VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.



LAB REPORT on

OBJECT ORIENTED JAVA

Submitted by

ADVITHI D(1BM21CS009)

in partial fulfillment for the award of the degree of BACHELOR OF ENGINEERING
in
COMPUTER SCIENCE AND ENGINEERING



B.M.S. COLLEGE OF ENGINEERING
(Autonomous Institution under VTU)
BENGALURU-560019
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B. M. S. College of Engineering,

Bull Temple Road, Bangalore 560019 (Affiliated To Visvesvaraya Technological University, Belgaum)

Department of Computer Science and Engineering



CERTIFICATE

This is to certify that the Lab work entitled "Object oriented java" carried out by **ADVITHI D** (**1BM21CS009**), who is bonafide student of **B. M. S. College of Engineering.** It is in partial fulfillment for the award of **Bachelor of Engineering** in **Computer Science and Engineering** of the Visvesvaraya Technological University, Belgaum during the year 2022. The Lab report has been approved as it satisfies the academic requirements in respect of a object oriented java work prescribed for the said degree.

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```
import java.util.Scanner;
class QuadraticEquation
public static void main(String xx[])
{
Scanner input=new Scanner(System.in);
System.out.println("enter the value of a:");
double a=input.nextDouble();
System.out.println("enter the value of b:");
double b=input.nextDouble();
System.out.println("enter the value of c:");
double c=input.nextDouble();
if(a==0.0) { System.out.println("the value of a cannot be 0");
{
else
{
if(d>0.0)
double r1=(-b+math.sqrt(d))/(2.0*a);
double r2=(-b+math.sqrt(d))/(2.0*a);
System.out.println("the roots are real and distinct and are
"+r1+" and "+r2);
```

```
}
else if(d==0.0)
{
double r1=-b/(2.0*a);
System.out.println("the roots are real and equal and are "+r1+" \,
and "+r1);
}
else
{
double r1=-b/(2.0*a);
double r2=(+Math.sqrt(Math.abs(d))/(2.0*a));
double r4=(+Math.sqrt(Math.abs(d))/(2.0*a));
System.out.println("the roots are real and imaginary and are
"+r1+" +i "+r2+" and "+r1+" +i "+r4);}
 }
}
}
```

```
Las program-1
Divelop a java program that printe all
 Neal solution to the quadratic equation axxtbx to =0 , fead in a by and use the
 quadentic formula. If the discommate b2-
 that it rightile, desplay a message stating
 there are no real relations.
import java util Scorner;
public quadrotic equation
publicstatic void main (String xx[])
Scanner mput = new Scanner ( system in);
Systemout printin (" enter the value of a:");
double as input next Double ();
if (a==0.0)
system aut printly " The value of a connot be o");
system out protto (" inter the value of b: ").
double be mput rest Double ();
system out print in (" Enter the value of C:");
double ( zinput next Double ();
doubled = b*b-4.0 * a*C;
if (dx 0.0)
double 11 = ( to + Month, sqr + (d, 0.4)) 1(2.0 xa);
double 12 2 (-b- Moth sqrt (d)) / (20xa);
System out pointly ("The roots are real and
distinct and "+ " and "+ +2);
un if (d = =0 0)
```

double (1 = b) (2 0x 0	a);
	he roots as equal and "tri
odat.	
ig (d<00)	
5	Control of the last of the las
TI= (-b+ mass abs	(moth eget (a)) (6*a));
syrum and printin	("The rook are :" +" i "+ YI
	Mathsqrt(d)) / (2*a));
System out printin (" " + " 1 + 1 2 + " as	The rook are maynone a
1	na +1 141)
1)	
T .	

