your choice: 1
Enter Principal: 5000
Enter Interest Rate: 7
Enter time in years: 2
Maturity amount = 5724.5


...Program finished with exit code 0
Press ENTER to exit console.
```

Q5. Write a java program to convert kilometres to miles.

CODE:

```
import java.util.*;
public class Main {
        public static void main(String []args) {
                Scanner sc =new Scanner(System.in);
                System.out.print("Enter the distance in kilometer : ");
                int n = sc.nextInt();
                double miles = n * 0.621;
                System.out.print("The distance in miles is --> " + miles);
        }
}
```

OUTPUT:



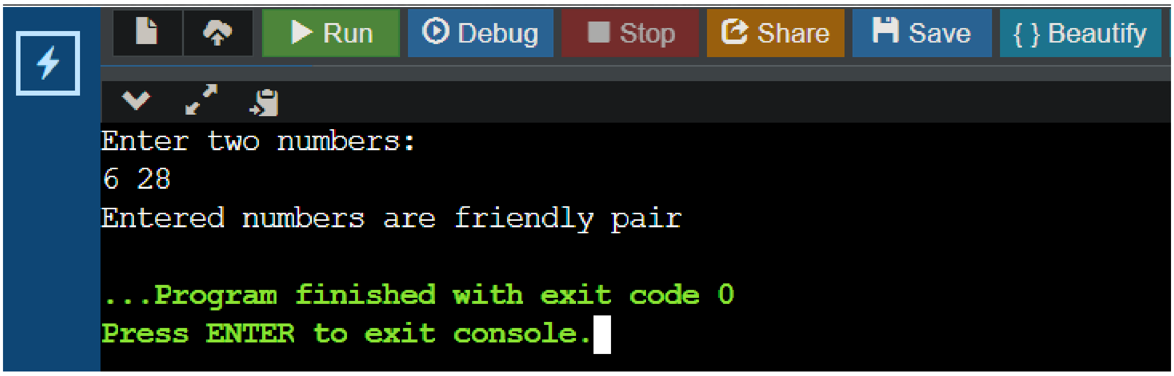
```
Enter the distance in kilometer : 50
The distance in miles is --> 31.05

...Program finished with exit code 0
Press ENTER to exit console.
```

Q6. Write a java program to find whether the given number are friendly pair or not.

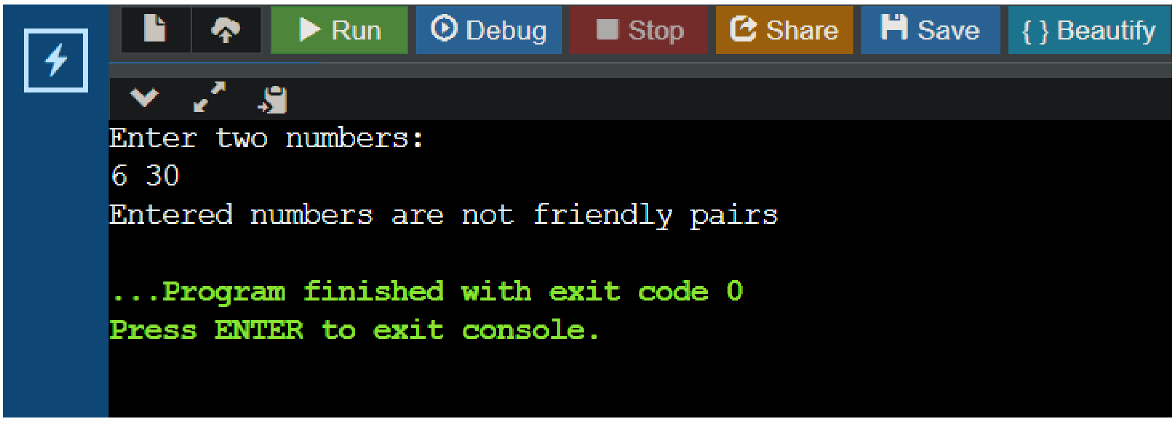
CODE:

```
import java.util.*;
public class Main {
        public static void main(String[] args) {
           Scanner sc = new Scanner(System.in);
           System.out.println("Enter two numbers: ");
           int n1=sc.nextInt();
           int n2=sc.nextInt();
           int s1=0,s2=0;
           for(int i=1;i<n1;i++) {
              if(n1%i==0)
                 s1=s1+i;
           }
           for(int i=1;i<n2;i++) {
              if(n2%i==0)
                 s2=s2+i;
           }
           if(s1==n1&&s2==n2)
              System.out.print("Entered numbers are friendly pair");
           else
              System.out.print("Entered numbers are not friendly pairs");
        }
}
```

OUTPUT:



```
Enter two numbers:
6 28
Entered numbers are friendly pair

...Program finished with exit code 0
Press ENTER to exit console.
```



```
Enter two numbers:
6 30
Entered numbers are not friendly pairs

...Program finished with exit code 0
Press ENTER to exit console.
```

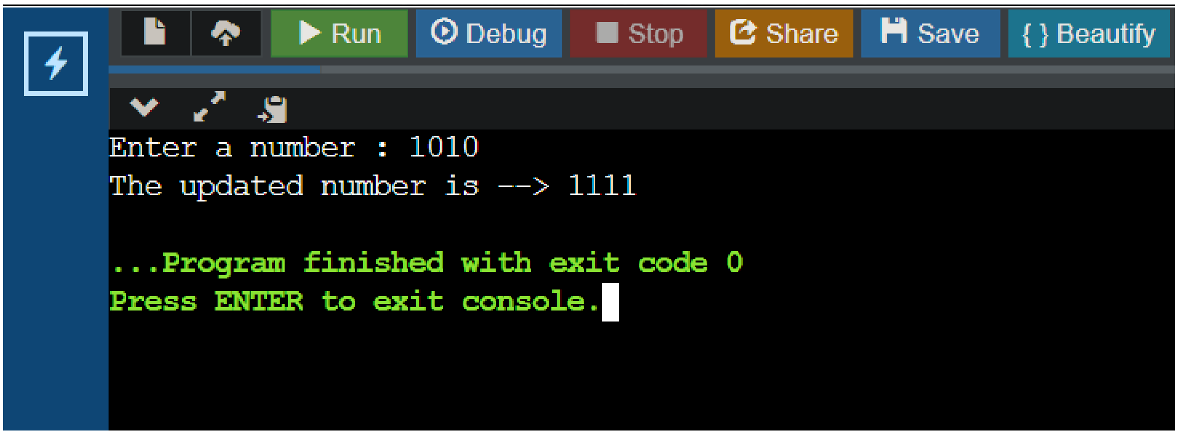
.

Q7. Write a java program to replace all 0’s with 1’s in an integer number.

CODE:

```
import java.util.*;
public class Main {
        public static void main(String[] args) {
           Scanner sc = new Scanner(System.in);
           System.out.print("Enter a number : ");
           int a = sc.nextInt();
                String str = Integer.toString(a);
                String str1 = "";
                for (int i = 0; i < str.length(); i++) {
                        if (str.charAt(i) == '0')
                                str1 = str1 + '1';
                        else
                           str1 = str1 + str.charAt(i);
                }
                System.out.print("The updated number is --> " + str1);
        }
}
```

OUTPUT:

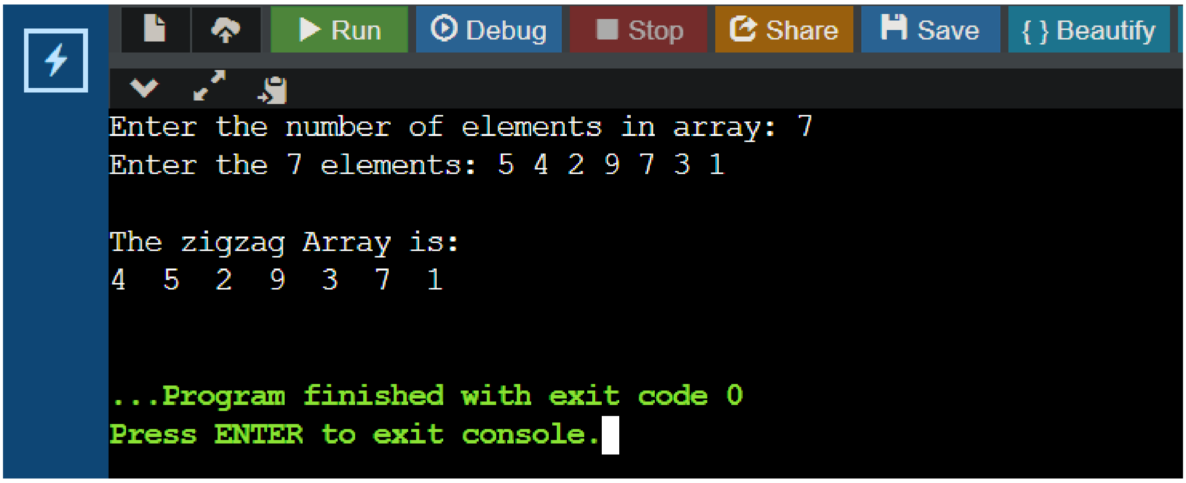


```
Enter a number : 1010
The updated number is --> 1111

...Program finished with exit code 0
Press ENTER to exit console.
```

Q8. Write a java program to print an array into zig zag fashion.

CODE:

```
import java.util.Scanner;
public class Main  {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        int[] array;
        int length = 0;
        System.out.print("Enter the number of elements in array: ");
        length = sc.nextInt();
        array = new int[length];
        System.out.print("Enter the " + length + " elements: ");
        for (int i = 0; i < length; i++)
            array[i] = sc.nextInt();
        System.out.print("\nThe zigzag Array is: \n");
        zigzagArray(array, length);
        for (int i = 0; i < length; i++)
            System.out.print(+array[i] + "  ");
        System.out.print("\n");
    }
    public static void zigzagArray(int array[], int n) {
        boolean flag = true;
        int temp;
        for (int i = 0; i <= n - 2; i++) {
            if (flag) {
                if (array[i] > array[i + 1])  {
                    temp = array[i];
                    array[i] = array[i + 1];
                    array[i + 1] = temp;
                }
            }
            else  {
                if (array[i] < array[i + 1]) {
                    temp = array[i];
                    array[i] = array[i + 1];
                    array[i + 1] = temp;
                }
            }
            flag = !flag;
        }
    }
}
```



