

Assignment : 1

```
class Discount{
    private float salesamount;
    private float discount;
    Discount(float sa){
        this.salesamount = sa;
    }
    public void compute1(){
        if(salesamount<10000) discount = 0;
        else if(salesamount>=10000 && salesamount<20000) discount = (salesamount*3)/100;
        else if(salesamount>=20000 && salesamount<40000) discount = (salesamount*5)/100;
        else if(salesamount>=40000) discount = (salesamount*10)/100;
    }
    public void compute2(){
        //Kora hoini ai part ta.....
        //Using ternary operator diya korte hobe compute1 r mato e
    }
    public void display(){
        System.out.println("The discount for pursuing "+salesamount+" is : "+discount);
        System.out.println("You have to pay : "+(salesamount-discount));
    }
    public static void main(String[] args){
        System.out.println("Welcome to Hello shop!!!");
        Discount d1 = new Discount(20000);
        d1.compute1();
        d1.display();

        Discount d2 = new Discount(40000);
        d2.compute1();
        d2.display();
    }
}
```

Output :

```
Welcome to Hello shop!!!
The discount for pursuing 20000.0 is : 1000.0
You have to pay : 19000.0
The discount for pursuing 40000.0 is : 4000.0
You have to pay : 36000.0
```

Assignment : 1.1

```
class complex {
    int a,b;
    complex(int A,int B){
        a = A;
        b = B;
    }
    void add(int A,int B){
        a +=A;
        b +=B;
    }
    void sub(int A,int B){
        a -=A;
        b -=B;
    }
}
```

```

void display(){
    System.out.println(" "+a + "+" + b+"i");
}
public static void main(String args[]){
    complex c1 = new complex(2,5);
    System.out.print("Initially c1 is :");
    c1.display();
    System.out.print("After of c1 :");
    c1.add(3,8);
    c1.display();
    System.out.print("After Substraction of c1 :");
    c1.sub(2,7);
    c1.display();

}
}

```

Output :

Output :

Initially c1 is : 2+5i

After of c1 : 5+13i

After Substraction of c1 : 3+6i

Assignment : 2

```

import java.lang.Math;
class Savings_Ac extends Account{
    private float ROI,Acc_Balance;
    Savings_Ac(String ANo,String Cname,String Cno,float roi,float ABalance){
        super(ANo,Cname,Cno);
        this.ROI = roi;
        this.Acc_Balance = ABalance;
    }
    public void compute(){
        System.out.println("Savings account details : ");
        System.out.println("Account Balance : "+Acc_Balance);
        Acc_Balance = Acc_Balance + (Acc_Balance*ROI)/100;
    }
    public void showdata(){
        Show();
        System.out.println("ROI : "+ROI);
        System.out.println("Updated Account Balance is : "+Acc_Balance);
    }
}
class Current_Ac extends Account{
    private float Acc_Balance,Min_Balance;
    Current_Ac(String ANo,String Cname,String Cno,float ABalance,float minbal){
        super(ANo,Cname,Cno);
        this.Acc_Balance = ABalance;
        this.Min_Balance = minbal;
    }
}

```

```

    }
    public void showdata(){
        System.out.println("Current Account details : ");
        Show();
        System.out.println("Account Balance : "+Acc_Balance);
        System.out.println("Min balance to have : "+Min_Balance);
        if(Acc_Balance<Min_Balance) System.out.println("Insufficient balance in the account.");
        else System.out.println("sufficient balance in the account.");
    }
}

class TD_Ac extends Account{
    private float Principal,Term,Time,ROI,Maturity_Balance;
    TD_Ac(String ANo,String Cname,String Cno,float prin,float trm,float time,float roi){
        super(ANo,Cname,Cno);
        this.Principal = prin;
        this.Term = trm;
        this.Time = time;
        this.ROI = roi;
    }
    public void compute(){
        System.out.println("TD_Account drtails : ");
        //Maturity_Balance = Principal * float(Math.pow(1+ROI/100,Time)); // Incorrect.....
        /***** */
    }
    public void showdata(){
        Show();
        System.out.println("Principal amount is : "+Principal);
        System.out.println("Total term is : "+Term);
        System.out.println("Rate of interests is : "+ROI);
        System.out.println("Maturity amount is : "+Maturity_Balance);
    }
}

class Account{
    private String Acc_No,C_Name,Contact_No;
    Account(String an,String cname,String cno){
        this.Acc_No = an;
        this.C_Name = cname;
        this.Contact_No = cno;
    }
    public void Show(){
        System.out.println("Account No : "+Acc_No);
        System.out.println("Customer name : "+C_Name);
        System.out.println("Contact No : "+Contact_No);
    }
    public static void main(String[] args){
        Savings_Ac S1 = new Savings_Ac("89979797979799779","Ram Das","4545135946",5,10000);
        S1.compute();
        S1.showdata();

        Current_Ac c1 = new Current_Ac("465656464699415852","Sam Das","959856685595",11000,10000);
        c1.showdata();
    }
}

```

```

        TD_Ac t1 = new TD_Ac("6568984479794","Raj Das","65366464664",20000,2,1,10);
        t1.compute();
        t1.showdata();
    }
}

```

Output :

Savings account details :
 Account Balance : 10000.0
 Account No : 899797979797979779
 Customer name : Ram Das
 Contact No : 4545135946
 ROI : 5.0
 Updated Account Balance is : 10500.0
 Current Account details :
 Account No : 465656464699415852
 Customer name : Sam Das
 Contact No : 959856685595
 Account Balance : 11000.0
 Min balance to have : 10000.0
 sufficient balance in the account.
 TD_Account drtails :
 Account No : 6568984479794
 Customer name : Raj Das
 Contact No : 65366464664
 Principal amount is : 20000.0
 Total term is : 2.0
 Rate of interests is : 10.0
 Maturity amount is : 0.0

Assignment : 3

```

class Developer extends ComputerProfessional{
    private float studyhour;
    Developer(String name,String DHour,String pros,float SH){
        super(name,DHour,pros);
        this.studyhour = SH;
    }
    public void display(){
        Show();
        System.out.println("StudyHour is "+studyhour);
    }
}

class Network extends ComputerProfessional{
    private float practicehour;
    Network(String name,String DHour,String pros,float pH){
        super(name,DHour,pros);
        this.practicehour = pH;
    }
    public void Display(){
        Show();
        System.out.println("Practice Hour is : "+practicehour);
        System.out.println("\n");
    }
}

```

```

class DataOperator extends ComputerProfessional{
    private float TypingSpeed;
    DataOperator(String name,String DHour,String pros,float TS){
        super(name,DHour,pros);
        this.TypingSpeed = TS;
    }
    public void Display(){
        Show();
        System.out.println("Typing Speed is : "+TypingSpeed);
        System.out.println("\n");
    }
}

class Javaprofession extends Developer{
    private String proficiency;
    Javaprofession(String name,String DHour,String pros,float SH,String profi){
        super(name,DHour,pros,SH);
        this.proficiency = profi;
    }
    public void display(){
        super.display();
        System.out.println("Proficiency level is : "+proficiency);
        System.out.println("\n");
    }
}

class Pythonprofession extends Developer{
    private String proficiency;
    Pythonprofession(String name,String DHour,String pros,float SH,String profi){
        super(name,DHour,pros,SH);
        this.proficiency = profi;
    }
    public void display(){
        super.display();
        System.out.println("Proficiency level is : "+proficiency);
        System.out.println("\n");
    }
}

class ComputerProfessional{
    private String Ename,DutyHour,prospect;
    ComputerProfessional(String name,String DHour,String pros){
        this.Ename = name;
        this.DutyHour = DHour;
        this.prospect= pros;
    }
    public void Show(){
        System.out.println("The information of the employee is : ");
        System.out.println("Name : "+Ename);
        System.out.println("Duty hour : "+DutyHour);
        System.out.println("Prospective : "+prospect);
    }
    public static void main(String[] args){

```

```
Network A1 = new Network("Arpan Hutait", "10", "fair", 3);
A1.Display();

DataOperator A2 = new DataOperator("Sourav Das", "16", "Excellent", 40);
A2.Display();

Javaprofession A3 = new Javaprofession("Partha Maity", "9", "Fair", 4, "Intermediate");
A3.display();

Pythonprofession A4 = new Pythonprofession("Jagadish Sau", "15", "Excellent", 6, "Pro");
A4.display();

}
}
```

Output :

The information of the employee is :

Name : Arpan Hutait

Duty hour : 10

Prospective : fair

Practice Hour is : 3.0

The information of the employee is :

Name : Sourav Das

Duty hour : 16

Prospective : Excellent

Typing Speed is : 40.0

The information of the employee is :

Name : Partha Maity

Duty hour : 9

Prospective : Fair

StudyHour is 4.0

Proficiency level is : Intermediate

The information of the employee is :

Name : Jagadish Sau

Duty hour : 15

Prospective : Excellent

StudyHour is 6.0

Assignment : 4.

```
class Arithmetic{
    private int a;
    private float b;
    private char c;
    private double d;
    Arithmetic(int A,float B,char C,double D){
        a = A;
        b = B;
        c = C;
        d = D;
    }
    void add(int i,double k){
        a+=i;
        d+=k;
    }
    void add(int i,float j, double k){
        a+=i;
        b+=j;
        d+=k;
    }
    void add(float j, int i, double k){
        a+=i;
        b+=j;
        d+=k;
    }
    Arithmetic add(Arithmetic p){
        Arithmetic Q = new Arithmetic(0, 0, 'a', 0);
        Q.a = this.a + p.a;
        Q.b = this.b + p.b;
        Q.c = this.c;
        Q.d = this.d + p.d;
        return Q;
    }
    void display(){
        System.out.println("Interger : " + a + " , float : " + b + " , character : " + c + " and double " + d);
    }
    public static void main(String[] args){
        Arithmetic A = new Arithmetic(2, 5.5f, 's', 123.45);
        Arithmetic B = new Arithmetic(5, 3.9f, 'n', 321.54);
        System.out.println("Initially object A ==> ");
        A.display();
        System.out.println("\nInitial object B ==> ");
        B.display();
        System.out.println("\nfter some operation on object A ==> ");
        A.add(2,36.56);
        A.display();
        A.add(3,2.6f,2445.364);
        A.display();
        A.add(2.36f,8,236.75);
    }
}
```

```

    A.display();
    Arithmetic C = A.add(B);
    System.out.println("\nFinally object A , B and C ==> ");
    A.display();
    B.display();
    C.display();
}
}

```

Output :

Initially object A ==>

Integer : 2 , float : 5.5 , character : s and double 123.45

Initial object B ==>

Integer : 5 , float : 3.9 , character : n and double 321.54

After some operation on object A ==>

Integer : 4 , float : 5.5 , character : s and double 160.01

Integer : 7 , float : 8.1 , character : s and double 2605.374

Integer : 15 , float : 10.46 , character : s and double 2842.124

Finally object A , B and C ==>

Integer : 15 , float : 10.46 , character : s and double 2842.124

Integer : 5 , float : 3.9 , character : n and double 321.54

Integer : 20 , float : 14.360001 , character : s and double 3163.6639999999998

Assignment : 4.1

```

class Time {
    private int hr;
    private int min;
    private double sec;
    Time(int HR,int MIN,double SEC){
        hr = HR;
        min = MIN;
        sec = SEC;
    }
    void add_time(int m){
        min+=m;
        if(min>=60){
            hr +=1;
            min%=60;
        }
    }
    void add_time(int h,int m){
        hr+=h;
        min+=m;
        if(min>=60){

```



```

        hr +=1;
        min%=60;
    }
}
void add_time(double s){
    sec+=s;
    if(s>=60){
        min +=1;
        sec%=60;
    }
}
Time add_time(Time k){
    Time T = new Time(0,0,0);
    T.sec = this.sec + k.sec;
    T.min = this.min +k.min;
    T.hr = this.hr + k.hr;
    if(T.sec>=60){
        T.min +=1;
        T.sec%=60;
    }
    if(T.min>=60){
        T.hr +=1;
        T.min%=60;;
    }
    return T;
}
void showtime(){
    System.out.println("Current time is => " + hr + " : " + min + " : "+ sec);
}
public static void main(String[] args){
    Time t1 = new Time(12, 5, 20.06);
    Time t2 = new Time(2, 56, 45);
    System.out.println("Initially t1 object : ");
    t1.showtime();
    System.out.println("\nInitially t2 object : ");
    t2.showtime();
    System.out.println("\nAfter some operation of t1 object : ");
    t1.add_time(50);
    t1.showtime();
    t1.add_time(2,40);
    t1.showtime();
    t1.add_time(37.3);
    t1.showtime();
    Time t3 = t1.add_time(t2);
    System.out.println("\nFinally t1 , t2 and t3 object : ");
    t1.showtime();
    t2.showtime();
    t3.showtime();

}
}

```

Output :

Initially t1 object :

Current time is => 12 : 5 : 20.06

Initially t2 object :

Current time is => 2 : 56 : 45.0

After some operation of t1 object :

Current time is => 12 : 55 : 20.06

Current time is => 15 : 35 : 20.06

Current time is => 15 : 35 : 57.36

Finally t1 , t2 and t3 object :

Current time is => 15 : 35 : 57.36

Current time is => 2 : 56 : 45.0

Current time is => 18 : 32 : 42.36

Assignment : 5

```
class Student{
    String S_Name,Roll_No,Stream;
    int Batch,YearofAdm;
    Student(String SN, int B){
        S_Name = SN;
        Batch = B;
    }
    Student(String SN, int B, String Roll){
        S_Name = SN;
        Batch = B;
        Roll_No = Roll;
    }
    Student(String SN, int B, String Roll, int Yr){
        S_Name = SN;
        Batch = B;
        Roll_No = Roll;
        YearofAdm = Yr;
    }
    Student(String SN, int B, String Roll, int yr, String Str){
        S_Name = SN;
        Batch = B;
        Roll_No = Roll;
        YearofAdm = yr;
        Stream = Str;
    }
    void show(){
        System.out.println("Student name is "+ S_Name+"\nRoll no : "+Roll_No+"\nStream : 
"+Stream+"\nBatch : "+Batch+"\nYear of Admission : "+YearofAdm+"\n\n");
    }
}
```

```
class Test5 {  
    public static void main(String[] args) {  
        Student s1 = new Student("MS Dhoni", 2020);  
        Student s2 = new Student("Soourav Ganguli", 2012, "996584422112");  
        Student s3 = new Student("Sachine Tendulkar", 2010, "359895626998", 2009);  
        Student s4 = new Student("Rahul Dravid", 2015, "788653489745", 2005, "Mechanical Dept.");  
  
        s1.show();  
        s2.show();  
        s3.show();  
        s4.show();  
    }  
}
```

Output :

Student name is MS Dhoni
Roll no : null
Stream : null
Batch : 2020
Year of Admission : 0

Student name is Soourav Ganguli
Roll no : 996584422112
Stream : null
Batch : 2012
Year of Admission : 0

Student name is Sachine Tendulkar
Roll no : 359895626998
Stream : null
Batch : 2010
Year of Admission : 2009

Student name is Rahul Dravid
Roll no : 788653489745
Stream : Mechanical Dwpt.
Batch : 2015
Year of Admission : 2005

Assignment : 6

```
import java.util.Scanner;  
class shape{  
    int a,b;  
    void get(){};  
    void cal_area(){};  
}
```

```

class square extends shape{
    void get(){
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the side of the square : ");
        a = sc.nextInt();
        while(a<=0){
            System.out.print("Invalid Input!!!\nEnter the side value again : ");
            a = sc.nextInt();
        }
    }
    void cal_area(){
        System.out.print("So the area of the square is : "+a*a);
    }
    void put(){
        System.out.println(" , Where entered side value of the square is : "+a+"\n");
    }
}

class Triangle extends shape{
    void get(){
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the base of the triangle : ");
        a = sc.nextInt();
        while(a<=0){
            System.out.print("Invalid Input!!!\nEnter the base value again : ");
            a = sc.nextInt();
        }
        System.out.print("Enter the heirgt of the triangle : ");
        b = sc.nextInt();
        while(b<=0){
            System.out.print("Invalid Input!!!\nEnter the height value again : ");
            b = sc.nextInt();
        }
    }
    void cal_area(){
        System.out.print("So the area of the square is : "+0.5*a*b);
    }
    void put(){
        System.out.println(" , Where entered base is : "+a + " and the height is : "+b+"\n");
    }
}

class Rectangle extends shape{
    void get(){
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the length of the rectangle : ");
        a = sc.nextInt();
        while(a<=0){
            System.out.print("Invalid Input!!!\nEnter the length value again : ");
            a = sc.nextInt();
        }
        System.out.print("Enter the weidth of the rectangle : ");
        b = sc.nextInt();
        while(b<=0){

```

```

        System.out.print("Invalid Input!!!\nEnter the weidth value again : ");
        b = sc.nextInt();
    }
}
void cal_area(){
    System.out.print("So the area of the rectangle is : "+a*b);
}
void put(){
    System.out.println(" , Where entered length is : "+a + " and the weidth is : "+b+"\n");
}
}
public class Test1 {
    public static void main(String args[]){
        square s1 = new square();
        s1.get();
        s1.cal_area();
        s1.put();
        Triangle t1 = new Triangle();
        t1.get();
        t1.cal_area();
        t1.put();
        Rectangle r1 = new Rectangle();
        r1.get();
        r1.cal_area();
        r1.put();
    }
}

```

Output :

```

Enter the side of the square : -1
Invalid Input!!!
Enter the side value again : 2
So the area of the square is : 4 , Where entered side value of the square is : 2
Enter the base of the triangle : 0
Invalid Input!!!
Enter the base value again : 3
Enter the heirgt of the triangle : -4
Invalid Input!!!
Enter the height value again : 2
So the area of the square is : 3.0 , Where entered base is : 3 and the height is : 2
Enter the length of the rectangle : 0
Invalid Input!!!
Enter the length value again : 6
Enter the weidth of the rectangle : -8
Invalid Input!!!
Enter the weidth value again : 3
So the area of the rectangle is : 18 , Where entered length is : 6 and the weidth is : 3

```

Assignment : 6.1

```
class FlyingBird extends Bird{
    FlyingBird(String Na,String co){
        super(Na, co);
    }
    void Fly(){
        System.out.println("Hello It's a "+Name+" a flying bird of colour "+colour);
    }
}
class NonFlyingBird extends Bird{
    NonFlyingBird(String Na,String co){
        super(Na, co);
    }
    void Fly(){
        System.out.println("Hello It's a "+Name+" a Nonflying bird of colour "+colour+"");
    }
}
abstract class Bird {
    String Name,colour;
    Bird(String N,String c){
        Name = N;
        colour = c;
    }
    void Fly(){};
    public static void main(String args[]){
        FlyingBird f1 = new FlyingBird("Parrot", "green");
        f1.Fly();
        NonFlyingBird f2 = new NonFlyingBird("Hean", "White");
        f2.Fly();
    }
}
```

Output :

Hello It's a Parrot a flying bird of colour green
Hello It's a Hean a Nonflying bird of colour White