Folder labPrograms

23 printable files

(file list disabled)

labPrograms/.vscode/settings.json

```
{
  "java.debug.settings.onBuildFailureProceed": true
}

```

labPrograms/lab1/calculator.java

```
import java.util.*;
public class calculator {
  public static void main(String[] args) {
    System.out.println("Bharath C\t1BMM22CS068");
    Double num1, num2;
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter number 1");
    num1 = sc.nextDouble();
    System.out.println("Enter number 2");
    num2 = sc.nextDouble();
    System.out.println("Sum = " + num1+num2 + "\n Difference = " + (num1 - num2) + "\n Product = " + num1*num2 +"\n Division = " + num1/num2);


  }
}

```

labPrograms/lab1/fibonacci.java

```
import java.util.*;

public class fibonacci {
  public static void main(String[] args) {
    System.out.println("Bharath C\t1BMM22CS068");
    int input;
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the number");
    input = sc.nextInt();
    if(input > 0){
      int a = 0;
      int b = 1;
      int c = 1;
      System.out.print("0 1");
      while (c <= input) {
        c = a + b;
        System.out.print(" " + c);
        a = b;
        b = c;
      }
      System.out.println();
    }
  }
}


```

labPrograms/lab1/helloWorld.java

```
public class helloWorld {
  public static void main(String[] args) {
    System.out.println("Bharath C\t1BMM22CS068");
    System.out.println("Hello World");
```

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```
{
  "java.debug.settings.onBuildFailureProceed": true
}

```

labPrograms/lab1/calculator.java

```
import java.util.*;
public class calculator {
  public static void main(String[] args) {
    System.out.println("Bharath C\t1BMM22CS068");
    Double num1, num2;
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter number 1");
    num1 = sc.nextDouble();
    System.out.println("Enter number 2");
    num2 = sc.nextDouble();
    System.out.println("Sum = " + num1+num2 + "\n Difference = " + (num1 - num2) + "\n Product = " + num1*num2 +"\n Division = " + num1/num2);


  }
}

```

```
b.@Bharaths-MacBook-Air lab1 % javac calculator.java
b.@Bharaths-MacBook-Air lab1 % java calculator
Bharath C       1BMM22CS068
Enter number 1
10
Enter number 2
20
Sum = 10.020.0
 Difference = -10.0
 Product = 200.0
 Division = 0.5
b.@Bharaths-MacBook-Air lab1 %
```

labPrograms/lab1/fibonacci.java

```
import java.util.*;

public class fibonacci {
  public static void main(String[] args) {
    System.out.println("Bharath C\t1BMM22CS068");
    int input;
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the number");
    input = sc.nextInt();
    if(input > 0){
      int a = 0;
      int b = 1;
      int c = 1;
      System.out.print("0 1");
      while (c <= input) {
        c = a + b;
        System.out.print(" " + c);
        a = b;
        b = c;
      }
      System.out.println();
    }
  }
}


```

labPrograms/lab1/helloWorld.java

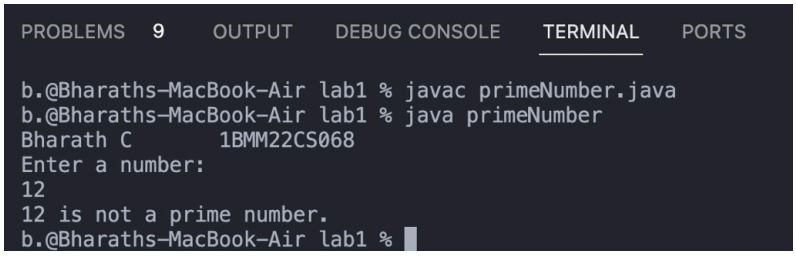
```
public class helloWorld {
  public static void main(String[] args) {
    System.out.println("Bharath C\t1BMM22CS068");
    System.out.println("Hello World");
```

```
b.@Bharaths-MacBook-Air 3-OOJ % cd Lab-Programs/lab1
b.@Bharaths-MacBook-Air lab1 % javac helloWorld.java
b.@Bharaths-MacBook-Air lab1 % java helloWorld
Bharath C       1BMM22CS068
Hello World
b.@Bharaths-MacBook-Air lab1 %
```

