

8/12/23 LAB-I

DOMS

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a) Printing Hello World

class Main {

```
public static void main(String args[]) {  
    System.out.println("Hello World");  
}
```

33

O/P Hello World

b) Adding two numbers

class Main {

```
public static void main(String args[]) {  
    int a=5, b=4;  
    System.out.println(a+b);  
}
```

33

O/P 9

c) Subtraction

class Main {

```
public static void main(String args[]) {  
    int a=5, b=4;  
    System.out.println(a-b);  
}
```

33

O/P 1

d) Multiplication

class Main {

```
public static void main(String args[]) {  
    int a=5, b=4;  
    System.out.println(a*b);  
}
```

33

O/p 20

e) Division

```
public class Main {
```

```
    public static void main(String args[])
```

```
        int a=15, b=3;
```

```
        System.out.println(15/3);
```

33

O/p = 5

f) Fibonacci Series

```
public class Main {
```

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

```
        int x=0, y=1;
```

```
        int next=x+y;
```

```
        System.out.print(x + " " + y);
```

```
        for (int i=0; i<=10; i++)
```

{

```
            x=y;
```

```
            y=next;
```

```
            next=x+y;
```

```
            System.out.print(next);
```

333

O/p 0 1 1 2 3 5 8 13 21 34 55 89

1. Write a java program to create a class `Grainy` that has the variables `c-name` and `c-phone`. Create a method to accept 3 parameters to specify quantity of dal, quantity of pulses and quantity of sugar. The method to return the total price. Display the name, ph-no and total bill of 3 customers.

class Main{

```
public static void main(String[] args){  
    Grocery g1 = new Grocery("Shubden", "1234567890");  
    Grocery g2 = new Grocery("Penny", "32426");  
    Grocery g3 = new Grocery("Howard", "38263");  
    g1.totalPrice(20, 33, 32);  
    g1.display();  
    g2.totalPrice(23, 24, 144);  
    g2.display();  
    g3.totalPrice(363, 467, 734);  
    g3.display();  
}
```

}

class Grocery{

```
String c-name;  
String c-ph;  
double total;
```

```
Gravy(string c-name, String c-ph) {
```

```
    this.c-name = c-name;
```

```
    this.c-ph = c-ph;
```

{

```
void totalPrice(double qty-dal, double
```

```
qty-pulses, double qty-sugar) {
```

```
total = 80 * qty-dal + 50 * qty-pulses +
```

```
10 * qty-sugar;
```

{

```
void display() {
```

```
System.out.println("Name" + " " +
```

```
"Phone number" + " " + "Total");
```

```
System.out.println(c-name + " " +
```

```
c-ph + " " + total);
```

{

O/P	Name	Phone number	Total
-----	------	--------------	-------

	Sheldon	12345	3570.0
--	---------	-------	--------

Name	Phone number	Total
------	--------------	-------

Penny	38263	4480.0
-------	-------	--------

Name	Phone number	Total
------	--------------	-------

Howard	34783	59730.0
--------	-------	---------

2. Write a program to overload the method print that prints the sum of n natural numbers when one variable is passed, and prints the prime number in a given range when two parameters are passed

class overload {

void print(int n) {

int sum = 0;

for (int i = 1; i <= n; i++) {

sum += i;

}

System.out.println(sum);

void print(int m, int n) {

System.out.println("Prime numbers
in the range");

for (int i = m; i <= n; i++) {

int flag = 0;

for (int j = 2; j <= i / 2; j++) {

if (i % j == 0) {

flag = 1;

break;

}

}

if (flag == 0) {

```
System.out.println(i); }  
}  
class Main {  
    public static void main(String[] args)  
    Overload o=new Overload();  
    o.print(5);  
    o.print(7,13);  
}
```

Output

15

Prime numbers in the range

7

11

13

3. write a Java program to calculate roots of a quadratic equation. Use appropriate methods to take the input and calculate roots

```
import java.util.Scanner;
public class QuadraticEquationSolver
{
    public static void main(String[] args)
    {
        Scanner scanner = new Scanner(System.in);
        double a = scanner.nextDouble();
        if (a == 0)
        {
            System.out.println("Invalid input");
        }
        else
        {
            double b = scanner.nextDouble();
            double c = scanner.nextDouble();
            double d = b * b - 4 * a * c;
            if (d > 0)
            {
                double r1 = (-b + Math.sqrt(d)) / (2 * a);
                double r2 = (-b - Math.sqrt(d)) / (2 * a);
                System.out.println("Two distinct\nreal roots");
                System.out.println("Root 1: " + r1);
                System.out.println("Root 2: " + r2);
            }
            else if (d == 0)
            {
                double root = -b / (2 * a);
                System.out.println("Equal roots,\nRoot: " + root);
            }
        }
    }
}
```

```
? else {  
    System.out.println("No real  
    roots exist. Complex roots exist.");  
}  
}  
}
```

