Assignment 7

//Problem Statement::

/*Implement a generic program using any collection class to count the number of

* element in a collection that have a specific property such as even number,

* odd number, prime number and pallindromes.*/

```
import java.util.Objects;
import java.util.*;

class Number{

//========================================== Array Method
==========================================//

	public static < E > void arr( ) {
		Scanner sc =new Scanner(System.in);
		System.out.print("Enter size of array:: ");
		int n=sc.nextInt();//taking size of array from user

		Object[] arr=new Object[n]; //creating array of size n

		System.out.print("Enter Array Elements :: ");
		for(int i =0; i<n ;i++) {
			arr[i]=sc.next();// taking array element from user
		}

		System.out.print("Entered Array is :: ");
		for(Object element : arr) {
			System.out.printf("'%s' ", element); //printing array element on console
	}
```

```
            System.out.println();// printing blank line
        }

//======================================== Pallindrome Method
========================================//

    public static < T > void Pallindrome(T s){
            String s1=(String)s;
            //converting s into string datatype
            s1=s1.toLowerCase();
            //converting into lowercase letter
            StringBuffer sb = new StringBuffer(s1);
            // creating stringbuffer

            String ss= new String(sb.reverse());
            //reversing stringbuffer and converting into string

            if(Objects.equals(s1, ss))          //checking both strings are equal or not
                System.out.println(s+" is Pallindrome");//if both string are equal
            else
                System.out.println(s+" is not Pallindrome");//if both string are different
    }



//======================================== EVEN ODD method
========================================//

    public static <T>void evenodd(T a){
            if((int)a%2==0)  //converting a into int and modulo by 2
                System.out.println(a+" is Even Number."); //if num is even
```

```
		else
			System.out.println(a+" is Odd Number."); //if num is odd
	}

//======================================== PRIME METHOD
========================================//

	public static <T>void prime(T a) {
		if((int)a==1)	//check if a = 1
			System.out.println(a+" is Not Prime NNumber");

		else if ((int)a==2) //check if a = 2
			System.out.println(a+" is Prime Number");

		else if((int)a%2==0 && (int)a>2) //check if a >2 and a mod 2 =0
			System.out.println(a+" is Not Prime Number");

		else {
			double b=Math.sqrt((int)a)+1; //taking squareroot of (num) +1
			int temp=0; // setting temp variable = 0
			for(int i=3;i<b;i=i+2) {
				if((int)a%i==0) // check if mod = 0
					temp=1; //setting temp to 1
			}
			if(temp==1) // checking temp = 1 or not
				System.out.println(a+" is Not Prime Number");//if temp =1
			else
				System.out.println(a+" is Prime NNumber");// if temp!= 1
		}
```

```
	}



//====================================== CHECK FUNCTION METHOD
====================================//


	public static <T>void checkfun(T s) {


		try {
			//try block
			int b = Integer.parseInt((String) s);
			// try to convert "s" into integer datatype
			System.out.println("We can perform Pallindrome , int Array , check Prime ,
EvenOdd Function.");
			// if successfully converted, print rest of code
		}


		catch (NumberFormatException e) {
			//catch block
			// catch NumberFormateException
			System.out.println("We can perform Pallindrome , String Array.");
		}
	}
}




//======================================== MAIN CLASS
========================================//


public class Main {
```

```
public static void main(String[] args) {
	String s; // declaring s as string
	Scanner sc =new Scanner(System.in); // creting object of scanner class

	aa: //loop aa
	while(true) {	//while loop
	System.out.println("\n\t==== MENU BAR ====\n\n\t1.String \n\t2.Integer"
			+ "\n\t3.integer array \n\t4.String Array"
			+ "\n\t5.Check Function\n\t6.Exit");
	//menu bar

	int c =sc.nextInt();//taking input from user


	switch(c) {// switch cases

	case 1:  //if input is 1
		System.out.print("Enter the String :: ");//printing on console
		s =sc.next();//taking String s as an input from user
		Number.Pallindrome(s); //calling Pallindrome method

System.out.println("=====================================================");
		break;

	case 2: //if input is 2
		System.out.print("Enter the Integer :: ");//printing on console
		s =sc.next();//taking String s as an input from user
		Number.Pallindrome(s); //calling Pallindrome method
		Number.evenodd(Integer.parseInt(s)); //calling Even Odd method
		Number.prime(Integer.parseInt(s)); //calling prime method

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

```
                break;


        case 3: //if input is 3


        case 4: //if input is 4
                Number.arr();//array method

System.out.println("=====================================================");
                break;


        case 5: //if input is 5
                System.out.print("Enter the String :: ");//printing on console
                String ss =sc.next();//taking String ss as an input from user
                Number.checkfun(ss); //calling check function method

System.out.println("=====================================================");
                break;


        case 6: //if input is 6

System.out.println("=====================================================");
                break aa; // break aa loop, stop execution of program


        default: //default Statement
                System.out.println("Invalid Input !!!"); //printing invalid input on console

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


        }
}
}
```

```
}

/*

 ##OUTPUT##

        ==== MENU BAR ====

        1.String
        2.Integer
        3.integer array
        4.String Array
        5.Check Function
        6.Exit
1
Enter the String :: Madam
Madam is Pallindrome
=====================================================

        ==== MENU BAR ====

        1.String
        2.Integer
        3.integer array
        4.String Array
        5.Check Function
        6.Exit
1
```

```
Enter the String :: Student
Student is not Pallindrome
=========================================================

        ==== MENU BAR ====

        1.String
        2.Integer
        3.integer array
        4.String Array
        5.Check Function
        6.Exit
2
Enter the Integer :: 1234321
1234321 is Pallindrome
1234321 is Odd Number.
1234321 is Not Prime Number
=========================================================

        ==== MENU BAR ====

        1.String
        2.Integer
        3.integer array
        4.String Array
        5.Check Function
        6.Exit
2
Enter the Integer :: 2
2 is Pallindrome
2 is Even Number.
```

2 is Prime Number

==========

==== MENU BAR ====

1.String

2.Integer

3.integer array

4.String Array

5.Check Function

6.Exit

3

Enter size of array:: 4

Enter Array Elements :: 4 6 2 8

Entered Array is :: '4' '6' '2' '8'

==========

==== MENU BAR ====

1.String

2.Integer

3.integer array

4.String Array

5.Check Function

6.Exit

4

Enter size of array:: 6

Enter Array Elements :: ads xd gxdfh fgxdg gdc hfh

Entered Array is :: 'ads' 'xd' 'gxdfh' 'fgxdg' 'gdc' 'hfh'

==========

==== MENU BAR ====

1.String

2.Integer

3.integer array

4.String Array

5.Check Function

6.Exit

5

Enter the String :: 2446

We can perform Pallindrome , int Array , check Prime , EvenOdd Function.

==========

==== MENU BAR ====

1.String

2.Integer

3.integer array

4.String Array

5.Check Function

6.Exit

5

Enter the String :: parent

We can perform Pallindrome , String Array.

==========

==== MENU BAR ====

1.String

2.Integer

3.integer array

4.String Array

5.Check Function

6.Exit

6

==========

*/