```
  }
}

```

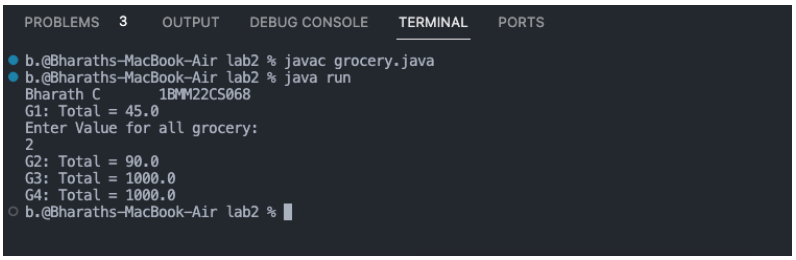
labPrograms/lab1/primeNumber.java

```java
import java.util.*;

public class primeNumber {
    public static void main(String[] args) {
        System.out.println("Bharath C\t1BMM22CS068");
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a number:");
        int number = sc.nextInt();

        if (isPrime(number)) {
            System.out.println(number + " is a prime number.");
        } else {
            System.out.println(number + " is not a prime number.");
        }
    }


    public static boolean isPrime(int num) {
        if (num <= 1) {
            return false;
        }
        for (int i = 2; i <= Math.sqrt(num); i++) {
            if (num % i == 0) {
                return false;
            }
        }
        return true;
    }
}

```



labPrograms/lab2/grocery.java

```java
import java.util.*;

public class grocery {
  double qty_dal;
  double qty_pulse;
  double qty_sugar;

  grocery() {
    qty_dal = 1;
    qty_pulse = 1;
    qty_sugar = 1;
  }

  grocery(double a){
    qty_dal = a;
    qty_pulse = a;
    qty_sugar = a;
  }

  grocery(double a,double b, double c) {
    qty_dal = a;
    qty_pulse = b;
    qty_sugar = c;
  }
  grocery(grocery g) {
    qty_dal = g.qty_dal;
    qty_pulse = g.qty_pulse;
    qty_sugar = g.qty_sugar;
  }

  void total(){
    double sum = qty_dal * 10 + qty_pulse * 15 + qty_sugar * 20;
    System.out.println("Total = " + sum);
```



```
  }
}

class run{
  public static void main(String[] args) {
    System.out.println("Bharath C\t1BMM22CS068");
    Scanner sc = new Scanner(System.in);
    grocery g1 = new grocery();
    System.out.print("G1: ");
    g1.total();
    System.out.println("Enter Value for all grocery: ");
    double a = sc.nextDouble();
    grocery g2 = new grocery(a);
    System.out.print("G2: ");
    g2.total();
    grocery g3 = new grocery(10,20,30);
    System.out.print("G3: ");
    g3.total();
    grocery g4 = new grocery(g3);
    System.out.print("G4: ");
    g4.total();
    sc.close();
  }
}

```

labPrograms/lab3/book.java

```
/* toString() method */

import java.util.Scanner;

class book {
    String name;
    String author;
    int price;
    int numPages;

    book(String name, String author, int price, int numPages) {
        this.name = name;
        this.author = author;
        this.price = price;
        this.numPages = numPages;
    }

    public String toString() {
        return "Book Name: " + this.name + "\n" +
                "Author Name: " + this.author + "\n" +
                "Book Price: " + this.price + "\n" +
                "Number of pages: " + this.numPages + "\n";
    }
}

class bookMain {
    public static void main(String[] args) {
        System.out.println("Bharath C\t1BMM22CS068");
        Scanner s = new Scanner(System.in);
        int n;
        String name;
        String author;
        int price;
        int numPages;

        System.out.println("Enter the number of book:");
        n = s.nextInt();

        book[] b;
        b = new book[n];

        for (int i = 0; i < n; i++) {
            System.out.println("Book " + (i + 1) + ":");
            System.out.println("Enter the book name");
            s.nextLine();
```

```
b.@Bharaths-MacBook-Air lab3 % javac book.java
b.@Bharaths-MacBook-Air lab3 % java bookMain
Bharath C       1BMM22CS068
Enter the number of book:
2
Book 1:
Enter the book name
Davinci Code
Enter the author
Dan brown
Enter the price
700
Enter the number of pages
890
Book 2:
Enter the book name
Let it Snow
Enter the author
John Greene
Enter the price
400
Enter the number of pages
300
Book 1
Book Name: Davinci Code
Author Name: Dan brown
Book Price: 700
Number of pages: 890

