Assignment No. 07

Name:
Roll.No.:

/* Implement a generic program using any collection class to count the number of elements in a collection that have a specific property such as even numbers, odd number, prime number and palindromes. */

Source Code :

```
import java.util.*;
import java.lang.*;
import java.io.*;
class JavaApplication10{
   static int count = 0; //COUNT VARIABLE

   //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
   static void even_odd(int x){
      if(x % 2 == 0){
         System.out.println(x+" IS EVEN");
         count += 1; //count the number of even numbers
      }
      else{
         System.out.println(x+" IS ODD");
      }
   }
   //FUNCION 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){
         System.out.println(x + " is a prime number.");
         count += 1; //count the number of prime numbers
```

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    }
    else{
        System.out.println(x + " is not a prime number.");
    }
}
//FUNCTION TO DECIDE WHICH FUNCTION TO CHECK
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 fucntion 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 number of elements:");
    n = sc.nextInt();
    System.out.println("Enter the elements:");

    for(int i=0;i<n;i++){
        element = sc.nextInt();
        nums.add(element); //Add elements to the ArrayList
    }

    System.out.println("Enter the Operation to be performed:");
    System.out.println("1. ODD or EVEN");
    System.out.println("2. PRIME OR NOT");
    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("The number of PRIME numbers is: "+ count);
            System.out.println("The 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 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 PALINDROMES is: "+ count);

    }
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);

        //Choose the type of List needed
        System.out.println("Choose Type:");
        System.out.println("1. String");
        System.out.println("2. Integer");
        int ch = sc.nextInt();

        if(ch == 2)
            number_op(); //Calls Interger arraylist
        else
            string_op(); //Calls String arraylist
    }
}
```

Output :

```
Choose Type:
1. String
2. Integer
1
Enter the number of elements:
3
Enter elements:
madam
ram
asa
madam is a Palindrome
ram is not a Palindrome
asa is a Palindrome
The number of PALINDROMES is: 2

Choose Type:
1. String
2. Integer
2
Enter the number of elements:
5
Enter the elements:
7
13
45
88
66
Enter the Operation to be performed:
1. ODD or EVEN
2. PRIME OR NOT
1
7 IS ODD
13 IS ODD
45 IS ODD
88 IS EVEN
66 IS EVEN
The number of EVEN numbers is: 2
The number of ODD numbers is: 3

Choose Type:
1. String
2. Integer
2
Enter the number of elements:
5
Enter the elements:
45
13
7
```

88
22
Enter the Operation to be performed:
1. ODD or EVEN
2. PRIME OR NOT
2
45 is not a prime number.
13 is a prime number.
7 is a prime number.
88 is not a prime number.
22 is not a prime number.
The number of PRIME numbers is: 2
The number of Non-PRIME numbers is: 3