

**YASHWANTH KIRAN S  
1BM19CS187  
'3D'BATCH-2**

## **OOJ LAB PROGRAMS**

### **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

#### **WRITEUP:-**

LAB-1

Date: / /

```
import java.util.Scanner;
public class lab1{
    public static int det (int a, int b, int c){
        int d = b * b - 4 * a * c;
        return d;
    }
    public static void main (String [] args){
        double r1, r2, real, imag;
        Scanner x = new Scanner (System.in);
        System.out.println("enter the a,b,c, values:");
        int a = x.nextInt();
        int b = x.nextInt();
        int c = x.nextInt();
        int d = x.nextInt(); det (a,b,c);
        if (d == 0){
            r1 = -b + Math.sqrt (d*1.0);
            r2 = -b - Math.sqrt (d*1.0);
            System.out.println ("the roots are real and equal:"+
                " " + r1 + ", " + r2);
        }
        if (d > 0){
            r1 = -b + Math.sqrt (d*1.0);
            r2 = -b - Math.sqrt (d*1.0);
            System.out.println ("the roots are real but not equal:"+
                " " + r1 + ", " + r2);
        }
    }
}
```

```

if (d<0){
    real = -b;
    imag = d;
    System.out.println("the roots are imaginary:" + (real) +
                        + ("+" + (+1.0 * imag) + "i"), "+(real) +
                        + ("+" + (-1.0 * imag) + "i"));
}
}
}

```

### OUTPUT:-

```

Command Prompt
Microsoft Windows [Version 10.0.19041.508]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\Yashwanth>e:
E:\>cd java
E:\Java>javac lab1.java
E:\Java>java lab1
enter the a,b,c values:1
2
3
the roots are imaginary:-2.0+(-8.0i),-2.0+(8.0i)

E:\Java>java lab1
enter the a,b,c values:2
2
2
the roots are imaginary:-2.0+(-12.0i),-2.0+(12.0i)

E:\Java>lab1
'lab1' is not recognized as an internal or external command,
operable program or batch file.

E:\Java>java lab1
enter the a,b,c values:2
3
5
the roots are imaginary:-3.0+(-31.0i),-3.0+(31.0i)

```

## LAB 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

### WRITEUP:-

Yashwanth Kiran.S  
1BM19CS187  
3D OOT Date: 16/10/2020  
LAB - 2

```
import java.util.*;  
public class Student {  
    public static void main(String args[]) {  
        int usn, n;  
        int Sgpa, sum = 0, msum = 0;  
        int [] credits;  
        int [] marks;  
        String name;  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter the number of Subjects");  
        n = sc.nextInt();  
        credits = new int [n];  
        marks = new int [n];  
        sc.nextLine();  
        System.out.println("Enter the name of the  
        student");  
        name = sc.next();  
  
        System.out.println("Enter the USN of the  
        student");  
        usn = sc.nextInt();
```

Date: / /

```
for (int i=0; i<n; i++)  
{  
    System.out.println ("Enter the Credits and  
    marks of the Subject" + (i+1));  
    credits[i] = sc.nextInt();  
    marks[i] = sc.nextInt();  
}
```

```
Student1 s1 = new Student1();  
for (int x: credits) {  
    sum += x;  
}  
for (int y: marks) {  
    msum += y;  
}
```

```
s1.accept (usn, credits, marks, name);  
Sgpa = s1.FindSgpa (sum);  
s1.display (msum, Sgpa);
```

```
}
```

```
}
```

Date: / /

Class Student {

```
    int usn;
    int [] credits = new int [100];
    int [] marks = new int [100];
    String name;
    void accept (int usn, int [] credits, int [] marks,
                 String name) {
```

```
        this.usn = usn;
        this.credits = credits;
        this.marks = marks;
        this.name = name;
    }
```

```
    void display (double tot, int Sgpa) {
```

```
        System.out.println ("\\n Name: " + name + " USN: " + usn +
                            "\\n Total Marks: " + tot + "\\n SGPA: " + Sgpa);
    }
```

```
    int FindSgpa (int vsum) {
        int Sgpa; int sum = 0, v = 0;
        for (int x : marks) {
            sum += (credits[v++] * x);
        }
    }
```

