VIT®
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

JAVA LAB CAT 1

B.Tech in Computer Science and Engineering **(CSE)**, **Winter** Semester **2020-21**

Name:	Swaranjana Nayak
Registration Number:	19BCE0977
Slot:	L43 + L44
Date:	31/03/2021

Registration number: 19BCE0977
Last digit: 7
Question number: 7

7.

a. *Write a boolean method called isOdd() in a class called OddEvenTest, which takes an int as input and returns true if it is odd. The signature of the method is as follows:*
public static boolean isOdd(int number);

Also write the main() method that prompts the user for a number, and prints "ODD" or "EVEN". You should test for negative input. For examples,

Enter a number: 9
9 is an odd number

Enter a number: 8
8 is an even number

Enter a number: -5
-5 is an odd number

Source Code:

```
import java.util.Scanner; // Done by 19BCE0977


class OddEvenTest {
    public static boolean isOdd(int number) {
        if(((number % 2) + 2) % 2 == 1) {
            return true;
        }else{
            return false;
        }
    }
}

public class Question1 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        System.out.print("Input an integer: ");
        int n = s.nextInt();

        // invoking the method in a static way
        if(OddEvenTest.isOdd(n)){
            System.out.println("ODD");
            System.out.println(n + " is an odd number.");
```

```
            }else{
                System.out.println("EVEN");
                System.out.println(n + " is an even number.");
            }
            s.close();
        }
}
```

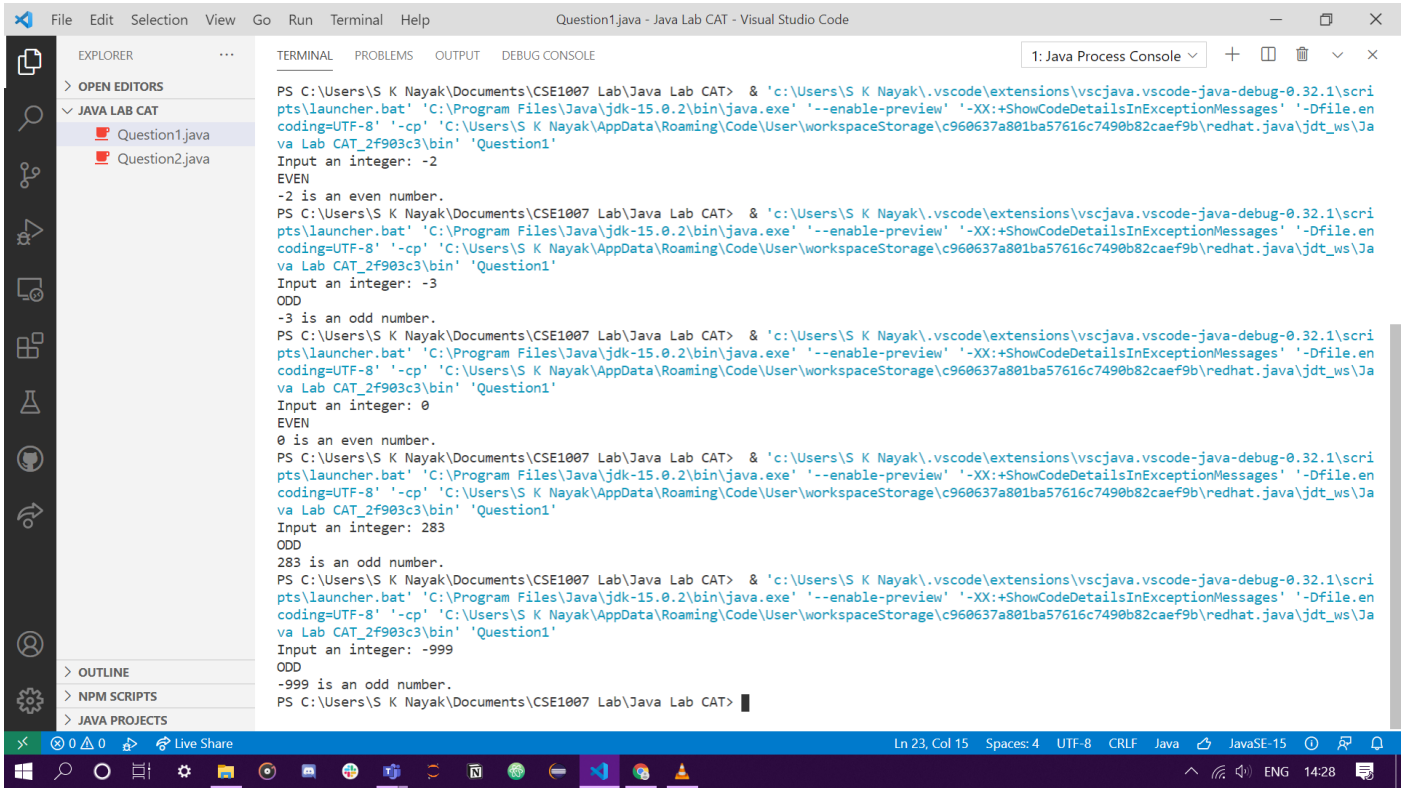
Sample Input and Output:
Input an integer: -1
ODD
-1 is an odd number.

