DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B. M. S. COLLEGE OF ENGINEERING

(AUTONOMOUS COLLEGE UNDER VTU, BELGAUM)

BANGALORE – 560019

2023-2024

OBJECT ORIENTED PROGRAMMING

LAB REPORT

BY

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SECTION- CSE- 3B

USN- 1BM22CS344

Course Instructor:

SHRAVYA AR

CERTIFICATE

This is to certify that the Lab work entitled "**OBJECT ORIENTED JAVA PROGRAMMING**" carried out by **Madhurika Priya (1BM22CS344),** who is bonafide student of **B. M. S. College of Engineering**. It is in partial fulfillment for the award of **Bachelor of Engineering in Computer Science and Engineering** of the Visvesvaraya Technological University, Belgaum during the year 2023-24. The Lab report has been approved as it satisfies the academic requirements in respect of Object-Oriented Java Programming Lab - (**23CS3PCOOJ**) work prescribed for the said degree.

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	the percentage and display appropriate details. (Array of student object to be created).	

Course Outcome

CO1	Apply the knowledge of Java concepts to find the solution for a given problem.
CO2	Analyse the given Java application for correctness/functionalities.
CO3	Develop Java programs / applications for a given requirement.
CO4	Conduct practical experiments for demonstrating features of Java.

LAB 1

Develop a Java program that prints all real solutions to the quadratic equation ax^2 +bx+c = 0. Read in a, b, c and use the quadratic formula. If the discriminant b^2 -4ac is negative, display a message stating that there are no real solutions.

```
import java.util.Scanner;

class Quadratic{

    public static void main(String args[]){

        int a,b,c,D;

        Scanner sc=new Scanner(System.in);

        System.out.println("Enter the value of A :");

        a=sc.nextInt();

        System.out.println("Enter the value of B :");

        b=sc.nextInt();

        System.out.println("Enter the value of C :");

        c=sc.nextInt();

        D=(b*b)-(4*a*c);

        if(D>0){

            System.out.println("Roots are real and distinct.");

            double r1=(-b + Math.sqrt(D))/(2*a);

            double r2=(-b - Math.sqrt(D))/(2*a);

            System.out.println("R1 = "+r1);

            System.out.println("R2 = "+r2);

        }

        else if(D==0){

            System.out.println("Roots are real and equal.");

            double r=(-b)/(2*a);

            System.out.println("R1 = "+r);

            System.out.println("R2 = "+r);
```

```
        }
        else{
            System.out.println("Roots are imaginary and distinct");
            double x = (double)-b/(2*a);
            double y = Math.sqrt(-D)/(2*a);
            System.out.println("R1 = "+x+" + "+y+"i");
            System.out.println("R2 = "+x+" - "+y+"i");
        }

    }
}
```

OUTPUT:

```
Microsoft Windows [Version 10.0.22621.3155]
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C:\Users\mpriy>cd "C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals"

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>javac Quadratic.java

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>java Quadratic
MADHURIKA PRIYA
1BM22CS344
Enter the value of A :
1
Enter the value of B :
1
Enter the value of C :
2
Roots are imaginary and distinct
R1 = -0.5 + 1.32287565553229541
R2 = -0.5 - 1.32287565553229541

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>java Quadratic
MADHURIKA PRIYA
1BM22CS344
Enter the value of A :
20
Enter the value of B :
34
Enter the value of C :
20
Roots are imaginary and distinct
R1 = -0.85 + 0.52678268764263691
R2 = -0.85 - 0.52678268764263691
```

LAB 2

Develop a JAVA program to create a class Book which contains four members:name,author,price,num_pages. Include a constructor to set the values for the members.Include methods to set and get the details of the objects.Include a toSTring() method that could display the complete details of the book.

