#### LAB RECORD

#### OOJ LAB

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#### 1BM19CS081

## LAB 1-

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

100	Dute 28-9-1000
	Manier Propad Sec-B IBMITCS091
WEEK 3:	
18#1	Dwelop a Java program that ethnis all Hull solutions to the quadratic equations ax2+ bx+c = 0. Read in a,b,c and use the quadratic
	somula. If the discriminate bo- tac is negative, display a message stating
Pile	that there are no neal solutions
	PLGIPRITHM :
Step 1 Step 2	Input the Value of a, b, c
Step 2	Calulate D=(b+b-(4+a+c))
Step 04	11_ (d>0)
	and re (-b-JD) (2+a)
	else 16 (d = 0)
	Disputy more are equal, culture the more > x1=x2b/(2+a)
	else Display there are no mai room -
Step 45	Phint YI and YZ
Step 5	Stop
	TO SELECTION OF THE PARTY OF TH
	PROGRAM:
	Import, javo util Scannur;
	import java for lang Math;
	Public class Main >
	T. Control of the con
	public state void main (string [] angs) }
	Seanner in . new Seanner (System in);

	Page	
2	Maura Provid Str. B. Inhiberral	
	Aurena Java corrorea contacto	
water	int a, b, c; we have the strong such asserted and a defend	
580	double ri, r2, d;	
2003	chan ch;	
	System out println ("Solution of Quadratic equation - ax ~ 2+	bx+("):
	do	
	{ MHTIBOASA	
	System.out.pmn+1n ("Inentura:");	Sie
	a=in.nextInt(); (5+0+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+	1 2 16
	System-out-println ("menturb: ");	190
(al	b=in-nextInt(); H william har no store unaso	
	System out printin ("entre c: ");	
	c=in.nextInt();	
Nd-	d=((b+b)-(4+a+c));	
	if (d>0) there my an sum as the company of	
	Phine is and its	2500
	n=(1-b+ Math. sqn (d))/(2+a));	3/11
	N2 = ((-b + - Math sq, rt (d))/(2+a)),	
200	System. out. pnnHn ("noots are - \n"+ "n = "+n+"\n'+">2:	2 "
	+ 72);	
	Amount sour African Many	
	else if (d = = 0)	
	<b>{</b>	_
500	$\gamma = (-b/(2 \times a));$	1
	System.out. printin ("houts are equal-\n"+ "71=82= "+81	);

700	classmate Date Page
uith	The former was not a series the rest of the former to the first of the former to the first of the former to the first of t
000 5	else many many many many many many many many
	§
	System-out-println ("there are no real nots");
	3 Regulation that course storing
	System. out-println ("In"+"do you want to find another set of roots?
	y(n?); I leave I I could be diver brown strate
	ch=in·next() · chcurAt(0);
	J. SCHOOL STATE
	while (ch == 'y');
	3 C" NINGOT" LINE TIME TO THE THIRD TO THE
	3 Challenna Managa
	DI = Hara inclus;
	per ( m) = 0 : ( c m : ( + + )
	Survey entrometer ("Entrol ("HIE!))
	(Challana and dia
	Andrew makes of the property of the
	(acat light)
	- Color and and
	Talia 4 ma

```
Solution of Quadratic equation—ax-2+bx+c

enter a:

2

enter b:

13

enter c:

4

roots are—
rl = 0.3238250232300936

r2= -6.176174977679906

do you want to find another set of roots7 y/n7

y

enter a:

6

enter b:

12:
enter c:

5

roots are equal—
rl=r2= -1.0

do you want to find another set of roots7 y/n7

y

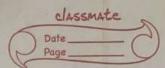
enter a:
```

```
r2= -6.176174977679906
do you want to find another set of roots? y/n?
enter a:
enter bi
12
enter c:
roots are equal-
r1=r2= -1.0
do you want to find another set of roots? y/n?
enter a:
enter b:
enter c:
there are no real roots
do you want to find another set of roots? y/n?
  ..Program finished with exit code 0
Press ENTER to exit console.
```

# LAB 2-

Develop a Java program to create a class Student with members usn, name, an array credits and an array marks. Include methods to accept and display details and a method to calculate SGPA of a student.