```
C:\Users\BMSCECSEIL74\Desktop\iBM21CS005\java QuadraticEquation
Enter the value of the coefficients

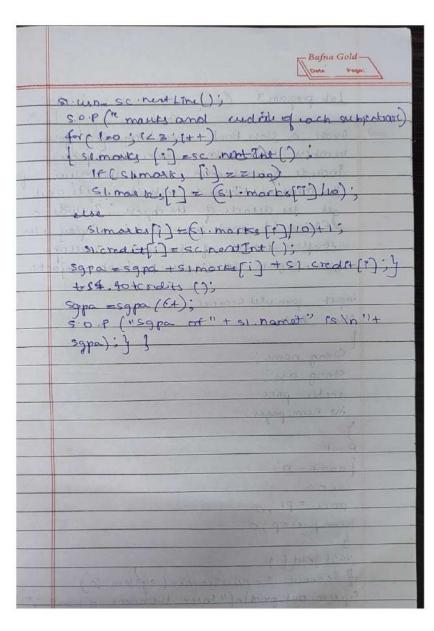
Inter the value of b:
Inter the value of b:
Inter the value of c:
Inter the value of the coefficients
Enter the value of the coefficients
Enter the value of b:
Inter the value of c:
Inter the value of the coefficients
Enter the value of c:
Inter the v
```

import java .util.Scanner;

```
String name;
String usn;
int marks[]=new int[3];
int credit[]=new int[3];
int totcredits()
int t=0,i;
for(i=0;i<3;i++)
t=t+credit[i];
return t;
}
class cs009{
public static void main(String args[])
System.out.println("enter the student name ,usn\n");
int i,t;
float sgpa=0;
```

```
Scanner sc=new Scanner(System.in);
student s1=new student();
s1.name=sc.nextLine();
s1.usn=sc.nextLine();
System.out.println("marks and credit of each subjects are\n");
for(i=0;i<3;i++)
s1.marks[i]=sc.nextInt();
if(s1.marks[i]==100)
s1.marks[i]=(s1.marks[i]/10);
else
s1.marks[i] = (s1.marks[i]/10) + 1;
s1.credit[i]=sc.nextInt();
sgpa=sgpa+s1.marks[i]*s1.credit[i];
}
t=s1.totcredits();
sgpa=sgpa/(t);
System.out.println("sgpa of"+s1.name+"is\n"+sgpa);
```

Lab program-a - Durlop a jour program to create class bludent with members USA, name an away reedite and an array marks Include methods to occept and deaplay details and a nethal to calculate scapa da student. import java, used scanner; class sendent String name; String usn: int morey] = new int [3]; At credit [] man int (3); int botcredite() 1 m+ +=0,91 for (1=0; 1c3; 1++) text (redit [i]; neturn +; y} class CSO44 public static void main (String args [] & system out printin (" enter the student name usn (n"). int it; float spazo; Scanner sie new Scanner (system in); student si znew student (); siname = sc next [ine ();





```
import java.util.Scanner;
```

```
Class book
String name;
String au;
double price;
int num_pages;
book(){}
book(String n,String a,double pr,int p)
{
name=n;
au=a;
price= 0;
num_pages=0;
}
void getd()
{
Scanner s=new Scanner(System.in);
System.out.println("enter the name of the book:");
name=s.next();
System.out.println("enter the name of the author");
```

```
au=s.next();
System.out.println("enter the price of book:");
price=s.nextDouble();
System.out.println("enter the number of pages");
num pages=s.nextInt();
}
public String toString()
{
String SSS="name of the book is"+name+" name of the author is"+au+"
price of the book is"+price+" number of pages in the book
is"+num_pages;
return SSS;
}
class main book
{
public static void main(String args[])
Scanner s1=new Scanner(System.in);
System.out.println("enter the number of books");
int n=s1.nextInt();
book b[]=new book[n];
for(int i=0;i<n;i++)
{ b[i]=new book();
```

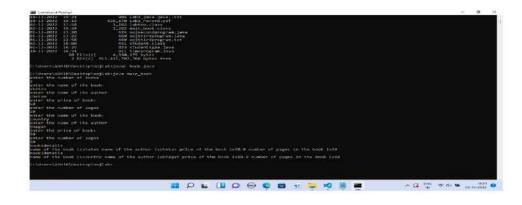
```
b[i].getd();

