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OOJ LAB OBSERVATION

LAB PROGRAM 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.

Lab - 1 Week - 3

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Q1 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.

LAB - 1:

Algorithm :-

Step 1:- Input the values of a, b and c

Step 2:- calculate using formula

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

Step 3:- If ($d < 0$)

Print : No real solutions

else if ($d = 0$)

Print : Roots are equal

$$\text{Print : } x_1 = x_2 = (-b/2 \geq a)$$

else

Print : Roots are real

$$\text{Print : } x_1 = -b + \sqrt{d} / (2 * a);$$

$$\text{Print : } x_2 = -b - \sqrt{d} / (2 * a);$$

Step 4:- End

Import java.util.*;

Public class main

{

Public static void main (String [] args) {

double a,b,c,d, x1,x2;

System.out.println ("Enter the values of a, b and c");

Scanner sc = new Scanner (System.in);

a = sc.nextDouble();

b = sc.nextDouble();

c = sc.nextDouble();

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

```
if (d > 0)
```

```
{
```

$$x_1 = (-b + \text{math.sqrt}(d)) / (2 * a);$$

$$x_2 = (-b - \text{math.sqrt}(d)) / (2 * a);$$

```
System.out.println("Root 1 = " + x1 + " Root 2 = " + x2);
```

```
}
```

```
else if (d == 0)
```

```
{
```

$$x_1 = x_2 = -b / (2 * a);$$

```
System.out.println("Root 1 = Root 2 = " + x1);
```

```
}
```

```
else
```

```
{
```

```
System.out.println("There are no real solutions  
to the given equation");
```

```
}
```

```
}
```

Output:

The screenshot shows a web-based Java compiler interface. At the top, there's a navigation bar with links for Run, Debug, Help, Share, Save, and Beauty. The Language dropdown is set to Java. The main area has tabs for Main.java and input. The code editor contains the following Java code:

```
1 import java.util.*;
2 public class Main
3 {
4     public static void main(String[] args) {
5         System.out.println("Enter the values of a,b and c");
6         int a = 1;
7         int b = -2;
8         int c = 1;
9         double Root1=Root2=1.0;
10    }
```

The input field contains the following user input:

```
1
2
3
4
```

The output window shows the program's execution:

```
Enter the values of a,b and c
1
-2
1
Root1=Root2=1.0

...Program finished with exit code 0
Press ENTER to exit console.
```

A screenshot of an online Java compiler interface. The title bar reads "onlinegdb.com/online_c_compiler". The menu bar includes "File", "Edit", "Run", "Debug", "Stop", "Save", "Results", and "Help". The language dropdown says "Language: Java". The code editor window shows a file named "Main.java" with the following content:

```
1 import java.util.*;
2 public class Main
3 {
4     public static void main(String[] args) {
5 }
```

The console window below the code editor shows the following interaction:

```
Enter the values of a,b and c
1
1
1
There are no real solutions for the given equation
...Program finished with exit code 0
Press ENTER to exit console.
```

LAB PROGRAM 2 :

Develop a Java program to create a class Student with members usn, name, an array

credits and an array marks. Include methods to accept and display details and a method to calculate SGPA of a student.

Week 4
Lab program - 2

L-2 Develop a Java program to create a class student with members USN, name, an array credits and an array marks. Include methods to accept & display details & a method to calculate SGPA of a student.

```
import java.util.*;
class student {
    private String USN;
    private String name;
    private int credits[];
    private int marks[];
    private int n;
    void accept() {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter student details");
        System.out.println("Name:");
        name = s.next();
        System.out.println("Enter the number of subjects");
        n = s.nextInt();
        credits = new int[n];
        marks = new int[n];
        System.out.println("Enter credits & marks attained by the student in each subject");
        for (int i=0; i<n; i++) {
            credit[i] = s.nextInt();
            marks[i] = s.nextInt();
        }
    }
    void display() {
    }
}
```

```
System.out.println("Student details:");
System.out.println("USN: " + USN);
System.out.println("Name: " + name);
System.out.println("Marks in each subject:");
for (int i = 0; i < n; i++) {
    System.out.println("Subject " + (i + 1) + ": " + marks[i]);
}
}

Double calculate() {
    int tcp = 0, tc = 0;
    for (int i = 0; i < n; i++) {
        tc = tc + credits[i];
        if (marks[i] >= 50) {
            tcp = tcp + ((marks[i] / 10) + 1) * credits[i];
        } else if (marks[i] >= 40 & marks[i] < 50) {
            tcp = tcp + (4 * credits[i]);
        }
    }
    return (double) tcp / tc;
}

class Student main {
    Public static void main (String ss[])
    {
        Student sl = new student();
        sl.accept();
    }
}
```

st. display();
System.out.println("SGPA: " + st. calculate());
}

Output
USN of the student:

2BM19CS001

Name of Student:

ashu

Enter the number of subjects:

4

Enter credits and marks attained by the student
in each subject (out of 100)

2

3

4

1

55

57

88

99

Student details:

USN: 2BM19CS001

Name: ashu

Marks in each subject:

Subject 1: 3

Subject 2: 1

Subject 3: 57

Subject 4: 99

SGPA: 8.1208

```
v / .<input>
USN of the student:
2BN19CS001
Name of student:
ashu
Enter the number of subjects:
4
Enter credits and marks attained by the student in each subject(out of 100)
2
3
4
1
55
57
68
99
Student details:
USN:2BN19CS001
Name:ashu
Marks in each subject:
Subject 1:3
Subject 2:1
Subject 3:57
Subject 4:99
SGPA: 8.120805369127517

... Program finished with exit code 0
Press ENTER to exit console.
```

LAB PROGRAM 3:

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 Java program to create n book objects

Lab - 3 Week 5

Q3 Create a class book which contains four members: name, author, price, num-pages. Include a constructor to set the value 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 java program to create a book objects.

```
import java.util.*;
import java.lang.*;
class Main
{
    String name;
    String author;
    double price;
    int num-pages;
    void getdetails()
    {
        Scanner x = new
        Scanner (System.in);
        System.out.println("Enter Book details");
        System.out.println("Enter Book Name:");
        name = x.next();
        System.out.println("Enter the Author");
        author = x.next();
        System.out.println("Enter the Price of the book");
        price = x.nextDouble();
        System.out.println("Enter the number of pages in the
                           book");
        num-page = x.nextInt();
    }
}
```

Public String toString ()

```
{  
    return ("Book Details * " + "\n the name of the book:  
    + " + name + "\n the author the book: " + auth-  
    \n the price & the book: " + price + "\n number  
    pages in book: " + num - pages);  
}
```

}

class main

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

{

int i, n;

Scanner x = new

Scanner (System.in);

System.out.println ("Enter the number of books");

n = x.nextInt();

Main b[] = new Main [n];

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

{

b[i] = new Main ();

b[i].getdetails ();

}

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

{

System.out.println (b[i]);

}

}

Output:-

Enter the number of books

2

Enter book Details

Enter Book Name:

aaaa

Enter the Author:

bbbb

Enter the Price of the book

2000

Enter the number of pages in the book

500

Enter Book Details

Enter Book Name:

xxxx

Enter the Author

yyyyyy

Enter the Price of the book

1000

Enter the number of pages in the book

350

Book Details *

The name of the book : aaaa

The author of the book : bbbb

The price of the book : 2000.0

Number of pages in book : 500

Book Details *

The name of the book : xxxx

The author of the book : yyyy

The price of the book : 1000.0
Number of pages in book : 350

Q1) Write
num
emp
Inch
& Accept
are
at Calcu
emp
3) cons
If
give
pay
ba
imp
cl
{
S
S

```
Main.java
17     scanner.out.println("Enter the Price of the book");
18     price=x.nextDouble();
19     scanner.out.println("Enter the number of pages in the book");
20     num_pages=x.nextInt();
21
2
Enter the number of books
2
Enter Book Details
Enter Book Name:
aaaa
Enter the Author
bbbb
Enter the Price of the book
2000
Enter the number of pages in the book
500
Enter Book Details
Enter Book Name:
xxxxx
Enter the Author
yyyyy
Enter the Price of the book
1000
Enter the number of pages in the book
350
BOOK DETAILS*
The name of the book : aaaa
The author of the book :bbbb
The price of the book: 2000.0
Number of pages in book :500
BOOK DETAILS*
The name of the book : xxxxx
The author of the book :yyyyyy
```

A screenshot of a Java IDE interface, likely Eclipse, showing the execution of a Java program named 'Main.java'. The code prompts the user for the price and number of pages of two books, then prints out the details. The output window shows the user input and the corresponding program output.

```
17     System.out.println("Enter the Price of the book");
18     price=x.nextDouble();
19     System.out.println("Enter the number of pages in the book");
20     num_pages=x.nextInt();
21
bbbb
Enter the Price of the book
2000
Enter the number of pages in the book
500
Enter Book Details
Enter Book Name:
xxxxx
Enter the Author
YYYYYY
Enter the Price of the book
1000
Enter the number of pages in the book
350
BOOK DETAILS*
The name of the book : aaaa
The author of the book :bbbb
The price of the book: 2000.0
Number of pages in book :500
BOOK DETAILS*
The name of the book : xxxxx
The author of the book :yyyyyy
The price of the book: 1000.0
Number of pages in book :350

... Program finished with exit code 0
Press ENTER to exit console.[]
```

LAB PROGRAM 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.