Develop a program to create n book objects.

```
import java.util.Scanner;
class Book{
	String name;
	String author;
	double price;
	int num_pages;

	Book(String name,String author,double price,int num_pages){
	this.name=name;
	this.author=author;
	this.price=price;
	this.num_pages=num_pages;
	}

	void setDetails(){
		name=name;
		author=author;
		price=price;
		num_pages=num_pages;
	}
```

```
	void getDetails(){
		Scanner s = new Scanner(System.in);



		System.out.print("Enter Book Name:");
		name=s.nextLine();
		System.out.print("Enter Author Name:");
		author=s.nextLine();
		System.out.print("Enter Price:");
		price=s.nextDouble();
		System.out.print("Enter Number Of Pages:");
		num_pages=s.nextInt();
		System.out.println("---------------------------------");
	}

	public String toString(){
		return ("Book Name :"+name+"\n Author Name :"+author+"\n Price
:"+price+"\n Number of Pages :"+num_pages);
	}
}

class BookMain{
	public static void main(String args[]){
		System.out.println("MADHURIKA PRIYA");
		System.out.println("1BM22CS344");

		Scanner s = new Scanner(System.in);
```

```
        int n,i;
        System.out.println("Enter Number Of Books");
        n=s.nextInt();
        Book[] books = new Book[n];
        for(i=0;i<n;i++){

            System.out.println("Enter details of book "+(i+1));
            books[i]=new Book(" "," ",0.0,0);
            books[i].getDetails();
        }
        for(i=0;i<n;i++){
            System.out.println("Details of book "+(i+1));
            System.out.println(books[i]);
        }
    }
}
```

OUTPUT:

```
C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>javac BookMain.ja
va

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>java BookMain
MADHURIKA PRIYA
1BM22CS344
Enter Number Of Books
2
Enter details of book 1
Enter Book Name:Harry Potter and the Prisoner of Azkaban
Enter Author Name:J.K. Rowling
Enter Price:509
Enter Number Of Pages:448
--------------------------------
Enter details of book 2
Enter Book Name:The Diary of a Young Girl
Enter Author Name:Anne Frank
Enter Price:120
Enter Number Of Pages:283
--------------------------------
Details of book 1
Book Name :Harry Potter and the Prisoner of Azkaban
 Author Name :J.K. Rowling
 Price :509.0
 Number of Pages :448
Details of book 2
Book Name :The Diary of a Young Girl
 Author Name :Anne Frank
 Price :120.0
 Number of Pages :283
```

LAB 3

Develop a JAVA program to create a class bank values, include classes account, curracct and display the same. Develop a program to create bank details.

```
class Account {
    String customerName;
    int accountNumber;
    String accountType;
    double balance;
    Account(String name, int accNo, String type, double bal) {
        customerName = name;
        accountNumber = accNo;
        accountType = type;
        balance = bal;
    }
    void deposit(double amount) {
        balance += amount;
        System.out.println("Deposit of Rs." + amount + " successful");
    }
    void displayBalance() {
        System.out.println("Account Balance: Rs." + balance);
    }
    void withdraw(double amount) {
        if (balance - amount >= 0) {
            balance -= amount;
            System.out.println("Withdrawal of Rs." + amount + " successful");
        } else {
```

```
            System.out.println("Insufficient balance for withdrawal");
        }
    }
}
class CurAcct extends Account {
    double minimumBalance;
    double serviceCharge;
    CurAcct(String name, int accNo, String type, double bal, double minBal, double charge) {
        super(name, accNo, type, bal);
        minimumBalance = minBal;
        serviceCharge = charge;
    }
    void withdraw(double amount) {
        if (balance - amount >= minimumBalance) {
            balance -= amount;
            System.out.println("Withdrawal of Rs." + amount + " successful");
        } else {
            System.out.println("Insufficient balance for withdrawal. Service charge of Rs." +
serviceCharge + " applied.");
            balance -= serviceCharge;
        }
    }
    void checkbook(){
        System.out.println("Checkbook facilities are available and will be sent soon.");
    }

}
```

```
class SavAcct extends Account {
    double interestRate;
    SavAcct(String name, int accNo, String type, double bal, double rate) {
        super(name, accNo, type, bal);
        interestRate = rate;
    }
    void computeInterest() {
        double interest = balance * (interestRate / 100);
        balance += interest;
        System.out.println("Interest of Rs." + interest + " added to account");
    }
    void checkbook(){
        System.out.println("Checkbook facilities not available.");
    }
}
public class Bank {
    public static void main(String[] args) {

            System.out.println("MADHURIKA PRIYA");
            System.out.println("1BM22CS344");
        CurAcct currentAccount = new CurAcct("Monish", 123456, "Current", 5000, 1000, 50);
        SavAcct savingsAccount = new SavAcct("Navaneeth", 654321, "Savings", 10000, 5);
        System.out.println("Current Account Details:");
        currentAccount.displayBalance();
        currentAccount.deposit(2000);
        currentAccount.displayBalance();
        currentAccount.withdraw(7000);
```

```
        currentAccount.displayBalance();
        currentAccount.withdraw(3000);
        currentAccount.displayBalance();
        currentAccount.checkbook();
        System.out.println("\nSavings Account Details:");
        savingsAccount.displayBalance();
        savingsAccount.deposit(5000);
        savingsAccount.displayBalance();
        savingsAccount.computeInterest();
        savingsAccount.displayBalance();
        savingsAccount.withdraw(15000);
        savingsAccount.displayBalance();
        savingsAccount.checkbook();
    }
}
```