```
Enter the number of elements in array: 7
Enter the 7 elements: 5 4 2 9 7 3 1

The zigzag Array is:
4   5   2   9   3   7   1


...Program finished with exit code 0
Press ENTER to exit console.
```

OUTPUT:

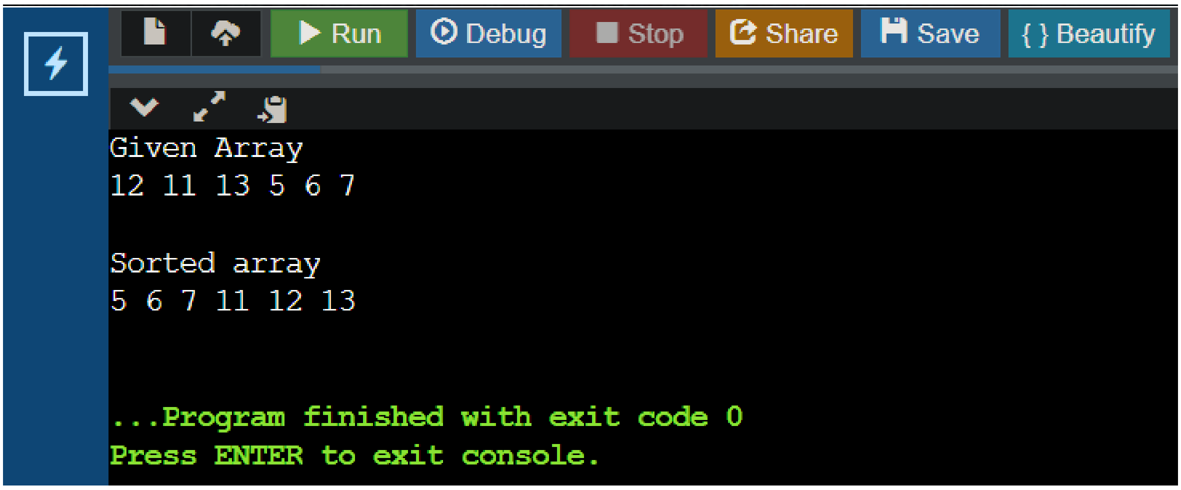
Q9. Write a java program to sort n elements in 1-D array using merge sort.

CODE:

```
public class Main {
    void merge(int arr[], int l, int m, int r) {
        int n1 = m - l + 1;
        int n2 = r - m;
        int L[] = new int [n1];
        int R[] = new int [n2];
        for (int i=0; i<n1; ++i)
            L[i] = arr[l + i];
        for (int j=0; j<n2; ++j)
            R[j] = arr[m + 1+ j];
        int i = 0, j = 0;
        int k = l;
        while (i < n1 && j < n2) {
            if (L[i] <= R[j]) {
                arr[k] = L[i];
                i++;
            }
            else {
                arr[k] = R[j];
                j++;
            }
            k++;
        }
        while (i < n1) {
            arr[k] = L[i];
        i++;
        k++;
    }
    while (j < n2) {
        arr[k] = R[j];
        j++;
        k++;
    }
}
void sort(int arr[], int l, int r) {
    if (l < r) {
        int m = (l+r)/2;
        sort(arr, l, m);
        sort(arr , m+1, r);
        merge(arr, l, m, r);
    }
}
static void printArray(int arr[]) {
    int n = arr.length;
    for (int i=0; i<n; ++i)
        System.out.print(arr[i] + " ");
    System.out.println();
}
public static void main(String args[]) {
    int arr[] = {12, 11, 13, 5, 6, 7};
    System.out.println("Given Array");
    printArray(arr);
```

```
        Main ob = new Main();
        ob.sort(arr, 0, arr.length-1);
        System.out.println("\nSorted array");
        printArray(arr);
    }
}
```

OUTPUT:



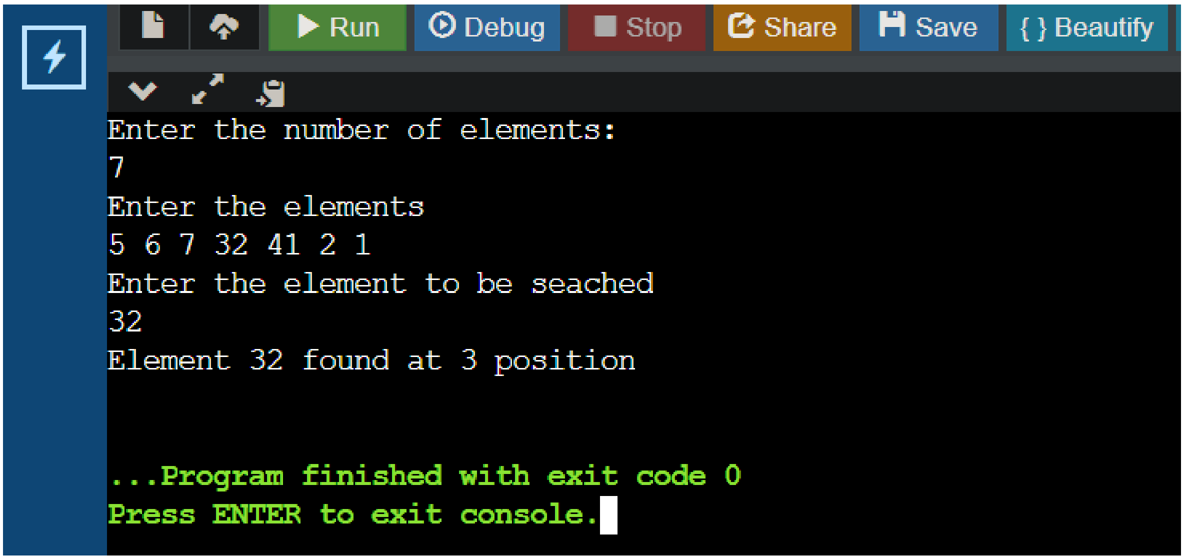
```
Given Array
12 11 13 5 6 7