Book 2
Book Name: Let it Snow
Author Name: John Greene
Book Price: 400
Number of pages: 300
```

```
            name = s.nextLine();
            System.out.println("Enter the author");
            author = s.nextLine();
            System.out.println("Enter the price");
            price = s.nextInt();
            System.out.println("Enter the number of pages");
            numPages = s.nextInt();

            b[i] = new book(name, author, price, numPages);
        }

        for (int i = 0; i < n; i++) {
            System.out.println("Book " + (i + 1) + "\n" + b[i]);
        }
    }
  }
```

labPrograms/lab3/quadraticEqaution.java

```
/* Objects */
import java.util.Scanner;

class quadratic {
    int a, b, c;
    double r1, r2, d;

    void getData() {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter the values of a, b, c");
        a = s.nextInt();
        b = s.nextInt();
        c = s.nextInt();
    }

    void compute() {
        while (a == 0) {
            System.out.println("Not a quadratic equation");
            System.out.println("Enter a non-zero value of a");
            Scanner s = new Scanner(System.in);
            a = s.nextInt();
        }

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

        if (d == 0) {
            r1 = -b / (2 * (double) a);
            System.out.println("Roots are real and equal");
            System.out.println("Roots are Root1=Root2=" + r1);
        } else if (d > 0) {
            r1 = (-b + Math.sqrt(d)) / (2 * (double) a);
            r2 = (-b - Math.sqrt(d)) / (2 * (double) a);
            System.out.println("Roots are real and distinct");
            System.out.println("Roots are Root1=" + r1 + " and Root2=" + r2);
        } else {
            r1 = -b / (2 * (double) a);
            r2 = Math.sqrt(Math.abs(d)) / (2 * (double) a);
            System.out.println("Roots are imaginary and Root1=" + r1 + "+i" + r2 + " and Root2=" + r1 +
"-i" + r2);
        }
    }
}

class quadraticMain {
    public static void main(String[] args) {
        System.out.println("Bharath C\t1BMM22CS068");
        quadratic q = new quadratic();
        q.getData();
        q.compute();
    }
}

```

```
b.@Bharaths-MacBook-Air lab3 % javac quadraticEqaution.java
b.@Bharaths-MacBook-Air lab3 % java quadraticMain
Bharath C       1BMM22CS068
Enter the values of a, b, c
10 20 30
Roots are imaginary and Root1=-1.0+i1.4142135623730951 and Root2=-1.0-i1.4142135623730951
b.@Bharaths-MacBook-Air lab3 %
```

labPrograms/lab3/student.java

```
b.@Bharaths-MacBook-Air lab3 % javac student.java
b.@Bharaths-MacBook-Air lab3 % java run
Bharath C       1BMM22CS068
Enter the number of Students
2
Enter USN:
001
Enter Name:
Bharath
Enter Student0 Marks
Enter Marks of Subject0:
90
Enter Marks of Subject1:
92
Enter Marks of Subject2:
89
Enter Marks of Subject3:
100
Enter Marks of Subject4:
98
Enter Marks of Subject5:
95
Enter USN:
002
Enter Name:
Raj
Enter Student1 Marks
Enter Marks of Subject0:
89
Enter Marks of Subject1:
98
Enter Marks of Subject2:
89
Enter Marks of Subject3:
98
Enter Marks of Subject4:
100
Enter Marks of Subject5:
99
Percentage of student0=94.0%
Percentage of student1=95.5%
b.@Bharaths-MacBook-Air lab3 %
```