output

2

-5

2

Two distinct real roots : Root1 = 2.0,
Root2 = 0.5

output 1

-2

1

Equal roots Root1 = 1

output 0

3

2

Invalid Input

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/ /

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

```
import java.util.Scanner;  
class Student {  
    private String USN;  
    private String name;  
    private int[] marks = new int[6];  
  
    public void acceptDetails() {  
        Scanner s = new Scanner(System.in);  
        System.out.println("Enter USN");  
        USN = s.nextLine();  
        System.out.println("Enter name");  
        Name = s.nextLine();  
        System.out.println("Enter marks");  
        for (int i = 0; i < marks.length; i++) {  
            marks[i] = s.nextInt();  
        }  
    }  
}
```

}

```
public void calculate() {  
    int totalMarks = 0;
```

```
    for (int i = 0; i < 6; i++) {  
        totalMarks += marks[i];  
    }
```

```
    public
```

```
    double percentage = (double) totalMarks / 5;  
    System.out.println(percentage);
```

```
}
```

```
public class StudentManagement {  
    public static void main(String[] args) {  
        Scanner scanner = new Scanner(  
            System.in);  
        System.out.println("No of students");  
        int noOfStudents = scanner.nextInt();
```

```
        Student[] students = new Student[noOfStudents];
```

```
for (int i = 0; i < num; i++) {  
    student[i] = new Student();  
    student[i].acceptDetails();  
    student[i].calculate();  
for (int i = 0; i < num; i++) {  
}; student[i]  
??
```

output

No. of students
2

Enter USN

IBM22CS309

Enter name

ABC

Enter Marks

72

72

72

72

72

72

90 72

Enter USN

IBM21CS309

Enter name

EFG

Enter marks

80

73

87

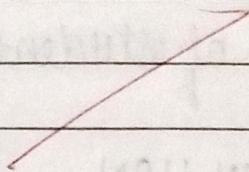
90

98

100

87.6

~~16x24~~



Lab IV

```
abstract class Shape{
```

```
    private int length;
```

```
    private int breadth;
```

```
    Shape(int length, int breadth){
```

```
        this.length = length;
```

```
        this.breadth = breadth;
```

{

```
    abstract public void printArea();
```

{

```
class Rectangle extends Shape{
```

```
    Rectangle(int length, int breadth){
```

```
        super(length, breadth);
```

{

```
    public void printArea(){
```

```
        System.out.println(length * breadth);
```

{

```
class Triangle extends Shape{
```

 ~~Triangle(int base, int height){~~ ~~super(base, height);~~

{

```
    public void printArea(){
```

```
        System.out.println(0.5 * base *  
                           breadth * height);
```

~~length~~

33

class circle extends Shape
circle (int radius) {
super (radius, 0);

{

public void printArea () {

System.out.println ($3.14 * \frac{\text{radius}}{\text{length}}$)

{

$\frac{\text{radius}}{\text{length}}$

public class main {

public static void main (String args[]) {
Rectangle r = new Rectangle (5, 5);
SoTriangle t = new Triangle (3, 4);
Circle c = new Circle (5);

Shape s;

s = r;

s.printArea();

s = t;

s.printArea();

s = c;

s.printArea();

{

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Output

20

6.0

50.24

~~8/19/11/24~~

Packages

```
package CIE;  
public class Student {  
protected String USN;  
protected String name;  
protected int sem;
```

```
public Student (String usn, String name,  
int sem) {
```

```
this.USN = USN;
```

```
this.name = name;
```

```
this.sem = sem;
```

{

```
package CIE
```

```
public class Internals {
```

```
protected int[] marks;
```

```
public Student (int[] marks) {
```

```
this.marks = new int[5];
```

{

3

package SEE;

```
public class External extends CIE.Student  
protected int[] finalMarks;  
public External(String usn, String name,  
    int sem, int[] finalMarks){  
    super(usn, name, sem);  
    finalMarks = new int[5];  
}
```

{

{

```
import CIE.*;
```

```
import SEE.*;
```

```
public class Main{
```

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

~~Student[] External = new Student~~

~~External[] std = new External[3];~~

~~Student[0] = new External("IBM22CS309", "Alex",
 3, new int[] {88, 36, 45, 96, 45});~~

~~students[1] = new External("IBM22CS
 312", "Jane", 3, new int[] {78, 82, 88,
 90, 92});~~

~~students[2] = new External("IBM22CS
 313", "Bob", 3, new int[] {85, 88, 92,
 78, 80});~~

System.out.println ("Final Marks of
students");

for (int i = 0; i < n; i++) {

System.out.println ("Student " +
(i + 1) + ":" + students[i].name);
System.out.println ("USN: " +
students[i].usn);