OUTPUT:

```
Microsoft Windows [Version 10.0.22621.3155]
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C:\Users\mpriy>cd "C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals"

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>javac Bank.java

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>java Bank
MADHURIKA PRIYA
1BM22CS344
Current Account Details:
Account Balance: Rs.5000.0
Deposit of Rs.2000.0 successful
Account Balance: Rs.7000.0
Insufficient balance for withdrawal. Service charge of Rs.50.0 applied.
Account Balance: Rs.6950.0
Withdrawal of Rs.3000.0 successful
Account Balance: Rs.3950.0
Checkbook facilities are available and will be sent soon.

Savings Account Details:
Account Balance: Rs.10000.0
Deposit of Rs.5000.0 successful
Account Balance: Rs.15000.0
Interest of Rs.750.0 added to account
Account Balance: Rs.15750.0
Withdrawal of Rs.15000.0 successful
Account Balance: Rs.750.0
Checkbook facilities not available.
```

LAB 4

Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea( )Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea( ) that prints the area of the given shape.

```
import java.util.*;
abstract class Shape{
   int dim1;
   int dim2;

   Shape(int dim1, int dim2){
      this.dim1=dim1;
      this.dim2=dim2;
   }
abstract void printArea();
}
class Rectangle extends Shape{
   Rectangle(int length, int width){
      super(length,width);
   }
   void printArea(){
      double area=dim1*dim2;
      System.out.println("Area of Rectangle : "+area);
   }
}
class Triangle extends Shape{
   Triangle(int base, int height){
```

```
        super(base,height);
    }
    void printArea(){
        double area=0.5*dim1*dim2;
        System.out.println("Area of Triangle : "+area);
    }
}
class Circle extends Shape{
    Circle(int radius){
        super(radius,0);
    }
    void printArea(){
        double area=Math.PI *dim1*dim1;
        System.out.println("Area of Circle : "+area);
    }
}
public class ShapeMain{
    public static void main(String args[]){

            System.out.println("MADHURIKA PRIYA");
            System.out.println("1BM22CS344");



        Scanner in = new Scanner(System.in);
        System.out.print("Enter Length of Rectangle:");
        int length = in.nextInt();
        System.out.print("Enter Width of Rectangle:");
```

```
        int width = in.nextInt();
        System.out.print("Enter Base of Triangle:");
        int base =in.nextInt();
        System.out.print("Enter Height of Triangle:");
        int height = in.nextInt();
        System.out.print("Enter Radius of Circle:");
        int radius=in.nextInt();
        Rectangle rectangle = new Rectangle(length,width);
        Triangle triangle=new Triangle(base,height);
        Circle circle = new Circle(radius);
        rectangle.printArea();
        triangle.printArea();
        circle.printArea();

    }
}
```

OUTPUT:

```
Microsoft Windows [Version 10.0.22621.3155]
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C:\Users\mpriy>cd "C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals"

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>javac ShapeMain.java

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>java ShapeMain
MADHURIKA PRIYA
1BM22CS344
Enter Length of Rectangle:44
Enter Width of Rectangle:20
Enter Base of Triangle:36
Enter Height of Triangle:12
Enter Radius of Circle:6
Area of Rectangle : 880.0
Area of Triangle : 216.0
Area of Circle : 113.09733552923255
```

