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("======================================================");

}

}

}

} 