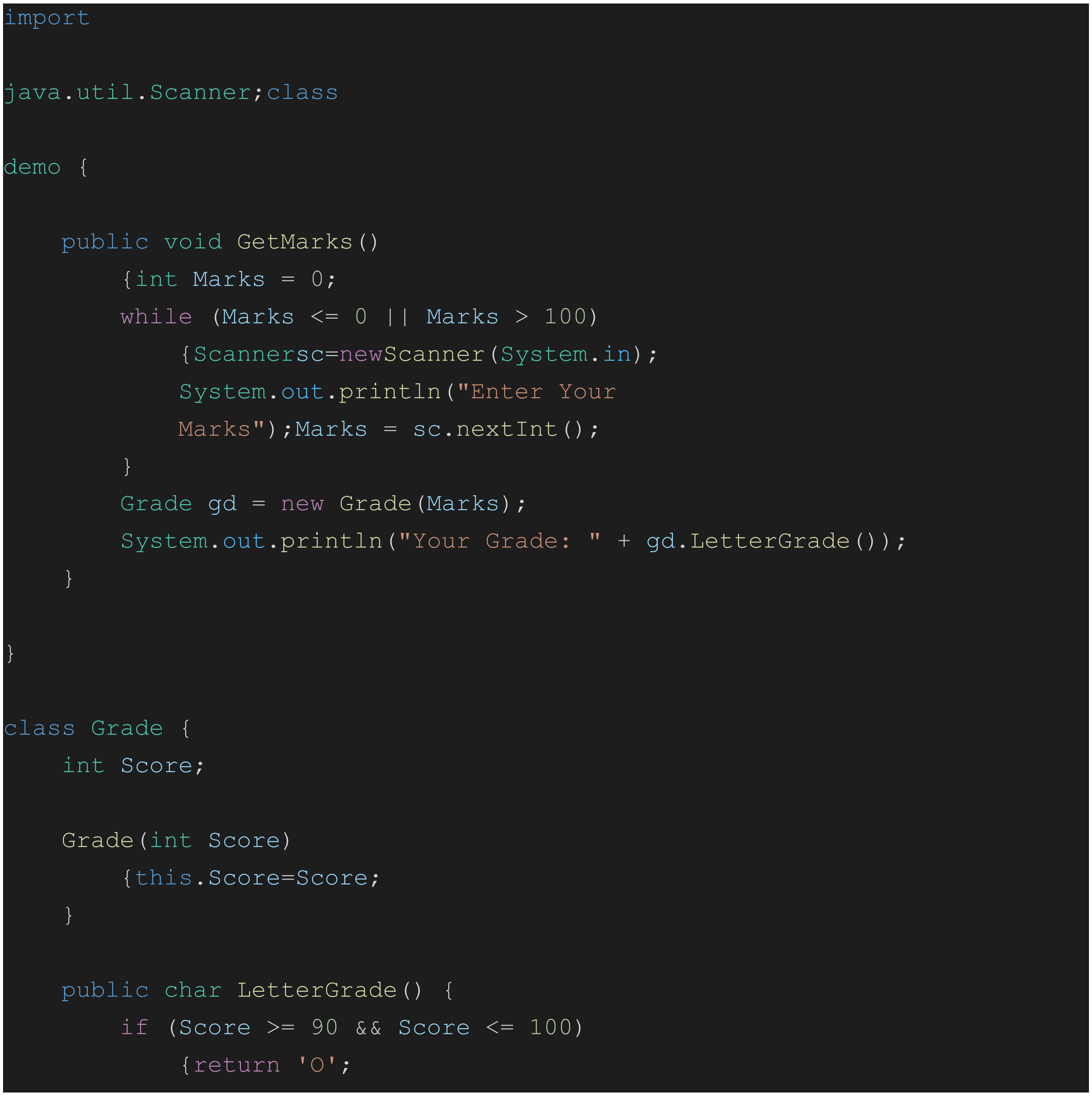
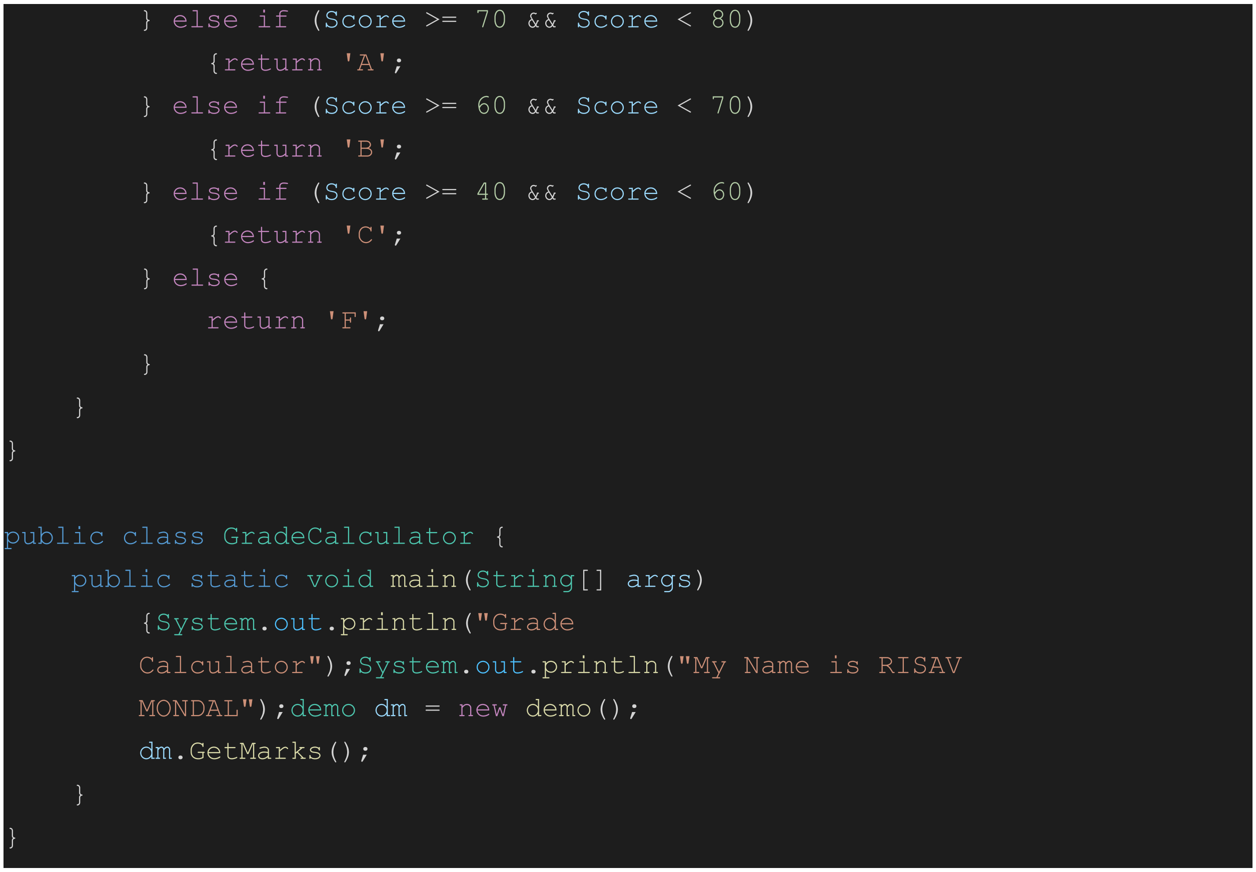
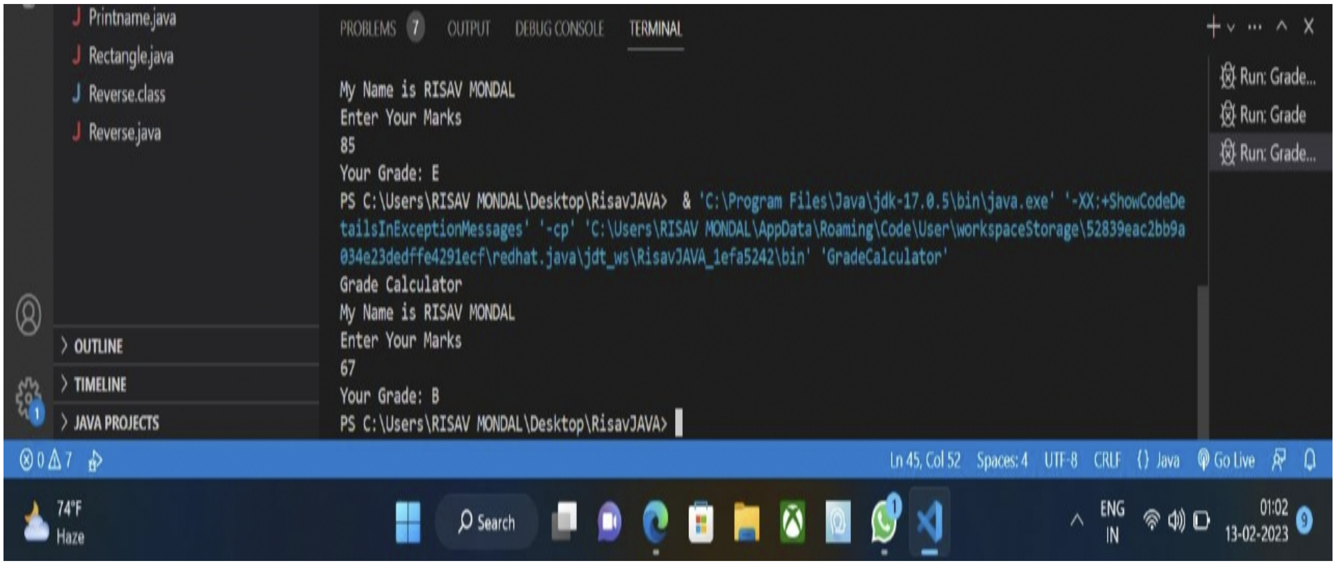
1.Writeaclass,Grader,whichhasaninstancevariable,score,anappropriateconstructorandappropriatemethods.Amethod,letterGrade(), that returns the letter grade as O/E/A/B/C/F. Now write ademoclasstotesttheGraderclassbyreadingascorefromtheuser,usingittocreateaGraderobjectaftervalidatingthatthevalueisnotnegativeandisnotgreaterthan100.Finally,calltheletterGrade()methodtogetand printthe grade.



```
import

java.util.Scanner;class

demo {

    public void GetMarks()
        {int Marks = 0;
        while (Marks <= 0 || Marks > 100)
