```
package assignment;
import java.util.Objects;
import java.util.Scanner;

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 - java7 (run)

```
run:

        ==== MENU BAR ====

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

        ==== MENU BAR ====

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

```
        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 8 9 6
Entered Array is :: '4' '8' '9' '6'
=========================================================

        ==== MENU BAR ====

        1.String
        2.Integer
        3.integer array
        4.String Array
        5.Check Function
        6.Exit
4
Enter size of array:: 3
Enter Array Elements :: a b h
Entered Array is :: 'a' 'b' 'h'
=========================================================

         1.String
         2.Integer
         3.integer array
         4.String Array
         5.Check Function
         6.Exit
 5
 Enter the String :: d
 We can perform Pallindrome , String Array.
 =========================================================

         ==== MENU BAR ====

         1.String
         2.Integer
         3.integer array
         4.String Array
         5.Check Function
         6.Exit
 6
 =========================================================
 BUILD SUCCESSFUL (total time: 50 seconds)
```