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“JnanaSangama”, Belgaum -590014, Karnataka.



LAB REPORT on

OBJECT ORIENTED JAVA

Submitted by

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



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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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Index

Sl. No.	Date	Experiment Title	Page No.
1	18/11/22	Lab program 1	04-08
2	02/12/22	Lab program 2	09-13
3	02/12/22	Lab program 3	14-19
4	09/12/22	Lab program 4	20-25
5	16/12/22	Lab program 5	26-41
6	30/12/22	Lab program 6	42-48
7	06/1/23	Lab program 7	49-53
8	13/1/23	Lab program 8	54-60

LAB 1

```
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);}
}
}
}

```

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 there are no real solutions.

```
import java.util.Scanner;
public 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();
        if (a == 0.0)
            System.out.println("The value of a cannot be 0");
        System.out.println("Enter the value of b:");
        double b = input.nextDouble();
        System.out.println("Enter the value of c:");
        double c = input.nextDouble();
        double d = b*b - 4.0*a*c;
        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 "+ r1 + " and " + r2);
        }
        else if (d == 0.0)
```

```

{
    double r1 = -b / (2 * a);
    system.out.println("The roots are equal and " + r1);
}
else
{
    if (d < 0)
    {
        r1 = (-b + Math.abs(Math.sqrt(d)) / (2 * a));
        system.out.println("The roots are: " + "i" + " " + r1 + " and "
            + "i" + r2);
        r3 = (-b - Math.abs(Math.sqrt(d)) / (2 * a));
        system.out.println("The roots are imaginary and "
            + " " + "i" + r3 + " and " + "i" + r4);
    }
}
}
}
}

```

```
C:\Users\BMSCECSEIL74\Desktop\1BM21CS005>java QuadraticEquation
Enter the value of the coefficients
Enter the value of a:
1
Enter the value of b:
1
Enter the value of c:
1
The roots are imaginary and are -0.5 +i 0.8660254037844386 and -0.5 +i -0.866025
4037844386

C:\Users\BMSCECSEIL74\Desktop\1BM21CS005>java QuadraticEquation
Enter the value of the coefficients
Enter the value of a:
4
Enter the value of b:
-4
Enter the value of c:
1
The roots are real and equal and are0.5 and 0.5

C:\Users\BMSCECSEIL74\Desktop\1BM21CS005>java QuadraticEquation
Enter the value of the coefficients
Enter the value of a:
1
Enter the value of b:
4
Enter the value of c:
3
The roots are real and distinct and are -1.0 and -3.0
```


LAB2

```
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-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.

```
import java.util.Scanner;
class student
{
    String name;
    String usn;
    int marks[] = new int [3];
    int credit[] = new int [3];
    int totcredits()
    {
        int t=0;
        for (i=0; i<3; i++)
        {
            t+=credit[i];
        }
        return t;
    }
}
class CS044
{
    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.un = sc.nextInt();
s.o.p("marks and credit of each subject are")
for (i=0; i<3; i++)
{
    s1.marks[i] = sc.nextInt();
    if (s1.marks[i] >= 100)
        s1.marks[i] = (s1.marks[i]/100);
    else
        s1.marks[i] = (s1.marks[i]/10)+1;
    s1.credit[i] = sc.nextInt();
    sgpa = sgpa + s1.marks[i] + s1.credit[i];
}
sgpa = sgpa/40;
s.o.p("sgpa of " + s1.name + " is \n" + sgpa);
}
    
```

[illegible]

LAB 3

```
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]);  
  
    }  
  
}  
  
}
```


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. Write a Java program to create a book objects.

```
import java.util.Scanner;
class Book
{
    String name;
    String au;
    double price;
    int num-pages;
}
Book
{ name = n;
  au = a;
  price = pr; 0
  num-pages = p; 0
}
void getdata ( )
{ Scanner s = new Scanner (system.in)
  System.out.println("Enter the name of book :")
  name = s.next();
  System.out.println("Enter the name of author")
  au = s.next();
  System.out.println("Enter the price of book :")
```

```

price = s.nextDouble();
System.out.println("Enter the number of
pages");
numPages = s.nextInt();
}
public String toString()
{
    String s = "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 " + numPages;
}
return s;
}

```

class mainBook

```

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

```

```

C:\Users\ADMIN\Documents>gcc -std=c99 -c book.c -o book.o
C:\Users\ADMIN\Documents>gcc -std=c99 -o book.exe book.o
C:\Users\ADMIN\Documents>./book.exe
Enter the number of books: 3
Enter the name of the book:
Enter the name of the author:
Enter the price of book:
Enter the number of pages:
Enter the name of the book:
Enter the name of the author:
Enter the price of book:
Enter the number of pages:
Book details:
Name of the book is: name of the author is: price of the book is: $0.0 number of pages in the book is: 0
Book details:
Name of the book is: name of the author is: price of the book is: $0.0 number of pages in the book is: 0
C:\Users\ADMIN\Documents>

```

LAB 4