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

{
    System.out.println("book"+(i+1)+"details");
    System.out.println(b[i]);
    }
}</pre>
```

Lab program 3 - Greate a closs Book which contains folis members: name, author price, nom pages Include a constructor do set the value the members. Include methods to set and get the details of the objects. Brillede to sering I without that would duplay the complete duoier of the book, Dureloga Java program to areate A book objects. import java. util. sconner: Class Book Strong name; string au double price int num-pages Book I nome = n; auca; price = prio numpageszp; a of Sconner 5 = new Scanner (system in) System out print of "Enter the name of back;" name = s neat (); System. out printin ("Enter the name goverthor) an = sinest (); System out println (" Enter the price of book :"

price as near+ Pouble (); System out protto ["Enter the number of mempages = S. heat. Trot (): public string to String () Strong Sz" Name of the book je"+ normet"
Name of the occuthor is" + au +" Price o the book is " + price+" Number of pages in the book is " + num-pages" returns; closs main hook. public static void main (strong ange []) Scanner SI 2 new Scianner (System in) gystem out println (" Enter the number of books int n 251 next Int (); Book of] zmus Book [n] for (1nt izo; 1/n; i+t) { b[i] znew boot ()i 4/i) getd ()', system out protth ("Book") (1+1) + "deseries" suprem - out printly (bfi);



```
import java.util.Scanner;
abstract class shape
int x, y;
abstract void printArea();
void set()
{Scanner ss=new Scanner(System.in);
System.out.println("enter the height and breadth:");
x=ss.nextInt();
y=ss.nextInt();
class rectangle extends shape
{void printArea()
{System.out.println("the area of rectangle is:"+(x*y));}}
class triangle extends shape
{void printArea(){
System.out.println("the area of triangle is:"+(x*y*0.5));}
```

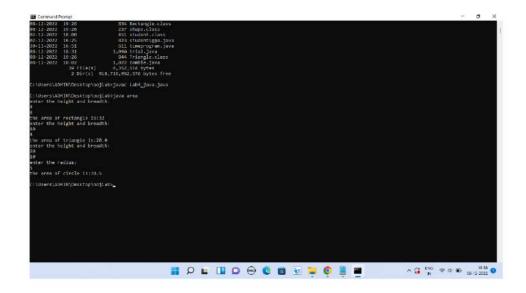
```
class circle extends shape
{void printArea()
{Scanner ss=new Scanner(System.in);
System.out.println("enter the radius:");
x=ss.nextInt();
System.out.println("the area of circle is:"+(3.14*x*x));
} }
class area
public static void main(String xx[])
rectangle rec=new rectangle();
rec.set();
rec.printArea();
triangle tri=new triangle();
tri.printArea();
tri.set();
circle cir=new circle();
cir.set();
cir.printArea();}
   }
```

Develop a java program to create an abstract class shope that contains the integers and on impty method manual point Area (). Provide these classes named Rectangle this and cincle such that each one of the classes internal the class shape sochood the classes contain only the method peint Area () that quints the area of the quien shape.

```
althout was shape
      abstract void produceal);
      Scanner St = new Scenner ( system. h).
      Cyrum out prolls ("soler the height and
      a = ss next Int():
      b. ss next Int ();
 Class lectangle extends shape
   void print Areal) [
     System out Prothe ("the area of rectangles
Class Triangle extends shape
    void print Arca(){
    system out printly "The area of Triangle lie"
 + ( a* b* 0.5) }
chass circle extends shope
  up to print Area ()
  Scanner ss = new scanner ( System in);
   system out printing "Enter the radius"
     a = SS next Int ():
Lycam . Out pout by!" the area of with is
     (3. ky *a *a))
class main - Abstract
 public static vord main Steing
    ectongle Rece new Pectongle ()
  Fee print Area ( ).
```

Sprangle the new Triangle ():

the print are all circle (): 3 cia paro Drea (); autput. Enter the height and break! the una of rectangle is: 50 enter the hught and broth: area of triongle is: 200 ently the radius:



```
import java.util.Scanner;
import java.lang.Math;
class account
String name=new String();
int accno;
double bal;
Scanner s=new Scanner(System.in);
void set()
System.out.println("Enter customer name");
name=s.nextLine();
System.out.println("Enter "+name+"'s account number");
accno=s.nextInt();
System.out.println("Enter balance amount ");
bal=s.nextDouble();
}
void display()
System.out.println("Customer Name:"+name);
System.out.println("Your account number:"+accno);
System.out.println("Your Account Balance:"+bal);
```