System.out.println ("Semester: " +
students[i].sem);

System.out.println ("Semester CIE Marks ");

for (int cieMark : students[i].internalMarks)
System.out.print (cieMark + " ");

System.out.println ("See Marks: ");

for (int seeMark : students[i].seeMarks)
System.out.print (seeMark + " ");

^ students[i].see
(seeMark + " ");

3

3

3

O/P

Final Marks of Students

Student 1 : Alex

USN : IBM22CS309

Semester : 3

SEE-CIE Marks

88 36 45 96 45

Student 2 : Jane

USN : IBM22CS312

Semester : 3

SEE Marks

78, 82, 88, 90, 92

Student 3 : Bob

USN : IBM22CS313

Semester : 3

SEE Marks

85 88 92 78 80

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

{

class Father {

private int age;

public Father (int age) throws
WrongAge {
 if (age < 0) {
 throw new WrongAge ("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 WrongAge {
 super (fatherAge);
}

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

```
this.sonAge = sonAge;
```

```
public int getSonAge() {  
    return sonAge;  
}
```

```
public class ExceptionHandlingDemo {  
    public static void main(String[] args) {  
        try {  
            Father father = new Father(40);  
            Son son = new Son(father.getAge(), 20);  
        }  
    }  
}
```

```
System.out.println("father.getAge());  
System.out.println("son.getSonAge());  
} catch (WrongAge e) {
```

```
    System.out.println("Exception: " +  
        e.getMessage());  
}
```

O/P Father's Age : 40
Son's Age : 20

16/02/24 Threads

```
public class Thread1 extends Thread {  
    public void run() {  
        for (int i = 0; i < 5; i++) {  
            System.out.println("BMS  
College of Engineering");  
        }  
        try {  
            Thread.sleep(10000);  
        } catch (InterruptedException e) {  
            System.out.println(e.getMessage());  
        }  
        System.out.println("Thread1 complete");  
    }  
}
```

```
public class Thread2 extends Thread {  
    public void run() {  
        for (int i = 0; i < 5; i++) {  
            System.out.println("CSE");  
        }  
        try {  
            Thread.sleep(2000);  
        } catch (InterruptedException e) {  
            System.out.println(e.getMessage());  
        }  
        System.out.println("Thread2 complete");  
    }  
}
```

```
System.out.println("Thread2 complete");  
}  
}
```

```
public class ThreadMain {
```

```
    public static void main(String args[])
```

```
        Thread1 t1 = new Thread1();
```

```
        Thread2 t2 = new Thread2();
```

```
        t1.start();
```

```
        t2.start();
```

```
}
```

```
}
```

Output

BMS College Of Engineering

CSE

CSE

CSE

CSE

CSE

BMS College Of Engineering

CSE

CSE

CSE

CSE

Thread2 complete

BMS College Of Engineering

Thread1 complete

23/02/24 AWT

```
import java.awt.*;
import java.awt.event.*;
public class AWTExample extends Frame
implements ActionListener {
    public static void main(String
    args) {
        Frame f = new Frame("Mouse Click");
        Label l = new Label("Click on the
button");
        TextField t = new TextField();
        Button b = new Button("Click Me");
        f.add(l);
        f.add(t);
        f.add(b);
        f.setSize(300, 300);
        t.setBounds(100, 120, 200, 30);
        b.setBounds(150, 120, 80, 30);
        f.setLayout(new FlowLayout());
        b.addActionListener(new AWT
Example()));
    }
}
```

?

```
private JTextField textField;
public AWTExample(JTextField textField)
{
    this.textField = textField;
}
```

?

public void actionPerformed(ActionEvent
e) {

 textField.setText("Welcome!");

3

3

8
3/21/24

23/2/24 I/O files
import java.io.*
public class ByteArrayInput {
 public static void main (String args)
 throws IOException {
 byte[] buf = {35, 36, 37, 38};
 ByteArrayInputStream (buf);
 int k=0;
 while ((k=byt.read()) != -1) {
 char ch=(char) k;
 System.out.println(ch);
 }
 }
}

O/P a b c d

##

\$

%

8

23/2/24 public class FileEx {

```
public static void main(String args[])
throws IOException {
    FileInputStream fin = new FileInputStream
        ("Example.txt");
    int content;
    System.out.println("Remaining bytes : "
        + fin.available());
    content = fin.read();
    System.out.println((char) content + " ");
    System.out.println(content + " ");
    System.out.println("Remaining bytes that
        can be read : " + fin.available());}
```

System.out.println

3
8

23/02/24

```
import java.io.FileInputStream;
import java.io.IOException;
public class FileEx2 {
    public static void main(String a[])
        throws IOException {
        FileInputStream fin = new FileInputStream
        ("Example1.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);
        }
    }
}
```

?

Q
23/2/24