Lab Program 4

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Q 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 shape class. Each one of the classes contain only the method printarea() that prints the area of the given shape.

```
import java.util.Scanner;
abstract class shape
{
    int d1;
    int d2;
    shape (int a, int b)
    {
        d1 = a;
        d2 = b;
    }
    abstract void printarea();
}
class Rectangle extends shape
{
    Rectangle (int a, int b)
    {
        super(a, b);
    }
    void printarea()
    {
        float area = (float) d1 * d2;
        System.out.println ("Area of rectangle : " + area);
    }
}
```

class Triangle extends shape
(
 Triangle (int a, int b)
 super (a, b);
 void paintArea()
 {
 float area = (float) d₁ * d₂ / 2;
 System.out.println ("Area of the triangle : " + area);
 }

class Circle extends Shape
(
 Circle (int a, int b)
 super (a, b);
 void paintArea()
 {
 float area = (float) 3.14 * d₁ * d₁;
 System.out.println ("Area of the circle : " + area);
 }

class Main
(
 public static void main (String args [])
 {
 int ch, flag = 0;
 Scanner ss = new Scanner (System.in);
 while (flag == 0)
 }

Lab 3

⇒ import
abstract
&

string
long

String

double

double

Accou

a

+

```
System.out.println ("Enter the choice whose  
area is to be calculated");  
System.out.println (" 1. RECTANGLE IN  
2. TRIANGLE IN 3. CIRCLE ");  
ch = ss.nextInt();  
switch (ch)
```

{

```
case 1: System.out.println ("Enter the  
dimensions of rectangle");  
int x = ss.nextInt();  
int y = ss.nextInt();  
Rectangle r = new Rectangle (x,y);  
r.printarea();  
break;
```

```
case 2: System.out.println ("Enter the dimensions  
of triangle");  
int s = ss.nextInt();  
int w = ss.nextInt();  
Triangle t = new Triangle (s,w);  
t.printarea();  
break;
```

```
case 3: System.out.println ("Enter the radius of  
the circle");  
int f = ss.nextInt();  
Circle c = new Circle (f,f);  
c.printarea();  
break;  
default;  
flag = 1;
```

y

y

y

```
Enter the choice whose area has to be calculated
1.RECTANGLE
2.TRIANGLE
3.CIRCLE
1
Enter the dimensions of rectangle
20 40
Area of the rectangle :800.0
Enter the choice whose area has to be calculated
1.RECTANGLE
2.TRIANGLE
3.CIRCLE
2
Enter the dimensions of triangle
12 8
Area of the triangle :48.0
Enter the choice whose area has to be calculated
1.RECTANGLE
2.TRIANGLE
3.CIRCLE
3
Enter the radius of circle
9
Area of the circle :254.34
Enter the choice whose area has to be calculated
1.RECTANGLE
2.TRIANGLE
3.CIRCLE
```

LAB PROGRAM 5:

Develop a Java program to create a class Bank that maintains two kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed. Create a class Account that stores customer name, account number and type of account. From this derive the classes Curr-acct and Sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks:

- Accept deposit from customer and update the balance.
- Display the balance.
- Compute and deposit interest
- Permit withdrawal and update the balance
- Check for the minimum balance, impose penalty if necessary and update the balance

Lab Program

```
import java.util.Scanner;  
abstract class Account  
{  
    String cust-name;  
    long acc-no;  
    String acc-type;  
    double balance;  
    double main-bal = 1000.0;  
    Account (String cust-name, long acc-no, String  
              acc-type, double balance)  
    {  
        this.cust-name = cust-name;  
        this.acc-no = acc-no;  
        this.acc-type = acc-type;  
        this.balance = balance;  
    }  
}
```

```
abstract void deposit (double amount);  
abstract void display ();  
abstract void withdrawal (double amount);  
}
```

```
class & cur-acct extends Account  
{  
    double penalty = 100.0;
```

```
    cur-acct (String cust-name, long acc-no,  
              String acc-type, double balance)  
    {  
        super (cust-name, acc-no, acc-type, balance);  
        System.out.println ("Name of customer :  
                            " + cust-name);  
    }  
}
```

```
System.out.println ("Account Number : " + acc-no);  
System.out.println ("Account type : " + acc-type);  
System.out.println ("Balance : " + balance);  
}
```

```
System.out.println("Customer Name : " + cust-name);
System.out.println("Account Number : " + acc-no);
System.out.println("Account Type : " + acc-type);
System.out.println("Balance : " + balanu);

class Saving-account extends account {
    Saving-account (String cust-name, long acc-no,
                    String acc-type, double balanu) {
        super (cust-name, acc-no, acc-type, balanu)
        System.out.println ("Name of the customer : " + cust-name);
        System.out.println ("Account Number : " + acc-no);
        System.out.println ("Account Type : " + acc-type);
        System.out.println ("Balance : " + balanu);
    }
}

class Current-account extends account {
    Current-account (String cust-name, long acc-no,
                     String acc-type, double balanu) {
        super (cust-name, acc-no, acc-type, balanu)
        System.out.println ("Name of the customer : " + cust-name);
        System.out.println ("Account Number : " + acc-no);
        System.out.println ("Account Type : " + acc-type);
        System.out.println ("Balance : " + balanu);
    }
}
```

```
System.out.println("Account type:" + acc.type);
System.out.println("Balance :" + balance);
}

void deposit(double amount)
{
    this.balance = this.balance + amount;
    interest();
}

void interest()
{
    int rate = 10, time = 1;
    float ci = (float)(this.balance * Math.pow
        (1 + rate / 100.0, time) - this.balance);
    this.balance = this.balance + ci;
}

void withdrawal(double amount)
{
    this.balance = this.balance - amount;
    System.out.println("The current balance:" + balance);
}

void display()
{
    System.out.println("Balance is " + this.balance);
}

class AccountMain
{
    public static void main(String [] args)
    {
        Scanner xx = new Scanner(System.in);
        Double amount;
        int flag = 0;
        while (flag != 0)
```

