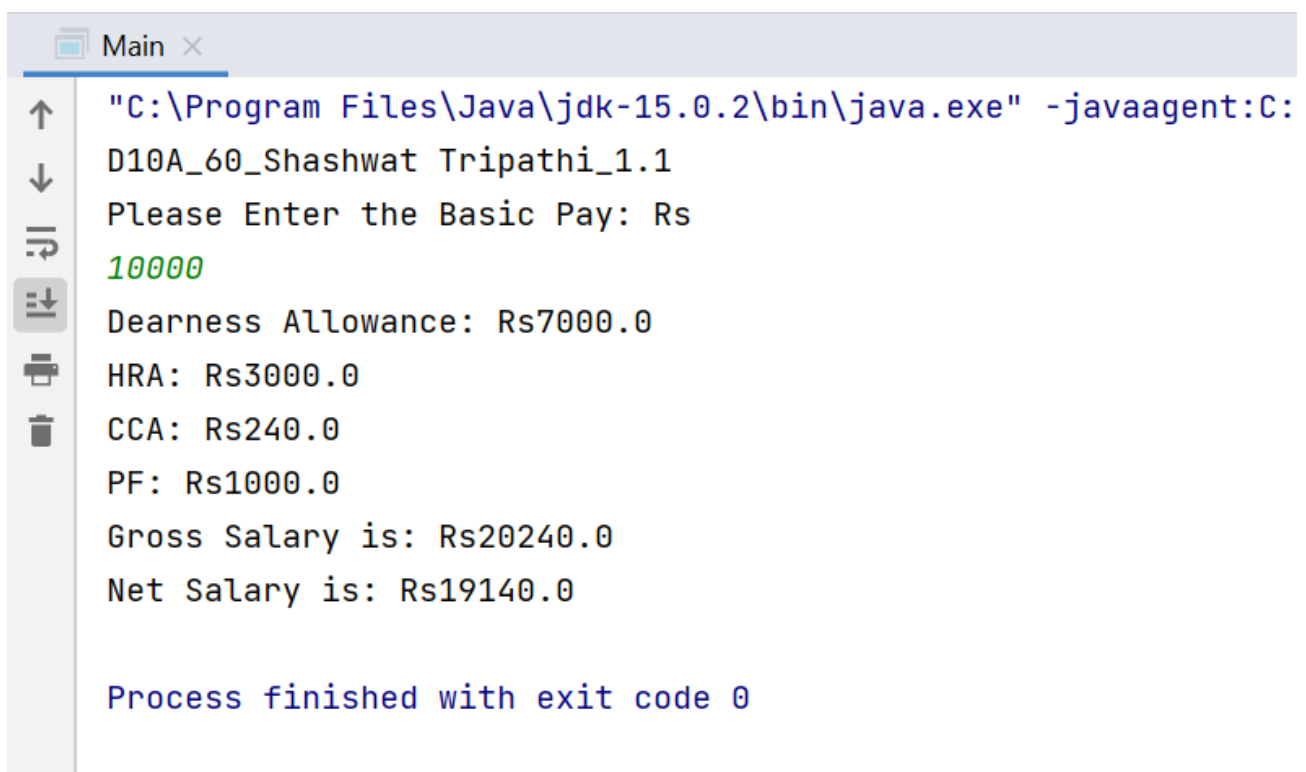


CODE:

```
import java.util.Scanner;
class Main {
    public static void main(String[] args) {
        System.out.println("D10A_60_Shashwat Tripathi_1.1");
        double PT = 100, CCA = 240;
        Scanner scan = new Scanner(System.in);
        System.out.println("Please Enter the Basic Pay: Rs");
        double Basic_Pay = scan.nextDouble();
        double Dearness_Allowance = Basic_Pay * 0.7 ;
        System.out.println("Dearness Allowance: Rs" + Dearness_Allowance);
        double HRA = Basic_Pay * 0.3 ;
        System.out.println("HRA: Rs" + HRA);
        System.out.println("CCA: Rs" + CCA);
        double PF = Basic_Pay * 0.1 ;
        System.out.println("PF: Rs" + PF);
        double Gross_Salary = Basic_Pay + Dearness_Allowance + HRA + CCA;
        double Net_Salary = Gross_Salary - PF - PT;
        System.out.println("Gross Salary is: Rs" + Gross_Salary);
        System.out.println("Net Salary is: Rs" + Net_Salary);
    }
}
```