Dat

$$Sgpa = \text{sum} / (\text{vsum} * 10);$$

return (Sgpa);

}

}

{ (main part)

(main - main code)

(fibonacci - fibo, code)

(fibonacci - fibo, code)

(main - main, code)

{ (9903 tai, test stdio) publication

main("count of ") al tang, han  
+ "9903 of " + bat + the + count + tot + "

## **OUTPUT:-**

The screenshot shows a Microsoft Windows Command Prompt window titled "Command Prompt". The window displays the following text:

```
Microsoft Windows [Version 10.0.19041.508]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\Yashwanth>e:
E:\>cd java
E:\Java>javac Student.java
E:\Java>java Student
Enter the Number Of Subjects
2
Enter the name of the Student
YASHWANTH
Enter the USN of The Student
187
Enter the Credits And Marks Of The Subject1
3
99
Enter the Credits And Marks Of The Subject2
3
99
Name: YASHWANTHUSN: 187
Total Marks: 198.0
sgpa: 9

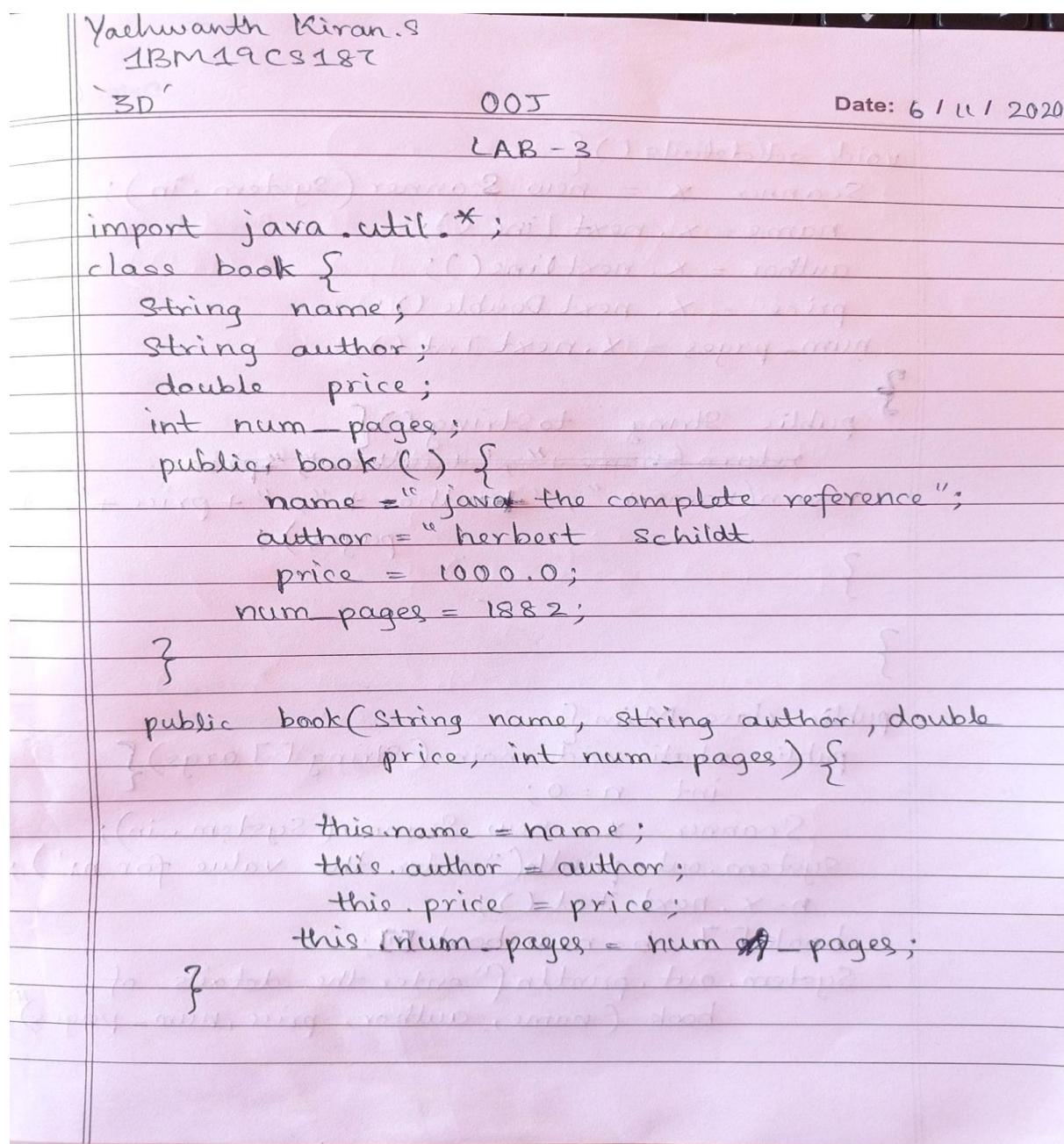
E:\Java>
```