            {Scannersc=newScanner(System.in);
            System.out.println("Enter Your
            Marks");Marks = sc.nextInt();
        }
        Grade gd = new Grade(Marks);
        System.out.println("Your Grade: " + gd.LetterGrade());
    }

}

class Grade {
    int Score;

    Grade(int Score)
        {this.Score=Score;
    }

    public char LetterGrade() {
        if (Score >= 90 && Score <= 100)
            {return 'O';
```



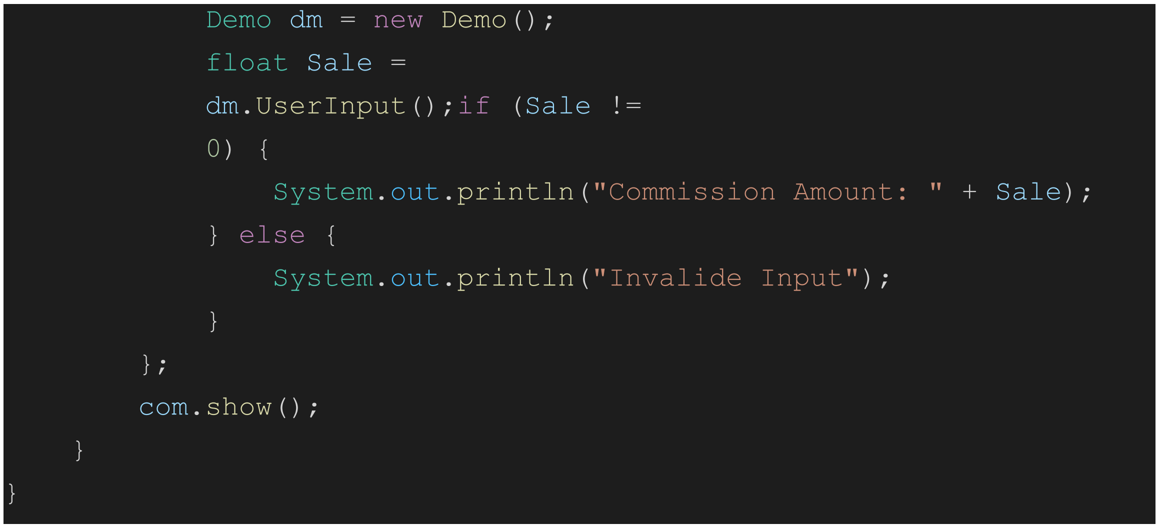
```
        } else if (Score >= 70 && Score < 80)
            {return 'A';
        } else if (Score >= 60 && Score < 70)
            {return 'B';