```java
/*Array of Objects */

import java.util.Scanner;

class student {
    String USN;
    String name;
    int marks[] = new int[6];
    float percentage = 0;

    void getData(int i) {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter USN: ");
        USN = s.next();
        System.out.println("Enter Name:");
        name = s.next();
        System.out.println("Enter Student" + i + " Marks");
        for (int j = 0; j < 6; j++) {
            System.out.println("Enter Marks of Subject" + j + ":");
            marks[j] = s.nextInt();
            percentage += marks[j];
        }
    }

    void calculatePercentage(int i) {
        percentage = (percentage / 6);
        System.out.println("Percentage of student" + i + "=" + percentage + "%");
    }
}

class studentMain {
    public static void main(String[] args) {
      System.out.println("Bharath C\t1BMM22CS068");
        System.out.println("Enter the number of Students");
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        student s[] = new student[n];
        for (int i = 0; i < n; i++) {
            s[i] = new student();
            s[i].getData(i);
        }
        for (int i = 0; i < n; i++) {
            s[i].calculatePercentage(i);
        }
    }
}


```

labPrograms/lab4/abstractExample.java

```java
abstract class Shape {
    // Two integers representing dimensions
    int dimension1;
    int dimension2;

    // Constructor
    Shape(int dimension1, int dimension2) {
        this.dimension1 = dimension1;
        this.dimension2 = dimension2;
    }

    // Abstract method to be implemented by subclasses
    abstract void printArea();
}

class Rectangle extends Shape {
    // Constructor
    Rectangle(int length, int width) {
        super(length, width);
    }

```

```java
    // Implementation of printArea for Rectangle
    @Override
    void printArea() {
        int area = dimension1 * dimension2;
        System.out.println("Area of Rectangle: " + area);
    }
}

class Triangle extends Shape {
    // Constructor
    Triangle(int base, int height) {
        super(base, height);
    }

    // Implementation of printArea for Triangle
    @Override
    public void printArea() {
        double area = 0.5 * dimension1 * dimension2;
        System.out.println("Area of Triangle: " + area);
    }
}

class Circle extends Shape {
    // Constructor
    Circle(int radius) {
        super(radius, 0); // Only one dimension needed for a circle
    }

    // Implementation of printArea for Circle
    @Override
    void printArea() {
        double area = Math.PI * dimension1 * dimension1;
        System.out.println("Area of Circle: " + area);
    }
}

class abstractExample {
    public static void main(String[] args) {
        // Creating objects of each shape
        System.out.println("Bharath C\t1BMM22CS068");
        Rectangle rectangle = new Rectangle(5, 10);
        Triangle triangle = new Triangle(8, 6);
        Circle circle = new Circle(4);

        // Printing areas
        rectangle.printArea();
        triangle.printArea();
        circle.printArea();
    }
}

```

```
PROBLEMS 8   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS
b.@Bharaths-MacBook-Air lab4 % java abstractExample.java
error: can't find main(String[]) method in class: Shape
b.@Bharaths-MacBook-Air lab4 % javac abstractExample.java
b.@Bharaths-MacBook-Air lab4 % java abstractExample
Bharath C       1BMM22CS068
Area of Rectangle: 50
Area of Triangle: 24.0
Area of Circle: 50.26548245743669
b.@Bharaths-MacBook-Air lab4 %
```

labPrograms/lab4/bankDataBase.java

```java
/* Inheritance  */

import java.util.Scanner;

class Account {
    String customerName;
    int accountNumber;
    String accountType;
    double balance;

    Account(String name, int number, String type, double initialBalance) {
        customerName = name;
        accountNumber = number;
        accountType = type;
        balance = initialBalance;
    }

    void deposit(double amount) {
        balance += amount;
```

```
b.@Bharaths-MacBook-Air lab4 % javac bankDataBase.java
b.@Bharaths-MacBook-Air lab4 % java bankDataBase
Bharath C       1BMM22CS068
Enter the number of users: 2

User 1
Enter customer name: bharath
Enter account number: 001
Enter initial deposit amount: INR 1200
Enter account type (Savings/Current): Savings

User 2
Enter customer name: raj

Enter account number: 002
Enter initial deposit amount: INR 1300
Enter account type (Savings/Current): Current

Choose an option:
1. Deposit
2. Withdraw
3. Display Balance
4. Compute Interest (Savings only)
5. Exit
Enter your choice: 1
Enter account number: 001
Enter deposit amount: INR 1000
Deposit of INR 1000.0 successful

Choose an option:
1. Deposit
2. Withdraw
3. Display Balance
4. Compute Interest (Savings only)
5. Exit
Enter your choice: 3
Enter account number: 001
Account Number: 1
Customer Name: bharath
Account Type: Savings
Balance: INR 2200.0