Sorted array
5 6 7 11 12 13


...Program finished with exit code 0
Press ENTER to exit console.
```

Q10. Write a java program to search for an element in an array and if found print the element and print “Element found.” else print “Element not found”.

CODE:

```
import java.util.*;
public class Main {
        public static void main(String args[]) {
                Scanner sc = new Scanner(System.in);
                int i,n,search,flag=0;
                System.out.println("Enter the number of elements:") ;
                n = sc.nextInt();
                int[] a = new int[n];
        System.out.println("Enter the elements") ;
        for(i=0;i<n;i++)
        a[i] = sc.nextInt();
                System.out.println("Enter the element to be seached");
                search = sc.nextInt();
                for(i=0;i<n;i++) {
        if(a[i]==search)
        {

                System.out.println("Element "+search+" found at "+i+" position");
                flag=1;
                break;
        }
        }
        if(flag==0) {
        System.out.println("Element "+search+" not found");
        }
        }
}
```

OUTPUT:



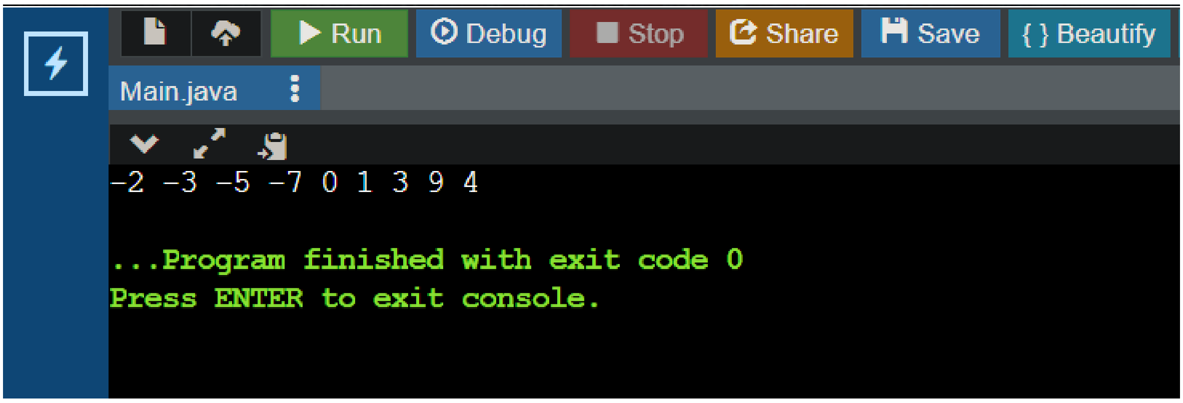
```
Enter the number of elements:
7
Enter the elements
5 6 7 32 41 2 1
Enter the element to be seached
32
Element 32 found at 3 position


...Program finished with exit code 0
Press ENTER to exit console.
```

Q11. Write a program in java to rearrange elements in array in such a way that negative number comes before positive number.

CODE:

```
import java.util.*;
public class Main {
    static void rearrangeArray(int arr[], int N) {
        int i, ind = -1;
        for (i = 0; i < N; i++) {
            if (arr[i] == 0) {
                ind = i;
                break;
            }
        }
        int j = -1, k, temp;
        for (k = 0; k < N; k++) {
            if (arr[k] < 0) {
                j += 1;
                if (arr[j] == 0)
                    j += 1;
                temp = arr[j];
                arr[j] = arr[k];
                arr[k] = temp;
            }
        }
        int temp2 = arr[j];
        arr[j] = arr[ind];
        arr[ind] = temp2;
        for (j = 0; j < N; j++) {
            System.out.print(arr[j] + " ");
        }
    }
    public static void main (String[] args) {
        int arr[] = { 1, 0, -2, 3, 4, -5, -7, 9, -3 };
        int N = arr.length;
        rearrangeArray(arr, N);
    }
}
```

OUTPUT:



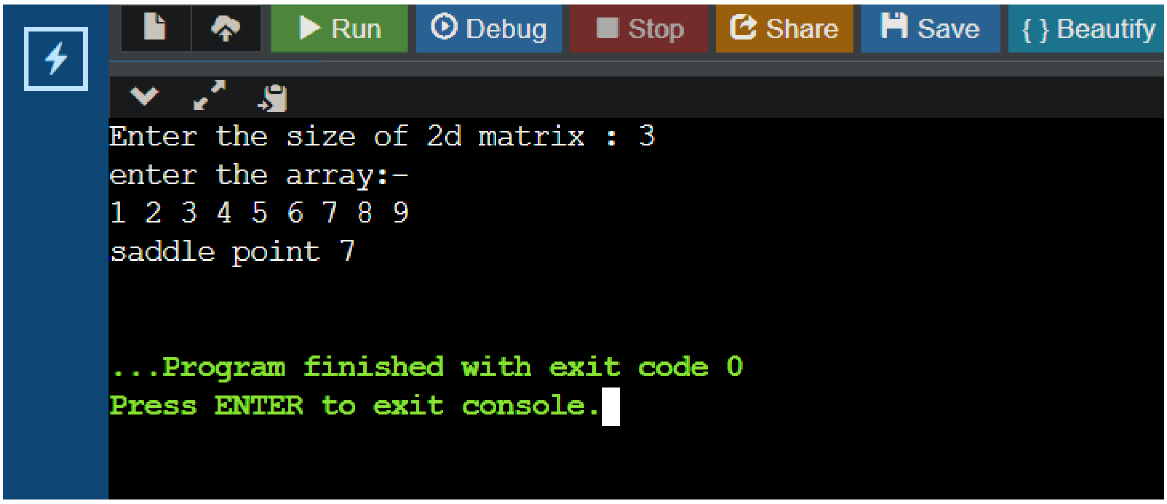
```
-2 -3 -5 -7 0 1 3 9 4

...Program finished with exit code 0
Press ENTER to exit console.
```

Q12. Write a java program to find saddle point coordinates of a matrix.

CODE:

```
import java.util.*;
public class Main {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        System.out.print("Enter the size of 2d matrix : ");
        int n = s.nextInt();
        int arr[][] = new int[n][n];
        System.out.println("enter the array:-");
        for (int i = 0; i < n; i++)
            for (int j = 0; j < n; j++) {
                arr[i][j] = s.nextInt();
            }
        int col_max = 0;
        for (int i = 0; i < n; i++) {
            int row_min = arr[i][0];
            int col = 0;
            for (int j = 1; j < n; j++) {
                if (arr[i][j] < row_min) {
                    row_min = arr[i][j];
                    col = j;
                }
            }
            for (int k = 0; k < n; k++) {
                if (row_min < arr[k][col]) {
                    col_max = 0;
                break;
            }
            else
                col_max = row_min;
        }
        if (col_max != 0)
            System.out.println("saddle point " + col_max);
    }