Input an integer: -20
EVEN
-20 is an even number.

Input an integer: 7
ODD
7 is an odd number.

Input an integer: 8
EVEN
8 is an even number.

Output:



b. *Declare the TV class to describe a television. Declare the Monitor class to describe a monitor. The TV class should extend the Monitor class. Think about the different variables and methods (constructors as well) that should be declared in each one of the classes. Test the classes that you declared using a standalone application (another separate class) by creating an array of objects and display Monitor inches in ascending order.*

Source Code:

```
import java.util.Arrays;
import java.util.Comparator;
import java.util.Scanner;

class Monitor {
    String manufacturer;
    double screenSize; // in inches
    int HDMI; // number of HDMI ports
    int serialNo; // serial number of the product
    double price; // price of the product

    Monitor() {}

    Monitor(String m, double s, int h, int n, double p) {
        manufacturer = m;
        screenSize = s;
        HDMI = h;
        serialNo = n;
        price = p;
    }

    double getPrice() {
        return this.price;
    }

    double getScreenSize() {
        return this.screenSize;
    }

    void getInput(Scanner s) {
        System.out.print("Manufacturer: ");
        manufacturer = s.next();
        System.out.print("Serial No.: ");
```

```
            serialNo = s.nextInt();
            System.out.print("Screen Size (in inches): ");
            screenSize = s.nextDouble();
            System.out.print("No. of HDMI ports: ");
            HDMI = s.nextInt();
            System.out.print("Price: ₹");
            price = s.nextDouble();
        }

        void printProductInfo() {
            System.out.println("Manufacturer: " + manufacturer);
            System.out.println("Serial No.: " + serialNo);
            System.out.println("Screen Size: " + screenSize + " inches");
            System.out.println("No. of HDMI ports: " + HDMI);
            System.out.println("Price: ₹" + price);
        }
    }

    class TV extends Monitor {
        int refreshRate; // in hertz
        int warranty; // years of warranty

        TV() {}

        TV(String m, double s, int h, int n, double p, int r, int w) {
            super(m, s, h, n, p);
            refreshRate = r;
            warranty = w;
        }

        int getWarranty() {
            return this.warranty;
        }

        String getManufacturer() {
            return this.manufacturer;
        }

        void getInput(Scanner s) {
            super.getInput(s);
```

```
            System.out.print("Refresh rate (in Hertz): ");
            refreshRate = s.nextInt();
            System.out.print("Years of warranty: ");
            warranty = s.nextInt();
        }

        void printProductInfo() {
            super.printProductInfo();
            System.out.println("Refresh rate (in Hertz): " + refreshRate);
            System.out.println("Years of warranty: " + warranty);
        }

    }

    public class Question2 {
        public static void main(String[] args) {

            Scanner s = new Scanner(System.in);

            int n = 5;
            Monitor m[] = new Monitor[n];

            for(int i = 0; i < n; i++) {
                m[i] = new Monitor();
                m[i].getInput(s);
            }

            Arrays.sort(m, new Comparator<Monitor>() {
                public int compare(Monitor m1, Monitor m2) {
                    if(m1.screenSize > m2.screenSize){
                        return 1;
                    }
                    if(m1.screenSize < m2.screenSize){
                        return -1;
                    }
                    return 0;
                }
            });

            System.out.println("\nPrinted in ascending order:");
```

```
            for(int i = 0; i < n; i++) {
                m[i].printProductInfo();
            }

            TV t[] = new TV[n];

            for(int i = 0; i < n; i++) {
                t[i] = new TV();
                t[i].getInput(s);
            }

            for(int i = 0; i < n; i++) {
                t[i].printProductInfo();
            }


            s.close();

        }
    }
```