LAB 5

Write a program that demonstrates handling of exceptions in inheritance tree. Create a base class called “Father” and derived class called “Son” which extends the base class. In Father class, implement a constructor which takes the age and throws the exception WrongAge( ) when the input age<0. In Son class, implement a constructor that cases both father and son’s age and throws an exception if son’s age is >=father’s age .

```
import java.util.*;

class WrongAgeException extends Exception{

   WrongAgeException(String msg){

      System.out.println(msg);

   }

}

class Father{

   int age;

   Father(int age) throws WrongAgeException {

      this.age=age;

      if(age<0){

         throw new WrongAgeException("Age Can't be less than zero!");

      }

      else{

         System.out.println(" Father's Age Verified!!");

      }

   }

}

class Son extends Father{

   int sonage;

   Son(int age,int sonage)throws WrongAgeException{

      super(age);
```

```
        this.sonage=sonage;

        if(sonage<0 || sonage>=age){
        throw new WrongAgeException("Son's age is Invalid!");
    }
    else{
        System.out.println("Son's age verified!");
    }
}
}
class Age{
    public static void main(String args[]){

            System.out.println("MADHURIKA PRIYA");
            System.out.println("1BM22CS344");

        Scanner in=new Scanner(System.in);
        int age,sonage;
        System.out.print("Enter Father's Age:");
        age=in.nextInt();
        System.out.print("Enter Son's Age:");
        sonage=in.nextInt();
        try{
        Father father = new Father(age);
        }
        catch (Exception e){
            System.out.println(e);
```

```
        }
        try{
            Son son = new Son(age,sonage);
            }
            catch (Exception e){
                System.out.println(e);
            }
    }
}
```

OUTPUT:

```
Microsoft Windows [Version 10.0.22621.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\mpriy>cd "C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals"

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>javac Age.java

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>java Age
MADHURIKA PRIYA
1BM22CS344
Enter Father's Age:45
Enter Son's Age:60
 Father's Age Verified!!
 Father's Age Verified!!
Son's age is Invalid!
WrongAgeException

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>java Age
MADHURIKA PRIYA
1BM22CS344
Enter Father's Age:45
Enter Son's Age:16
 Father's Age Verified!!
 Father's Age Verified!!
Son's age verified!
```

LAB 6

Write a program which creates two threads, one thread displaying “BMS College of Engineering” once every ten seconds and another displaying “CSE” once every two seconds.

```
class CollegeThread extends Thread {
    @Override
    public void run() {
        while (true) {
            System.out.println("BMS College of Engineering");
            try {
                Thread.sleep(10000); // Sleep for 10 seconds
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
    }
}

class DepartmentThread extends Thread {
    @Override
    public void run() {
        while (true) {
            System.out.println("CSE");
            try {
                Thread.sleep(2000); // Sleep for 2 seconds
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
    }
}
```

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

        System.out.println("MADHURIKA PRIYA");
        System.out.println("1BM22CS344");


      // Create and start threads
      CollegeThread collegeThread = new CollegeThread();
      DepartmentThread departmentThread = new DepartmentThread();

      collegeThread.start();
      departmentThread.start();
    }
}
```

OUTPUT:

```
C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>javac Threads.java

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>java Threads
MADHURIKA PRIYA
1BM22CS344
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
CSE
```

LAB 7

Create a package CIE which has two classes- Student and Internals. The class Student has members like usn, name, sem. The class internals derived from student has an array that stores the internal marks scored in five courses of the current semester of the student. Create another package SEE which has the class External which is a derived class of Student. This class has an array that stores the SEE marks scored in five courses of the current semester of the student. Import the two packages in a file that declares the final marks of n students in all five courses.

1. Create a folder CIE and save the programs Student.java and Internals.java within it.

2. Create a folder SEE and save the program External.java within it.

3. Save the Main program outside these two folders.

4. Compile Main.java and Execute the Main.class.

Student.java (inside CIE package):

```
package CIE;
public class Student{
   public String usn,name;
   public int sem;
   public Student(String usn,String name,int sem){
      this.usn=usn;
      this.name=name;
      this.sem=sem;
   }
}
```

Internals.java (inside CIE package):

```
package CIE;
public class Internals extends Student {
  public int m[]=new int[5];
  public Internals(String usn, String name, int sem,int [] m){
```

```
    super(usn,name,sem);
    this.m=m;
  }
}
```

External.java (inside SEE package):