```
}
account(){}
}
class savacct extends account
Scanner s=new Scanner(System.in);
savacct()
System.out.println("Cheque Facility not available ");
void deposit()
{
int ch;
double amt;
System.out.println("Press 1 to deposit ");
ch=s.nextInt();
if(ch==1)
{
System.out.println("Enter amount to be deposited ");
amt=s.nextDouble();
bal=bal+amt;
else
```

```
System.out.println("Invalid Input");
void in()
{
System.out.println("Enter rate of interest ");
double r=s.nextDouble();
System.out.println("Enter number of times interest applied per time period");
int n=s.nextInt();
System.out.println("Enter number of time periods");
int t=s.nextInt();
double x=bal*(1+(r/n));
double ci=Math.pow(x,n*t);
System.out.println("Interest amount="+ci+" \nBalance amount without interest
is"+bal);
bal=bal+ci;
System.out.println("Available balance after updating is"+bal);
}
void wd()
System.out.println("Press 1 to withdraw ammount");
int ch=s.nextInt();
if(ch==1)
{
```

```
System.out.println("Enter the amount to be withdrawn ");
 double wdraw=s.nextDouble();
 bal=bal-wdraw;
 System.out.println("Available Balance:"+bal);}
 else System.out.println("Invalid input");
 }
 class curacct extends account
 Scanner s=new Scanner(System.in);
 curacct()
{System.out.println("Cheque Facility available ");}
 void deposit()
 int ch;
 double amt;
 System.out.println("Press 1 to deposit ");
 ch=s.nextInt();
 if(ch==1)
 {
 System.out.println("Enter amount to be deposited ");
 amt=s.nextDouble();
 bal=bal+amt;
```

```
}
else
System.out.println("Invalid Input");
void wd()
{
System.out.println("Press 1 to withdraw ammount");
int ch=s.nextInt();
if(ch==1)
System.out.println("Enter the amount to be withdrawn ");
double wdraw=s.nextDouble();
bal=bal-wdraw;
System.out.println("Available Balance:"+bal);}
else System.out.println("Invalid input");
if(bal<1000)
{
System.out.println("You are running out of minimum balance \nAmount of rs 50 has
been credited as service charge for having low balance");
bal=bal-50;
System.out.println("Your Available Balance:"+bal);
```

```
}
public class Lab5
{
public static void main(String xx[])
{
Scanner s=new Scanner(System.in);
int ch;
System.out.println("\n\press\n1. if your account is savings account \n2. if
your account is current account");
ch=s.nextInt();
switch(ch)
case 1:
savacct s1=new savacct();
s1.set();
s1.display();
s1.deposit();
s1.in();
s1.wd();
break;
case 2:
```

```
curacct c1=new curacct();
c1.set();
c1.display();
c1.deposit();
c1.wd();
break;
default : System.exit(0);
}
}
```

Develop a java program to create port that mainsains pure bunds of account for it useoners, one vouings and other uneus account the rowings oceand provides compound interest and withdrownel facilities but no whoge book feating The current account provides chaque book facility, but no interest warrant account holders should also mentain as minimum balence and if the balance falls below this level, a service should is imposed. deade a cloud secount that stokes authorise norm, account number and type of account from this desire the classes rue acct and saw acct to make them none spicific to their enquirements Sociede necessary methods to which were following darks of occupt deposits from customer and updatae be belonce 6) Deploy In bolonce. d) compute the appoint futurest. a permit withraval and update the balance check for minimum balance, impose proceed on recentary and update

Bafna Gold Owner: Page:
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import jak-long Nath;
dan account
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System out protto ("Cheque facility pot wailable"); void agorit() { int ch; double anti Systematis front in (" Press 100 deposit"). ch = s nextitut (); 9 (cht == 1) System out point in "Enter amount to be deposited") ant es rest Daisle(); bal = bal + amt; else System out printly " Trucked Input"); void for () I system out pointly ("Enter rate of interest"); double TES next Double (); System west post of the member of time merest applied per time period ")" int nos next Int (); System out println ("Enter number of time perceds") int to sheatTate): double x = bol (1+(r/n)); double ci=Noth pow (x,n++); Sighten, and printly ("Interest amount " + cit" In Palance gomernt without interest is + bal) tal zbal +ci;

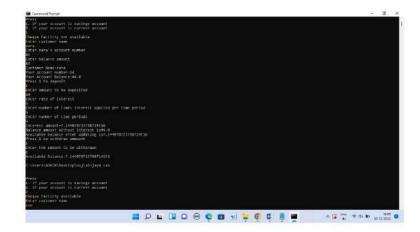
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System out	pronten ("Available Balance" "+ had) }
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	THE RESERVE