WEEK 4:	6/10/2020
	Develop a Java program to create a class Student with members
	Usn, name, an away credits and an armay manks . Include
	methods to accept and display details and a method to
	calculate SCAPA of a student.
	Suspensioner amore to Commission De Suspension De Suspensi
	import java util-Scannu;
	clapo Student
Muries.	E Company and a 10 all along the top Salahin But
	private String susn;
	private String sname;
	private int swedit [];
	private int smooks[];



```
void getDetails()
 System. out printin ("enter student details:");
 Scannes in = new Scannes (System in);
 suedit = new int(5);
 smoulds = new int (5);
Susn = in next ();
Sname = in-next();
 for (int i=0; ix5; 1++) {
 System-out-printin ("cudit for sub "+ (i+1)+":");
 swdit[i] = in. nex+(n+();
 for lint i=0; i<5; i++) {
System out println ("marks for sub "+(i+1)+":");
smars (i) = in.nextIn+();
  every court of 2 = 10 1 per march to the more before
 void printDetails()
System. out. pmnHn ("USN: "+ susn);
System. out println ("Name: "+ sname);
for lint i=0; i<5; i++) {
System. out-print ("credits for sub "+ (i+1)+": ");
System. out. printin ( scredit(i)); }
```

	for lint i=0; ix5; i++) {
	System out print ("marks for sub" + (i+i) +":");
	System out printer (smarks [i]); }
	The state of the party of the state of the s
	void Sgpa() {
	int sum = 0, sum > 0;
	double g =0;
	for lint i=o; i<5; i++) {
	18 (smarks [i] >=90) E
	g=10; 3
	else if (smarks [i] > = 80 & smarks (i) < 90)
	$\xi g = 9$ ; }
The state of	else if Csmarks[i] >=70 && smarks[i] (80) {
14	9=8.5
	else if ( smarks (i) >=60 & smarks (i) < 70) }  9 = 7; }
	else if ( smarks li 7 >= 50 & smarks li 7 < 60) {  9 = 6; }
	else if (smours (i) >=40 18 smours (i) <50) {
	9 > 1; }
	else 1/ (smarks [i] < 10) {
	g=0;
	The case of the control of the contr
Contract of the last	

```
sum + = g + suredit [i];
 sum 2+ = swedit [i];
Sgpa = sum/sum 2;
System out print ("SUPA of student: ");
System. out. println (sgpa);
      PER LEMANDE FINE DE MENTE CON L'ALA
      the it simples file is a more at 570 in a 2
 public class Main
   TOO IS COMMENT STORY OF ANTHONY TO ASS.
 public static void main (string ss [])
         88516 Smyaxa & 13, 0=0
 Student SI = new Studentl);
 S1. getDetails();
                                  860.58
 S1- print Details ();
  SI. Sgpa C);
```

- Q=	Page
	Algorithm:
Step1:	Start
Step 2:	Input student details i.e. usn, name, usedits and markslog
	each of 5 subjects in 2 different arrays) in degrands accommon
Step3:	Display the student details in moin memor
Step 4:	4 smarks > 20, g = 10
	eye if smarry >= 80 se smarts < 90, 9=9
	else if smarrs $\frac{5}{70}$ se smarrs (80, $g=8$
	else if smarks \$60 be smarks <70, 9=7
	else if smarls >= 50 82 smarls < 60, 9 = 6
	else if smarts >= to be smarks < 50 g = 4
	else if smarks < 10, g=0
	Out value of g and valuate sum of (g + nedits) (sum)
Step 5:	Calculate sopox Cret to sum of credits (sum 2)
Step 6:	Calulate sgpa = & sum/sum2
Step 7:	Print sgpa of student in miles wellow.
Step 8:	Stop
	Control of the second
	THE YOUR DESIGNATION OF THE PERSON OF THE PE

```
• / A
ibm19cs001
mal
credit for sub 1:
credit for sub 2:
credit for sub 3:
credit for sub 4:
credit for sub 5:
marks for sub 1:
narks for sub 2:
20
marks for sub 3:
30
marks for sub 4:
40
marks for sub 5:
USN: 1bm19ce001
Name: mal
credits for sub 1:1
credits for sub 2:2
 redits for sub 3:3
```

```
marks for sub 1:
marks for sub 2:
marks for sub 3:
marks for sub 4:
 mrks for sub 5:
UGN: ibm19cs081
Mame: mal
credits for sub 1:1
credits for sub 2:2
redits for sub 3:3
credits for sub 4:4
credits for sub 5:5
marks for sub 1:10
marks for sub 2:20
marks for sub 3:30
marks for sub 4:40
marks for sub 5:50
SGPA of student: 3.0
  .Program finished with exit code D
Press EMTER to exit commonle.
```

```
v / §
enter student details:
1hm19cs790
Sen
credit for sub 1:
credit for sub 2:
credit for sub 3:
credit for sub 4:
credit for sub 5:
marks for sub li
marks for sub 2:
marks for sub 3;
mrks for sub 4:
marks for sub 5;
U936: 1bm19ca790
Name : mam
credits for sub 1:4
credits for sub 2:5
credits for sub 3:4
```

```
marks for sub 1:

00
marks for sub 2:

70
marks for sub 3:

00
marks for sub 3:

55

UNN: 1bm1Boo790
Name: sam

credits for sub 7:5

mrwits for sub 7:5

mrwits for sub 7:5

marks for sub 7:5

marks for sub 7:5

marks for sub 7:5

marks for sub 7:3

marks for sub 7:3

marks for sub 5:3

marks for sub 5:3

marks for sub 5:55

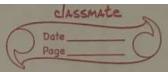
806A of student: 8.0

Press ENTER to suit outsols.
```

## LAB 3-

Create a class Book which contains four members: name, author, price, num\_pages. Include a constructor to set the values for the members. Include methods to set and get the details of the objects. Include a toString() method that could display the complete details of the book. Develop a Java program to create n book objects.

LP#3	import java util Scanner;	4
	Uano Book 1	
	String author;	
-	Hoat price;	
	int num_pages;	
	III militaring	-
	BOOK () }	
	this name . "";	
	this author = "";	
	this price = 06;	
	this-num-pages = 0;	
	BOOK (Smng name, Sming author, bleat price, int num-pay	ges)
	this name = name;	
	this outhor = outhor,	
	this price - price;	
	this nom-pages - num-pages;	
	void get-dutails() }	
	Sunner 5 - new Scanner (System in);	-



```
name = s. nextline ();
System-out-println ("Enter the author:");
author = s. nextline ();
System out printer ("Enter price of the book: ");
price - sinext Ploat ();
System out printer ("Enter number of pages of the book "").
num_pages = 8.nex+In+();
void set-details (sining n, sining a, float p, int np) {
 this name = n
 this author = a;
 this price = p;
 this-num-pages = np;
 public String to String () {
 neturn ("Name = "+ name +" \n Author = "+ author + "\n Phice = "+
 price + " In Number of pages = " + num-pages + " In");
class Main {
public static void main (string angs[]) {
```

```
int n:
Scanner 5 = new Scanner (System. in);
System. out printing "Enter number of books:");
 n = S-nextInt();
 BOOK []b - new Book (n];
 for (int i=0; i<n; i++) {
  b[i]=new Book ();
  b[i]:get_details();
for (int-i=0; i<n; i++) {
  System. out. pinntin (" Details of the book " + (i+1) + ":").
 System-out-printly (b[i]);
 BOOK bool - new BOOKL);
  bool-set-details ("The world", "Kenny", 300, 400),
  System out println (" Details of the book :");
 System.out. println (bool);
```

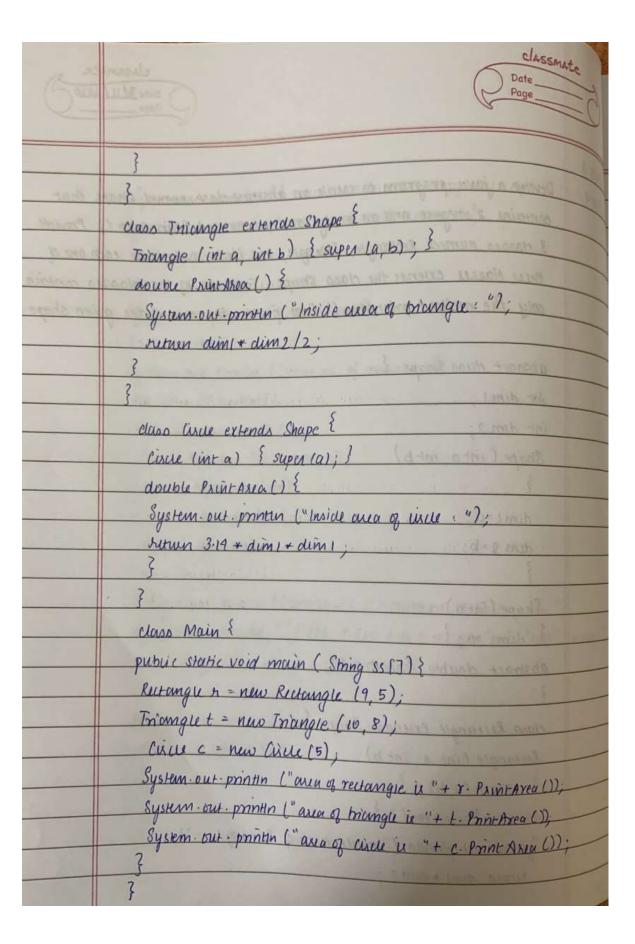
```
Enter number of books:
Enter the name of the book:
harrypotter
Enter the author :
jkr
Enter the price of the book;
333
Enter the number of pages of the book:
234
Enter the name of the book:
divergent
Enter the author :
VE
Enter the price of the book:
444
Enter the number of pages of the book:
312
Details of the bookl:
Name=harrypotter
Authorajkr
Price=333.0
Number of pages=234
Details of the book2:
Name=divergent
Author
Price=444.0
Number of pages=312
```

```
Enter the author :
Enter the price of the book:
444
Enter the number of pages of the book:
312
Details of the bookl:
Name-harrypotter
Author-jkr
Price=333.0
Number of pages=234
Details of the book2;
Name=divergent
Author=vr
Price=444.0
Number of pages=312
Details of the book:
 ame-The wrld
Author=Kenny
Price=300.0
Number of pages=400
 .. Program finished with exit code 0
Press ENTER to exit console.
```

## LAB 4-

Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea() that prints the area of the given shape.

133	Classmate Date 3/11/2010 Page
WEEK 8	
LP#4:	Develop a juva program to create an abstract class named shape that
	contains 2 integers and an empty method named frint area ()
	3 classes named Rectangle, Triangle, and circle such that each one of
	these classes extends the class shape. Each one of the classes contain
	only the method print Area () that prints the area of the given shape
	abstract dans shape {
	int dim 1;
	int dim 2;
	Shape (inta, intb)
	The same of the sa
	dimi-a; will a see the delication to a see the
	dim 2=b;
	Shape (inta)
	{ dim = a; }
	abstract double Print-Area ();
	(3.9) Manually was a manual
	class Rectangle extends Shape &
	Rectangle (int a, int b)
	3 super (a, b); }
	double PrintArea() {
-	System out printer ("Inside area of Rectangle:");
	return dim + dim 2;



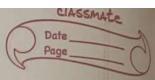
```
Inside area of rectangle:
area of rectangle is 45.0
Inside area of triangle:
area of triangle is 40.0
Inside area of circle:
area of circlr is 78.5

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

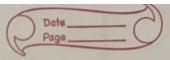
#### LAB 5-

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

0=	Date 11/3/2020 Page
P#5:	Develop a program to wate a class Bank that maintains 2 kinds of
	account for its customers, one called savings account and the other current account. The sewings account provides compained interest
	and withandwal facilities but no cheque book facilities. The current
	holders should also maintain a minimum of balance and if the
	Create a class Account that Stores untominame, account number
	San-acet to make-them more specific to their requirements.
	tasks · Accept deposit from customer & update the balance.
	· Display the balance · Compute and deposit interest · Permit  withdrawal and update the balance · Check for minimum  balance impace pagetty it severely and the balance
	balance, impose penalty if necessary and update the balance
	class Account {
	int accno;
	Account () &
	Scanner ss = new Scanner (System in);



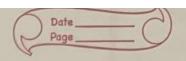
3(0)	Date Page
1995	System. out. printin ("Enter name, account type number and type
2016	of account: ");
SERVE	
2333 2	accno = ss.nextin+();
iano	type = ss-nex+();
	boldes should also maintain a companion at balatic as
	button fain helpen this least a service change is impaced
ersty.	class cur aut extends Account {
	ploat dip, wit;
	Sau-act to more them was specific to their sequine
	void deposi+C) {
	Scanner ss = new Scanner (System-in);
	System.out.pnntln ("Enter amount to be deposited: ");
	dep = ss. nex+in+();
	bul = bal + alp;
	System out printin ("updated balance after deposit : "+ bal);
	3 Company of the state of the s
	3 temperate male
	Void withdraw () {
	Scanner ss = new Scanner (system.in);
	System-out-printer ("enter amount to be withdrawn ");
	wit = ss. nextint();
/ 1	bal=bal-wit;
	System. Out-printin ("Updated balance after withdrawal "+bal)-



? The same time and state and and the latter and a to
void penalty () {
if (bal < 500)
bal = bal - pen;
System out printer ("Updated balance after imposing penalty: "+bai)
Bernand Comment of the Prince of
else wheelings and of approximately a survival assured to the survival assured
System out printin ("No penalty imposed, balance: "+ bal);
} - 4 my - 10 d - 1 md
and about the amount betheath of the man and the
class oan aat extends Account {
float dep, wit, r, t, n, ci,
Server dates your trains (there see 17) ?
void deposite { ) {
Scanner SS = new Scanner ( System in);
System out printin ("enter amount to be deposited ");
dep = ss. nextn+c);
System-out printer (" enter nate 1. time in years and number
of times interest is compounded per year: ");
n = ss. nextn+();
t = ss. nextn+l);
1 - Water Cr

System out printin ( no enequebook facilities available

sav\_ acts = new sav\_act();



```
System-out-printin ("1. deposit with compound interest in 2-with-
 draw ln3- exit (n");
 System-out-printer ("enter choice");
 cn = ss. nextent ():
 switch (un)
 case 1 : s. depositel); break
 case 2: S. withdrawc (); break;
 case 3! break;
 3 while (ch) = 3);
 (+ lopt == 2) {
 System-out printer ("**** CURRENT ACCOUNT ****);
System. out. println (" chequebook services arciclable _ ");
 cum_acct c = new cum_acct();
System. out. printer ("1. deposit In 2. withdraw In 3. check minim-
um balance ( penalty \n4. exit \n"),
 System. out. printle ("enter choice ");
 ch = ss. nextint();
```

4-	
	switch (cn)
20.00	switch (cn)
-	}
-	case 1: c- diposit (); break;
	case 2: Cwitndraw (); break;
	case 3: c-penalty (); break;
	3 CAMMAN MAN
	3 (while ch! = 4);
	}
	3 speed Clarinogahis a page
	Series 2 Superheduras ( ) Sheat
	Allender E. south in
	F BENTA COLO = 37
	1 (c== 10) 1
	(" AND THE CONTROL OF THE STATE OF THE CONTROL AND CONTROL OF THE
(0	Succession and printed to invalidate strange annual bia
	1000 (A) (11) (A) (A) (A) (A) (A) (A) (A) (A) (A) (A
Sivery.	The state of the s
	The second secon
	Charter the particular and and the
	The spring areas I appear to the same of the
	C. Strollege C. L.

# Savings:

```
choose type of account:
1.savings account
2.current account
****SAVINGS ACCOUNT****
 no chequebook services available
Enter name, account no. and type of account:
mal 123 savings
1.deposit with compound interest
2.withdraw
3.exit
enter choice
enter amount to be deposited:
5000
enter rates, time in years and number of times interest is compunded per year:
Updated balance after computing CI: 8235.103
enter choice
enter amount to be withdrawn:
7000
Updated balance after withdrawal; 1235.1025
enter choice
enter amount to be deposited:
enter rates, time in years and number of times interest is compunded per year:
4 8 11
```

```
Enter name, account no. and type of account:
mal 123 savings
1.deposit with compound interest
2. withdraw
3.exit
enter choice
enter amount to be deposited;
enter rate%, time in years and number of times interest is compunded per year:
Updated balance after computing CI: 8235.103
enter choice
enter amount to be withdrawn:
Updated balance after withdrawal: 1235.1025
enter choice
enter amount to be deposited:
100
enter rate%, time in years and number of times interest is compunded per year:
4 8 11
Updated balance after computing CI: 1372.7354
enter choice
 .. Program finished with exit code 0
Press ENTER to exit console.
```

#### **Current:**

```
hoose type of account:
1.savings account
2.current account
****CURRENT ACCOUNT****
    _chequebook services available_
Enter name, account no. and type of account:
mal 1234 current
1.deposit
2.withdraw
3.check minimum balance/penalty
1.exit
enter choice
Enter amount to be deposited:
updated balance after deposit: 2000.0
enter choice
enter amount to be withdrawn:
1400
Opdated balance after withdrawal: 600.0
enter choice
No penalty imposed, balance: 600.0
enter choice
enter amount to be withdrawn:
200
```

```
Opdated balance after withdrawal: 600.0
enter choice
No penalty imposed, balance: 600.0
enter choice
enter amount to be withdrawn;
Updated balance after withdrawal: 400.0
Opdated balace after imposing penalty: 300.0
enter choice
Enter amount to be deposited:
500
updated balance after deposit: 800.0
enter choice
enter amount to be withdrawn:
100
 Opdated balance after withdrawal: 700.0
No penalty imposed, balance: 700.0
enter choice
 ... Program finished with exit code 0
Press ENTER to exit console.
```