Choose an option:
1. Deposit
2. Withdraw
3. Display Balance
4. Compute Interest (Savings only)
5. Exit
Enter your choice: 2
Enter account number: 3000
Enter withdrawal amount: INR 001

Choose an option:
1. Deposit
2. Withdraw
```

```java
        System.out.println("Deposit of INR " + amount + " successful");
    }

    void displayBalance() {
        System.out.println("Account Number: " + accountNumber);
        System.out.println("Customer Name: " + customerName);
        System.out.println("Account Type: " + accountType);
        System.out.println("Balance: INR " + balance);
    }

    void withdraw(double amount) {
        if (balance >= amount) {
            balance -= amount;
            System.out.println("Withdrawal of INR " + amount + " successful");
        } else {
            System.out.println("Insufficient funds");
        }
    }

    void computeInterest() {
    }

    void checkMinimumBalance(double minBalance, double serviceCharge) {
    }
}

class SavAcct extends Account {
    double interestRate = 0.05;

    SavAcct(String name, int number, String type, double initialBalance) {
        super(name, number, type, initialBalance);
    }

    void computeInterest() {
        double interest = balance * interestRate;
        balance += interest;
        System.out.println("Interest of INR " + interest + " added to the account");
    }
}

class CurAcct extends Account {
    double minBalance = 1000;
    double serviceCharge = 50;

    CurAcct(String name, int number, String type, double initialBalance) {
        super(name, number, type, initialBalance);
    }

    void checkMinimumBalance(double minBalance, double serviceCharge) {
        if (balance < minBalance) {
            System.out.println("Service charge of INR " + serviceCharge + " imposed");
            balance -= serviceCharge;
        }
    }
}
class bankDataBase {
    public static void main(String[] args) {
        try (Scanner scanner = new Scanner(System.in)) {
            System.out.println("Bharath C\t1BMM22CS068");
            System.out.print("Enter the number of users: ");
            int numUsers = scanner.nextInt();

            Account[] accounts = new Account[numUsers];

            for (int i = 0; i < numUsers; i++) {
                System.out.println("\nUser " + (i + 1));
                System.out.print("Enter customer name: ");
                scanner.nextLine();
                String name = scanner.nextLine();
                System.out.print("Enter account number: ");
                int accNumber = scanner.nextInt();
                System.out.print("Enter initial deposit amount: INR ");
                double initialDeposit = scanner.nextDouble();
                System.out.print("Enter account type (Savings/Current): ");
```

```
                scanner.nextLine();
                String accType = scanner.nextLine();

                if (accType.equalsIgnoreCase("Savings")) {
                    accounts[i] = new SavAcct(name, accNumber, accType, initialDeposit);
                } else if (accType.equalsIgnoreCase("Current")) {
                    accounts[i] = new CurAcct(name, accNumber, accType, initialDeposit);
                } else {
                    System.out.println("Invalid account type entered. Defaulting to Account.");
                    accounts[i] = new Account(name, accNumber, "Account", initialDeposit);
                }
            }

            boolean exit = false;
            while (!exit) {
                System.out.println("\nChoose an option:");
                System.out.println("1. Deposit");
                System.out.println("2. Withdraw");
                System.out.println("3. Display Balance");
                System.out.println("4. Compute Interest (Savings only)");
                System.out.println("5. Exit");
                System.out.print("Enter your choice: ");
                int choice = scanner.nextInt();

                switch (choice) {
                    case 1:
                        System.out.print("Enter account number: ");
                        int accNum = scanner.nextInt();
                        System.out.print("Enter deposit amount: INR ");
                        double depositAmount = scanner.nextDouble();
                        for (Account acc : accounts) {
                            if (acc.accountNumber == accNum) {
                                acc.deposit(depositAmount);
                            }
                        }
                        break;
                    case 2:
                        System.out.print("Enter account number: ");
                        accNum = scanner.nextInt();
                        System.out.print("Enter withdrawal amount: INR ");
                        double withdrawAmount = scanner.nextDouble();
                        for (Account acc : accounts) {
                            if (acc.accountNumber == accNum) {
                                acc.withdraw(withdrawAmount);
                            }
                        }
                        break;
                    case 3:
                        System.out.print("Enter account number: ");
                        accNum = scanner.nextInt();
                        for (Account acc : accounts) {
                            if (acc.accountNumber == accNum) {
                                acc.displayBalance();
                            }
                        }
                        break;
                    case 4:
                        System.out.print("Enter account number (for Savings account): ");
                        accNum = scanner.nextInt();
                        for (Account acc : accounts) {
                            if (acc.accountNumber == accNum && acc instanceof SavAcct) {
                                ((SavAcct) acc).computeInterest();
                            }
                        }
                        break;
                    case 5:
                        exit = true;
                        break;
                    default:
                        System.out.println("Invalid choice. Please enter a valid option.");
                }
            }
        }

```