  }
}
```

OUTPUT:



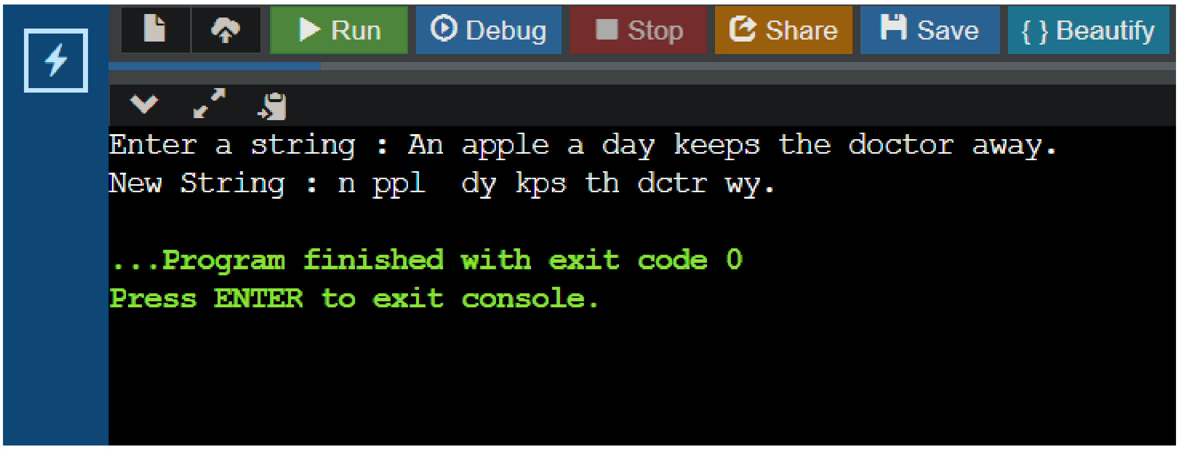
```
Enter the size of 2d matrix : 3
enter the array:-
1 2 3 4 5 6 7 8 9
saddle point 7


...Program finished with exit code 0
Press ENTER to exit console.
```

Q13. Implement a java program to delete vowels from given string using StringBuffer class.

CODE:

```
import java.util.*;

import java.lang.*;

public class Main  {

  public static void main(String[] args)

  {

      Scanner sc = new Scanner(System.in);

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

      String str = sc.nextLine();

      StringBuffer sb = new StringBuffer(str);

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

          if(sb.charAt(i) == 'a'||sb.charAt(i) == 'e'||sb.charAt(i) == 'i'||

          sb.charAt(i) == 'o'||sb.charAt(i) == 'u'||sb.charAt(i) == 'A'||

          sb.charAt(i) == 'E'||sb.charAt(i) == 'I'||sb.charAt(i) == 'O'||sb.charAt(i) == 'U') {

              sb.replace(i,i+1,"");

              i--;

          }

      }

      System.out.print("New String : "+ sb.toString());