```
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();}

}

```

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 ~~inherits~~ ^{extends} the class Shape. 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
```

```
{
```



```

abstract class shape
{
    int a, b;
    abstract void printArea();
    void set()
    {
        Scanner ss = new Scanner(System.in);
        System.out.println("Enter the height and breadth.");
        a = ss.nextInt();
        b = ss.nextInt();
    }
}

class Rectangle extends shape
{
    void printArea() {
        System.out.println("The area of rectangle is: " + (a * b));
    }
}

class Triangle extends shape
{
    void printArea() {
        System.out.println("The area of Triangle is: " + (a * b * 0.5));
    }
}

class circle extends shape
{
    void printArea()
    {
        Scanner ss = new Scanner(System.in);
        System.out.println("Enter the radius:");
        a = ss.nextInt();
        System.out.println("The area of circle is: " + (3.14 * a * a));
    }
}

class main - Abstract
{
    public static void main (String x[])
    {
        Rectangle Rec = new Rectangle();
        Rec.set();
        Rec.printArea();
    }
}

```

Triangle the new Triangle();

tri.set();

Circle cin = new circle();

cin.printArea();

}

}

output:

enter the height and breath:

10

5

the area of rectangle is: 50

enter the height and breath:

5

5

area of triangle is: 20.0

enter the radius:

5

12
9/12

the area of circle is: 78.5


```
Command Prompt
20-12-2022 19:20      836 Rectangle.class
20-12-2022 19:20      437 shape.class
20-12-2022 19:00      451 student.class
20-12-2022 16:25      823 studentgpa.java
20-11-2022 16:51      611 timeprogram.java
20-12-2022 16:31      1,046 trial.java
20-12-2022 19:20      644 Triangle.class
20-12-2022 18:40      1,422 zombie.java
20-12-2022 18:40      2 Dir(s)  918,716,952 bytes free

C:\Users\ADMIN\Desktop\lab>javac Lab4_java.java

C:\Users\ADMIN\Desktop\lab>java area
enter the height and breadth:
4
5
The area of rectangle is:32
enter the height and breadth:
10
4
The area of triangle is:20.0
enter the height and breadth:
20
10
enter the radius:
5
The area of circle is:78.5

C:\Users\ADMIN\Desktop\lab>
```

LAB 5

```
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\nPress\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);
```

```
}
```

```
}
```

```
}
```


5. Develop a java program to create bank that maintains two kinds of account for its customers, one savings and 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 savings and current to make them more specific to their requirements.

Include necessary methods to achieve following tasks:

- accept deposit from customer and update the balance
- Display the balance
- compute the deposit interest
- permit withdrawal and update the balance

check for minimum balance, impose penalty if necessary and update the balance

```

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 the 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);
    }
}
class car acc extends account
{
    Scanner s = new Scanner(System.in);
    sav acc()

```

```

    }
    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 An()
    {
        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);
        System.out.println("In Balance amount without interest is " + bal);
        bal = bal + ci;
    }

```

Assignment: ATM System
 Date: Page:

```

    System.out.println("Available balance after
    updating is "+ bal);
  }
  void wdd()
  {
    System.out.println("Press 1 to withdraw
    amount");
    int ch = scanner.nextInt();
    if (ch == 1)
    {
      System.out.println("Enter the amount to be
      withdrawn");
      double wdrow = scanner.nextDouble();
      bal = bal - wdrow;
      System.out.println("Available balance: "+ bal);
    }
    else System.out.println("Invalid input");
  }
}

class curraaccnt extends account
{
  Scanner s = new Scanner(System.in);
  curraaccnt()
  {
    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)
  }
}
  
```



```

}
public static void main (String xx[])
{
    Scanner s = new Scanner (System.in);
    int ch;
    System.out.println("Welcome! If your account  
is savings account '1' if your account  
is current account");
    ch = s.nextInt();
    switch (ch)
    {
        case 1:
            Savings s1 = new Savings();
            s1.set();
            s1.display();
            s1.deposit();
            s1.in();
            s1.withd();
            break;
        case 2:
            Current c1 = new Current();
            c1.set();
            c1.display();
            c1.deposit();
            c1.withd();
            break;
        default:
            System.exit(0);
    }
}
}

```

output

* Press

1. if your account is savings account.
2. if your account is current account.

2

cheque facility available

Enter customer name

Sara

Enter Sara's account number

22556

Enter balance amount

50000

Customer Name: Sara

Your account number: 22556

Your account balance: 50000.0

Press 1 to deposit

↓

Enter amount to be deposited

10000

Press 1 to withdraw amount

1

Enter the amount to be withdrawn

5000

Available balance: 55000.0

* Press

1. if your account is ~~savings~~ account
2. if your account is ~~current~~ account

1

cheque facility not available

Enter customer name

Sara

Enter Sara's account number

52555

Enter balance 50000.0

Press 1 to deposited

1

Enter Amount to be deposited

10000

Enter rate of interest

5

Enter number of times interest applied per time period

5

Enter number of time periods

10

Interest amount = 91004215.00

Balance amount without interest is 60000.0

available balance after updating is

press 1 to withdraw amount

1

Enter the amount to be withdrawn

10000

Available balance 90000.0

22


```

C:\Users\Parag>python Savings.py
Press
1. if your account is savings account
2. if your account is current account
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```

LAB 6

```
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);  
}  
}  
}
```

- a) 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 calls both father and son's age and throws an exception if son's age is \geq father's age.

```
class FatherAgeException extends Exception
```

```
{
    public String toString() {
        return ("Father's age is less than 0");
    }
}
```

```
class SonAgeException extends Exception {
```

```
    int a;
    SonAgeException(int age) {
        a = age;
    }
```

```
    public String toString() {
        if (a < 0)
            return ("son's age is less than 0");
        else
            return ("son's age is more than father's age");
    }
}
```

```
class Father {
    int age;
```

```

Scanner in = new Scanner (System.in);
Father f;
System.out.println ("Enter the father's age:");
age = in.nextInt();
}
void ex1 () throws FatherAgeException {
    if (age < 0)
        throw new FatherAgeException ();
}
}
class Son extends Father {
    int age;
    Son () {
        System.out.println ("Enter the age of Son:");
        age = in.nextInt();
    }
    void ex2 () throws SonAgeException {
        if (age < 0 || age > super.age) {
            throw new SonAgeException (age);
        }
    }
}
}

public class except {
    public static void main (String [] args) {
        Son s = new Son();
        try {
            s.ex1();
        }
        catch (FatherAgeException e) {
            System.out.println (e);
        }
    }
}

```

```
try {  
    s.erase();
```

```
}  
catch (const AgeException &e) {  
    System.out.println(e);  
}
```

```
}
```

output

Enter father's age:

3

Enter the age of son:

6

Son's age is more than father's age.

Enter the father's age:

90

Enter the age of son:

50

```
C:\Users\bmsce\Desktop\1bm21cs020>java except
Enter the father's age:
90
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();
```

```
}
```

```
}
```

11/123

Lab program

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.

```
import java.util.Scanner;
class Bms extends Thread {
    synchronized public void run() {
        try {
            int i=0;
            while (i<5) {
                sleep (1000);
                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 ();
}
}

```

output

computer science engineering
 computer science engineering
 computer science engineering
 computer science engineering
 BMS college of engineering
 computer science engineering
 BMS college of engineering
 BMS college of engineering
 BMS college of engineering
 BMS college of engineering

Done
 6-1-23

```
CA Command Prompt
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\BMSCECSEIL74>cd C:\Users\BMSCECSEIL74\Desktop\usnnn
C:\Users\BMSCECSEIL74\Desktop\usnnn>javac threads.java
C:\Users\BMSCECSEIL74\Desktop\usnnn>java Main
Computer science engineering
Computer science engineering
Computer science engineering
Computer science engineering
Computer science engineering
BMS college of engineering
Computer science engineering
BMS college of engineering
BMS college of engineering
BMS college of engineering
BMS college of engineering
C:\Users\BMSCECSEIL74\Desktop\usnnn>
```

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();
    }

}
```

```
Enter number of students:
2
Enter student 1 details
Enter USN, Name and Current semester:
1bm21cs020
amulya
3
Enter CIE marks of subject 1
25
Enter CIE marks of subject 2
35
Enter CIE marks of subject 3
36
Enter CIE marks of subject 4
26
Enter CIE marks of subject 5
37
Enter SEE marks of subject 1
28
Enter SEE marks of subject 2
27
Enter SEE marks of subject 3
35
Enter SEE marks of subject 4
35
Enter SEE marks of subject 5
35
Enter student 2 details
Enter USN, Name and Current semester:
1bm21cs021
anagha
3
Enter CIE marks of subject 1
35
```

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:

2

Enter student 1 details

Enter USN, Name and Current semester:

1bm21cs020

amulya

3

Enter CIE marks of subject 1

25

Enter CIE marks of subject 2

35

Enter CIE marks of subject 3

36

Enter CIE marks of subject 4

26

Enter CIE marks of subject 5

37

Enter SEE marks of subject 1

28

Enter SEE marks of subject 2

27

Enter SEE marks of subject 3

35

Enter SEE marks of subject 4

35

Enter SEE marks of subject 5

35

Enter student 2 details

Enter USN, Name and Current semester:

1bm21cs021

anagha

3

Enter CIE marks of subject 1

35