The window has a standard Windows title bar and taskbar at the bottom. The taskbar includes icons for File Explorer, Task View, Taskbar settings, and the date/time (3:25 PM, 10/16/2020).

## LAB 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.

### WRITEUP:-



Date: 6 / 11 / 2021

```
void setDetails() {  
    Scanner x = new Scanner(System.in);  
    name = x.nextLine();  
    author = x.nextLine();  
    price = x.nextDouble();  
    numPages = x.nextInt();  
}  
  
public String toString() {  
    return (name + ", " + author, " " + price);  
    return (name + ", " + author + ", " + price + ", " + num  
        pages);  
}  
}  
  
public class Main {  
    public static void main (String [] args) {  
        int n=0;  
        Scanner x = new Scanner(System.in);  
        System.out.println("enter the value for n:");  
        n=x.nextInt();  
        book [] b = new book [n];  
        System.out.println("enter the details of  
            book (name, author, price, numPages)");  
    }  
}
```

Date: 6 / 11 / 2020

```
for (int i=0 ; i<n ; i++) {  
    b[i] = new book();  
    System.out.println ("details of " +(i+1) + " book  
                      book:");
```

```
    b[i].setdetails();  
}
```

```
System.out.println ("the details of the book are:");
```

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

```
}
```

```
}
```

```
}
```

## OUTPUT:-

```
C:\Users\Yashwanth>:  
E:\>cd java  
E:\Java>javac Main.java  
E:\Java>java Main  
enter the value for n:  
enter the details of book(name,author,price,num_pages)  
details of 1 book:  
java the complete reference  
herbert schildt  
1000  
1882  
details of 2 book:  
introduction to java programming  
y daniel liang  
999  
1446  
the details of the books are:  
1 book:  
java the complete reference,herbert schildt,1000.0,1882  
2 book:  
introduction to java programming,y daniel liang,999.0,1446
```

## 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.

### WRITEUP:-

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'3D' Batch 2 OOT

Date: 6/11/2020

LAB 4

```
abstract class Shape
{
    int a=3;
    int b=4;
    abstract public void print_area();
}

class rectangle extends Shape
{
    public int area_rect;
    public void print_area()
    {
        area_rect = a*b;
        System.out.println("The area of rectangle is:" + area_rect);
    }
}

class triangle extends Shape
{
    int area_tri;
    public void print_area()
    {
    }
}
```

Date: 6/11/2018

```
area_tri = (int) (0.5 * a * b);  
System.out.println("The area of triangle is :"  
+ area_tri);  
}  
}
```

```
class circle extends Shape  
{  
    int area_circle;
```

```
public void print_area()  
{  
    area_circle = (int) (3.14 * a * a);  
    System.out.println("The area of circle is :"  
+ area_circle);  
}  
}
```

Date: 6 / 11 / 2020

```
class abs {  
    public static void main (String [] args)  
    rectangle rec = new rectangle ();  
    rec.print_area ();  
    triangle tri = new triangle ();  
    tri.print_area ();  
    circle cir = new circle ();  
    cir.print_area ();  
}  
}  
}
```

## OUTPUT:-

The screenshot shows a Microsoft Windows Command Prompt window titled 'Command Prompt'. The window displays the following text:

```
Microsoft Windows [Version 10.0.19041.508]  
(c) 2020 Microsoft Corporation. All rights reserved.  
C:\Users\Yashwanth>e:  
E:\>cd java  
E:\Java>javac abs.java  
E:\Java>java abs  
The area of rectangle is: 12  
The area of triangle is: 6  
The area of circle is: 28  
E:\Java>
```

## LAB 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:

a) Accept deposit from customer and update the balance.

b) Display the balance.

c) Compute and deposit interest

d) Permit withdrawal and update the balance

Check for the minimum balance, impose penalty if necessary and update the balance.