```
    }
}
```

labPrograms/lab5/cie/internals.java

```java
// File: labPrograms/lab5/cie/internals.java
package labPrograms.lab5.cie;

public class internals extends student {
    public int[] internalMarks;

    public internals(String usn, String name, int sem, int[] marks) {
        super(usn, name, sem);
        this.internalMarks = marks;
    }
}

```

labPrograms/lab5/cie/student.java

```java
// File: labPrograms/lab5/cie/student.java
package labPrograms.lab5.cie;

public class student {
    public String usn;
    public String name;
    public int sem;

    public student(String usnInp, String nameInp, int semInp) {
        this.usn = usnInp;
        this.name = nameInp;
        this.sem = semInp;
    }
}
```

labPrograms/lab5/see/external.java

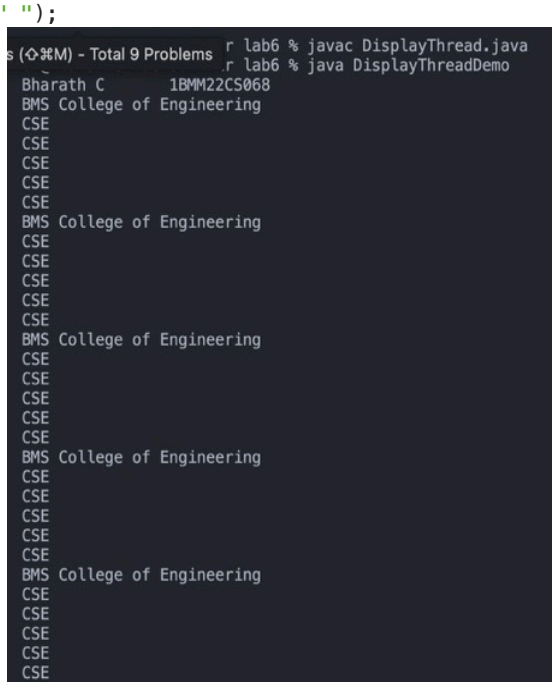
```java
// File: labPrograms/lab5/see/external.java
package labPrograms.lab5.see;

import labPrograms.lab5.cie.student;

public class external extends student {
    public int[] seeMarks;

    public external(String usn, String name, int sem, int[] seeMarks) {
        super(usn, name, sem);
        this.seeMarks = seeMarks;
    }
}
```

labPrograms/lab5/see/see.java

```java
// File: labPrograms/lab5/see/see.java
package labPrograms.lab5.see;

import labPrograms.lab5.cie.internals;
// import labPrograms.lab5.see.external;
import java.util.Scanner;

public class see {
    public static void main(String[] args) {
        System.out.println("Bharath C\t1BMM22CS068");

        try (Scanner scanner = new Scanner(System.in)) {
          System.out.print("Enter the number of students: ");
          int n = scanner.nextInt();

          internals[] cieStudents = new internals[n];
```

```
b.@Bharaths-MacBook-Air 3-OOJ %  /usr/bin/env /Library/Java/J
s/b./Library/Application\ Support/Code/User/workspaceStorage/
Bharath C       1BMM22CS068
Enter the number of students: 2
Enter details for CIE of student 1
USN: 001
Name: b
Semester: 3
Enter CIE marks for 5 courses: 99 98 96 96 96
Enter details for CIE of student 2
USN: 002
Name: c
Semester: 3
Enter CIE marks for 5 courses: 88 87 86 85 85
Enter details for SEE of student 1
USN: 001
Name: b
Semester: 3
Enter SEE marks for 5 courses: 99 99 99 99 99
Enter details for SEE of student 2
USN: 002
Name: c
Semester: 3
Enter SEE marks for 5 courses: 88 88 88 88 88