```
package SEE;
import CIE.Student;
public class External extends Student{
    public int sm[]=new int[5];
    public External(String usn, String name, int sem, int[] sm){
        super(usn,name,sem);
        this.sm=sm;
    }
}
```

mainClass.java (outside both packages)

```
import java.util.*;
import CIE.Student;
import CIE.Internals;
import SEE.*;
public class mainClass{
    public static void main(String args[]){

            System.out.println("MADHURIKA PRIYA");
            System.out.println("1BM22CS344");



        int fm=0;
```

```
Scanner in= new Scanner(System.in);
System.out.print("Enter number of Students:");
int n= in.nextInt();
Internals[] im=new Internals[n];
External[] em = new External[n];
Student[] stu=new Student[n];
for(int i=0;i<n;i++){
   System.out.println("Enter details for Student"+(i+1)+":");
   System.out.println("-------------------------");
   System.out.print("Enter Name:");
   in.nextLine();
   String name=in.nextLine();
   System.out.print("Enter USN:");
   String usn=in.nextLine();
   System.out.print("Enter Semester:");
   int sem=in.nextInt();
   int[] internalmarks=new int[5];
   int[] externalmarks=new int[5];
   System.out.println();
   System.out.println("Enter Marks Details:");
   System.out.println("--------------------");
   for(int j=0;j<5;j++){

      System.out.print("Enter Internal marks for course "+(j+1)+":");
      internalmarks[j]=in.nextInt();
      System.out.print("Enter External marks for course "+(j+1)+":");
      externalmarks[j]=in.nextInt();

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

```
            stu[i]=new Student(usn,name,sem);
            im[i]=new Internals(usn,name,sem,internalmarks);
            em[i]=new External(usn,name,sem,externalmarks);



        }
        System.out.println("Final Marks Details:");
        System.out.println("--------------------");
        for(int i=0;i<n;i++){
            System.out.println("Student "+(i+1)+":");
            System.out.println("Name:"+stu[i].name);
            System.out.println("USN:"+stu[i].usn);
            System.out.println("Sem:"+stu[i].sem);

            for(int j=0;j<5;j++){
                fm+=im[i].m[j]+em[i].sm[j];
                System.out.println("Final Marks Of Course "+(j+1)+":"+fm);
                fm=0;
            }
            System.out.println();
             }
    }
}
```

OUTPUT:

```
Microsoft Windows [Version 10.0.22621.3155]
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C:\Users\mpriy>cd "C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals"

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>javac mainClass.java

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>java mainClass
MADHURIKA PRIYA
1BM22CS344
Enter number of Students:2
Enter details for Student1:
-------------------------
Enter Name:Madhurika Priya
Enter USN:1BM22CS344
Enter Semester:3

Enter Marks Details:
--------------------
Enter Internal marks for course 1:34
Enter External marks for course 1:98
Enter Internal marks for course 2:39
Enter External marks for course 2:97
Enter Internal marks for course 3:33
Enter External marks for course 3:56
Enter Internal marks for course 4:33
Enter External marks for course 4:64
Enter Internal marks for course 5:40
Enter External marks for course 5:90

Enter details for Student2:
-------------------------
Enter Name:Kshitiz
```

```
-------------------------
Enter Name:Kshitiz
Enter USN:1BM22CS300
Enter Semester:3

Enter Marks Details:
--------------------
Enter Internal marks for course 1:15
Enter External marks for course 1:45
Enter Internal marks for course 2:17
Enter External marks for course 2:50
Enter Internal marks for course 3:39
Enter External marks for course 3:60
Enter Internal marks for course 4:24
Enter External marks for course 4:55
Enter Internal marks for course 5:25
Enter External marks for course 5:50

Final Marks Details:
--------------------
Student 1:
Name:Madhurika Priya
USN:1BM22CS344
Sem:3
Final Marks Of Course 1:132
Final Marks Of Course 2:136
Final Marks Of Course 3:89
Final Marks Of Course 4:97
Final Marks Of Course 5:130

Student 2:
Name:Kshitiz
USN:1BM22CS300
```

```
Enter Internal marks for course 2:17
Enter External marks for course 2:50
Enter Internal marks for course 3:39
Enter External marks for course 3:60
Enter Internal marks for course 4:24
Enter External marks for course 4:55
Enter Internal marks for course 5:25
Enter External marks for course 5:50

Final Marks Details:
--------------------
Student 1:
Name:Madhurika Priya
USN:1BM22CS344
Sem:3
Final Marks Of Course 1:132
Final Marks Of Course 2:136
Final Marks Of Course 3:89
Final Marks Of Course 4:97
Final Marks Of Course 5:130

Student 2:
Name:Kshitiz
USN:1BM22CS300
Sem:3
Final Marks Of Course 1:60
Final Marks Of Course 2:67
Final Marks Of Course 3:99
Final Marks Of Course 4:79
Final Marks Of Course 5:75
```