OUTPUT:



```
Main x
"C:\Program Files\Java\jdk-15.0.2\bin\java.exe" -javaagent:C:
D10A_60_Shashwat Tripathi_1.1
Please Enter the Basic Pay: Rs
10000
Dearness Allowance: Rs7000.0
HRA: Rs3000.0
CCA: Rs240.0
PF: Rs1000.0
Gross Salary is: Rs20240.0
Net Salary is: Rs19140.0

Process finished with exit code 0
```

CODE:

```
import java.util.Scanner;
import java.util.UUID;
class Bank {
    static String Name;
    static String PAN_CardNo;
    static String Account_Number;
    static double Initial_Balance;
    static double deposit;
    static double withdraw;
    static double Balance;
    static double Interest;

    static void createAccount() {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter your name: ");
        Name = sc.nextLine();
        System.out.println("Enter you PAN Card Number: ");
        PAN_CardNo = sc.nextLine();
        System.out.println("Your account has been created.");
        Initial_Balance = 0.00;
        Account_Number = ("SBI" + UUID.randomUUID());
        System.out.println("Your Account Number is: " + Account_Number);
        System.out.println("Initial Balance is: Rs." + Initial_Balance);
    }
}
```

```

static void deposit() {
    Scanner scan1 = new Scanner(System.in);
    System.out.println("Enter the amount to be deposited: ");
    deposit = scan1.nextDouble();
    System.out.println("Rs." + deposit + " has been credited to your account");
}

static void withdraw() {
    Scanner scan2 = new Scanner(System.in);
    System.out.println("Enter the amount to be withdrawn: ");
    withdraw = scan2.nextDouble();
    if(withdraw<= Balance){
        System.out.println("Rs." + withdraw + " has been debited from your account");
        System.out.println("Balance: "+(Balance-withdraw));}
    else {
        System.out.println("Not Enough Balance in your Account");
    }
}

static void computeInterest() {
    System.out.println("The interest at 6% per year is: ");
    Interest = Balance * 0.06;
}

static void displayBalance() {
    System.out.println("Your Balance is: " + Balance);
}
}
}

```

```

public class Application extends Bank {
    public static void main(String[] args) {
        int i;
        Scanner scan = new Scanner(System.in);
        do {
            System.out.println("#####");
            System.out.println("Enter your choice:");
            System.out.println("1.Create Account" + "\n" + "2.Deposit" + "\n" + "3.Withdraw" + "\n" +
                "4.Compute Interest" + "\n" + "5.Display Balance" + "\n" + "6.Exit");
            i = scan.nextInt();

            switch (i) {
                case 1:
                    createAccount();{
                        Balance = Initial_Balance;
                        System.out.println("Balance: " + Balance);
                    }
                    break;
                case 2:
                    deposit();{
                        Balance = Balance + deposit;
                        System.out.println("Balance: " + Balance);
                    }
                    break;
                case 3:

```

```

        withdraw();
        Balance = Balance - withdraw;
        break;
    case 4:
        computeInterest();{
        System.out.println("Interest: " + Interest);
        System.out.println("Balance: " + Balance);
        }
        break;
    case 5:
        displayBalance();
        break;
    case 6:
        break;
    default:
    }
} while (i != 6);
}
}
}

```

OUTPUT:

```

"C:\Program Files\Java\jdk-15.0.2\bin\java.exe" -javaagent:C:\Users\sl
#####
Enter your choice:
1.Create Account
2.Deposit
3.Withdraw
4.Compute Interest
5.Display Balance
6.Exit
1
Enter your name:
shashwat
Enter you PAN Card Number:
hgth6769gt
Your account has been created.
Your Account Number is: SBI373ab8b9-4058-419b-bd08-53b9d0a4b985
Initial Balance is: Rs.0.0
Balance: 0.0
#####

```

#####

Enter your choice:

- 1.Create Account
- 2.Deposit
- 3.Withdraw
- 4.Compute Interest
- 5.Display Balance
- 6.Exit

2

Enter the amount to be deposited:

56000

Rs.56000.0 has been credited to your account

Balance: 56000.0

#####

Enter your choice:

- 1.Create Account
- 2.Deposit
- 3.Withdraw
- 4.Compute Interest
- 5.Display Balance
- 6.Exit

4

The interest at 6% per year is:

Interest: 3360.0

Balance: 56000.0

#####

Enter your choice:

- 1.Create Account
- 2.Deposit
- 3.Withdraw
- 4.Compute Interest
- 5.Display Balance
- 6.Exit

3

Enter the amount to be withdrawn:

70000

Not Enough Balance in your Account

#####

Enter your choice:

- 1.Create Account
- 2.Deposit
- 3.Withdraw
- 4.Compute Interest
- 5.Display Balance
- 6.Exit

#####

Enter your choice:

- 1.Create Account
- 2.Deposit
- 3.Withdraw
- 4.Compute Interest
- 5.Display Balance
- 6.Exit

3

Enter the amount to be withdrawn:

6000

Rs.6000.0 has been debited from your account

Balance: 50000.0

#####

Enter your choice:

- 1.Create Account
- 2.Deposit
- 3.Withdraw
- 4.Compute Interest
- 5.Display Balance
- 6.Exit

5

Your Balance is: 50000.0

#####

Enter your choice:

- 1.Create Account
- 2.Deposit
- 3.Withdraw
- 4.Compute Interest
- 5.Display Balance
- 6.Exit

6

Process finished with exit code 0

|

Program No: 1.3

CODE:

```
import java.util.Scanner;
class Main {
    public static void main(String[] args) {
        System.out.println("D10A_60_Shashwat Tripathi_1.3");
        int i;
        int j=0;
        Scanner scan = new Scanner(System.in);
        int Speed[] = new int[5];
        int Sum=0;
        for(i=0;i<5;i++){
            System.out.println("Enter the speed of Racer "+(i+1));
            Speed[i]= scan.nextInt();
            Sum = Sum + Speed[i];
        }
        double AVG = Sum / 5;

        for(i=0;i<5;i++){
            j=i+1;
            if(Speed[i]>AVG){
                System.out.println("The Racer" + j + " is Qualified");
            }
            else{
                System.out.println("The Racer" + j + " is not Qualified");
            }
        }
    }
}
```

OUTPUT:

```
"C:\Program Files\Java\jdk-15.0.2\bin\java.exe" -javaagent:
D10A_60_Shashwat Tripathi_1.3
Enter the speed of Racer 1
120
Enter the speed of Racer 2
112
Enter the speed of Racer 3
128
Enter the speed of Racer 4
124
Enter the speed of Racer 5
117
The Racer1 is not Qualified
The Racer2 is not Qualified
The Racer3 is Qualified
The Racer4 is Qualified
The Racer5 is not Qualified

Process finished with exit code 0
|
```

Program No: 2.1

CODE:

```
class Student{
    String name;
    int age;
    String address;

    Student(){
        name = "unknown";
        age = 0;
        address = "not available";
    }
    void setInfo(String n, int a){
        name =n;
        age = a;
    }
    void setInfo(String n, int a, String s){
        name =n;
        age = a;
        address = s;
    }
    public static void main(String[] args) {
        System.out.println("D10A_60_Shashwat Tripathi_2.1");
        Student[] stu;
        stu = new Student[10];
        stu[0] = new Student();
        stu[1] = new Student();
```

```
        stu[2] = new Student();
        stu[3] = new Student();
        stu[4] = new Student();
        stu[5] = new Student();
        stu[6] = new Student();
        stu[7] = new Student();
        stu[8] = new Student();
        stu[0].setInfo( n: "Piyush", a: 19, s: "Chembur");
        stu[1].setInfo( n: "Shashwat", a: 18, s: "Thane");
        stu[2].setInfo( n: "Atharva", a: 16);
        stu[3].setInfo( n: "Anuj", a: 17);
        stu[4].setInfo( n: "Simran", a: 19, s: "Heathrow");
        stu[5].setInfo( n: "Karan", a: 17, s: "Canada" );
        stu[6].setInfo( n: "Dhanashree", a: 21, s: "Bandra" );
        stu[7].setInfo( n: "Vinay", a: 18, s: "Belapur" );
        stu[8].setInfo( n: "Sujal", a: 19, s: "Khar" );
        stu[9] = new Student();

        System.out.println("Name\tAge\tAddress\n");
        for(int i = 0 ; i < 10; i++){
            System.out.println(stu[i].name+"\t"+stu[i].age+"\t"+stu[i].address+"\n");
        }
    }
}
```


OUTPUT:

"C:\Program Files\Java\jdk-15.0.2\bin\java.exe" -

D10A_60_Shashwat Tripathi_2.1

Name	Age	Address
------	-----	---------

Piyush	19	Chembur
--------	----	---------

Shashwat	18	Thane
----------	----	-------

Atharva	16	not available
---------	----	---------------

Anuj	17	not available
------	----	---------------

Simran	19	Heathrow
--------	----	----------

Karan	17	Canada
-------	----	--------

Dhanashree	21	Bandra
------------	----	--------

Vinay	18	Belapur
-------	----	---------

Sujal	19	Khar
-------	----	------

unknown	0	not available
---------	---	---------------

CODE:

```
import java.util.Scanner;
class EmployeeDetails {
    int salary, yoj;
    String name, address;
}
public class Employee extends EmployeeDetails{
    public static void main(String[] args) {
        System.out.println("D10A_60_Shashwat Tripathi_2.2");
        Scanner scan = new Scanner(System.in);
        EmployeeDetails emp1 = new EmployeeDetails();
        System.out.println("Enter Details of 1st Employee: ");
        System.out.println("Name: ");
        emp1.name = scan.nextLine();
        System.out.println("Address: ");
        emp1.address = scan.nextLine();
        System.out.println("Salary: ");
        emp1.salary = scan.nextInt();
        System.out.println("Year of Joining : ");
        emp1.yoj = scan.nextInt();

        EmployeeDetails emp2 = new EmployeeDetails();
        System.out.println("Enter Details of 2nd Employee: ");
        System.out.println("Name: ");
        emp2.name = scan.nextLine();
        emp2.name = scan.nextLine();

        emp2.name = scan.nextLine();
        System.out.println("Address: ");
        emp2.address = scan.nextLine();
        System.out.println("Salary: ");
        emp2.salary = scan.nextInt();
        System.out.println("Year of Joining : ");
        emp2.yoj = scan.nextInt();
        EmployeeDetails emp3 = new EmployeeDetails();
        System.out.println("Enter Details of 3rd Employee: ");
        System.out.println("Name: ");
        emp3.name = scan.nextLine();
        emp3.name = scan.nextLine();
        System.out.println("Address: ");
        emp3.address = scan.nextLine();
        System.out.println("Salary: ");
        emp3.salary = scan.nextInt();
        System.out.println("Year of Joining : ");
        emp3.yoj = scan.nextInt();

        System.out.println("1st Employee Details");
        System.out.println("Name: "+emp1.name);
        System.out.println("Address: "+emp1.address);
        System.out.println("Salary: "+emp1.salary);
        System.out.println("Year of Joining: "+emp1.yoj);
```

```

        System.out.println("2nd Employee Details");
        System.out.println("Name: "+emp2.name);
        System.out.println("Address: "+emp2.address);
        System.out.println("Salary: "+emp2.salary);
        System.out.println("Year of Joining: "+emp2.yoj);

        System.out.println("3rd Employee Details");
        System.out.println("Name: "+emp3.name);
        System.out.println("Address: "+emp3.address);
        System.out.println("Salary: "+emp3.salary);
        System.out.println("Year of Joining: "+emp3.yoj);
    }
}

```

OUTPUT:

```

"C:\Program Files\Java\jdk-15.0.2\bin\java.exe" -javaage
D10A_60_Shashwat Tripathi_2.2
Enter Details of 1st Employee:
Name:
Shashwat
Address:
Thane
Salary:
1500000
Year of Joining :
2022
Enter Details of 2nd Employee:
Name:
Piyush
Address:
Chembur
Salary:
1350000
Year of Joining :
2021
Enter Details of 3rd Employee:
Name:
Giulia
Address:
Italy

```

Giulia

Address:

Italy

Salary:

1700000

Year of Joining :

2022

1st Employee Details

Name: Shashwat

Address: Thane

Salary: 1500000

Year of Joining: 2022

2nd Employee Details

Name: Piyush

Address: Chembur

Salary: 1350000

Year of Joining: 2021

3rd Employee Details

Name: Giulia

Address: Italy

Salary: 1700000

Year of Joining: 2022

Process finished with exit code 0

|

Program No: 3.1

CODE:

```
import java.lang.*;
import java.util.Scanner;
class UniversityStudent{
    String Name;
    int Age;
    String Programme;
    String temp;
    UniversityStudent(String N, String P, int A){
        Name = N;
        Age = A;
        Programme = P;
    }
    UniversityStudent(){
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter Student's Name:");
        Name = scan.nextLine();
        System.out.println("Enter Student's Programme:");
        Programme = scan.nextLine();
        System.out.println("Enter Student's Age:");
        Age = scan.nextInt();
        temp = scan.nextLine();
    }
    void DisplayInfo(){
        System.out.println("Name: "+Name);
        System.out.println("Age: " +Age);
        System.out.println("Programme: "+Programme);
    }
}
class GradStu extends UniversityStudent{
    float Marks;
    String Stream;
    GradStu(float M, String S){
        super();
        Marks = M;
        Stream= S;
    }
    GradStu(){
        super();
        Scanner scan1 = new Scanner(System.in);
        System.out.println("Enter Student's Stream:");
        Stream = scan1.nextLine();
        System.out.println("Enter Student's Marks(in %):");
        Marks = scan1.nextFloat();
    }
    void DisplayInfo() {
        super.DisplayInfo();
        System.out.println("Marks: " + Marks);
        System.out.println("Stream: "+ Stream);
    }
}
```

```

    }
}

class ResearchStu extends UniversityStudent{
    int ExpYears;
    String Specialization;

    ResearchStu(){
        super();
        Scanner scan2 = new Scanner(System.in);
        System.out.println("Enter Student's specialization:");
        Specialization = scan2.nextLine();
        System.out.println("Enter Student's Experience (In years):");
        ExpYears = scan2.nextInt();
    }

    ResearchStu(int E , String S){
        super();
        ExpYears = E;
        Specialization= S;
    }

    void DisplayInfo() {
        super.DisplayInfo();
        System.out.println("Specialization: " + Specialization);
        System.out.println("Experience (In years): "+ ExpYears);
    }
}

public class Test2{
    public static void main(String[] args) {
        System.out.println("D10A_60_Shashwat Tripathi_3.1");
        GradStu a = new GradStu();
        ResearchStu b = new ResearchStu();
        System.out.println("Student 1 Details: ");
        a.DisplayInfo();
        System.out.println();
        System.out.println("Student 2 Details: ");
        b.DisplayInfo();
    }
}

```

OUTPUT:

```
"C:\Program Files\Java\jdk-15.0.2\bin\java.exe" -javaagent
D10A_60_Shashwat_Tripathi_3.1
Enter Student's Name:
Shashwat
Enter Student's Programme:
Java Programming
Enter Student's Age:
18
Enter Student's Stream:
Information Technology
Enter Student's Marks(in %):
95
Enter Student's Name:
Piyush
Enter Student's Programme:
AI & ML
Enter Student's Age:
22
Enter Student's specialization:
Web Development
Enter Student's Experience (In years):
2
Student 1 Details:
Name: Shashwat
Age: 18
Student 1 Details:
Name: Shashwat
Age: 18
Programme: Java Programming
Marks: 95.0
Stream: Information Technology

Student 2 Details:
Name: Piyush
Age: 22
Programme: AI & ML
Specialization: Web Development
Experience (In years): 2

Process finished with exit code 0
```

CODE:

```
import java.util.Scanner;

interface Vehicle {
    void setInfo();
    void displayInfo();
}

class Bike implements Vehicle {
    String model = "";
    String brand = "";
    int wheels = 0;

    public void setInfo() {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter Bike's Brand");
        brand = sc.nextLine();
        System.out.println("Enter Bike's model");
        model = sc.nextLine();
        System.out.println("Enter the number of wheels of bike");
        wheels = sc.nextInt();
    }

    public void displayInfo() {
        System.out.println("Bike's Brand: " + brand);
        System.out.println("Bike's Model: " + model);

        System.out.println("Bike's Number of wheels: " + wheels);
    }
}

class Car implements Vehicle {
    String model = "";
    String brand = "";
    int wheels = 0;

    public void setInfo() {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter Car's Brand");
        brand = sc.nextLine();
        System.out.println("Enter Car's model");
        model = sc.nextLine();
        System.out.println("Enter the number of wheels of car");
        wheels = sc.nextInt();
    }

    public void displayInfo() {
        System.out.println("Car's Brand: " + brand);
        System.out.println("Car's Model: " + model);
        System.out.println("Car's Number of wheels: " + wheels);
    }
}
```



```

class Bicycle implements Vehicle {
    String model = "";
    String brand = "";
    int wheels = 0;

    public void setInfo() {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter Bicycle's Brand");
        brand = sc.nextLine();
        System.out.println("Enter Bicycle's model");
        model = sc.nextLine();
        System.out.println("Enter the number of wheels of bicycle");
        wheels = sc.nextInt();
    }

    public void displayInfo() {
        System.out.println("Bicycle's Brand: " + brand);
        System.out.println("Bicycle's Model: " + model);
        System.out.println("Bicycle's Number of wheels: " + wheels);
    }
}

```

```

class exp5 {
    public static void main(String[] args) {
        System.out.println("D10A_60_Shashwat Tripathi_3.2");
        Bike obj1 = new Bike();
        obj1.setInfo();
        obj1.displayInfo();

        Car obj2 = new Car();
        obj2.setInfo();
        obj2.displayInfo();

        Bicycle obj3 = new Bicycle();
        obj3.setInfo();
        obj3.displayInfo();
    }
}

```

OUTPUT:

```
"C:\Program Files\Java\jdk-15.0.2\bin\java.exe" -jav
D10A_60_Shashwat Tripathi_3.2
Enter Bike's Brand
Ducati
Enter Bike's model
Panigale V4
Enter the number of wheels of bike
2
Bike's Brand: Ducati
Bike's Model: Panigale V4
Bike's Number of wheels: 2
Enter Car's Brand
Tesla
Enter Car's model
Model 3
Enter the number of wheels of car
4
Car's Brand: Tesla
Car's Model: Model 3
Car's Number of wheels: 4
Enter Bicycle's Brand
BMX
Enter Bicycle's model
1102
Enter the number of wheels of bicycle
Enter Bicycle's Brand
BMX
Enter Bicycle's model
1102
Enter the number of wheels of bicycle
2
Bicycle's Brand: BMX
Bicycle's Model: 1102
Bicycle's Number of wheels: 2

Process finished with exit code 0
|
```

CODE:

```

import java.util.*;

class InvalidPasswordException extends Exception{
    public InvalidPasswordException(String str){
        super(str);
    }
}

public class password{
    static void check(String password) throws InvalidPasswordException{
        int i=0,j=0;
        String temp1,temp2;
        boolean result1=false, result2=false;
        String digit[]={"0","1","2","3","4","5","6","7","8","9"};
        String special[]={"`","~","!", "@", "#", "$", "%", "^", "&", "*", "(", ")", "-", "_", "=", "+", "[", "]",
            "{", "}", "|", ";", ":", "'", "\"", "<", ".", ">", "/", "?"};
        if(password.length()<8) {
            throw new InvalidPasswordException("Please enter 8 digit Password");
        }
        for (i = 0; i < digit.length; i++) {
            temp1 = digit[i];
            if (password.contains(temp1)) {
                result1 = true;
                break;
            }
        }
        else {
            result1 = false;
        }

        for(j=0;j< special.length;j++){
            temp2 =special[j];
            if(password.contains(temp2)){
                result2=true;
                break;
            }
            else{
                result2=false;
            }
        }
        if(result1==true&&result2==true){
            System.out.println("Login Successful!");
        }
        else{
            throw new InvalidPasswordException("Please enter password containing one digit and one Special
    }
}

```

```

public static void main(String[] args) {
    System.out.println("D10A_60_Shashwat Tripathi_4.1");
    String loginId, password;
    Scanner scan= new Scanner(System.in);
    System.out.println("Enter your Login ID: ");
    loginId = scan.nextLine();
    System.out.println("Enter your Password: ");
    password =scan.nextLine();

    try {
        check(password);
    }
    catch (InvalidPasswordException ex)
    {
        System.out.println(ex);
    }
}
}

```

OUTPUT:

```

"C:\Program Files\Java\jdk-15.0.2\bin\java.exe" -javaagent:C:\Users\shweta\AppData\Local\JetBr
D10A_60_Shashwat Tripathi_4.1
Enter your Login ID:
vesitgvest123
Enter your Password:
student123
InvalidPasswordException: Please enter password containing one digit and one Special Symbol

Process finished with exit code 0

```

```

"C:\Program Files\Java\jdk-15.0.2\bin\java.exe" -javaa
D10A_60_Shashwat Tripathi_4.1
Enter your Login ID:
vesitgvest123
Enter your Password:
student@12<3
Login Successful!

Process finished with exit code 0

```