        } else if (Score >= 40 && Score < 60)
            {return 'C';
        } else {
            return 'F';
        }
    }
}

public class GradeCalculator {
    public static void main(String[] args)
        {System.out.println("Grade
        Calculator");System.out.println("My Name is RISAV
        MONDAL");demo dm = new demo();
        dm.GetMarks();
    }
}
```



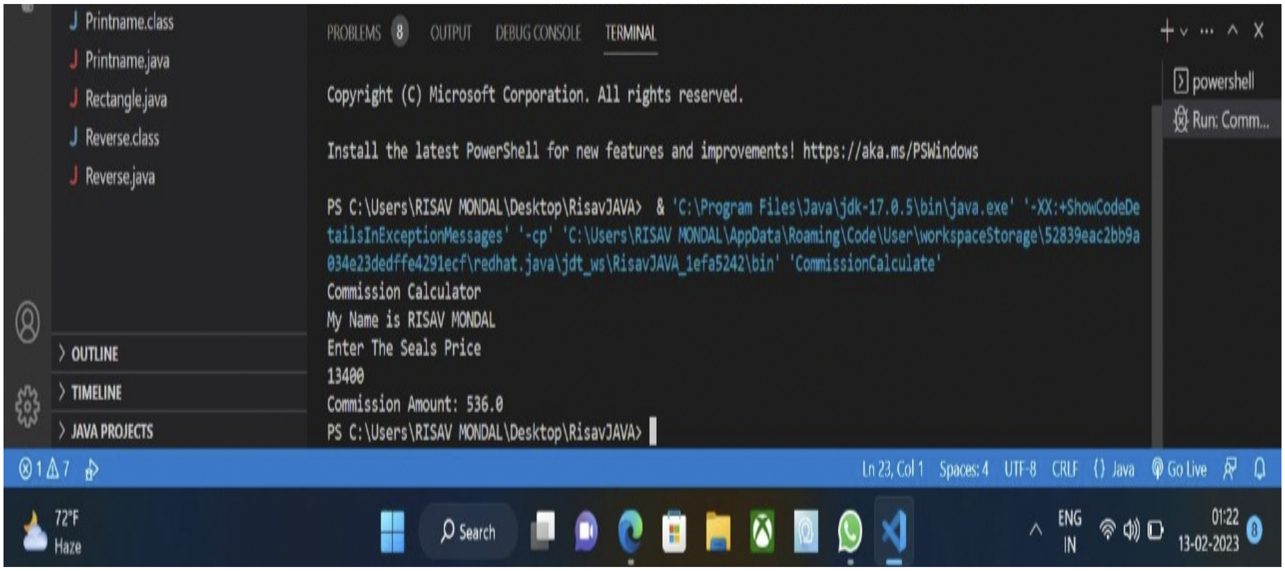
```
My Name is RISAV MONDAL
Enter Your Marks
85
Your Grade: E
PS C:\Users\RISAV MONDAL\Desktop\RisavJAVA>  & 'C:\Program Files\Java\jdk-17.0.5\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\RISAV MONDAL\AppData\Roaming\Code\User\workspaceStorage\52839eac2bb9a034e23dedffe4291ecf\redhat.java\jdt_ws\RisavJAVA_1efa5242\bin' 'GradeCalculator'
Grade Calculator
My Name is RISAV MONDAL
Enter Your Marks
67
Your Grade: B
PS C:\Users\RISAV MONDAL\Desktop\RisavJAVA>
```

2. Write a class,Commission,whichhasaninstancevariable,sales;anappropriateconstructor;andamethod,commission()thatreturnsthecommission.Now writeademoclasstotesttheCommissionclassbyreadingasalefromtheuser,usingittocreatea Commission object after validating that the value is not negative.Finally,callthecommission()methodtogetandprintthecommission. If the sales are negative, your demo should print themessage“InvalidInput”.