  }

}
```

OUTPUT:



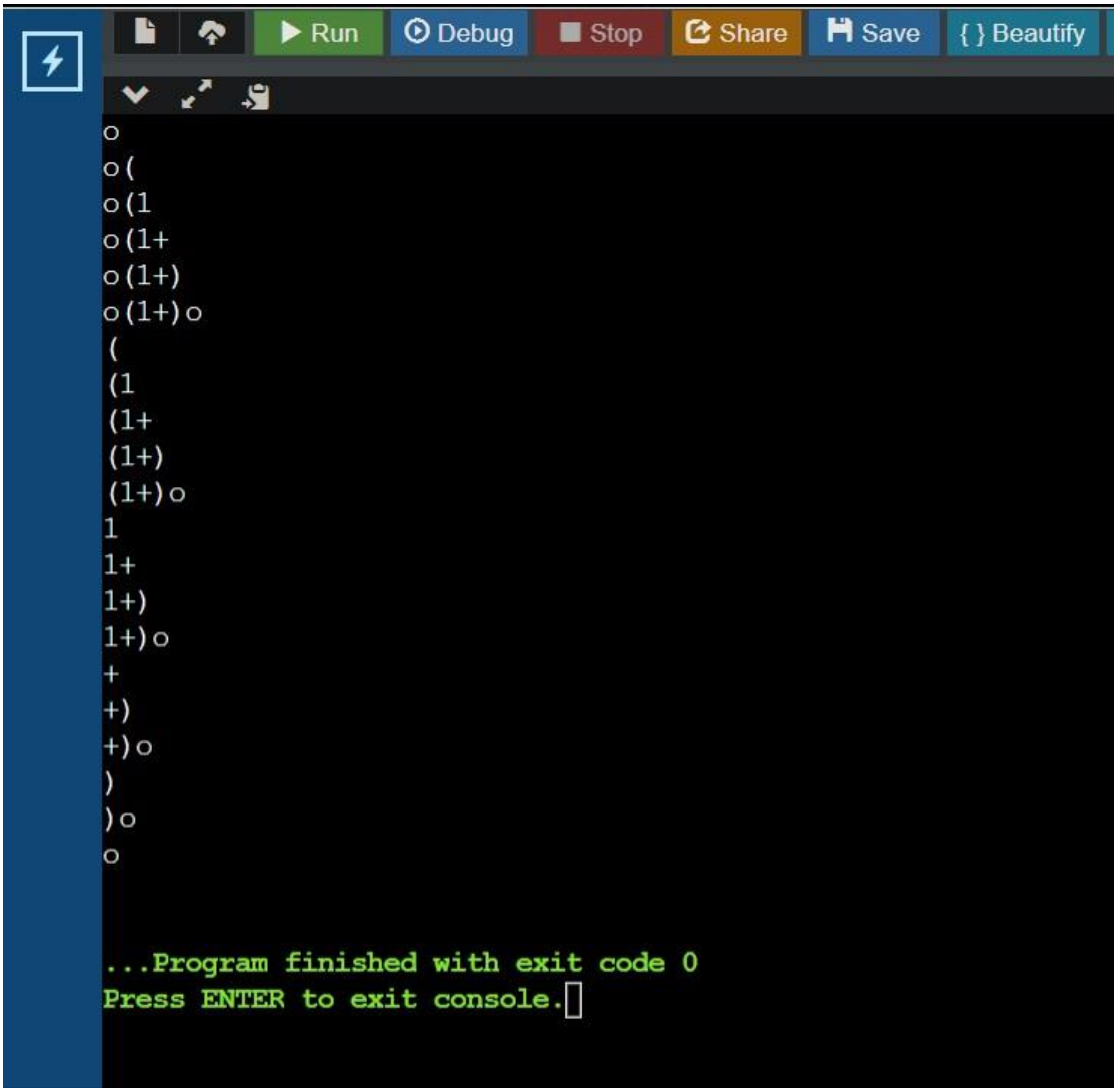
```
Enter a string : An apple a day keeps the doctor away.
New String : n ppl  dy kps th dctr wy.

...Program finished with exit code 0
Press ENTER to exit console.
```

Q14. WAP to print all the substrings of “O(1+)O”.

CODE:

```
import java.util.Scanner;
public class Main {
    public static void main(String[] args) {
        String s ="o(1+)o";
        String p = "";
        for(int i = 0 ; i < s.length() ; i++){
            System.out.print(s.charAt(i));
            System.out.print("\n");
            p = "" + s.charAt(i);
            for(int j = i+1 ; j < s.length() ; j++){
                p = p + s.charAt(j);
                System.out.print(p);
                System.out.print("\n");
            }
        }
    }
}
```

OUTPUT:



```
o
o(
o(1
o(1+
o(1+)
o(1+)o
(
(1
(1+
(1+)
(1+)o
1
1+
1+)
1+)o
+
+)
+)o
)
)o
o


...Program finished with exit code 0
Press ENTER to exit console.
```