LAB 8

Write a Java program to create a class Student with members USN, name, marks(6 subjects). Include methods to accept student details and marks, Also include a method to calculate the percentage and display appropriate details. (Array of student object to be created).

```
import java.util.Scanner;
class Student {
 String usn;
 String name;
 double[] marks = new double[6];
 void acceptDetails() {
 Scanner scanner = new Scanner(System.in);
 System.out.print("Enter USN: ");
 usn = scanner.nextLine();
 System.out.print("Enter Name: ");
 name = scanner.nextLine();
 System.out.println("Enter Marks for 6 Subjects:");
 for (int i = 0; i < 6; i++) {
 System.out.print("Subject " + (i + 1) + ": ");
 marks[i] = scanner.nextDouble();
 }
 }
 double calculatePercentage() {
 double total = 0;
 for (double mark : marks) {
 total += mark;
 }
 return (total / 600) * 100;
 }
 void displayDetails() {
 System.out.println("USN: " + usn);
```

```
 System.out.println("Name: " + name);
 System.out.println("Marks:");
 for (int i = 0; i < 6; i++) {
 System.out.println("Subject " + (i + 1) + ": " + marks[i]);
 }
 System.out.println("Percentage: " + calculatePercentage() + "%");
 System.out.println("--------------------------");
 }
}
public class StudentArray {
 public static void main(String[] args) {
 System.out.println("MADHURIKA PRIYA");
 System.out.println("1BM22CS344");
 Scanner scanner = new Scanner(System.in);
 System.out.print("Enter the number of students: ");
 int n = scanner.nextInt();
 Student[] students = new Student[n];
 for (int i = 0; i < n; i++) {
 System.out.println("\nEnter details for Student " + (i + 1) + ":");
 students[i] = new Student();
 students[i].acceptDetails();
 }
 System.out.println("\nDetails of all students:");
 for (int i = 0; i < n; i++) {
 System.out.println("\nDetails for Student " + (i + 1) + ":");
 students[i].displayDetails();
 }
 }
}
```

OUTPUT:

```
Microsoft Windows [Version 10.0.22621.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\mpriy>cd "C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals"

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>javac StudentArray.java

C:\Users\mpriy\OneDrive\Desktop\OOJ Practicals>java StudentArray
MADHURIKA PRIYA
1BM22CS344
Enter the number of students: 2

Enter details for Student 1:
Enter USN: 1BM22CS344
Enter Name: Madhurika Priya
Enter Marks for 6 Subjects:
Subject 1: 87
Subject 2: 79
Subject 3: 85
Subject 4: 90
Subject 5: 95
Subject 6: 92

Enter details for Student 2:
Enter USN: 1BM22CS354
Enter Name: Priyanshi Surana
Enter Marks for 6 Subjects:
Subject 1: 88
Subject 2: 90
Subject 3: 85
Subject 4: 94
Subject 5: 93
Subject 6: 74
```

```
Subject 5: 93
Subject 6: 74

Details of all students:

Details for Student 1:
USN: 1BM22CS344
Name: Madhurika Priya
Marks:
Subject 1: 87.0
Subject 2: 79.0
Subject 3: 85.0
Subject 4: 90.0
Subject 5: 95.0
Subject 6: 92.0
Percentage: 88.0%
--------------------------

Details for Student 2:
USN: 1BM22CS354
Name: Priyanshi Surana
Marks:
Subject 1: 88.0
Subject 2: 90.0
Subject 3: 85.0
Subject 4: 94.0
Subject 5: 93.0
Subject 6: 74.0
Percentage: 87.33333333333333%
--------------------------
```