

Practical 7 B

Name: Vedant Tiwari

Roll no: 68

Subject: OOPS

Code:

```
import java.util.Scanner;
import java.util.TreeSet;

public class Main {
    public static void main(String[] args) {
        // Create some Student objects
        TreeSet<Student> students = new TreeSet<>();
        Scanner sc = new Scanner(System.in);
        int i = 0;
        while (i < 5) {
            try {
                System.out.println("Enter Name:");
                String n = sc.next();
                if (n.isEmpty()) {
                    throw new MissingDetailsException("Name is missing");
                }
                System.out.println("Enter City:");
                String c = sc.next();
                if (c.isEmpty()) {
                    throw new MissingDetailsException("City is missing");
                }
                System.out.println("Enter Phone Number:");
                String p = sc.next();
                if (p.isEmpty()) {
                    throw new MissingDetailsException("Phone Number is missing");
                }
                System.out.println("Enter Roll No:");
                Integer r = sc.nextInt();
```

```
System.out.println("Enter Semester:");
Integer sem = sc.nextInt();
students.add(new Student(r, sem, n, c, p));
System.out.println("Element added successfully\n\n");
i++;
} catch (MissingDetailsException e) {
System.out.println("Error: " + e.getMessage());
}
}
System.out.println("Displaying students");
display(students);
System.out.println("\nDisplaying students city-wise");
displayCityWise(students);
}

public static void display(TreeSet<Student> students) {
System.out.println("Rollno\tName\t\tCity\t\tSemester\tPho
ne No");
for (Student student : students) {
System.out.printf("%-6d\t%-15s\t%-15s\t%-8d\t%s\n",
student.roll_no, student.name, student.city, student.sem,
student.ph_no);
}
}

public static void displayCityWise(TreeSet<Student>
students) {
TreeSet<String> cities = new TreeSet<>();
for (Student student : students) {
cities.add(student.city);
}
for (String city : cities) {
System.out.println("City: " + city);
for (Student student : students) {
if (student.city.equals(city)) {
System.out.printf("%-6d\t%-15s\t%-8d\t%s\n",
student.roll_no, student.name, student.sem,
student.ph_no);
}
```

```
}  
}  
System.out.println();  
}  
}  
}
```

```
import java.util.*;  
class Student implements Comparable<Student> {  
    Integer roll_no, sem;  
    String name, city;  
    String ph_no;  
    public int compareTo(Student ob) {  
        int cmp = sem.compareTo(ob.sem);  
        if (cmp == 0) {  
            cmp = roll_no.compareTo(ob.roll_no);  
        }  
        return cmp;  
    }  
    Student(Integer r, Integer s, String n, String c, String  
p) {  
        roll_no = r;  
        sem = s;  
        name = n;  
        city = c;  
        ph_no = p;  
    }  
}  
class MissingDetailsException extends Exception {  
    public MissingDetailsException(String message) {  
        super(message);  
    }  
}
```

Output:

```
"C:\Program Files\Java\jdk-20\bin\java.exe"
"-javaagent:D:\IntelliJ\IntelliJ IDEA Community Edition
2023.1.2\lib\idea_rt.jar=50163:D:\IntelliJ\IntelliJ IDEA
Community Edition 2023.1.2\bin" -Dfile.encoding=UTF-8
-Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8
-classpath "E:\RCOEM 4TH Semester\Java VSC
(Errors)\LabPracticals\Practical7\out\production\Practica
l7" Main
Enter Name:
Vedant
Enter City:
Nagpur
Enter Phone Number:
9373
Enter Roll No:
68
Enter Semester:
4
Element added successfully

Enter Name:
xyz
Enter City:
Moscow
Enter Phone Number:
9372
Enter Roll No:
36
Enter Semester:
4
Element added successfully

Enter Name:
```

```
pqr
Enter City:
LasVegas
Enter Phone Number:
83
Enter Roll No:
01
Enter Semester:
4
Element added successfully
```

```
Enter Name:
MNO
Enter City:
leh
Enter Phone Number:
82
Enter Roll No:
21
Enter Semester:
4
Element added successfully
```

```
Enter Name:
ABC
Enter City:
Bengaluru
Enter Phone Number:
9214
Enter Roll No:
47
Enter Semester:
4
Element added successfully
```

Displaying students

Rollno	Name	City	Semester	Phone	No
1	pqr	LasVegas	4	83	
21	MNO	leh	4	82	
36	xyz	Moscow	4	9372	
47	ABC	Bengaluru	4	9214	
68	Vedant	Nagpur	4	9373	

Displaying students city-wise

City: Bengaluru

47	ABC	4	9214
----	-----	---	------

City: LasVegas

1	pqr	4	83
---	-----	---	----

City: Moscow

36	xyz	4	9372
----	-----	---	------

City: Nagpur

68	Vedant	4	9373
----	--------	---	------

City: leh

21	MNO	4	82
----	-----	---	----

Process finished with exit code 0