Sample Input and Output
Input:
Manufacturer: A
Serial No.: 1
Screen Size (in inches): 21
No. of HDMI ports: 3
Price: ₹1234
Manufacturer: B
Serial No.: 2
Screen Size (in inches): 20
No. of HDMI ports: 3
Price: ₹1234
Manufacturer: C
Serial No.: 3
Screen Size (in inches): 33
No. of HDMI ports: 4
Price: ₹12345
Manufacturer: D
Serial No.: 4
Screen Size (in inches): 12
No. of HDMI ports: 4

Price: ₹12345
Manufacturer: E
Serial No.: 13
Screen Size (in inches): 40
No. of HDMI ports: 5
Price: ₹99999

Output:
Printed in ascending order:
Manufacturer: D
Serial No.: 4
Screen Size: 12.0 inches
No. of HDMI ports: 4
Price: ₹12345.0
Manufacturer: B
Serial No.: 2
Screen Size: 20.0 inches
No. of HDMI ports: 3
Price: ₹1234.0
Manufacturer: A
Serial No.: 1
Screen Size: 21.0 inches
No. of HDMI ports: 3
Price: ₹1234.0
Manufacturer: C
Serial No.: 3
Screen Size: 33.0 inches
No. of HDMI ports: 4
Price: ₹12345.0
Manufacturer: E
Serial No.: 13
Screen Size: 40.0 inches
No. of HDMI ports: 5
Price: ₹99999.0

For TV:
Input:
Manufacturer: V
Serial No.: 10
Screen Size (in inches): 22
No. of HDMI ports: 4
Price: ₹12345
Refresh rate (in Hertz): 50
Years of warranty: 1
Manufacturer: W
Serial No.: 11
Screen Size (in inches): 23
No. of HDMI ports: 4