2
System.out.println("Enter type of Account : In
1. current account or 2. Savings account ");

int choice = xx.nextInt();
switch (choice)

case 1: System.out.println("In Current Account : In");
System.out.println("Enter the name of account holder");
String f = xx.next();
System.out.println("Enter the account number");
long g = xx.nextLong();
System.out.println("Enter the balance amount");
double h = xx.nextDouble();
curr_act c = new curr_act(f, g, "current", h);
int flag1 = 0;
while (flag1 == 0):

<

System.out.println("Enter your choice In 1:
deposit amount \n 2: Display Balance \n
3. withdraw");

int choice1 = xx.nextInt();

switch (choice1)

<

case 1:

System.out.println("Enter amount to be deposited");
amount = xx.nextDouble();
c.deposit(amount);
break;

case 2: c.display();

break;

case 3: System.out.println("Enter amount you
need to withdraw");

amount = xx.nextDouble();

```
c. withdrawal(amount),  
break;  
default;  
flag 1=1;  
}  
break;  
case 2: System.out.println ("Saving Account:\n");  
System.out.println ("Enter the name of the account  
holder");  
};  
String p = xx.next();  
System.out.println ("Enter the account number");  
long q = xx.nextLong();  
System.out.println ("Enter the balance amount");  
double r = xx.nextDouble();  
Saving-account s = new Saving-account(p,q,  
"Savings", r);  
int flag 2=0;  
while (flag 2==0)  
{  
    System.out.println ("Enter your choice\n  
1. Deposit amount\n2. Display balance\n  
3. withdraw").  
    int choice 2 = xx.nextInt();  
    switch (choice 2)  
{  
        case 1: System.out.println ("Enter amount to be  
deposited:");  
        amount = xx.nextDouble();  
        s.deposit (amount);  
        break;  
        case 2: s.display ();  
        break;  
    }  
}
```

case 3 : System.out.println ("Enter amount you want
to withdraw :");
amount = nr.nextInt();
s.withdrawal(amount);
break;
default;

flag = 1;

}

break;

default : flag = 1;

}

}

}

System.out.println ("Data entered successfully");

else (flag == 1)

System.out.println ("Data entered successfully");

else (flag == 2)

System.out.println ("Data entered successfully");

else (flag == 3)

System.out.println ("Data entered successfully");

else (flag == 4)

System.out.println ("Data entered successfully");

else (flag == 5)

System.out.println ("Data entered successfully");

else (flag == 6)

System.out.println ("Data entered successfully");

else (flag == 7)

System.out.println ("Data entered successfully");

else (flag == 8)

System.out.println ("Data entered successfully");

else (flag == 9)

System.out.println ("Data entered successfully");

else (flag == 10)

System.out.println ("Data entered successfully");

else (flag == 11)

System.out.println ("Data entered successfully");

else (flag == 12)

System.out.println ("Data entered successfully");

else (flag == 13)

System.out.println ("Data entered successfully");

else (flag == 14)

System.out.println ("Data entered successfully");

else (flag == 15)

System.out.println ("Data entered successfully");

else (flag == 16)

System.out.println ("Data entered successfully");

else (flag == 17)

System.out.println ("Data entered successfully");

else (flag == 18)

System.out.println ("Data entered successfully");

else (flag == 19)

System.out.println ("Data entered successfully");

```
Enter the type of Account:  
1:Current account  
2:Savings account  
1  
  
Current account:  
  
Enter the name of account holder  
ABC  
Enter the account number  
12345678  
Enter the balance amount  
800000  
Name of the customer: ABC  
Account Number : 12345678  
Account type: current  
Balance: 800000.0  
Enter your choice  
1:Deposit amount  
2:DisplayBalance  
3:Withdraw  
1  
Enter amount to be deposited:  
100  
Enter your choice  
1:Deposit amount  
2:DisplayBalance  
3:Withdraw  
2  
Balance is: 800100.0  
Enter your choice  
1:Deposit amount  
2:DisplayBalance  
3:Withdraw  
3  
Enter amount you want to withdraw:  
500  
The current balance is 799600.0  
Enter your choice  
1:Deposit amount  
2:DisplayBalance  
3:Withdraw  
5  
Enter the type of Account:  
1:Current account  
2:Savings account  
2  
  
Savings account:  
  
Enter the name of account holder
```

```
1:Deposit amount
2:DisplayBalance
3:Withdraw
5
Enter the type of Account:
1:Current account
2:Savings account
2

Savings account:

Enter the name of account holder
XYZ
Enter the account number
725582
Enter the balance amount
600000
Name of the customer: XYZ
Account Number : 725582
Account type: Savings
Balance: 600000.0
Enter your choice
1:Deposit amount
2:DisplayBalance
3:Withdraw
1
Enter amount to be deposited:
200
The interest amount added to balance is 60020.0
Enter your choice
1:Deposit amount
2:DisplayBalance
3:Withdraw
2
Balance is: 660220.0
Enter your choice
1:Deposit amount
2:DisplayBalance
3:Withdraw
3
Enter amount you want to withdraw:
1000
The current balance is 659220.0
Enter your choice
1:Deposit amount
2:DisplayBalance
3:Withdraw
```

LAB PROGRAM 6

Lab Program 6.

EXCELLENT
Page No.: / /
Date: / /

```
package CIE;
import java.util.*;
public class Student
{
    public String usn, name;
    public int sem;
    public void input()
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter student details");
        System.out.println("name :");
        name = sc.nextLine();
        System.out.println("usn :");
        usn = sc.nextLine();
        System.out.println("Sem :");
        sem = sc.nextInt();
        System.out.println();
    }
    public void display()
    {
        System.out.println("Student details");
        System.out.println("name : " + name);
        System.out.println("usn : " + usn);
        System.out.println("Sem : " + sem);
    }
}
```

```
package CIE;  
import java.util.*;  
public class Internals
```

```
{ public int cie_marks[] = new int[5]; }
```

```
public void input()
```

```
{
```

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

```
System.out.println("Enter cie marks in  
5 courses :");
```

```
for (int i = 0; i < 5; i++)
```

```
cie_marks[i] = sc.nextInt();
```

```
}
```

```
public void display()
```

```
{
```

```
System.out.println("cie marks : ");
```

```
for (int i = 0; i < 5; i++)
```

```
cie_marks[i] = sc.nextInt();
```

```
System.out.println("cie_marks[i] = ");
```

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

```
}
```

EXCELLENT
Page No. / /
Date: / /

```
package SEE;
import CIE.*;
import java.util.*;
public class External extends CIE.Student
{
    public int see_marks[] = new int[5];
    public void input()
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter see marks in
5 courses:");
        for (int i = 0; i < 5; i++)
            see_marks[i] = sc.nextInt();
    }
    public void display()
    {
        System.out.println("See marks:");
        for (int i = 0; i < 5; i++)
            System.out.print(see_marks[i] + " ");
        System.out.println();
    }
}
```

```
Page No. _____  
Date : / /  
  
import CIE.*;  
import SEE.*;  
import java.util.*;  
class main  
{  
    int final_marks [] = new int [5];  
    public static void main (String args [])  
    {  
        Scanner sc = new Scanner (System.in);  
        System.out.println ("Enter no. of students");  
        int n = sc.nextInt();  
        CIE.Student [] o1 = new CIE.Student [n];  
        CIE.Internals [] o2 = new CIE.Internals [n];  
        SEE.Externals [] o3 = new SEE.Externals [n];  
        main [] obj = new main [n];  
        for (int i = 0; i < n; i++)  
        {  
            o1 [i] = new CIE.Student ();  
            o2 [i] = new CIE.Internals ();  
            o3 [i] = new SEE.Externals ();  
            obj [i] = new main ();  
            o1 [i].input ();  
            o2 [i].input ();  
            o3 [i].input ();  
            for (int j = 0; j < 5; j++)  
                obj [i].final_marks [j] = o2 [i].cie_marks [j] +  
                (o3 [i].sec_marks [j] / 2);  
        }  
        for (int i = 0; i < n; i++)  
        {  
            o1 [i].display ();  
            o2 [i].display ();  
            o3 [i].display ();  
        }  
    }  
}
```

```
System.out.println ("final marks in 5 courses");  
for (int j=0; j<5; j++)  
    System.out.println (obj[i] - final-marks [j] + " ");  
System.out.println ();
```

}

}

}

")

class work 10

"public void" is it by self returning function
: (1) main()

"public static void" is it by self returning function
: (1) main()

(1) creating IT

: 10 minutes

(1) adding ST

: 5 days, created

and work

(1) 100 points from how much selling

total profit = total points * capital > 100
total profit < 100 < points

(1) profit > 100

PS C:\Users\Marshita\Desktop\Java\Package> **java TotalMarks**

```
Enter the number of students
2
ENTER STUDENT1 DETAILS
Enter name:
ABC
Enter usn:
1BH19C5001
Enter sem:
3
Enter the cie marks of subject1
45
Enter the cie marks of subject2
42
Enter the cie marks of subject3
40
Enter the cie marks of subject4
39
Enter the cie marks of subject5
46
Enter the see marks of subject1
88
Enter the see marks of subject2
82
Enter the see marks of subject3
80
Enter the see marks of subject4
85
Enter the see marks of subject5
79
ENTER STUDENT2 DETAILS
Enter name:
XYZ
Enter usn:
1BH19C5002
Enter sem:
3
Enter the cie marks of subject1
42
Enter the cie marks of subject2
44
Enter the cie marks of subject3
47
Enter the cie marks of subject4
39
Enter the cie marks of subject5
40
Enter the see marks of subject1
80
Enter the see marks of subject2
87
Enter the see marks of subject3
85
Enter the see marks of subject4
90
Enter the see marks of subject5
82
DETAILS OF STUDENT 1
Name :ABC
Usn :1BH19C5001
Sem :3
Total marks in subject1 is 80
Total marks in subject2 is 83
Total marks in subject3 is 85
Total marks in subject4 is 81
Total marks in subject5 is 85
DETAILS OF STUDENT 2
Name :XYZ
Usn :1BH19C5002
Sem :3
Total marks in subject1 is 82
Total marks in subject2 is 87
Total marks in subject3 is 89
Total marks in subject4 is 84
Total marks in subject5 is 86
```

1: powershell

Build failed, do you want to continue?
Source: Debugger for Java Extension
Proceed Cancel

12:38 29-12-2020

PS C:\Users\Marshita\Desktop\Java\Package> **java TotalMarks**

```
Enter the see marks of subject5
79
ENTER STUDENT1 DETAILS
Enter name:
ABC
Enter usn:
1BH19C5001
Enter sem:
3
Enter the cie marks of subject1
42
Enter the cie marks of subject2
44
Enter the cie marks of subject3
47
Enter the cie marks of subject4
39
Enter the cie marks of subject5
40
Enter the see marks of subject1
80
Enter the see marks of subject2
87
Enter the see marks of subject3
85
Enter the see marks of subject4
90
Enter the see marks of subject5
82
DETAILS OF STUDENT 1
Name :ABC
Usn :1BH19C5001
Sem :3
Total marks in subject1 is 80
Total marks in subject2 is 83
Total marks in subject3 is 85
Total marks in subject4 is 81
Total marks in subject5 is 85
DETAILS OF STUDENT 2
Name :XYZ
Usn :1BH19C5002
Sem :3
Total marks in subject1 is 82
Total marks in subject2 is 87
Total marks in subject3 is 89
Total marks in subject4 is 84
Total marks in subject5 is 86
```

1: powershell

Build failed, do you want to continue?
Source: Debugger for Java Extension
Proceed Cancel

12:38 29-12-2020

LAB PROGRAM 7

Lab program 7

```
class Gen < T1, T2 >
{
    T1 obj1;
    T2 obj2;
    Gen (T1 o1, T2 o2)
    {
        obj1 = o1;
        obj2 = o2;
    }
    void showTypes()
    {
```

```
        System.out.println ("Type of T1 is " + obj1.getClass().
            getName ());
        System.out.println ("Type of T2 is " + obj2.getClass().
            getName ());
    }
```

```
    T1 getobj1()
    {
```

```
        return obj1;
```

```
    T2 getobj2()
    {
```

```
        return obj2;
```

```
}
```

```
class demo
```

```
{
```

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

```
        Gen < Integer, String > obj = new Gen < Integer,
            String > (100, "hello!");
    }
```

```
    obj.showTypes ();
```

```
int v = obj.getobj1();
System.out.println("T1 value : "+v);
String str = obj.getobj2();
System.out.println("T2 value : "+str);
```

y

(x to) ~~obj~~

: x = 100

1. writing result. like

The screenshot shows a Windows desktop environment with a Visual Studio Code window open. The title bar reads "labrogram7.java - Visual Studio Code". The terminal tab is active, displaying the output of a Java program. The code in the terminal window is as follows:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\LENOVO> & 'c:\Users\LENOVO\.vscode\extensions\vscodejava.vscode-java-debug-0.30.0\scripts\launcher.bat' "C:\Program Files\Java\jdk-15.0.1\bin\java.exe" '--enable-preview' '>XX:>ShowCodeDetail
sInExceptionStacks' '--encoding=UTF-8' '<p>' 'C:\Users\LENOVO\AppData\Local\Temp\vscodews_6d903\jdt_ws\jdt_ls\java-project\bin' 'demo'
Type of T1 is java.lang.Integer
Type of T2 is java.lang.String
T1 value: 100
T2 value: hello!
PS C:\Users\LENOVO>
```

The status bar at the bottom of the VS Code window shows "Ln 36, Col 1 Spaces: 4 UTF-8 CRLF Java JavaSE-15 ⚡ 12:36 29-12-2020".

LAB PROGRAM 8

Lab programs

EXCELLENT
Page No. _____
Date: / /

```
import java.util.Scanner;  
class WrongAge extends Exception  
{  
    int age;  
    WrongAge (int x)  
    {  
        age = x;  
    }  
    public String toString()  
    {  
        return "Age of Son : "+age+" is entered not  
        correctly";  
    }  
}
```

class father

```
{  
    int a;  
    father (int x)  
    {  
        a = x;  
    }  
}
```

class son extends father

```
{  
    int age;  
    son (int fage, int sage)  
    {  
        super (fage);  
        age = sage;  
    }  
}
```

void compute() throws WrongAge

```
(f (age >= a)
```

```
↳
```

```
    throw new WrongAge (age);
```

```
↳
```

```
else
```

```
↳
```

```
System.out.println ("The ages are entered correctly");
```

```
System.out.println ("Father's age : " + a + " & " + SON'S  
Age : " + age);
```

```
↳
```

```
↳
```

```
↳
```

```
class Expression
```

```
↳
```

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

```
↳
```

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

```
System.out.println ("Enter Father's Age");
```

```
int f = s.nextInt();
```

```
System.out.println ("Enter Son's Age");
```

```
int so = s.nextInt();
```

```
Son ss = new Son (f, so);
```

```
try
```

```
↳
```

```
    ss.compute ();
```

```
↳
```

```
catch (WrongAge e)
```

```
↳
```

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

```
↳
```

```
↳
```

```
↳
```

```
File Edit Selection View Go Run Terminal Help
labprogram8.java - Visual Studio Code
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Java Process Console + ×

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\LENOVO> & 'c:\Users\LENOVO\.vscode\extensions\vscode-java.vscode-java-debug-0.30.0\scripts\launcher.bat' 'C:\Program Files\Java\jdk-15.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-Dfile.encoding=UTF-8' '-cp' 'C:\Users\LENOVO\AppData\Local\Temp\vscodews_6d903\jdt_ws\jdt.ls\java-project\bin' 'demo'
Type of T1 is java.lang.Integer
Type of T2 is java.lang.String
T1 value: 100
T2 value: hello!
PS C:\Users\LENOVO> & 'c:\Users\LENOVO\.vscode\extensions\vscode-java.vscode-java-debug-0.30.0\scripts\launcher.bat' 'C:\Program Files\Java\jdk-15.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-Dfile.encoding=UTF-8' '-cp' 'C:\Users\LENOVO\AppData\Local\Temp\vscodews_6d903\jdt_ws\jdt.ls\java-project\bin' 'expmain'
ENTER FATHER'S AGE
45
ENTER SON'S AGE
15
THE AGES ARE ENTERED CORRECTLY
FATHER'S AGE=45 SON'S AGE=15
PS C:\Users\LENOVO> & 'c:\Users\LENOVO\.vscode\extensions\vscode-java.vscode-java-debug-0.30.0\scripts\launcher.bat' 'C:\Program Files\Java\jdk-15.0.1\bin\java.exe' '-agentlib:idap-transport=dt_socket,server,suspend=y,address=localhost:50269' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-Dfile.encoding=UTF-8' '-cp' 'C:\Users\LENOVO\AppData\Local\Temp\vscodews_6d903\jdt_ws\jdt.ls\java-project\bin' 'expmain'
ENTER FATHER'S AGE
15
ENTER SON'S AGE
19
AGE OF SON=19 IS ENTERED INCORRECTLY
PS C:\Users\LENOVO>
```

LAB PROGRAM 9

Lab program 9.

class Threads implements Runnable

{

String text;

Thread t;

int time;

Threads (String threadname, int tm)

{

text = threadname;

time = tm;

t = new Thread (this, text);

System.out.println ("thread : " + t);

t.start();

}

public void run()

{

try

{

for (int i = 5; i > 0; i--)

{

System.out.println (text);

Thread.sleep (time);

}

catch (InterruptedException e)

{

System.out.println (text + ". Interrupted");

}

System.out.println (text + " exiting ");

}

class Main

{

public static void main (String args [])

{

Threads t1 = new Threads ("OMS college of
engineering ", 10000);

Threads t2 = new Threads ("CSE", 2000);

}

}

constructor is called

initialization of local variable

is method

initialization of local

>

(0) thread will run

new t1 ("OMS college of engineering ", 10000);

new t2 ("CSE", 2000);

t1.start(); t2.start();

(1) thread run : 10

(2) thread run : 20

(3) thread run : 10

(4) thread run :

(5) thread run :

(6) thread run :

(7) thread run :

(8) thread run :

(9) thread run :

(10) thread run :

(11) thread run : 10

(12) thread run : 20

(13) thread run : 10

(14) thread run : 20

(15) thread run : 10

The screenshot shows a Visual Studio Code interface with the following details:

- File Bar:** File, Edit, Selection, View, Go, Run, Terminal, Help.
- Title Bar:** labprogram9.java - Visual Studio Code
- Tab Bar:** PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (selected).
- Output Panel:** Displays Java process output:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\LENOVO> & 'c:\Users\LENOVO\.vscode\extensions\vscodejava.vscode-javascript\scripts\launcher.bat' "C:\Program Files\Java\jdk-15.0.1\bin\java.exe" '--enable-preview' '>xx>ShowCodeDetail
sInExceptInNewSapes' '--file_encoding=UTF-8' '<p>' 'C:\Users\LENOVO\AppData\Local\Temp\vscodews_4d4ce\jdt_ws\jdt_ls\java-project\bin\' 'Main'
thread:thread[BMS COLLEGE OF ENGINEERING,5,main]
thread:thread[CSE,5,main]
BMS COLLEGE OF ENGINEERING
CSE
CSE
CSE
CSE
CSE
BMS COLLEGE OF ENGINEERING
CSE exiting.'
```
- Bottom Status Bar:** Ln 1, Col 1 | Spaces: 4 | UTF-8 | CRLF | Java | JavaSE-15 | ⚡ | 1242 | Type here to search | Windows taskbar icons | 29-12-2020

LAB PROGRAM 10

Lab Program 10

Page 7/10

Date: / /

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
public class integrdivision extends Frame implements
    ActionListener
{
    JTextField n1, n2, res;
    Label In1, In2, Inres;
    Button b;
    public integrdivision()
    {
        setLayout(new FlowLayout());
        Label In1 = new Label("Number 1", Label.RIGHT);
        Label In2 = new Label("Number 2", Label.RIGHT);
        Label Inres = new Label("RESULT", Label.RIGHT);
        n2 = new JTextField(12);
        n2 = new JTextField(8);
        res = new JTextField(10);
        b = new Button("DIVISION");
        add(In1);
        add(n1);
        add(In2);
        add(n2);
        add(b);
        add(Inres);
        add(res);
        b.addActionListener(this);
        addWindowListener(new WindowAdapter());
    }
    public void actionPerformed(ActionEvent ae)
    {
        if(ae.getActionCommand() == b)
        {
            int a = Integer.parseInt(n1.getText());
            int b = Integer.parseInt(n2.getText());
            res.setText(Integer.toString(a/b));
        }
    }
}
```

```
Page No. _____  
Date: / /  
  
{  
    try  
    {  
        int num1 = Integer.parseInt(n1.getText());  
        int num2 = Integer.parseInt(n2.getText());  
        int num3 = num1 / num2;  
        res.setText(String.valueOf(num3));  
    }  
    catch (NumberFormatException e)  
    {  
        JOptionPane.showMessageDialog(this, e, "ERROR",  
            JOptionPane.ERROR_MESSAGE);  
    }  
    catch (ArithmeticException a)  
    {  
        JOptionPane.showMessageDialog(this, a, "DIVISION  
BY ZERO ERROR", JOptionPane.ERROR_MESSAGE);  
    }  
}  
  
Public static void main(String args[]){  
    integerdivision i = new integerdivision();  
    i.setSize(new Dimension(400, 400));  
    i.setTitle("Integer Division of 2 numbers");  
    i.setVisible(true);  
}  
  
class WindowAdapter1 extends WindowAdapter  
{  
    public void windowClosing(WindowEvent we)  
    {  
        System.exit(0);  
    }  
}
```