### WRITEUP:-

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'3D' OOT  
Date: 6/11/2022  
LAB 5

```
import java.util.*;  
class account {  
    String customer_name;  
    int account_number;  
    String account_type;  
}  
class curr_acct extends account {  
    Scanner x = new Scanner (System.in);  
    double temp = 0.0;  
    double amount = 0.0;  
    double fine = 0.0;  
    double minimum_amount = 1000.0;
```

Date: 6/11/2020

```
void get details () {  
    customer_name = x.nextLine();  
    account_number = x.nextInt();  
}  
void deposit () {  
    System.out.println("Enter the deposit amount :");  
    temp = x.nextDouble();  
    amount += temp;  
}  
void showbalance () {  
    if (amount >= min_amount) {  
        System.out.println("Balance is :" + amount);  
    } else {  
        fine = (amount * 1.0 * 10) / 100;  
        amount -= fine;  
        System.out.println("the fine imposed :" + fine);  
        System.out.println("Balance is :" + amount);  
    }  
}  
void withdrawal () {  
    System.out.println("Enter the withdrawal amount :");  
    temp = x.nextDouble();  
    amount -= temp;  
}
```

Date: 6/11/2020

```
{ class sav_acct extends account {  
    Scanner x = new Scanner (System.in);  
    double temp = 0.0;  
    double amount = 0.0;  
    double interest = 0.0;  
    void get_details () {  
        customer_name = x.nextLine();  
        account_number = x.nextInt();  
    }  
    void showbalance () {  
        System.out.println ("Balance is :" + amount);  
    }  
    void withdrawal () {  
        System.out.println ("Enter the withdrawal amount:  
        -amount");  
        temp = x.nextDouble();  
        amount = temp;  
    }  
    void interest () {  
        interest = (amount * 1.0 * 3) / 100;  
        amount += interest;  
        System.out.println ("interest added :" + interest);  
        System.out.println ("Balance is :" + amount);  
    }  
}
```

Date: / /

```
public class Main {
    public static void main ( String [] args ) {
        int opt = 0;
        String type = null;
        Scanner x = new Scanner ( System.in );
        System.out.println ("Welcome to the bank service");
        System.out.println ("Enter the type of account
                           (curr_acct/sav_acct)");
        type = x.nextLine ();
        if ( type.equals ("curr_acct") ) {
            curr_acct a = new curr_acct ();
            System.out.println ("Enter the customer name,
                               account number :");
            a.getdetails ();
            while ( true ) {
                System.out.println ("press 1 : Accept deposit and update
                                   the balance");
                System.out.println ("press 2 : Display the balance");
                System.out.println ("press 3 : withdrawal and update
                                   the balance");
                System.out.println ("Enter option :");
                opt = x.nextInt ();
                switch ( opt ) {
                    case 1: a.deposit ();
                    a.showbalance ();
                    break;
```

Date: / /

```
case 2 : a.showbalance();  
        break;  
case 3 : a.withdrawal();  
          a.showbalance();  
        break;  
    }  
}  
}  
if (type.equals("sav-acct")){  
    sav-acct a = new sav-acct();  
    System.out.println("Enter the customer-name,  
                      account-number:");  
    a.getdetails();  
    while(true){  
        System.out.println("press 1: Accept details and  
                           update the balance");  
        System.out.println("press 2: Display the amount");  
        System.out.println("press 3: Compute and deposit  
                           interest");  
        System.out.println("press 4: Withdrawal and update  
                           the balance");  
        System.out.println("Enter option:");  
        opt = x.nextLine();  
        if (opt == "1") {  
            a.acceptDetails();  
            a.updateBalance();  
        } else if (opt == "2") {  
            a.displayAmount();  
        } else if (opt == "3") {  
            a.computeAndDepositInterest();  
        } else if (opt == "4") {  
            a.withdrawal();  
            a.showbalance();  
        } else {  
            System.out.println("Invalid option");  
        }  
    }  
}
```

Date: 6 / 11 / 2020

Switch (opt) {

case 1 : a. deposit ();

a. showbalance ();

break;

case 2 : a. showbalance ();

break;

case 3 : a. interest ();

a. showbalance ();

break;

case 4 : a. withdrawal ();

a. showbalance ();

break;

}  
} } } }

## **OUTPUT:-**

```
Command Prompt - java Main
F:\Java>javac Main.java
F:\Java>java Main
Welcome to the bank service
Enter the the of account (curr_acct/sav_acct)
sav_acct
Enter the customer_name,account_number:
YASHWANTH KIRAN S
88888
press 1 : Accept deposit and update the balance
press 2 : Display the balance
press 3 : Compute and deposit interest
press 4 : Withdrawal and update the balance
Enter option : 1
Enter the deposit amount : 1000000
Balance is : 1000000.0
press 1 : Accept deposit and update the balance
press 2 : Display the balance
press 3 : Compute and deposit interest
press 4 : Withdrawal and update the balance
Enter option : 2
Balance is : 1000000.0
press 1 : Accept deposit and update the balance
press 2 : Display the balance
press 3 : Compute and deposit interest
press 4 : Withdrawal and update the balance
Enter option : 3
Interest added : 30000.0
Balance is : 1030000.0
Balance is : 1030000.0
press 1 : Accept deposit and update the balance
press 2 : Display the balance
press 3 : Compute and deposit interest
press 4 : Withdrawal and update the balance
Enter option : 4
Enter the withdrawal amount : 1
Balance is : 1029999.0
press 1 : Accept deposit and update the balance
press 2 : Display the balance
press 3 : Compute and deposit interest
press 4 : Withdrawal and update the balance
Enter option :
```

## LAB 6

Create a package CIE which has two classes- Student and Internals. The class Personal has members like usn, name, sem. The class Internals 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.

### WRITEUP:-

Yashwardh Kiran.s  
1BM19CS187  
3D Batch-2

LAB - 6

Date: 20/11/2020

```
package CIE;
import java.util.Scanner;
public class Internals extends
Student

package CIE;
import java.util.*;
public class personal
{
    public String name;
    public int sem;
    public String usn;

    public void read()
    {
        Scanner sc = new
        Scanner(System.in);
        System.out.println("Enter the semester");
        sem = sc.nextInt();
        System.out.println("Enter the USN");
        usn = sc.next();
    }

    public void display()
    {
        System.out.println("Student details:");
        System.out.println("Name: " + name + "\n"
        "USN: " + usn + "\n Sem: " + sem);
    }
}
```

```
package SEE;
import java.util.*;
import CIE.*;
public class external extends personal
{
    public double see[];
    public void get()
    {
        see = new double [5];
        Scanner sc = new
        Scanner(System.in);
        for(int i=0; i<5; i++)
        {
            System.out.println("SEE mark for course " + (i+1) +
                ":" );
            see[i] = sc.nextDouble();
        }
    }
}
```

```
package CIE;
import java.util.*;
public class internal extends personal
{
    public double cie[];
    public void accept()
    {
        cie = new double [5];
        Scanner sc = new
        Scanner(System.in);
        for(int i=0; i<5; i++)
```

Date: / /

{

```
System.out.println ("CIE mark for course "
+ (i+1) + ":" );
cie[i] = sc.nextDouble();
```

}

}

}

```
import CIE.*;
import SEE.*;
import java.util.*;
```

class Main

{

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

```
Scanner sx = new Scanner (System.in);
System.out.println ("Enter the number of
students");
```

```
int n = sx.nextInt();
```

```
CIE.internals in[] = new
CIE.internals [n];
```

```
SEE.externals en[] = new
SEE.externals [n];
```

```
int i, j;
for (i=0; i<n; i++)
```

Date: / /

{

```
System.out.println("Student" + (i+1));
in[i] = new CIE.internals();
en[i] = new SEE.externals();
in[i].read();
```

```
System.out.println("CTE MARKS:");
in[i].accept();
System.out.println("SEE MARKS:");
en[i].get();
System.out.println();
int[i].display();
for(j=0; j<5; j++)
```

```
System.out.println("Total Marks for course"
+ (j+1) + ":" + (in[i].cie[j] + en[i].
see[j]/2)));
```

}

}

}

## OUTPUT:-

```
E:\Java\packages>java Main
Enter the number of students
2
Student 1
Enter the name
yashwanth
Enter the semester
3
Enter the USN
1bm19cs187
CIE MARKS:
CIE mark for course 1 :
40
CIE mark for course 2 :
38
CIE mark for course 3 :
36
CIE mark for course 4 :
34
CIE mark for course 5 :
32
SEE MARKS:
SEE mark for course 1 :
100
SEE mark for course 2 :
98
SEE mark for course 3 :
97
SEE mark for course 4 :
96
SEE mark for course 5 :
95

Student details:
Name: yashwanth
USN: 1bm19cs187
Sem: 3
Total Marks for course 1: 96.0
Total Marks for course 2: 87.6
Total Marks for course 3: 84.6
Total Marks for course 4: 82.0
Total Marks for course 5: 79.5

E:\Java\packages> Command Prompt
Student 2
Enter the name
kiran
Enter the semester
3
Enter the USN
1bm19cs188
CIE MARKS:
CIE mark for course 1 :
40
CIE mark for course 2 :
39
CIE mark for course 3 :
38
CIE mark for course 4 :
37
CIE mark for course 5 :
36
SEE MARKS:
SEE mark for course 1 :
100
SEE mark for course 2 :
99
SEE mark for course 3 :
98
SEE mark for course 4 :
97
SEE mark for course 5 :
96

Student details:
Name: kiran
USN: 1bm19cs188
Sem: 3
Total Marks for course 1: 96.0
Total Marks for course 2: 88.5
Total Marks for course 3: 87.0
Total Marks for course 4: 85.5
Total Marks for course 5: 84.0

E:\Java\packages>
```

## LAB-7

Write a program to demonstrate generics with multiple object parameters.

### WRITEUP:-

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3D batch-2

LAB-7 Date: 27/11/2020

// A simple generic class with two type parameters:  
T and V.

```
class TwoGen<T, V> {  
    T ob1;  
    V ob2;  
  
    // Pass the constructor a reference to an object of  
    // type T and an object of type V.  
    TwoGen(T o1, V o2) {  
        ob1 = o1;  
        ob2 = o2;  
    }  
  
    // Show types of T and V.  
    void showTypes() {  
        System.out.println("Type of T is " + ob1.getClass().  
                           getName());  
        System.out.println("Type of V is " + ob2.getClass().  
                           getName());  
    }  
  
    T getOb1() {  
        return ob1;  
    }
```

Date: 27/11/2020

```
    v getob2() {
```

```
        return ob2;
```

```
}
```

```
}
```

```
// Demonstrate TwoGen.
```

```
class SimpGen {
```

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

```
TwoGen< Integer , String > tgObj =  
new TwoGen< Integer , String >(88, "Generics");
```

```
// Show the types.
```

```
tgObj.showTypes();
```

```
// Obtain and show values.
```

```
int v = tgObj.getob1();
```

```
System.out.println ("value:" + v);
```

```
String str = tgObj.getob2();
```

```
System.out.println ("Value:" + str);
```

```
}
```

```
}
```

## **OUTPUT:-**

```
Microsoft Windows [Version 10.0.19041.630]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\Yashwanth> c:\Users\Yashwanth\vscode\extensions\vscjava.vscode-javascript-launcher.bat D:\AdoptOpenJDK\jdk-15.0.1.9-hotspot\bin\java.exe --enable-preview -XX
:ShowCodeDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp C:\Users\Yashwanth\AppData\Local\Temp\vscodews_4316\jdt_ws\jdt.ls-java-project\bin SimpGen
Type of T is java.lang.Integer
Type of V is java.lang.String
value: 88
value: Generics

C:\Users\Yashwanth>
```

## LAB-8

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.

