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**Assignment No 7**

**Template**

**Problem Statement :** 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:**

**package** genericassign;

**import** java.util.\*;

**public** **class** Functions {

**static** **int** *count*;

**void** num\_op()

{

**int** element, choice, n;

Scanner sc=**new** Scanner(System.***in***);

ArrayList<Integer> numlst=**new** ArrayList<Integer>();

System.***out***.print("Enter the Number of Elements To be Entered : ");

n=sc.nextInt();

System.***out***.println("Enter the elements : \n");

**for**(**int** i=0;i<n;i++)

{

System.***out***.print("Enter "+(i+1)+" Element : ");

element=sc.nextInt();

numlst.add(element);

}

System.***out***.println("Enter the choice : ");

System.***out***.println("1. To check EVEN OR ODD \n2.To check PRIME OR NOT");

System.***out***.print("Choice : ");

choice=sc.nextInt();

Iterator<Integer> itr=numlst.iterator();

*count*=0;

**if**(choice==1)

{

**while**(itr.hasNext())

{

**int** ele=(**int**)itr.next();

**if** (*isEven*(ele))

{

System.***out***.println(ele+" is Even..!!");

*count*++;

}

**else** **if** (*isOdd*(ele))

{

System.***out***.println(ele+" is Odd..!!");

}

}

}

**else** **if**(choice==2)

{

**while**(itr.hasNext())

{

**int** ele=(**int**)itr.next();

**if** (*isPrime*(ele))

{

System.***out***.println(ele+" is Prime..!!");

*count*++;

}

**else**

{

System.***out***.println(ele+" is Not Prime..!!");

}

}

}

**else** {

System.***out***.println("Wrong Input Given..!!");

}

*display*(choice,*count*,n);

}

**static** **void** display(**int** choice,**int** count,**int** n)

{

**if**(choice==1) {

System.***out***.println("The Total Even number's are : "+count);

System.***out***.println("The Total Odd number's are : "+(n-count));

}

**if**(choice==2)

{

System.***out***.println("The total Prime Number's are : "+count);

}

}

**void** stringop()

{

**int** n;

String element;

Scanner sc=**new** Scanner(System.***in***);

LinkedList<String> strlst=**new** LinkedList<String>();

System.***out***.print("Enter the Number of Strings To be Entered : ");

n=sc.nextInt();

System.***out***.println("Enter the Strings : \n");

sc.nextLine();

**for**(**int** i=0;i<n;i++)

{

System.***out***.print("Enter "+(i+1)+" String : ");

element=sc.nextLine();

strlst.add(element);

}

*count*=0;

**for**(String w:strlst)

{

**if**(*isPalindrome*((String)w))

{

System.***out***.println(w+" is a Palindrome");

*count*++;

}

**else** {

System.***out***.println(w+" is not a Palindrome");

}

}

}

**static** **boolean** isEven(**int** A)// Checking Number is Even

{

**if**(A%2==0)

{

**return** **true**;

}

**return** **false**;

}

**static** **boolean** isOdd(**int** B)// Checking Number is Odd

{

**if**(B%2!=0)

{

**return** **true**;

}

**return** **false**;

}

**static** **boolean** isPrime(**int** C)// Checking Number is Prime

{

**for**(**int** i = 2; i <= C/2; ++i)

{

// condition for nonprime number

**if**(C % i == 0)

{

**return** **false**;

}

}

**return** **true**;

}

**static** **boolean** isPalindrome(String str)

{

String rev = "";

str=str.toLowerCase();

**int** length = str.length();

**for** ( **int** i = length - 1; i >= 0; i-- )

rev = rev + str.charAt(i);

**if** (str.equals(rev))

**return** **true**;

**else**

**return** **false**;

}

}

**Class Containing Main :**

**package** genericassign;

**import** java.util.Scanner;

**class** Main{

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

// **TODO** Auto-generated method stub

Scanner sc =**new** Scanner(System.***in***);

**int** Choice;

**do** {

System.***out***.println("\n\t\t\*\* Menu \*\*\n");

System.***out***.println("Press 1 : To perform Number Operation");

System.***out***.println("Press 2 : To perform String Operation");

System.***out***.println("Press 3 : TO EXIT");

System.***out***.print("\nChoice : ");

Choice=sc.nextInt();

Functions f =**new** Functions();

**switch**(Choice)

{

**case** 1:

f.num\_op();

**break**;

**case** 2:

f.stringop();

**break**;

}

}**while**(Choice!=3);

}

}

**Output :**

\*\* Menu \*\*

Press 1 : To perform Number Operation

Press 2 : To perform String Operation

Press 3 : TO EXIT

Choice : 1

Enter the Number of Elements To be Entered : 5

Enter the elements :

Enter 1 Element : 2

Enter 2 Element : 3

Enter 3 Element : 4

Enter 4 Element : 5

Enter 5 Element : 6

Enter the choice :

1. To check EVEN OR ODD

2.To check PRIME OR NOT

Choice : 1

2 is Even..!!

3 is Odd..!!

4 is Even..!!

5 is Odd..!!

6 is Even..!!

The Total Even number's are : 3

The Total Odd number's are : 2

\*\* Menu \*\*

Press 1 : To perform Number Operation

Press 2 : To perform String Operation

Press 3 : TO EXIT

Choice : 1

Enter the Number of Elements To be Entered : 3

Enter the elements :

Enter 1 Element : 2

Enter 2 Element : 5

Enter 3 Element : 7

Enter the choice :

1. To check EVEN OR ODD

2.To check PRIME OR NOT

Choice : 2

2 is Prime..!!

5 is Prime..!!

7 is Prime..!!

The total Prime Number's are : 3

\*\* Menu \*\*

Press 1 : To perform Number Operation

Press 2 : To perform String Operation

Press 3 : TO EXIT

Choice : 2

Enter the Number of Strings To be Entered : 3

Enter the Strings :

Enter 1 String : Diptesh

Enter 2 String : Naman

Enter 3 String : Kadak

Diptesh is not a Palindrome

Naman is a Palindrome

Kadak is a Palindrome

\*\* Menu \*\*

Press 1 : To perform Number Operation

Press 2 : To perform String Operation

Press 3 : TO EXIT

Choice : 3