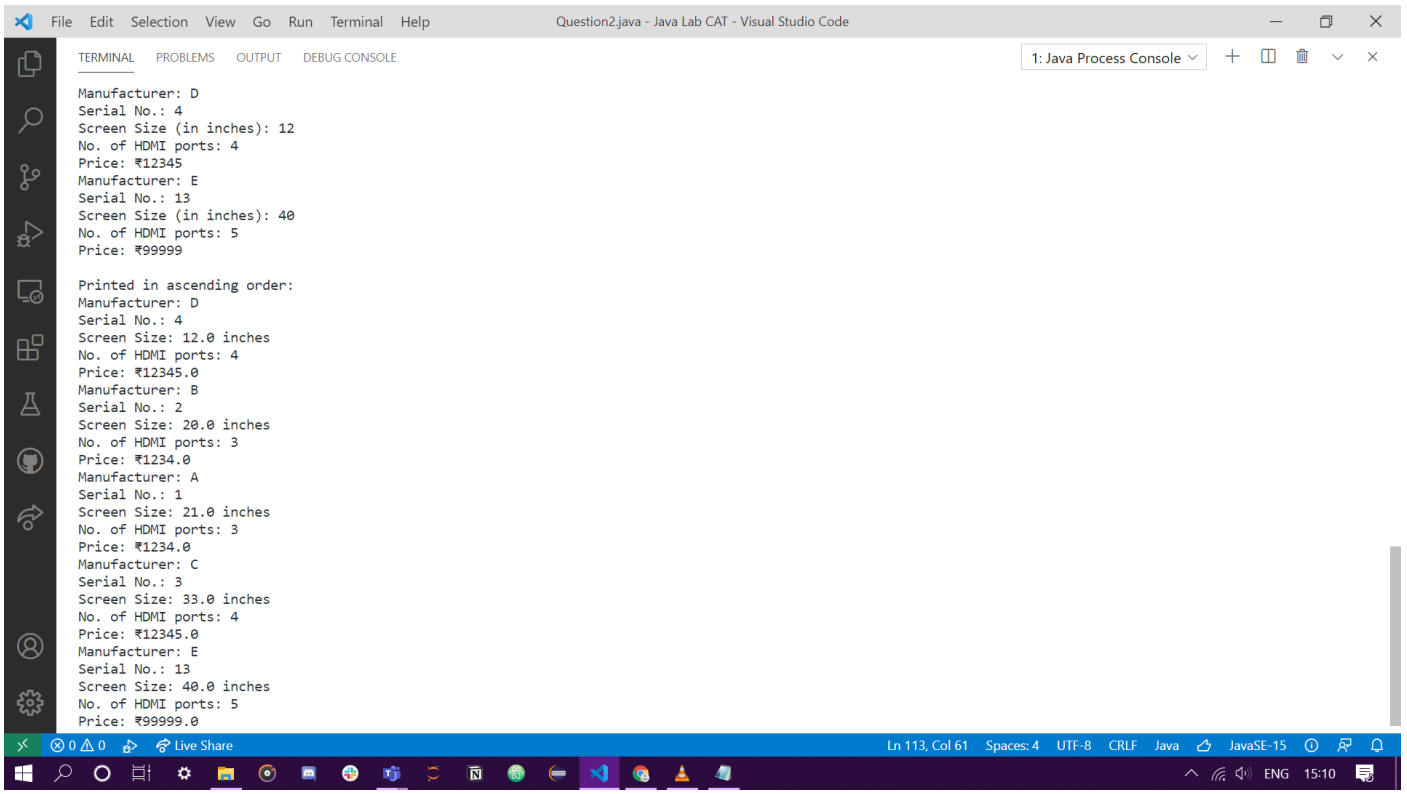
Price: ₹12345
Refresh rate (in Hertz): 50
Years of warranty: 1
Manufacturer: X
Serial No.: 12
Screen Size (in inches): 25
No. of HDMI ports: 4
Price: ₹12345
Refresh rate (in Hertz): 50
Years of warranty: 3
Manufacturer: Y
Serial No.: 12345
Screen Size (in inches): 60
No. of HDMI ports: 5
Price: ₹1010101
Refresh rate (in Hertz): 45
Years of warranty: 5
Manufacturer: Z
Serial No.: 123
Screen Size (in inches): 39
No. of HDMI ports: 6
Price: ₹12345
Refresh rate (in Hertz): 60
Years of warranty: 7

Output:

Manufacturer: V
Serial No.: 10
Screen Size (in inches): 22
No. of HDMI ports: 4
Price: ₹12345
Refresh rate (in Hertz): 50
Years of warranty: 1
Manufacturer: W
Serial No.: 11
Screen Size (in inches): 23
No. of HDMI ports: 4
Price: ₹12345
Refresh rate (in Hertz): 50
Years of warranty: 1
Manufacturer: X
Serial No.: 12
Screen Size (in inches): 25
No. of HDMI ports: 4
Price: ₹12345
Refresh rate (in Hertz): 50
Years of warranty: 3

Manufacturer: Y
Serial No.: 12345
Screen Size (in inches): 60
No. of HDMI ports: 5
Price: ₹1010101
Refresh rate (in Hertz): 45
Years of warranty: 5
Manufacturer: Z
Serial No.: 123
Screen Size (in inches): 39
No. of HDMI ports: 6
Price: ₹12345
Refresh rate (in Hertz): 60
Years of warranty: 7

Output Screenshot:



For television: