Lab Program 1:

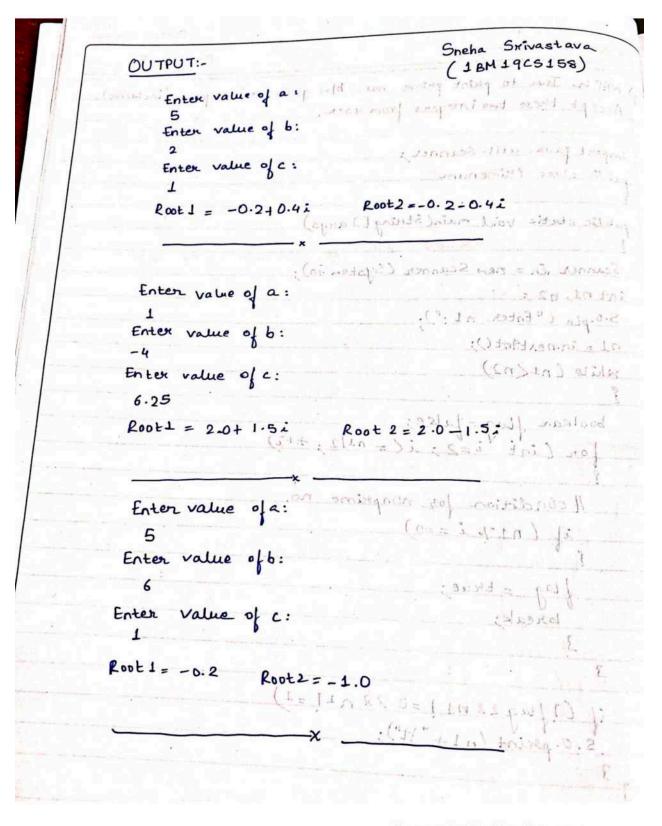
Develop a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminate b2-4ac is negative, display a message stating that there are no real solutions.

```
import java.util.Scanner;
public class Quadratic
public static void main(String args[])
  double a,b,c;
  double root1, root2;
  Scanner in=new Scanner(System.in);
  System.out.println("Enter value of a: ");
  a=in.nextDouble();
  System.out.println("Enter value of b: ");
  b=in.nextDouble();
  System.out.println("Enter value of c: ");
  c=in.nextDouble();
  double determinant=(b*b)-(4*a*c);
  double sq=Math.sqrt(determinant);
  // condition for real and different roots
  if(determinant>0)
  root1=((-b+sq)/(2*a));
  root2=(-b-sq)/(2*a);
  System.out.println("Root 1= "+root1+"\t"+"Root2= "+root2);
  // condition for real and equal roots
  else if(determinant==0)
  root1=root2=(-b+sq)/(2*a);
  System.out.println("Root 1=Root 2= "+root1);
  // condition for roots that are not real
  else
  double real=-b/(2*a);
  double img=Math.sqrt(-determinant)/(2*a);
  System.out.println("Root 1= "+real+"+"+img+"i"+"\t"+"Root2= "+real+"-"+img+"i");
 }
                                  |Snehas-MacBook-Pro:~ snehasrivastava$ javac Quadratic.java
```

```
|| Snehas-MacBook-Pro:~ snehasrivastava$ java Quadratic
Enter value of a:
Enter value of b:
Enter value of c:
Root 1 = -0.2 + 0.4i
                        Root2= -0.2-0.4i
[Snehas-MacBook-Pro:~ snehasrivastava$ java Quadratic
Enter value of a:
Enter value of b:
Enter value of c:
6.25
Root 1= 2.0+1.5i
                        Root2= 2.0-1.5i
|Snehas-MacBook-Pro:~ snehasrivastava$ java Quadratic
Enter value of a:
Enter value of b:
Enter value of c :
Root 1 = -0.2 Root 2 = -1.0
Snehas-MacBook-Pro:~ snehasrivastava$
```

		Date
Expt. No.	LAB PROGRAM-1	(12M19cs158) Page No6
7) Develop a Java pr	agream that prints	all real solutions to the
quadractic equation	1 ax2+bx+ c=0	. Read in a, b, c and use
the quadratic for	unula. If the discri	iminate b1- 4ac is negative, we are no real solutions.
imposet java. util. Sc	anner;	
public class guadre		
public static voice	d main (String args []	
double a, b, c	<u>, </u>	
double noots	, xoot2;	
Scanner in = ne	w Scamer (System. in);
100	value of a: ");	
a = in.nextDou	727 10	
S.O.pln ("Enterv	value of b: ");	
b= in.nextDoub		
S.O.pln(" Enter v	alue of c:");	
C=in.next Doub		
double determin	nant = (b*b) -(4*	·a*c);
Il condition for	ath sqrt (determina 2 real and differe	ent scoots
if (determinan	t>0)	
٤ '		
root1 = ((-b-	+sq) ((2+a));	
300t2 = (-b-	-sq) 1(2+a);	
S.O.pln(" Root	-sq) 1(2+a); 1="+noot1+"1t"+	"Root2="+ noot2);
3		feacher's Signature :

	Date
Expt. No (18N19CS158)	Page No7
11 condition fox real and equal xoots	
else s (determinant == 0)	
noots = noot 2 = (-b+sq)/(2*a);	
3.0.pln ("Roots = Root2 = "+ noots);	
Il condition for moots that are not real	
e Ise	
double real = -6/ (2 * a);	
double ing = Math. sqrt(-determinant) 5.0-pln("Root1 = "+ real + "+" + ing + "i" + ")	/(2*a):
5.0-pln ("Roots = "+ real + "+" + img + ":" + ")	1t" + "Root 2 = "+ Heal+"-
img + 'i");	
3	
3	
	*
Teacher's	s Signature :



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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.*;
public class Student
   String name;
   String USN;
   int marks[]=new int[5];
   int credits[]=new int[5];
     int tot=0;
     int i;
     int grade=0:
  void read_data()
  {
       Scanner obj=new Scanner(System.in);
       System.out.println("ENTER THE NAME OF THE STUDENT:\n");
       name=obj.next();
       System.out.println("ENTER THE USN:\n");
       USN=obj.next();
       System.out.println("ENTER THE CREDITS AND MARKS FOR 5 SUBJECTS:\n");
       for(i=0; i<5; i++)
          System.out.println("CREDITS FOR SUBJECT "+(i+1)+": ");
          credits[i]=obj.nextInt();
          System.out.println("\nMARKS FOR SUBJECT "+(i+1)+": ");
          marks[i]=obj.nextInt();
  }
   void calc_SGPA()
     for(i=0; i<5; i++)
       if(marks[i]>=90 && marks[i]<=100)
          grade = 10;
       else if(marks[i]>=75 && marks[i]<90)
          grade = 9;
       else if(marks[i]>=60 && marks[i]<75)
          grade = 8;
       else if(marks[i]>=50 && marks[i]<60)
          grade = 7;
       else if(marks[i]>=45 && marks[i]<50)
          grade = 6;
       else if(marks[i]>=40 && marks[i]<45)
          grade = 5;
       else if(marks[i]<40)
          grade = 0;
          tot = tot + grade * credits[i];
    tot = tot/20;
     System.out.println("Total SGPA:" +tot);
```

[Snehas-MacBook-Pro:~ snehasrivastava\$ javac Student.java

```
}
void details()
{
    System.out.println("NAME:"+name);
    System.out.println("USN:"+USN);
    System.out.println("MARKS and CREDITS OF ALL 5 SUBJECTS:");
    for(i=0;i<5;i++)
    {
        System.out.print(marks[i]+"\t");
        System.out.println(credits[i]);
    }
    calc_SGPA();
}

public static void main(String args[])
{
    Student ob=new Student();
    ob.read_data();
    ob.calc_SGPA();
    ob.details();
}
</pre>
```

```
[Snehas-MacBook-Pro:~ snehasrivastava$ java Student
ENTER THE NAME OF THE STUDENT:
Sneha
ENTER THE USN:
1BM19CS158
ENTER THE CREDITS AND MARKS FOR 5 SUBJECTS:
CREDITS FOR SUBJECT 1:
MARKS FOR SUBJECT 1:
87
CREDITS FOR SUBJECT 2:
4
MARKS FOR SUBJECT 2:
CREDITS FOR SUBJECT 3:
MARKS FOR SUBJECT 3:
CREDITS FOR SUBJECT 4:
MARKS FOR SUBJECT 4:
CREDITS FOR SUBJECT 5:
3
MARKS FOR SUBJECT 5:
95
Total SGPA:8
NAME: Sneha
USN:1BM19CS158
MARKS and CREDITS OF ALL 5 SUBJECTS:
87
65
        4
90
        3
73
        4
95
Total SGPA:8
Snehas-MacBook-Pro:~ snehasrivastava$
```

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		9/10/2020
	LAB PROGRAM-2	Sneha Ski vastava
•	ALGORITHM :-	(1BM19CS136)
STEP:1:-	START.	in and in the second
STEP: 1:	importjava util. * package creat	ed along with class Ct de
STEP: 3:-	Required variablesh array created	J Class Staden
STEP: 4:-	void read-data () method created	to to wood me
	Credits & marks of the student	to hear name, Usn
STEP: 5:	void calc-SG2PA() method cre	1124 C 11
	the SCIPA of 5 subjects across	eated so as to calculate
	and grade points al account	ding to the marks
STEP:6:	SCIPA alter alter	Subject.
STEP: 7	SCIPA after calculation is	printed.
	Creation of void details () m	ethod to display all the
	on the screen i.	e. Name 175N LAPINE
STEP:8:	The state of the s	
	Now, main method () is cre Ob is Created	ated and an object
STEP:9:	14 1 17 14 14	D. SALE DO DE
	The object ob calls all the	the three methods
er en	vo. sead_data(), ob.	cala Scion 11
STEP: 10:	I I I I I I I I I I I I I I I I I I I	IFS.
	of main () method alo	ing with the close
STEP:11:	1	
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	i. nextinte).	rucki es lile o
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	- norther C	ass Lide Anne
		After the letter than the lett
	Cash 1	
		nie nie

ese VI	rall and and and analysis and and analysis analysis and analysis and analysis analys
1,25	
	import java .util.*;
	DUBLE
1000 100	E a little of the series of th
	String name; String USN; String USN; String USN;
HPC V	
	int marks () = ne H int [5]
Cakent	int credits [] = new int [6]; 2 also bis
29.5	int tot = 0; areas = = = 100 d 10 4903 arving
	int interes a read print int
	integrade = 0; mintustus costo Aguas Fistilia
- 41A	void read-data()
s M G ad	sequiscencents on the system is Name 13 A
	Scanner obj = new Scanner (System.in); had
25 10	S.O. PLA ("ENTER THE NAME OF THE STUDENT : 17")
	name = obj.next(); bostoski il
N Octo	S.O.PLA("ENTER THE USN: In");
sh. go	USN = obj. next(); (work hook do . si
	S.O. PLA ("ENTER THE CREDITS AND MARKS FOR 5 SUBJECTS
97.51	Jon (i=0; i(5; i+1) () in (, see)
	le les Student.
	S. O. pla ("CREDITS FOR SUBTECT"+ (i+1)+":")
	credits [i] = obj. nextInt().
	S.O.pln ("In MARKS FOR SUBJECT"/()
	marks [i] = obj -nextInt();
	3
	3
	Void calc-SGPA()
	{
	jon (i=0; i(5; i++)

```
[ (marks [i] ) = 9028 marks [1] = 100)
else il (marks [i]) = 75 && (marks[i] (90))
    if (marks [i]) =60 22 marks [i], (. 75)
  e if (marks[i])=50 & R marks[i] (60).
   se 2/ ( marks [i] > -45 & & marks [i] (45)
  else if (marks [i] (40)
   tot -tot + grade * credits [i];
 S.o.pla ("Total SapA:"+tot);
  S.O. pln ("NAME:"+name);
 S.O. pln ("USN: "+ USN).
 S.O. pln (" MARKS Fand (REDITS OF ALL 5 SUBJECTS:");
  5.0.p (maxks[i]+"1t");
   (al - SGIPA();
```

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Student ob = r	new Student ():	141
Ob. nead-data	(C);	Addition to the
ob. cale - SGIP	The second secon	
ob. details();		AND AND AND
7	131,104,1 (E.m List - 4, 1, 1),13	and A V Phison
N. 55 (723) 4 28 X (SE		
	e Core > 161 and	
		All man of the late of the lat

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.

```
import java.util.*;
class Book1
  String name, author;
  double price;
  int num_pages;
    public Book1()
    this.name="":
    this.author="":
    this.price=0.0;
    this.num pages=0;
    public void DETAILS()
    Scanner ob=new Scanner(System.in);
    System.out.println("ENTER THE NAME OF THE BOOK\n");
    name=ob.nextLine();
    System.out.println("ENTER THE NAME OF THE AUTHOR");
    author=ob.nextLine();
    System.out.println("ENTER THE PRICE OF THE BOOK");
    price=ob.nextDouble();
    System.out.println("ENTER THE NUMBER OF PAGES OF THE BOOK");
    num_pages=ob.nextInt();
   public void ToString()
   System.out.println("****DETAILS OF THE BOOK****");
   System.out.println("NAME OF THE BOOK:"+name);
   System.out.println("NAME OF THE AUTHOR:"+author);
   System.out.println("PRICE OF THE BOOK:"+price);
   System.out.println("NO. OF PAGES OF THE BOOK:"+num_pages);
   public static void main(String args[])
    int i=0,n;
    Book1 obj=new Book1();
    Scanner ob1=new Scanner(System.in);
    System.out.println("ENTER THE LIMIT");
    n=ob1.nextInt();
    for(i=1;i \le n;i++)
      obj.DETAILS();
      obj.ToString();
}
```

```
Snehas-MacBook-Pro:~ snehasrivastava$ javac Book1.java
Snehas-MacBook-Pro:~ snehasrivastava$ java Book1
ENTER THE LIMIT
ENTER THE NAME OF THE BOOK
Computer Applications
ENTER THE NAME OF THE AUTHOR
Sumita Arora
ENTER THE PRICE OF THE BOOK
ENTER THE NUMBER OF PAGES OF THE BOOK
1020
****DETAILS OF THE BOOK****
NAME OF THE BOOK: Computer Applications
NAME OF THE AUTHOR: Sumita Arora
PRICE OF THE BOOK:980.0
NO. OF PAGES OF THE BOOK:1020
ENTER THE NAME OF THE BOOK
Understanding JAVA
ENTER THE NAME OF THE AUTHOR
Vijay Kumar Pandey
ENTER THE PRICE OF THE BOOK
759.98
ENTER THE NUMBER OF PAGES OF THE BOOK
894
****DETAILS OF THE BOOK****
NAME OF THE BOOK: Understanding JAVA
NAME OF THE AUTHOR: Vijay Kumar Pandey
PRICE OF THE BOOK:759.98
NO. OF PAGES OF THE BOOK:894
ENTER THE NAME OF THE BOOK
OOJ Concepts
ENTER THE NAME OF THE AUTHOR
Mc-GrawHill
ENTER THE PRICE OF THE BOOK
1345.86
ENTER THE NUMBER OF PAGES OF THE BOOK
2985
****DETAILS OF THE BOOK****
NAME OF THE BOOK: OOJ Concepts
NAME OF THE AUTHOR: Mc-GrawHill
PRICE OF THE BOOK:1345.86
NO. OF PAGES OF THE BOOK: 2985
Snehas-MacBook-Pro:~ snehasrivastava$
```

pt. N	D LAB PROGRAM - 3 (18M19 (5158) Page No. 12
	LAB PROGRAM - 3 (1BM19 CS158) Page No. 12
Cxe	-pages. Include a construction to set the values for the
men	bers. Include methods to set & get the details of the objects.
Inc	lude a to String () method that could display the complete detail
ol t	he book. Develop a Java program to create in book objects.
1	Fig. 19 - 19 - 19 - 19 - 19 - 19 - 19 - 19
imi	ont java.util.*;
	ass Book 1
3	- A A A A A A A A A A A A A A A A A A A
	tring name author:
	double price;
	int num-pages;
	public Books()
	Same to the same of the same o
14	this. name=";
	this. author=";
	this. pxice = 0.0;
	this. num-pages = 0;
	public void DETAILS()
	ž
	Scanner ob = new Scanner (System.in);
_	S.O. pla ("ENTER THE WAME OF THE BOOK In");
	name of modifice ():
	S.O. PLA (" ENTER THE NAME OF THE AUTHOR").

	Date
t. No	Page No 13
author = ob. nextline();	
S.O. PLA ("ENTER THE PRICE OF THE E	300 K");
price = ob.next Double();	
SOPLAL" ENTER THE NUMBER OF PA	GES OF THE BOOK");
num-pages = ob. nextInt();	
3	
public void To Storing ()	
3	
S.o.pln ("**** DETAILS OF THE BO	DOK ** * * ");
S.O.PLA ("NAME OF THE BOOK :"+	
Sorth (" NAME OF THE AUTHOR	:"+authon);
Sorph (" PRICE OF THE BOOK :"	+ pxice);
S.O. ILO (NO. OF PAGES OF THE E	
, '	
public static void main (String	augs[])
{	
int $i=0,n$;	
Books obj = new Books();	a Allowane E. D. Carlos A.
Scanner Ob1 = new Scanner (Sys	tem.in);
S.O. PLA (" ENTER THE LIMIT");	
n = obs. nextsnt();	
Jor (:= 1; i (= n; i++)	
1	
Obj. DETAILS ();	
obj. To Storing ();	
]	
1	
	Teacher's Signature :

Step 1:- Start. Step 2:- import java. util * package 1 create class Apokt. Step 2:- import java. util * package 1 create class Apokt. Step 3:- Required variables i.e. name, author, price 1 num-pages is declared. Step 4:- Conctructor Books () created to initial the values to the variate of the book. Step 5:- method DETAILS () is created in order to enter the details of the book, i.e. name of the book, author, price 1 no. of pages. Step 6:- Another method To String () is created. Step 6:- Another method To String () is created. Step 7:- The method To String () basically prints all the details of the book. Step 8:- Now, main () nethod is created. Step 9:- An object is created object call the functions step 9:- An object object is also created in order. Create n book objects. Step 10:- Scanner object objects. Step 11:- A for loop is created for n book objects which calls the methods DETAILS ()? To String (). Step 12:- The main method () is closed along with the close of Class Books. Step 13:- Stop.	T	ALGORITHN
step 4: Constructor Books () enerted to initial the values to the varial Step 4: Constructor Books () enerted in order to enter the Step 5: method DETAILS () is created in order to enter the details of the book, i.e. name of the book, author, price I no. of pages. Step 6: Another method To String () is created. Step 6: The method To String () is created. Step 7: The method To String () basically prints all the details of the book. Step 8: Now, main () method is created. Step 9: An object is created object call the functions. Step 10: Scanner object obt is also created in order. Create n book objects. Step 11: A for loop is created for n book objects which calls the methods DETAILS ()? To String (). Step 12: The main method () is closed along with the close of Class Books.	S	tep 1:- Start. tep 2:- import java. util. * package 1 create class Book 1.
Step 6:- Another method To String () is created. Step 6:- Another method To String () is created. Step 6:- Another method To String () basically prints all the details of the book. Step 8:- Now, main () method is created. Step 9:- An object is created object all the functions. Step 10:- Scanner object obt is also created in order. Create n book objects. Step 11:- A for loop is created for n book objects which calls the methods DETALLS()? To String(). Step 12:- The main method() is closed along with the close of Class Books.	1	ro 3:- Required variables 1.E.
Step 6:- Another method To String () is created. Step 6:- Another method To String () basically prints all the details of the book. Step 8:- Now, main () method is created. Step 9:- An object is created object also created in order. Step 10:- Scanner object obt is also created in order. Create n book objects. Step 11:- A for loop is created for n book objects which calls the methods DETAILS () & To String (). Step 12:- The main method() is closed along with the close of class Book!	SI	tep 4: Constructor Books () Breated in order to enter the
Step 8:- Now, main() method is created Step 8:- Now, main() method is created Step 9:- An object is created obj to call the Junctions Step 10:- Scanner object obt is also created in order Create n book objects. Step 11:- A for loop is created for n book objects which calls the methods DETALS()? To String(). Step 12:- The main method() is closed along with the close of class Books.	_	price & no. of pages.
Step 8:- Now, main() method is created Step 9:- An object is created obj to call the Junetions Step 10:- Scanner object obt is also created in order Create n book objects. Step 11:- A for loop is created for n book objects which calls the methods DETALS()? To String(). Step 12:- The main method() is closed along with the close of Class Books.	5	tert: The method 10 String () basicsary
Step 10:- Scanner object bbs as Create n book objects. Step 11:- A for loop is created for n book objects which calls the methods DETAILS()? To String(). Step 12:- The main method() is closed along with the close of class Books.	5	step 8:- Now, main () method is created.
Step 11: A for loop is created for n book objects river calls the methods DETAILS()? To String(). Step 12: The main method() is closed along with the close of class Book1.	S	tep 10:- Scanner object objects.
of class Books.		tep 11: A for loop is created for n book objects need to the methods DETALLS() & To String().
	S	tep 12: The main method() is closed alling will
	5	

Output :-

ENTER THE LINIT

ENTER THE NAME OF THE MATTHER BOOK
Computer Applications

ENTER THE NAME OF THE AUTHOR Sumita Arora

ENTER THE PRILE OF THE BOOK

980

ENTER THE NUMBER OF PAGES OF THE BOOK 1020

*** DETAILS OF THE BOOK ***

NAME OF THE BOOK: Computer Applications
NAME OF THE AUTHOR: Sumita Anona

PRICE OF THE BOOK: 980.0

NO. OF PAGES OF THE BOOK: 1020

ENTER THE NAME OF THE BOOK Understanding Java

ENTER THE NAME OF THE AUTHOR Vijay Kumar Pandey

ENTER THE PRICE OF THE BOOK

ENTER THE NUMBER OF PACKES OF THE BOOK

NAME OF THE BOOK: Understanding JAVA
NAME OF THE AUTHOR: Vijay Kumar Pandey
NO. OF PAGES

NO. OF PAGES OF THE BOOK: 894

ENTER THE NAME OF THE BOOK OOT concepts and an end a lateral a lateral and as as as a stage ENTER THE NAME OF THE AUTHOR Mc-Grantill mentals and top a dop of discours absolutes. ENTER THE PRICE OF THE BOOK ENTER THE NUMBER OF PAGES OF THE BOOK 2985 **** DETAILS OF THE BOOK *** NAME OF THE BOOK: OUT Concepts NAME OF THE AUTHOR: MC-GranHill PRICE OF THE BOOK: 1345.86 NO- OF PAGES OF THE BOOK : 2985 public void DETAILSC Scanness ob a new Scanness Capabonia 2.0. PM (" EN TEN THE LANG OF THE " ENJER JAF WHILE LE THE 40 100 P name = jb, pestilar ();

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.

```
import java.util.*;
import java.lang.Math.*;
abstract class shape{
     public int a;
     public int b;
     abstract public void printArea();
     Scanner s=new Scanner(System.in);
}
class rectangle extends shape{
     public void printArea(){
          System.out.print("Enter length and breadth of rectangle: ");
          float a=s.nextFloat();
          float b=s.nextFloat();
          float area=a*b;
          System.out.println("Area="+area+"sq.units");
     }
}
class triangle extends shape{
     public void printArea(){
          System.out.print("Enter three sides of triangle: ");
          float a=s.nextFloat();
          float b=s.nextFloat();
          float c=s.nextFloat();
          float d=(a+b+c)/2;
          double area=Math.sqrt(d*(d-a)*(d-b)*(d-c));
          System.out.println("Area="+area+"sq.units");
     }
}
class circle extends shape{
     public void printArea(){
          System.out.print("Enter radius of circle: ");
          float a=s.nextFloat();
          float area=22/7*a*a;
          System.out.println("Area="+area+"sq.units");
     }
}
class shapedemo{
     public static void main(String args[]){
          shape r=new rectangle();
          shape t=new triangle();
          shape c=new circle();
```

```
for(int i=0; i<100; i++){
          System.out.println("\n1)Triangle\n2)Rectangle\n3)Circle\n");
          System.out.println("Enter your choice: ");
          Scanner s=new Scanner(System.in);
          int ch=s.nextInt();
          switch(ch){
               case 1: t.printArea();
                     break;
               case 2: r.printArea();
                     break;
                case 3: c.printArea();
                     break:
                     default:
                System.out.println("Invalid choice");
          }
     }
}
```

```
Snehas-MacBook-Pro:~ snehasrivastava$ nano shapedemo.java
Snehas-MacBook-Pro:~ snehasrivastava$ javac shapedemo.java
Snehas-MacBook-Pro:~ snehasrivastava$ java shapedemo
1)Triangle
2)Rectangle
3)Circle
Enter your choice:
Enter three sides of triangle: 5
7
Area=6.49519052838329sq.units
1)Triangle
2)Rectangle
3)Circle
Enter your choice:
Enter radius of circle: 6
Area=108.0sq.units
1)Triangle
2)Rectangle
3)Circle
Enter your choice:
Enter length and breadth of rectangle: 5
Area=40.0sq.units
1)Triangle
2)Rectangle
3)Circle
Enter your choice:
Invalid choice
```

	6/11/2020
RITE-U	P: LAB PROGRAM-4 (1BM19CS158)
(4)	I'mport java. util. *;
	import java . Lang. Math. * :
	1 and (" : where of suchar alast) pas 1 1
	abstract class shape [tool traited : a /col
	publicaint carialist a area loof
	· (public sint by promy lattice). 0.3
	abstract public void printAkea ();
	Scanner s = new Scanner (System.in);
	closs shoped can's
	class rectangle extends shape it it is silling
	public void print Axea () {
	S.O.p ("Entex length and breadth of rectangle:");
Jan 1	loat a = s. next-Float (); 1 + joil2
	loat b=s. nextFloats (), n = 1 37912
	{ loat avec = axb; i : 0 : 1 10 1
	8.0.pln ("Area="+ area+ "sq.units");
	S.o. pla ("Int) Triangle Int) ledge (int) for cle to
	2.0.pin ("Inles you choice:");
	class treangle extends shape 2
	public void print Axea () 3, m. 2 = 112 tai
S. Contract	S.O.p(" Enter three sides of (triangle ");
	float a = s. next Float(); 1 : 1 200
] loat b = S. next Float();
	float c = s.nextFloat(); (: 5)= 0)
	float d = (a+b+c)/2;
	double area = Math. sqrt (d* (d-a) * (d-b) * (d-c));
	5.0. pln ("Axea =" + axea+ 39, units");
	1100/01
	3 . (" mals bitont" 1,4.0.2

IN TROOTING (STNIGTSSEE)	-/_/_ No. 11711
class cencle extends shape ?	Die G
public void printArea () 2	No veri
S.O.p ("totox radius of cixcle:")	
loat a = s. nextFloat ();	Parriada
10at area = 22/7+a+a;	
S. O. pountin ("Area"+ area "sq. units").
3: (1) and France brown sixted to be take	senseth 1
(simpleyed) common to some some some	autelia -
class shapedemo {	
public static void main (String args [])	125 [7]
2 (Yeard Pares 1)	Live
Shape or = new rectangle(); 1111110.	
Shape t = new triangle (); 1.2 : 0 1001	
Shape c = nen circle (); m. 2: 1 1001	
for (int 2=0; i (100; i+1) vo 1001	
2 (" < King pa" + 10000 1" - 1014 0.3	
S.O. p (n ("In1) Triangle In2) Rectangle In 3)	(
3.0.pln ("Entex your choice:");	CIRCLE III);
Scanner s = new Scanner (System. in)	6
int ch = s.next fnt(): Index	1 55 0 1 1
Switch (ch)?	Lide 1
Switch, (ch) & ship over to 1,7"	1.0.2
case 1: t. printArea()	
	Inclination
	tool fr
break.	1 001
case 3: (chprint Area ());	11.06
" time break; " - wa A") ala	0.2
default:	
5.0. pln ["Invalid choice	") ;
1 3 3	

	White out of Agricultures	/_/
111 1		3
	OUTRIT: javac shapedemo.java	
	ja va shapedemo	
	1) Triangle	All Ter
	2) Rectangle 3) Cixcle	
70	Enter your choice:	
- 125	1	
	1 three Enter sides of triangle: 5	
	7	
	3	
	Area = 6.49519052838329 sq. units	1
	1) Tourangle	
	2) Rectangle 3) Circle	1.7
	Entex your choice:	1
	Enter radius of circle: 6	
	Area = 108.0 sq.units	
	1) Triangle	
	2) Rectangle	
1 12	3) Cixcle	
	Entex your choice:	
P.4	2	1
	Entex length and breadth of rectangle: 5	
7.0	8	
- 15 M	Area = 40.0 sq. units	r os
110	1) Tollangle	
-44	2) Rectangle	
- 13 A	3) Cixcle	
	Enter your choice; Invalid choice	

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.

```
import java.util.*;
class Account
     String name, type;
     int acc no:
     double amount:
     Scanner in=new Scanner(System.in);
     void type(int choice)
         if(choice==1)
              type="Savings Account";
         if(choice==2)
              type="Current Account";
     void input()
         System.out.println("Enter the Name, Account number and Balance:");
         name=in.next();
         acc_no=in.nextInt();
         amount=in.nextDouble();
     void deposit()
         System.out.println("Enter the amount to be deposited:");
         double x=in.nextDouble();
         amount=amount+x;
    void display()
         System.out.println("Name:"+name);
         System.out.println("Account number:"+acc_no);
         System.out.println("Type:"+type);
         System.out.println("balance:"+amount);
    }
class Savings_acc extends Account
     double a, cinterest;
     Scanner in=new Scanner(System.in);
```

```
void withdrawal()
          System.out.println("Enter amount to be withdrawn:");
          double amtw=in.nextDouble();
          if(amtw<=amount)
               amount=amount-amtw;
          else
               System.out.println("Invalid amount");
     void cmp interest()
          System.out.println("Enter the rate and time:");
          r=in.nextInt();
          t=in.nextInt();
          a=amount^* Math.pow(1 + (r *0.01),t);
          cinterest= a - amount;
     }
     void display()
          super.display();
          System.out.println("Compound Interest after " + t + " years: "+cinterest);
          System.out.println("Amount after " + t + " years: "+a);
     }
class Current_acc extends Account
     double min=10000;
     void input()
     {
          super.input();
     void service_charge()
          if(amount<min)
          amount=amount-500;
     void display()
          super.display();
class bankdemo
     public static void main(String args[])
          Scanner in=new Scanner(System.in);
          System.out.println("Choose type of account.");
          System.out.println("1.Savings account.");
System.out.println("2.Current account.");
          int choice=in.nextInt();
          if(choice==1)
               Savings_acc b=new Savings_acc();
               b.type(choice);
               b.input();
               System.out.println("Do you want to deposit or withdraw?\n1.Deposit.
\n2.Withdraw\n");
               int ch=in.nextInt();
```

```
if(ch==1)
               b.deposit();
                else if(ch==2)
                b.withdrawal();
                System.out.println("Invalid choice");
                b.cmp_interest();
               b.display();
          else if(choice==2)
                Current_acc b=new Current_acc();
               b.type(choice);
                b.input();
               b.deposit();
               b.service_charge();
               b.display();
          }
          else
                System.out.println("Invalid choice");
     }
}
```

```
[Snehas-MacBook-Pro:~ snehasrivastava$ java bankdemo
Choose type of account.
1.Savings account.
2.Current account.
Enter the Name, Account number and Balance:
Sneha
86956473
8900369.78
Do you want to deposit or withdraw?
1.Deposit.
2.Withdraw
Enter the amount to be deposited:
12300
Enter the rate and time:
9
Name: Sneha
Account number:86956473
Type:Savings Account
balance:8912669.78
Compound Interest after 9 years: 4913806.329413034
Amount after 9 years: 1.3826476109413033E7
Snehas-MacBook-Pro:~ snehasrivastava$ java bankdemo
Choose type of account.
1. Savings account.
2.Current account.
Enter the Name, Account number and Balance:
86904512
76409.75
Enter the amount to be deposited:
Name:Smita
Account number:86904512
Type:Current Account
balance:79899.75
Snehas-MacBook-Pro:~ snehasrivastava$
```

6/11/20
LAB PROGRAM-5 (1BM19CS158)
A Total Chica
import java. util.*;
class Account
Charles the same of 23 months of distance 2.
String name, type,
[77 P
double amount; , what rough a site with 1 19.0.2
Scanner in = new Scanner (System in);
void type (int choice)
£ .
il (choice ==1)
type = "Savings Account";
if (choice = =2)
type = "Current Account";
3 + Empere hat serger and sugar
void input() should the the law of alg 0 2
· ·
S.O-pla ("Enter the Name, Account number and Balance:
name = in.next();
acc-no=in, nextant().
amount= in.nextDouble();
1
void deposit()
Ž
s.o.pln(" Enter the amount to be deposited:").
double x = in. nextDouble();
amount = amount + x;
3
void display ()
1

5)	
0 0 0 0	S.O.pla ("Name: "+name); Oyalpeilo blov
4)	S.o.pln ("Account number: "+acc-no);
	S.o.pla ("Type: "+type); (1) palged . magus
- (degasta)	S. O. pln ("balance: "+ amount), brungers)
0	support " normal after " + tot " years: " + 0); [
6)	1
0)	class Savings-acc extends Am Account
9)	class Cumentace extends Accounts 3
))	double a, cintexest;
(i)	int v, t; 2000 nim adducts
9)	
(i)	Void Withdrawall)
) [Super. in put ();
D D	S.O. pln (" Enter amount to be withdrawn:");
D.	
)	double antw=n.nextDouble ()=1100
5)	il (antw (= amount)
	amount = amount - antwist
j) (1)	else . and . Insumm = insums
5)	S.O.pln ("Invalid amount");
	Void display ()
	Void cmp-integrest()
	2 cupen. chisping ()
9	S.O. pln (" Enter the state and time: ");
	r = in.nextant ();
	t = in.next got(); cankdens
	a = amount * Math. pon (1+(T x 0.01), t);
	(cointerest = a - amount) side - would
	3
	Scennes in new Scennes (System in)
2	The state of the s

		/
	vaid display() (ment : email ") algod	
	Supply ("Account markers:" + acc no).	
	Supex. display();	
	3.0. pin ("Compound Interest after + tt years: +c	intere
=	Super. display (); 3.0. pln ("Compound Interest after "+ t+" years: "+ c S.O.pln ("Amount after "+ t+ "years: "+ a);	
	3	
	chase Savings were extende from Mesonal [
	class Current-acc extends Account	
	E double a contraction	
	double min = 10000; : dir dai	
	School in the new School (sucher () trying biov	
	Void withdrawalls	
	super. in put();	
	S.O. plat" Enter amount to be withdrawn: 8.	
	void service - charge Un in a work stouch	
	il (antw /= amount)	17
4	il (amount/min) me = truoma	
	amount = a mount - 500 : sale	13
	5.0. pln ("Invalid amount"). E	
4		
	void display()	
	Void empiritement()	
	super. display ();	1
	S.O. Pla (" Enter the state and time : "); ?	
щ	(UdnBalan ni = r	
	class bankdemo (13nt 3xom m) = 3	
	a = arrount & Mater pour (1+ (xx 0-01), 1); \$	
	public static void main (String augs [])	
	9	
	Scanner in = new Scanner (System .in);	

•	
.	
	S.O. pln ("Choose type of account.");
	S.O.pla ("1. Savings a ccount.");
	s.o.pin (" 2. Current account.");
	int choice = in. next fat();
	il (choice == 1)
a	6 2
	Savings-acc b = new Savings-acc ();
	b.type (choice);
	b.input();
	s.o.pln ("Do you want to deposit ox withdraw?) n.l. Deposit
	In2. Withdraw In").
9	int ch = in. next9nt();
5	if (ch == 1)
	b. deposit ();
	else if (ch==2)
	b. withdrawal ();
	else
2	5.0.pln("Invalid choice");
	b. cmp_interest ();
8	b. display (1;
9	3
	else il (choice == 2)
3	3
<u> </u>	convent_acc b = new convent_acc();
8	b.type (choice);
9	b. input ();
9	b. deposit ();
2	b. service-charge ();
9	b. display ();
8	2 g else s.b. pln ("I Invalid choice");

Lab Program 6:

package SEE;

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.

```
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 name");
  name = sc.next();
  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+"\nUSN: "+usn+"\nSem: "+sem);
package CIE;
import java.util.*;
public class internals 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++)
    System.out.println("CIE mark for course "+(i+1)+": ");
   cie[i]= sc.nextDouble();
}
```

```
import java.util.*;
import CIE.*;
public class externals 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();
}
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++)
     System.out.println("Student "+(i+1));
    in[i] = new CIE.internals();
     en[i] = new SEE.externals();
     in[i].read();
     System.out.println("CIE MARKS:");
     in[i].accept();
     System.out.println("SEE MARKS:");
     en[i].get();
     System.out.println();
     in[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)));
}
```

```
|| Snehas-MacBook-Pro:desktop snehasrivastava$ javac Main.java
Snehas-MacBook-Pro:desktop snehasrivastava$ java Main
                                                                              41
                                                                              SEE MARKS:
Enter the number of students
                                                                              89
Student 1
                                                                             SEE mark for course 2:
Enter the name
Sneha
Enter the semester
Enter the USN
1bm19cs158
CIE MARKS:
CIE mark for course 1:
                                                                             Student details:
45
                                                                             Name: Sneha
USN: 1bm19cs158
CIE mark for course 2:
50
                                                                             Sem: 3
CIE mark for course 3:
32
CIE mark for course 4:
40
CIE mark for course 5 :
                                                                             Student 2
41
                                                                             Enter the name
SEE MARKS:
                                                                              Smita
SEE mark for course 1:
                                                                             Enter the semester
89
SEE mark for course 2 :
                                                                             Enter the USN
                                                                              1bm18cs153
                                                                             CIE MARKS:
SEE mark for course 3:
90
                                                                              45
SEE mark for course 4:
96
SEE mark for course 5 :
76
                                                                             34
                                                                             CIE mark for course 4:
Student details:
Name: Sneha
USN: 1bm19cs158
                                                                             SEE MARKS:
Sem: 3
Total Marks for course 1: 89.5
Total Marks for course 2: 88.0
Total Marks for course 3: 77.0
                                                                              54
Total Marks for course 4: 88.0
                                                                             SEE mark for course 3:
Total Marks for course 5: 79.0
Student 2
                                                                              34
Enter the name
Smita
Enter the semester
                                                                             Student details:
Enter the USN
                                                                             Name: Smita
USN: 1bm18cs153
1bm18cs153
                                                                              Sem: 5
CIE MARKS:
CIE mark for course 1 :
45
CIE mark for course 2:
CIE mark for course 3 :
```

```
CIE mark for course 5:
SEE mark for course 1 :
SEE mark for course 3:
SEE mark for course 4:
SEE mark for course 5 :
Total Marks for course 1: 89.5
Total Marks for course 2: 88.0
Total Marks for course 3: 77.0
Total Marks for course 4: 88.0
Total Marks for course 5: 79.0
CIE mark for course 1 :
CIE mark for course 2 :
CIE mark for course 3:
CIE mark for course 5:
SEE mark for course 1 :
SEE mark for course 2 :
SEE mark for course 4:
SEE mark for course 5 :
Total Marks for course 1: 83.0
Total Marks for course 2: 50.0
Total Marks for course 3: 77.5
Total Marks for course 4: 58.0
Total Marks for course 5: 16.5
Snehas-MacBook-Pro:desktop snehasrivastava$
```

Main class: - Persona	ges (1PM1903158)
1.0.30114	- 111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
package CIE;	
import java. util.	
public class Po	et sonal
٤	O'SONIE CONTROL OF THE OWNER OWNER OF THE OWNER
public String	name:
- Public int	
public Strin	a usn:
public void nea	d()
Scanner sc= new	Scanner (Sucha
S.O. pln ("Enter	the name".
name = sc. next	();
s.o.pln ("Enter	- the semester").
Som= sc.next9n	ttl);
5.0.pln (" Fortex	
USn = Sc.next	U;
3	119 77 4
public void display ())
£	
s.o.pin ("Student	details:");
S.O. pln ("Name;"+	name + "InUSN" tusn+ "Insem; "+ sem);
1	Carlotte State State
	The Land Market
	= 1kH (24)
	12 12 1 22 1 1 1 1 1 2 2 2 2 2 2 2 2 2
	the Valencia and a second
	*
· · · · · · · · · · · · · · · · · · ·	How was 1967 to 100
	Now the state of the control of
7 7	

Inter	als. java (18M19(8158)	
	age CIE;	
Jack	vt java. util. *;	
W. h	ic class internals extends personal	4
13	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Ĺ	public double cie []	_
	which would accept ()	
	fublic void accept ()	_
	cie - new double [5];	
	Scanner SC = new Scanner (345 cont. 111)	
	for (int i=0; i(5; i++)	
	5	
	S.O. pln ("CIE mark for course" + (i+1)+":")	<u>;_</u>
	cie (i) = sc.nextbouble ();	
	1	17
	1 (122-1-14)	
7		
٦		
Fxte	enals.java desta de la contrata del contrata de la contrata de la contrata del contrata de la contrata del contrata de la contrata de la contrata del contrata de la contrata del contrata	é
	A second of the second	
D41	kage SEE; out java. util. *; out CIE. *;	
ime	out java. util. *;	97
im	out CIE. X;	
ov hi	ic class externals extends possition	
1	The second of th	4
-	ublic double see [];	
	public void get()	_
9		_
	see = new double (5);	
	Scamer sc = new Scamer (System.in);	
37.1	lox (int i=0; i(5; i+1)	
	10	
	5.0.pln(" SEE mark for course"+ (i+1) +":").	
	sce [i] = sc. nextDouble ();	
	1 man to the second of the sec	1
)		
7		

	LATER.
	opent CIE. *;
,	mpint SEE.*;
	mport java util *)
	class Man
_)	- life states and main (Stains avas [])
	public static void main (String angs [])
-	Sanger Sy Scancer (Sustem in):
	Scanner 3x = now Scanner (System.in); 5.0-pln(* Entex the no. of students *);
	ich o = ax and 10t():
_	CIF. internals ID[] = new CIF. internals [h];
	SEE. externals en[] = new SEE. externals [n];
	int i, j; or (i=0; i(n; i++)
	5 (1,2.1)
	5.0.pln ("Student" + (i+1));
N.	in [i] = new CIE. Internals ();
	en (i) = new SEF. externals ();
	in [i]. read();
V 20	S.o. pln("CIE marks:");
	in [i]. accept();
V	go-pla ("SEE marks:")
19	en [i]. coccepte get ();
	s.o.pln();
	in Ci]. display();
	don (i=0) (3:i+1)
	110000
	S.o. pln (" Total marks for course" + (j+1)+":"+
	intil are lil + (paril an ril
	3 Con Cla. See Cyal
3	The Control of the Advantage of the Control of the

Lab Program 7:

Write a program to demonstrate generics with multiple object parameters.

```
import java.util.*;
class Genrics<T>{
 T var1;
void Genirics(T gvar){
 var1=gvar;
T Gdisplay(){
return var1;
}
public class App{
     public static void main(String[]args)throws Exception{
System.out.println("--PLEASE ENTER STUDENT DETAILS--");
Scanner Minp=new Scanner(System.in);
Genrics<Integer> Rollno= new Genrics<Integer>();
Genrics<String> Name= new Genrics<String>();
System.out.println("NAME: ");
String Sname=Minp.nextLine();
Name.Genirics(Sname);
System.out.println("USN: ");
int Sroll=Minp.nextInt();
Rollno.Genirics(Sroll);
System.out.println("------);
System.out.println("--STUDENT DETAILS--");
System.out.println("NAME: "+Name.Gdisplay());
System.out.println("USN: "+Rollno.Gdisplay());
Minp.close();
```

```
Snehas-MacBook-Pro:~ snehasrivastava$ javac App.java
Snehas-MacBook-Pro:~ snehasrivastava$ java App
--PLEASE ENTER STUDENT DETAILS--
NAME:
Sneha
USN:
158
-----DISPLAY-----
--STUDENT DETAILS--
NAME: Sneha
USN: 158
Snehas-MacBook-Pro:~ snehasrivastava$
```

	//
and or in	Grenerics (18M19CS158)
	import java. util *; I The many many many
	class Exernics (T) & the grant of the state
	Tvares;
	wid Genirics (T grax) &
	Vari = gvar;
	1 (at have be where 'reasoning here attage
	T Godisplay ()2
	return vari;
	Contract Con Market Landers Francisco 1
	3
	public class App & The way mon & The Andrews
	public static void main (String [Jaxgs throws Exception)
	System.out. printin(" PLEASE ENTER STUDENT DETAILS ")
	Scanner Ming= nen Scannor (System.in);
	Covenics (Integer) Rollno= new (Kenking (Integer) ();
	Genrics (String) Name=new Genrics (String) ().
	Bystem. out. println("NAME:").
	String Sname = Minp. nextline();
	Name. Orenirics (Sname)
	System. out. printer ("USN:");
	int Smoll= Minpinextont();
	Rollno. Greninics (Skoll).
	System out protin ("USN:")
	System. out. println ("");
	System. out- println (" STUDENT DETAILS");
	System. out. porintln (KNAME: " + Name. (rolispray ());
	System out prints ("1391." . A
	System. aut. printle ("USN: " + Rollno. G dis play (1); Minp. close (1;
	1
	33 (2) 176 . 8

Scanned with CamScanner

Lab Program 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.

```
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);
}
}}
```

	Exception Handling (1BM19(5158)
impor	t java. util.*;
cla	ss Worong Age extends Exception ?
	nt f,s;
	Hrong Age lint fage, int sage) ?
	f = fage; S = sage,
	3 . A servery
	public String to String () ?
	return & Please enter the correct ages as father's age
	can't be less than or equal to the son's age."
2	
	1 trong to the part of the world
C	lass Negative Age extends Exception ?
	int 2:
	Negative Age (int lage) 2
	$\chi = fage$;
إركامها	January Committee of the state
	public String to String () {
	return "Age can't be negotive value";
	1]
	class Father
	int lage: (n = A insper)
	Scanner in=new
	Father () therows Negative Age
	S. s. olo (" Enter lather's age: ");
-	Strike Control
7	lage = /n.nextInt();
	1 (lage (10)
A	th now new Negative Age (fage);
- 6	113

Lab Program 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.

```
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;
  thread2()
     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");
}
```

	(80 L2) P. (128M19C \$ 1 58) ON
class	Son extends Father
2	Francis Color of the Francis
int	5008
	ner h =
Son	() throws NegativeAge, Wrong Age ? super(); s.o.pln("Enter son's age:");
9	super():
4	sopla(" Enter son's age ");
<u> </u>	3age = 10 100 100 100 100 100 100 100 100 100 100 100 100 100 100
V	1) (sage (o) il lospe to mil and in a
[
	throw new NegativeAge (sage);
	The first from the first t
	1) (sage) = lage) { New new Word Age (lage sage) }
	throw new Wording Age (age sage)
1	
	11
	class' AgeDisplay it of the state sild public static.
	class medisplay
The state of the s	public state.
300	Son s = New Son ();
	Son S = 1
	catch (Negative Age n)
	wen in assess
	S.o.p Ln (" fxceptions it n) jell () outs
1	3.00
P 1	catch (Wrong Age W) mig.
	8 . (11 ab Lyman) . (1.)
	Soon (Exception: + w)
	33. 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1

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

```
Snehas-MacBook-Pro:java snehasrivastava$ nano threadmain.java
Snehas-MacBook-Pro:java snehasrivastava$ javac threadmain.java
Snehas-MacBook-Pro:java snehasrivastava$ java threadmain
Enter CONTROL+C to stop
BMS College Of Engineering
CSE
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```

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	LAB PROGRAM (Threads)	
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	Threadt;	¥
17	thread ()	1
	E Land Company of the state of	No. of the Control
	t = new Thread (this, "thread1"); 11 3 pas	pac pac
19	t. start (); 12 1 min	mil.
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	public void kund compatible silve	29
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	La static void min (State profite)	14 11
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	i (mude . 4.59)	
- (1	Thread. sleep (10000):	(");
	Thread. sleep (10000):	0
	1	(- 1-120L
	Catch (Interupted Exception ie)	g .
	£ .	
1.75	System. out. println ("Interrupted");	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
	3	mark to be
16.	1-	
	3	integrated to
13.1	3	
	Class thread? Inclass to Product	
	Class thread 2 implements Runnable	
9 44	Thread t2;	
34 61	thread2(),	

2 = new Thread (this, "thread?");	
=2. startu;	
War and the second seco	
ublic void Kun ()	
for (;;)	
E will be the	
try	
2	
System.out.printin("CSE");	
Thread. sleep (2000);	114
3	
catch (Interrupted Exception ie)	100
Σ	
System. out. println ("Interrupted");	
3	
2	
7	
Class threadmain	
2	
public static void main(String augs [])	
System. out. println [" Enter CONTROL+C	to stop");
thread t1 = new thread 11);	
thread t2 = new thread2();	
}	