Final Marks of Students:

Details of Student 1
USN: 001
Name: b
Semester: 3
CIE Marks:
99 98 96 96 96
SEE Marks:
99 99 99 99 99
Details of Student 2
USN: 002
Name: c
Semester: 3
CIE Marks:
88 87 86 85 85
SEE Marks:
88 88 88 88 88
b.@Bharaths-MacBook-Air 3-OOJ %
```

```
        external[] seeStudents = new external[n];

        // Input CIE marks
        for (int i = 0; i < n; i++) {
            System.out.println("Enter details for CIE of student " + (i + 1));
            System.out.print("USN: ");
            String usn = scanner.next();
            System.out.print("Name: ");
            String name = scanner.next();
            System.out.print("Semester: ");
            int sem = scanner.nextInt();

            int[] cieMarks = new int[5];
            System.out.print("Enter CIE marks for 5 courses: ");
            for (int j = 0; j < 5; j++) {
                cieMarks[j] = scanner.nextInt();
            }

            cieStudents[i] = new internals(usn, name, sem, cieMarks); // Pass cieMarks as an array
        }

        // Input SEE marks
        for (int i = 0; i < n; i++) {
            System.out.println("Enter details for SEE of student " + (i + 1));
            System.out.print("USN: ");
            String usn = scanner.next();
            System.out.print("Name: ");
            String name = scanner.next();
            System.out.print("Semester: ");
            int sem = scanner.nextInt();

            int[] seeMarks = new int[5];
            System.out.print("Enter SEE marks for 5 courses: ");
            for (int j = 0; j < 5; j++) {
                seeMarks[j] = scanner.nextInt();
            }

            seeStudents[i] = new external(usn, name, sem, seeMarks); // Pass seeMarks as an array
        }

        // Displaying final marks
        System.out.println("\nFinal Marks of Students:");
        for (int i = 0; i < n; i++) {
            System.out.println("\nDetails of Student " + (i + 1));
            System.out.println("USN: " + cieStudents[i].usn);
            System.out.println("Name: " + cieStudents[i].name);
            System.out.println("Semester: " + cieStudents[i].sem);
            System.out.println("CIE Marks: ");
            for (int j = 0; j < 5; j++) {
                System.out.print(cieStudents[i].internalMarks[j] + " ");
            }
            System.out.println("\nSEE Marks: ");
            for (int j = 0; j < 5; j++) {
                System.out.print(seeStudents[i].seeMarks[j] + " ");
            }
        }
    }
}
```



labPrograms/lab6/DisplayThread.java

```
 class DisplayThread extends Thread {

     String message;
int intervalMillis;

   DisplayThread(String message, int intervalMillis) {
        this.message = message;
        this.intervalMillis = intervalMillis;
    }

```

```
    @Override // Recommended to explicitly override run() from Thread
    public void run() {
        while (true) {
            try {
                System.out.println(message);
                Thread.sleep(intervalMillis);
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
    }
}

 class DisplayThreadDemo {

    public static void main(String[] args) {
        System.out.println("Bharath C\t1BMM22CS068");
        DisplayThread thread1 = new DisplayThread("BMS College of Engineering", 10000);
        DisplayThread thread2 = new DisplayThread("CSE", 2000);

        thread1.start();
        thread2.start();
    }
}

```

labPrograms/lab6/WrongAgeException.java

```
class WrongAgeException extends Exception {
    public WrongAgeException(String message) {
        super(message);
    }
}

class Father {
    private int age;

    public Father(int age) throws WrongAgeException {
        if (age < 0) {
            throw new WrongAgeException("Father's age cannot be negative");
        }
        this.age = age;
    }

    public int getAge() {
        return age;
    }
}

class Son extends Father {
    private int sonAge;

    public Son(int fatherAge, int sonAge) throws WrongAgeException {
        super(fatherAge);

        if (sonAge >= fatherAge) {
            throw new WrongAgeException("Son's age should be less than Father's age");
        }

        this.sonAge = sonAge;
    }

    public int getSonAge() {
        return sonAge;
    }
}

class run {
    public static void main(String[] args) {
        System.out.println("Bharath C\t1BMM22CS068");
        try {
            Father father = new Father(40);
            System.out.println("Father's age: " + father.getAge());
```