```
import java.util.Scanner;

@FunctionalInterfaceinterfaceCommission{
    void show();
}

class Demo {
    Scanner sc = new Scanner(System.in);

    public float UserInput()
        {System.out.println("Enter The Seals
        Price");int Sale = sc.nextInt();
        float CommissionPercentage =
        4;if (Sale < 0) {
            return 0;
        } else {
            return (Sale * CommissionPercentage / 100);
        }
    }
}

public class CommissionCalculate {
    public static void main(String[] args)
        {System.out.println("Commission
        Calculator");System.out.println("My Name is RISAV
        MONDAL");Commission com = () -> {
```



```
            Demo dm = new Demo();
            float Sale =
            dm.UserInput();if (Sale !=
            0) {
                System.out.println("Commission Amount: " + Sale);
            } else {
                System.out.println("Invalide Input");
            }
        };
        com.show();
    }
}
```



```
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\RISAV MONDAL\Desktop\RisavJAVA>  & 'C:\Program Files\Java\jdk-17.0.5\bin\java.exe' '-XX:+ShowCodeDe
tailsInExceptionMessages' '-cp' 'C:\Users\RISAV MONDAL\AppData\Roaming\Code\User\workspaceStorage\52839eac2bb9a
034e23dedffe4291ecf\redhat.java\jdt_ws\RisavJAVA_1efa5242\bin' 'CommissionCalculate'
Commission Calculator
My Name is RISAV MONDAL
Enter The Seals Price
13400
Commission Amount: 536.0
PS C:\Users\RISAV MONDAL\Desktop\RisavJAVA>
```
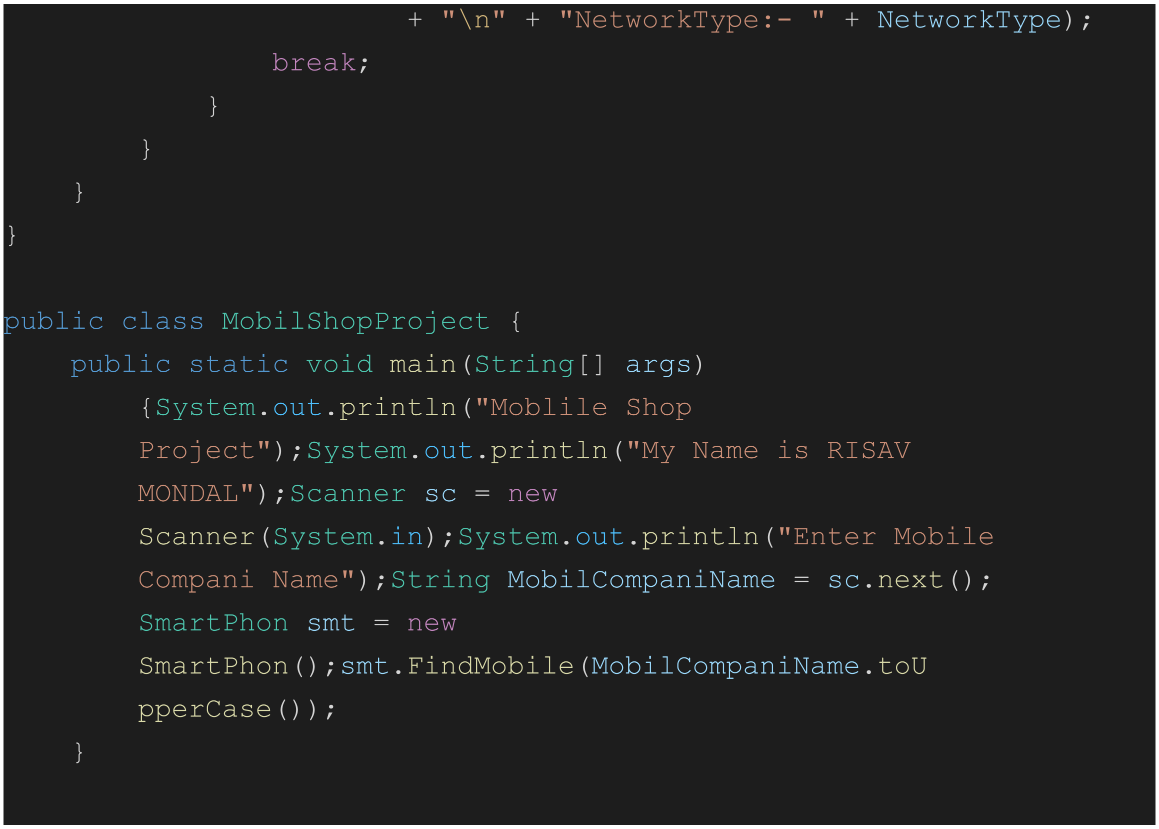
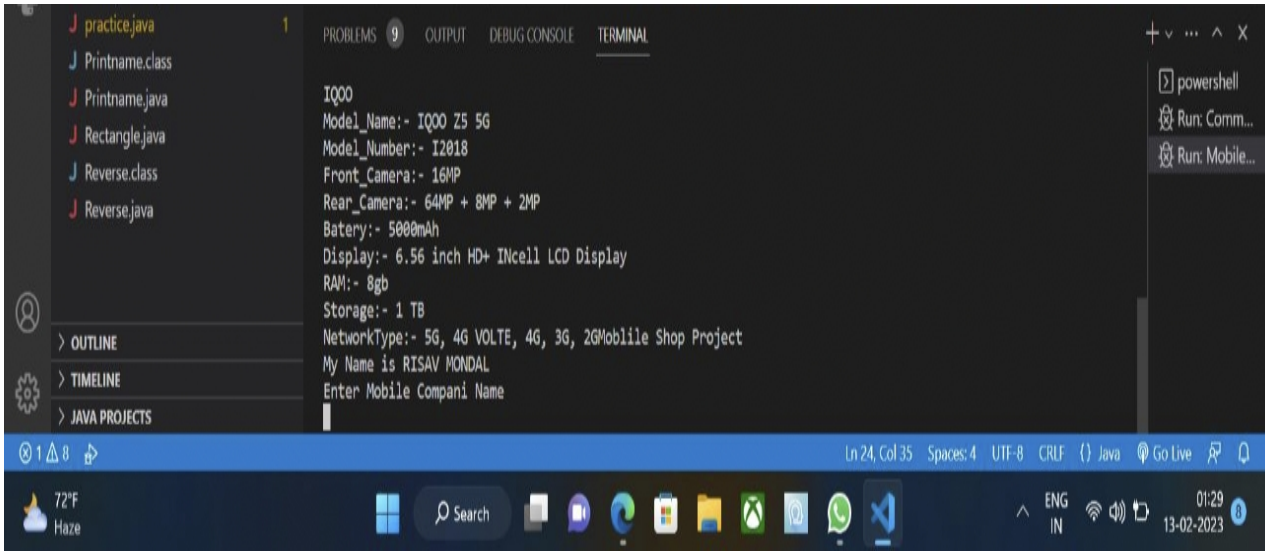

3. For a Mobile Shop project, create “Telephone” class with detailslike mobile_id,model_nameandavailable_quantityin “Phone”package.Inheritfromthisclassandcreateaclassfor“smart_phone” with necessary details like enabled_5G, foldable anddual_screen in package “Smart”. The customer executive tries todisplayallsmart_phonedetails(mobile_id,model_name,

available_quantity,enabled_5G,foldableanddual_screen)andupdatesthequantityin ormation,wheneverthecustomerpurchases the smart_phone.Write the necessary java programs toimplementthisscenarioandtestwithuserinputs.