```
import java.util.Scanner;
class Wrongage extends Exception
{String msg=new String();
Wrongage(String x)
\{mag=x;
public String toString()
{return msg;}
class Lessage extends Exception{
String msg=new String();
lessage(String x)
{msg=x;}
public String toString()
{return msg;}
class father{
int fage;
father()throws wrongage
{Scanner s=new Scanner(System.in);
System.out.println("enter father's age:");
fage=s.nextint();
```

```
if(fage<0)
{throw new wrongage("age cannot be negative");
}
class son extends father
{int age;
son()throws Wrongage, Lessage
{system.out.println('enter the son's age");
sage=s.next int();
if (sage<0)
{throw new wrongage("age cannot be negative");}
else if(sage>=fage)
{throw new Lessage("father's age cannot be less than son's
age");
class main
{public static void main(String args[])
{try{son s1=new son();
father f1=new father();
catch(Wrongage wa)
```

```
{
System.out.println(wa);
catch(lessage la)
{
System.out.println(la);
}
}
```

Bafna Gold a) Muite a program that dummitantes handling of marghine in inhuisence free coats about class called "Father" and desimed dow called "Son" which estends the have close . En father class implement a construction which states the age the exception Wrongsqu() when input age co. In son class, implement a construction that cares both falker and some one and thurses an exception if work age is > = father's age class father Agistrophion entends Exception public string tostring() 1 return ("Pather's oge is un trat 0"); Class confige Enception extends Exception (SonAgetraption (int age) { public String to String () of if (260) matura ("sode age is enthon o")", neurs ("son's age is note than father's age") clays father & (6) int age;

Sconner in - new Sconner (System to); Septem and printer (" Ensur the fathers age: "); age - In . next Int (): world earl () throws tather Age exception if (age co) thon an famulge Exception (); day son extends Fathery int age; System out pointhon (" sales the age of con: "); age = in next Int (); void enz () tonoros son Agrenceptions is lage to 11 age > super age) { Amors new son Agricultion (agr); public doss except public status void main (sing [] angs If Son 3 2 new son(); try of catch (father sylveception e) } System out printin (e);

truy (): Leater (son Agerneuption e) of System aut printin(e): System aut printin(e): Sontie fortheads age: Sond age in more transfather's age. The the age of lon: Son the the age of lon: Son the age of lon: Son the age of lon:		Rofing Gold -
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Entre tor aged son: Entre tor aged son: Son's age in more trem fother's age. Entre the father's age: Entre tore gge of Lon:	T.A.	S.tall);
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Enter the age of son:
50

C:\Users\bmsce\Desktop\1bm21cs020>java except
Enter the father's age:
3
Enter the age of son:
6
Son's age is more than father's age
C:\Users\bmsce\Desktop\1bm21cs020>
```

LAB 7

```
import java.util.Scanner;
class Bms extends Thread
Synchronized public void run(){
try{
int i=0;
while(i<5){
sleep(10000);
System.out.println("BMS college of Engineering");
i++
} }
catch(Exception e) {
} } }
class cse extends Thread
Synchronized public void run(){
try{
int i=0;
while (i < 5) {
sleep(2000);
System.out.println("Computer Science Engineering);
i++
```

```
{catch(Exception e)

}}

class main{

public static void main(String args[]){

Bms t1=new Bms();

Cse t2=new Cse();

t1.start();

t2.start();

}

}
```