```
b.@Bharaths-MacBook-Air lab6 % javac WrongAgeException.java
b.@Bharaths-MacBook-Air lab6 % java run
Bharath C       1BMM22CS068
Father's age: 40
Son's age: 20
b.@Bharaths-MacBook-Air lab6 %
```

```
46
47              Son son = new Son(40, 20); // This will throw an exception
48              System.out.println("Son's age: " + son.getSonAge());
49          } catch (WrongAgeException e) {
50              System.out.println("Error: " + e.getMessage()); // More specific error message
51              // e.printStackTrace(); // For debugging, prints the entire stack trace
52          } // Added closing parenthesis
53      }
54  }
```

labPrograms/lab9/awt.java

```
1   import java.awt.*;
2   import java.awt.event.WindowAdapter;
3   import java.awt.event.WindowEvent;
4
5   public class awt extends WindowAdapter {
6     Frame f;
7     awt(){
8       f = new Frame();
9       f.addWindowListener(this);
10      Label l = new Label("Employee ID:");
11      Button b = new Button("Submit");
12      TextField t = new TextField();
13
14      l.setBounds(20,80,110,30);
15      t.setBounds(20,100,80,30);
16      b.setBounds(100,100,80,30);
17
18      f.add(b);
19      f.add(l);
20      f.add(t);
21
22      f.setSize(400,300);
23
24
25      f.setTitle("Employee info");
26      f.setLayout(null);
27      f.setVisible(true);
28    }
29
30    public void windowClosing(WindowEvent e){
31      System.exit(0);
32    }
33
34    public static void main(String[] args) {
35      @SuppressWarnings("unused")
36      awt obj = new awt();
37    }
38  }
39
```

labPrograms/lab9/byteArrayInput.java

```
1   import java.io.*;
2
3   public class byteArrayInput {
4       public static void main(String[] args) throws IOException {
5
6           byte[] buf = {35, 36, 37, 38};
7
8           ByteArrayInputStream byt = new ByteArrayInputStream(buf);
9
10          int k = 0;
11
12          while ((k = byt.read()) != -1) {
13              char ch = (char) k;
14
15              System.out.println("ASCII value of Character is:" + (int)ch + "; Special character is: " +
    ch);
16          }
17      }
```

```
}

```

labPrograms/lab9/eventHandling.java

```
import java.awt.*;
import java.awt.event.*;

public class eventHandling extends WindowAdapter implements ActionListener {

    Frame f;
    TextField tf;

    eventHandling() {
        f = new Frame();
        f.addWindowListener(this);

        tf = new TextField();
        tf.setBounds(60, 50, 170, 20);


        Button b = new Button("click");
        b.setBounds(100, 120, 70, 30);

        b.addActionListener(this);


        f.add(b);
        f.add(tf);
        f.setSize(300, 300);
        f.setLayout(null);
        f.setVisible(true);
    }


    public void actionPerformed(ActionEvent e) {
        tf.setText("Welcome");
    }


    public void windowClosing(WindowEvent e) {
        System.exit(0);
    }

    public static void main(String[] args) {
        new eventHandling();
    }
}



```

labPrograms/lab9/example.txt

```
Hello
```

labPrograms/lab9/fileEx.java

```
import java.io.*;

public class fileEx {

    public static void main(String[] a) throws IOException {

        FileInputStream fin = new FileInputStream("example.txt");

        System.out.println("Remaining bytes that can be read: " + fin.available());

        int content;
```

```
        while ((content = fin.read()) != -1) {
            System.out.print((char) content + " ");
            System.out.print(content + " ");
        }

        System.out.println("\nRemaining bytes that can be read: " + fin.available());

        fin.close();
    }
}

```

labPrograms/lab9/fileEx2.java

```
import java.io.FileInputStream;
import java.io.IOException;

public class fileEx2 {
    public static void main(String[] a) throws IOException {
        FileInputStream fin = new FileInputStream("example.txt");

        byte[] bytes = new byte[20];
        int i;
        char c;

        i = fin.read(bytes);

        System.out.println("Number of bytes read: " + i);
        System.out.print("Bytes read: ");

        for (byte b : bytes) {
            c = (char) b;

            System.out.print(c);
        }
        fin.close();
    }
}

```