```
import java.util.Scanner;;

class Telephone
    {StringModel_Name;
    String
    Model_Number;String
    NetworkType;
}

class SmartPhon extends Telephone
    {String Front_Camera;
    String
    Rear_Camera;String
    Batery;String
    Display;String RAM;
    String Storage;

    public void FindMobile(String MobileCompaniName)
        {switch (MobileCompaniName) {
            case "IQOO": {
                Model_Name = "IQOO Z5
                5G";Model_Number =
                "2018";Batery = "5000mAh";
                Display = "6.56 inch HD+ INcell LCD
                Display";Front_Camera = "8MP";
                Rear_Camera = "64MP + 8MP +
                2MP";RAM = "8gb";
                Storage = "1 TB";
                NetworkType = "5G, 4G VOLTE, 4G, 3G, 2G";
                 System.out.print("Model_Name:- " + Model_Name + "\n"
+ "Model_Number:- " + Model_Number + "\n"
                          +"Front_Camera:-
                          + Batery + "\n" + "Display:- " + Display
+"\n" + "RAM:- " + RAM + "\n" + "Storage:- " + Storage
                        + "\n" + "NetworkType:- " + NetworkType);
                break;
            }
            case "SAMSUNG": {
                Model_Name = "Galaxy S21 FE 5G";
                Model_Number = "SM-G990EZAIINU|SM-G990EZAIINS";
                Batery = "4500mAh";
                Display = "16.26 cm (6.4
                inch)";Front_Camera="8MP";Rear_C
                amera = "48MP + 2MP";
                RAM = "8gb";
                Storage = "128 GB";
                NetworkType = "5G, 4G, 3G,
                 2G";System.out.print("Model_Name:-"+Model_Name+"\n"
+ "Model_Number:- " + Model_Number + "\n"
                         + "Front_Camera:- " + Front_Camera + "\n"
+"Rear_Camera:- " + Rear_Camera + "\n" + "Batery:- "
                          + Batery + "\n" + "Display:- " + Display
+"\n" + "RAM:- " + RAM + "\n" + "Storage:- " + Storage
                        + "\n" + "NetworkType:- " + NetworkType);
                break;
            }
            case "OnePlus": {
                Model_Name="NordCE2Lite5G";Model_Number
                = "CPH2381";
                Batery = "5000mAh";
                Display="16.74cm(6.59inch)";Front_Camera
                = "8MP";
                Rear_Camera="64MPRearCamera";RAM
                = "6GB";
                Storage = "128 GB";
                NetworkType = "5G, 4G, 3G,
                 2G";System.out.print("Model_Name:-"+Model_Name+"\n"
+ "Model_Number:- " + Model_Number + "\n"
                         + "Front_Camera:- " + Front_Camera + "\n"
+"Rear_Camera:- " + Rear_Camera + "\n" + "Batery:- "
                          + Batery + "\n" + "Display:- " + Display
+"\n" + "RAM:- " + RAM + "\n" + "Storage:- " + Storage
```



```
                         + "\n" + "NetworkType:- " + NetworkType);
                break;
            }
        }
    }
}

public class MobilShopProject {
    public static void main(String[] args)
        {System.out.println("Moblile Shop
        Project");System.out.println("My Name is RISAV
        MONDAL");Scanner sc = new
        Scanner(System.in);System.out.println("Enter Mobile
        Compani Name");String MobilCompaniName = sc.next();
        SmartPhon smt = new
        SmartPhon();smt.FindMobile(MobilCompaniName.toU
        pperCase());
    }
```



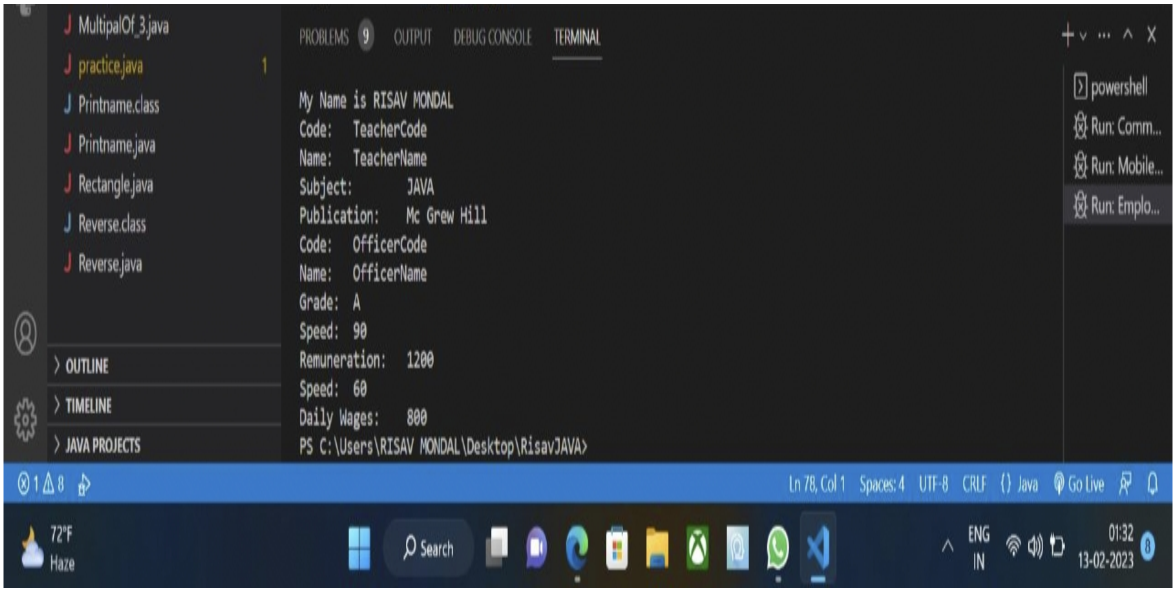
```
IQOO
Model_Name:- IQOO Z5 5G
Model_Number:- I2018
Front_Camera:- 16MP
Rear_Camera:- 64MP + 8MP + 2MP
Batery:- 5000mAh
Display:- 6.56 inch HD+ INcell LCD Display
RAM:- 8gb
Storage:- 1 TB
NetworkType:- 5G, 4G VOLTE, 4G, 3G, 2GMoblile Shop Project
My Name is RISAV MONDAL
Enter Mobile Compani Name
▌
```

4.