### WRITEUP:-

LAB - 8

Yashwanth Kiran.S  
1BM19CS187  
'3D' Batch - 2

```
import java.util.*;  
class WrongAge extends Exception {  
    int f, s;  
    WrongAge (int fage, int sage) {  
        f = fage;  
        s = sage;  
    }  
  
    public String toString() {  
        return "please enter the correct ages as father's age  
        can't be less than or equal to the son's age.";  
    }  
  
    class NegativeAge extends Exception {  
        int x;  
        NegativeAge (int fage) {  
            x = fage;  
        }  
        public String toString() {  
            return "Age can't be a negative value.";  
        }  
    }  
}
```

```
class Father
{
    int fage;
    Scanner in = new Scanner(System.in);
    Father() throws NegativeAge
    {
        System.out.println("Enter the father's age:");
        fage = in.nextInt();
        if (fage < 0)
            throw new NegativeAge(fage);
    }
}
```

```
class Son extends Father
{
    int sage;
    Scanner in = new Scanner(System.in);
    Son() throws NegativeAge, WrongAge
    {
        super();
        System.out.println("Enter the son's age:");
        sage = in.nextInt();
        if (sage < 0)
            throw new NegativeAge(sage);
    }
}
```

```
if (sage >= fage) {  
    throw new WrongAge(fage, sage);  
}  
}  
??
```

```
class AgeDisplay {  
    public static void main(String args[]) {  
        try {  
            Son s = new Son();  
        }  
        catch (NegativeAge n) {  
            System.out.println("Exception: " + n);  
        }  
        catch (WrongAge w) {  
            System.out.println("Exception: " + w);  
        }  
    }  
}
```

## **OUTPUT:-**

```
Microsoft Windows [Version 10.0.19041.638]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\Yashwanth> c:\Users\Yashwanth\vscode\extensions\vscjava.vscode-java-debug-0.29.0\scripts\launcher.bat D:\AdoptOpenJDK\jdk-15.0.1.9-hotspot\bin\java.exe --enable-preview -XX:+ShowCodeDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp C:\Users\Yashwanth\AppData\Local\Temp\vscodews_fb096\jdt_ws\jdt.ls-java-project\bin AgeDisplay
Enter the father's age:
53
Enter the son's age :
20

C:\Users\Yashwanth> c:\Users\Yashwanth\vscode\extensions\vscjava.vscode-java-debug-0.29.0\scripts\launcher.bat D:\AdoptOpenJDK\jdk-15.0.1.9-hotspot\bin\java.exe --enable-preview -XX:+ShowCodeDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp C:\Users\Yashwanth\AppData\Local\Temp\vscodews_fb096\jdt_ws\jdt.ls-java-project\bin AgeDisplay
Enter the father's age:
20
Enter the son's age :
53
Exception:Please enter the correct ages as father's age can't be less than or equal to the son's age.

C:\Users\Yashwanth> c:\Users\Yashwanth\vscode\extensions\vscjava.vscode-java-debug-0.29.0\scripts\launcher.bat D:\AdoptOpenJDK\jdk-15.0.1.9-hotspot\bin\java.exe --enable-preview -XX:+ShowCodeDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp C:\Users\Yashwanth\AppData\Local\Temp\vscodews_fb096\jdt_ws\jdt.ls-java-project\bin AgeDisplay
Enter the father's age:
20
Enter the son's age :
20
Exception:Please enter the correct ages as father's age can't be less than or equal to the son's age.

C:\Users\Yashwanth>
```

## LAB-9

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.

### WRITEUP:-

LAB - 9

Yashwardh Kiran.S  
1BM19CS187  
3D 'Batch-2'

```
class thread1 implements Runnable
{
    Thread t;
    thread1()
    {
        t = new Thread (this, "thread1");
        t.start();
    }
    public void run()
    {
        for (;;)
        {
            try
            {
                System.out.println ("BMS College of Engineering");
                Thread.sleep (10000);
            }
            catch (InterruptedException ie)
            {
                System.out.println ("Interrupted");
            }
        }
    }
}
```

```
class thread2 implements Runnable
{
    Thread t2;
    thread 2()
    {
        t2 = new Thread(this, "thread2");
        t2.start();
    }

    public void run()
    {
        for (;;)
        {

            try
            {
                System.out.println("CSE");
                Thread.sleep(2000);
            }
            catch(InterruptedException ie)
            {
                System.out.println ("Interrupted");
            }
        }
    }
}
```

```
class threadmain
{
    public static void main (String args[])
    {
        System.out.println("Enter CONTROL+C to stop");
        thread1 t1 = new thread1();
        thread2 t2 = new thread2();
    }
}
```

### **OUTPUT:-**

## LAB-10

Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an ArithmeticException. Display the exception in a message dialog box.

### WRITEUP:-

LAB - 10

Yashwanth Kiran.S

1BM19CS187

3D Batch - 2

Yashwanth

```
import java.awt.*;
import java.awt.event.*;
class MyDialog extends Dialog implements ActionListener {
    Prog1 p;
    MyDialog(Frame parent, String title) {
        super(parent, title, false);
        setLayout(new FlowLayout());
        setSize(300, 150);
        p = (Prog1) parent;
        Button b = new Button("OK");
        Label l = new Label("Error: " + p.error);
        add(l);
        add(b);
        b.addActionListener(this);
    }
    public void actionPerformed(ActionEvent ae) {
        dispose();
    }
}
```

```
public class Prog1 extends Frame implements ActionListener {
    TextField Num1, Num2;
    Button divide = new Button ("Divide");
    float res = 0;
    public String error = " ";
    public Prog1() {
        setLayout (new FlowLayout ());
        Num1 = new TextField (1);
        Num2 = new TextField (1);
        Label1 Num1L = new Label ("Num1:", Label.RIGHT);
        Label1 Num2L = new Label ("Num2:", Label.RIGHT);
        add (Num1L);
        add (Num1);
        add (Num2L);
        add (Num2);
        add (divide);
        divide.addActionListener (this);
        addWindowListener (new WinAdapter ());
    }
}
```

```
public void actionPerformed (ActionEvent ae) {
    if (ae.getSource () == divide) {
        try {
            int n1 = Integer.parseInt (Num1.getText ());
            int n2 = Integer.parseInt (Num2.getText ());
            if (n2 <= 0) {
                throw new ArithmeticException ("Error");
            }
        }
    }
}
```

Teacher's C: \_\_\_\_\_

```
res = (float) n1/n2;
repaint();
} catch (NumberFormatException exception) {
    System.out.println(exception);
    res = 0;
    error = "Entered no. is not an integer.";
    repaint();
} catch (ArithmaticException exception) {
    System.out.println(exception);
    res = 0;
    error = "You tried to divide by zero!";
    repaint();
}
if (res == 0) {
    System.out.println(this.error);
    MyDialog d = new MyDialog(this, "Error");
    d.setVisible(true);
}
}

public void paint (Graphics g) {
    g.drawString("Result:" + String.valueOf(res), 20, 100);
}
```

```

public static void main (String []args) {
    Prog1 p = new Prog1();
    p.setSize (new Dimension (400,100));
    p.setTitle ("Divide");
    p.setVisible (true);
}

}

```

```

class WinAdapter extends WindowAdapter {
    public void windowClosing (WindowEvent we) {
        System.exit(0);
    }
}

```

## OUTPUT:-

The screenshot shows a terminal window with the following content:

```

● Prog1.java X
C: > Users > Yashwanth > Desktop > OJ LAB PROGRAMS > LAB 10 > ● Prog1.java > WinAdapter
  1 import java.awt.*;
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
1: Java Process Console +  ×
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

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

PS C:\Users\Yashwanth> & 'c:\Users\Yashwanth\vscode\extensions\vscjava.vscode-javascript-debug-0.30.0\scripts\launcher.bat' "D:\AdoptOpenJDK\jdk-15.0.1.9-hotspot\bin\java.exe" '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '--file.encoding=UTF-8' '-cp' 'C:\Users\Yashwanth\AppData\Local\Temp\vscodews_a421d\jdt_ws\jdt.ls-java-project\bin' 'Prog1'

```

Below the terminal is a screenshot of a window titled "Divide". The window has three input fields: "Num1:" containing "45", "Num2:" containing "18", and a button labeled "Divide". Below the input fields, the text "Result: 2.5" is displayed.