Assignment No:7

```
import java.util.*;
import java.lang.*;
import java.io.*;
public class GenericFunctionExample
{
 static int count = 0;
 //Function to check palindrome
 static void check_palindrome(String x)
   {
     StringBuilder s1 = new StringBuilder(x);
     if(x.equals(s1.reverse().toString()))
      {
           System.out.println(x+" is a Palindrome");
           count += 1; //count the number of palindromes
       }
     else
      {
         System.out.println(x+" is not a Palindrome");
      }
    }
 //Function to check even or odd number
  static void even_odd(int x)
        {
            if(x % 2 == 0)
             {
                  System.out.println(x+" is Even Number");
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                count += 1; //count the number of even numbers
            }
           else
            {
                System.out.println(x+" is Odd Number");
            }
       }
//Function to check Prime Number
      static void prime(int x)
     {
         boolean flag = false;
        for(int i = 2; i <= x/2; i++)
      {
          if(x % i == 0)
         {
            flag = true;
            break;
        }
    }
      if (!flag) // flag ==false
     {
        System.out.println(x + " is a prime number.");
       count += 1; //count the number of prime numbers
     }
   else
     {
         System.out.println(x + " is not a prime number.");
```

```
  }
 }
static void check(int ch,int x)
    {
       switch(ch)
     {
          case 1:
                  even_odd(x); //call even_odd fucntion for number x
                  break;
         case 2:
                 prime(x); //call prime function for number x
                 break;
       default:
            System.out.println("ENTER CORRECT OPTION");
       }
    }
//Function for integer Array
  static void number_op()
     {
        int element, n, choice;
       Scanner sc = new Scanner(System.in);
      //ArrayList from Collection Interface
      //Integer type
       ArrayList<Integer> nums = new ArrayList<Integer>();
       System.out.println("Enter the total number of elements:");
        n = sc.nextInt();
        System.out.println("Enter the elements:");
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        for(int i=0;i<n;i++)
        {
            element = sc.nextInt();
            nums.add(element); //Add elements to the ArrayList
        }
       System.out.println("***You have following choice on Integer Numbers****");
       System.out.println("1. Check Number is ODD or EVEN ");
       System.out.println("2. Check Number is PRIME OR NOT");
       System.out.print("Enter your choice :");
        choice = sc.nextInt();
       Iterator itr = nums.iterator(); //Iterator from the COLLECTION interface
       count = 0;
      while(itr.hasNext())
      {
        //Loop till there are elements in the ArrayList
       check(choice,(int)itr.next()); //call the check function for each element
      }
        //Give the Count
        if(choice == 1)
       {
         System.out.println("The number of Even numbers is: "+ count);
         System.out.println("The number of Odd numbers is: "+ (nums.size()-
                    count));
       }
       else
```

```
    {
        System.out.println(" Number of Prime numbers is: "+ count);
        System.out.println(" Number of Non-Prime numbers is: "
            +(nums.size()-count));
    }
  }
//Function for String Array
    static void string_op()
   {
      int n;
      String word;
    //ArrayList from COLLECTION interface
     //String type
      ArrayList<String> words = new ArrayList<String>();
      Scanner sc = new Scanner(System.in);
      System.out.println("Enter the total number of elements:");
      n = sc.nextInt();
      System.out.println("Enter elements:");
      for(int i=0;i<n;i++)
      {
          word = sc.next();
          words.add(word); //Add elements to the ArrayList
      }
      count = 0;
      for(String w:words){ //Loop the ArrayList
      check_palindrome(w);
     }
```

```
        System.out.println("The Number of Palindrome is: "+ count);
    }
      // Main Function
     public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("*****We have following data type to perform operations*****");
        System.out.println("1. Integer");
        System.out.println("2. String");
       System.out.print(“Enter your choice: ”);
        int ch = sc.nextInt();
        if(ch == 1)
          {
            number_op(); //Calls Interger arraylist
          }
       else if(ch==2)
        {
           string_op(); //Calls String arraylist
        }
       else
        {
          System.out.println("Enter valid choice");
        }
    }
}
```

Output

*********We have following data type to perform operations*********

1. Integer

2. String

Enter your choice: 1

Enter the total number of elements:

5

Enter the elements:

2

3

1

4

5

*****You have following choice on Integer Numbers******

1. Check Number is ODD or EVEN

2. Check Number is PRIME OR NOT

Enter your choice :1

2 is Even Number

3 is Odd Number

1 is Odd Number

4 is Even Number

5 is Odd Number

The number of Even numbers is: 2

The number of Odd numbers is: 3