Aneducationalinstitutionmaintainsadatabaseofitsemployees.Thedata baseisdividedintoanumberofclasseswhosehierarchicalrelationships are shown below. Write all the classes and define themethods tocreate thedatabaseandretrieveindividualinformationasandwhenneeded.Writ eadriverprogramtotesttheclasses.
StaI(code,name)
Teacher(subject,publication)isaStaIOcer(grade)isaStaI
Typist(speed)isaStaI
RegularTypist(remuneration)isaTypistCasualTypist(dailywages)isaTypist.

```
class Staff {
    String code, name;

    public Staff(String code, String name)
        {this.code = code;
        this.name = name;
    }
}

class Teacher extends Staff
    {Stringsubject,publication;

    public Teacher(String subject, String publication)
        {super("TeacherCode","TeacherName");this.subject
        = subject;
        this.publication = publication;
    }

    void display()
        {System.out.println("Code:\t" +
        code);System.out.println("Name:\t"+na
        me);
        System.out.println("Subject:\t" +
        subject);System.out.println("Publication:\t"+public
}

class Officer extends Staff
    {String grade;

    public Officer(String grade)
        {super("OfficerCode",
        "OfficerName");this.grade = grade;
    }

    void display()
        {System.out.println("Code:\t" +
        code);System.out.println("Name:\t" +
        name);System.out.println("Grade:\t"+gra
        de);
    }
}

class Typist extends Staff
    {int speed;

    public Typist(int speed)
        {super("TypistCode",
        "TypistName");this.speed = speed;
    }
}

class RegularTypist extends Typist
    {int remuneration;

    public RegularTypist(int speed, int remuneration)
        {super(speed);
        this.remuneration = remuneration;
    }

    void display()
        {System.out.println("Speed:\t"+speed);
        System.out.println("Remuneration:\t" + remuneration);
    }
}
```

```
class CasualTypist extends Typist
    {int daily_wages;

    public CasualTypist(int speed, int daily_wages)
        {super(speed);
        this.daily_wages = daily_wages;
    }

    void display()
        {System.out.println("Speed:\t"+speed);
        System.out.println("Daily Wages:\t" + daily_wages);
    }
}

public class EmployeesDatabase {
    public static void main(String[] args)
        {System.out.println("Employee
        Database");System.out.println("My Name is RISAV
        MONDAL");Teacher t = new Teacher("JAVA", "Mc Grew
        Hill");t.display();
        Officer o = new
        Officer("A");o.display();
        RegularTypist r = new RegularTypist(90,
        1200);r.display();
        CasualTypist c = new CasualTypist(60,
        800);c.display();
    }
}
```



```
My Name is RISAV MONDAL
Code:   TeacherCode
Name:   TeacherName
Subject:        JAVA
Publication:    Mc Grew Hill
Code:   OfficerCode
Name:   OfficerName
Grade:  A
Speed:  90
Remuneration:   1200
Speed:  60
Daily Wages:    800
PS C:\Users\RISAV MONDAL\Desktop\RisavJAVA>
```