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```

LAB 8

```
package CIE;
import java.util.*;
public class student{
    Scanner sc=new Scanner(System.in);
    public String usn, name;
    public int sem;
    public void accept(){
        System.out.println("Enter USN, Name and Current semester: ");
        usn=sc.nextLine();
        name=sc.nextLine();
        sem=sc.nextInt();
    }
    public void display() {
        System.out.println("\nStudent Details");
        System.out.println("Name: "+name);
        System.out.println("USN: "+usn);
        System.out.println("Semester: "+sem);
    }
}
package CIE;
import java.util.*;
public class internals extends CIE.student {
    Scanner sc=new Scanner(System.in);
    public int ciem[]=new int[5];
```

```
public void accept(){
        int i;
        for(i=0;i<5;i++)
        { System.out.println("Enter CIE marks of subject "+(i+1));
          ciem[i]=sc.nextInt();
    }
package SEE;
import CIE.*;
import java.util.*;
public class externals extends CIE.student{
    Scanner sc=new Scanner(System.in);
    public int seem[]=new int[5];
    public void accept(){
        for(int i=0;i<5;i++)
            System.out.println("Enter SEE marks of subject "+(i+1));
            seem[i]=sc.nextInt();
        }
```

```
import CIE.*;
import SEE.*;
import java.util.*;
class total{
   public static void main(String args[]) {
       int i,j,n;
       Scanner sc=new Scanner(System.in);
       int total[]=new int[5];
       System.out.println("Enter number of students: ");
       n=sc.nextInt();
       CIE.student s[]=new CIE.student[n];
       CIE.internals ci[]=new CIE.internals[n];
       SEE.externals se[]=new SEE.externals[n];
       for(i=0;i<n;i++)
        {
            System.out.println("\nEnter student "+(i+1)+" details");
            s[i]=new CIE.student();
            s[i].accept();
           ci[i]=new CIE.internals();
           ci[i].accept();
           se[i]=new SEE.externals();
           se[i].accept();
       for(i=0;i<n;i++)
        {
            System.out.println("\nDetails of student "+(i+1));
            s[i].display();
```

```
for(j=0;j<5;j++)

{
    total[j]=ci[i].ciem[j]+se[i].seem[j];
    System.out.println("Total marks in subject "+(j+1)+":
"+total[j]);
}
System.out.println();
}
</pre>
```

```
Enter number of students:
Enter student 1 details
Enter USN, Name and Current semester:
1bm21cs020
amulya
Enter CIE marks of subject 1
Enter CIE marks of subject 2
Enter CIE marks of subject 3
Enter CIE marks of subject 4
Enter CIE marks of subject 5
Enter SEE marks of subject 1
Enter SEE marks of subject 2
Enter SEE marks of subject 3
35
Enter SEE marks of subject 4
Enter SEE marks of subject 5
35
Enter student 2 details
Enter USN, Name and Current semester:
1bm21cs021
anagha
Enter CIE marks of subject 1
```

```
Details of student 2

Student Details
Name: anagha
USN: 1bm21cs021
Semester: 3
Total marks in subject 1: 71
Total marks in subject 2: 70
Total marks in subject 3: 60
Total marks in subject 4: 64
Total marks in subject 5: 63

C:\Users\bmsce\Desktop\1bm21cs020>
```

```
Enter number of students:
Enter student 1 details
Enter USN, Name and Current semester:
1bm21cs020
amulya
Enter CIE marks of subject 1
Enter CIE marks of subject 2
Enter CIE marks of subject 3
Enter CIE marks of subject 4
Enter CIE marks of subject 5
Enter SEE marks of subject 1
Enter SEE marks of subject 2
Enter SEE marks of subject 3
35
Enter SEE marks of subject 4
Enter SEE marks of subject 5
35
Enter student 2 details
Enter USN, Name and Current semester:
1bm21cs021
anagha
Enter CIE marks of subject 1
```

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sylin out porton ("Total ments in subject "+(j+1)+"
i"+ total [j]); } syrem out printen (); }