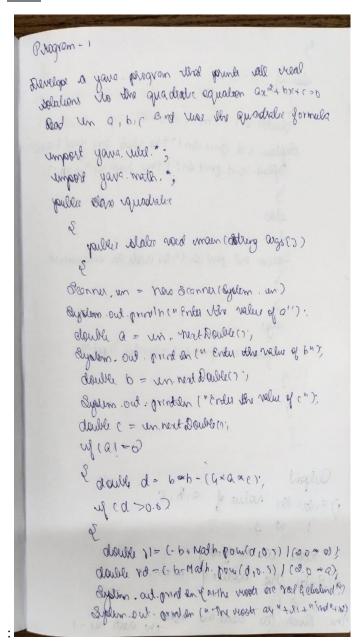
LAB PROGRAM -1

Develop a Java program that prints all real solutions to the quadratic equation ax2+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.

CODE

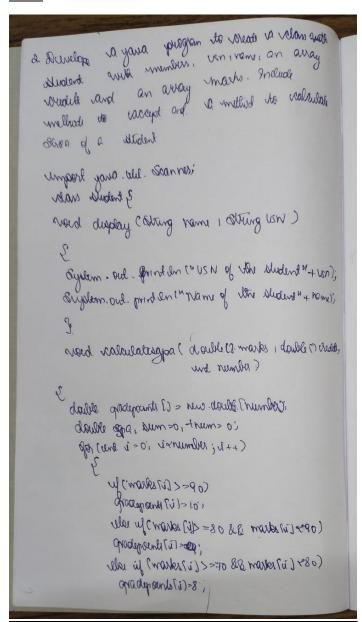


```
C:\Users\bmsce\Desktop\1bm21cs062>java quadratic
enter the value of a,b,c
1 2 3
the roots are imaginary
C:\Users\bmsce\Desktop\1bm21cs062>java quadratic
enter the value of a,b,c
1 2 1
the roots are real and equal
the roots is-1.0
C:\Users\bmsce\Desktop\1bm21cs062>java quadratic
enter the value of a,b,c
3 2 1
the roots are imaginary
C:\Users\bmsce\Desktop\1bm21cs062>java quadratic
enter the value of a,b,c
4 6 2
the roots are real and distinct
The roots are-5.75and-6.25
```

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.

CODE



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ala y (marker i) 2 >60 & & marker 1 2 x 40]
    gradepaints Pi J = 7.
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   cost (instant) > 40 & c marter (i) < 30)
       gradepoints (i) > (i)
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    Ogpa = sum/Inum;
     Syden, out. print ln 1 or 8 all A us "+55pa);
         9860 g
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  public state used main Cotting Varys (3)
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       Sylton, and print in (" Entitl name & ung ille solution");
        dry want. > 8 next(1)
       Blung name = 0. new (1)
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      apulle reduct () = how double fourthers?
      double marks [ ) - new double (number );
       gol [ curt is 0 ; ix number; is as )
       System. Out produce ( " Credit of delayet "+ (vi+1+1:1))
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         System. ad gudania Marks of Suly of 1+hi+1)+in
          makery = & withould ()',
        61. duplay ( name ( ush);
        81 - valudatispe (malor, wild mumber);
Autput
```

```
C:\Users\bmsce\Desktop\1bm21cs062>java sgpa
enter name and usn of the student
sanjana 1bm21cs062
enter number of courses
credit of the subject1:
marks of the subject1:
94
credit of the subject2:
marks of the subject2:
credit of the subject3:
marks of the subject3:
89
credit of the subject4:
1
marks of the subject4:
credit of the subject5:
marks of the subject5:
credit of the subject6:
3
marks of the subject6:
credit of the subject7:
marks of the subject7:
credit of the subject8:
marks of the subject8:
credit of the subject9:
marks of the subject9:
85
usn of the student:1bm21cs062
name of the student:sanjana
sgpa is 9.1
```

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.

CODE

Create a blook which cortains Jour members morre, allo police num goes. Induct the nonstructor to wet the values for the members. Include melhads to set and aget the delails of the Objects. Include a lowling! million that sould display the dample delate of Who clock. Dievelops a your program to weak nhook object. umport yava. val. *; umport your day . "; whan hook Slang rome; author; and price 1 num-pages; "word gelvale?. Secret 50 - new Scenner (System in) System out product (" Enter boot roma") & yelem . acd print don (" Entry author nome: "); author = 80. mind (7) aplem. out. months on Enter police 1 1: mice > 6 C. nixt 90/2 (7) ayolem out print on (" order no of peges"); J. Num-pagu - 50. nxt9nt ();

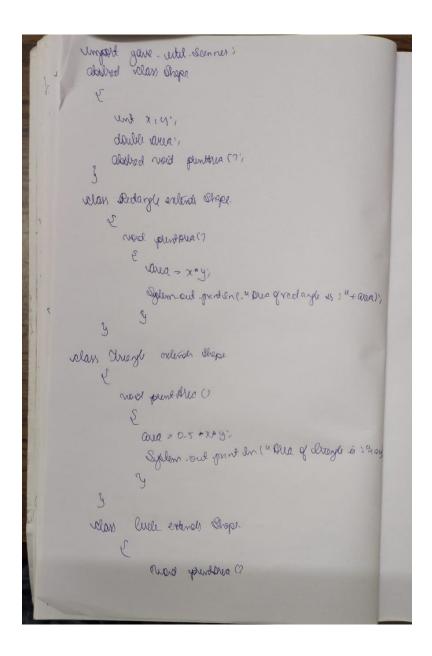
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```
C:\Users\bmsce\Desktop\1bm21cs062>java Bookv
enter the no of books

2
enter book name,author name,price and number of pages
twilight stephanie

300
500
enter book name,author name,price and number of pages
woman
mary
400
900
twilight stephanie 300Rs 500pages
woman mary 400Rs 900pages
```

Q) 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 extend the class Shape. Each one of the classes contain only the method printArea() that prints the area of the given shape.



```
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  3
clan Area
     PS v. m (Blung ays (3)
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           Deargle & - New Druggle ();
           Circle C > new Circle (5")
           und ch;
          Scenner & = new Scenner Eyolem in;
         S.O. P L'Menu In 1. Redargh Lo. Triengh 3 n.3. aud
                  In 4. Enut 100),
          Ch = s. new of or;
          Dwilch (ch)
       Mare 1:5. 0.0 ( " Ende length & breadth ");
              Sec 1 = S. nord and (i)
              ore C. 425. wodent ();
               NU. Pint Aug (7)
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             Ex 28 midlider 4-425 midlider
                E print sue cr'i
       COSI 3 . S. O. P ("Enly redus")
                 C.x - s new Poter, c. prontaceni
           default: S. . O. P(" graded unpar"):
```

```
C:\Users\sanja\OneDrive\Desktop\1bm21cs062>javac swm.java

C:\Users\sanja\OneDrive\Desktop\1bm21cs062>java Area
menu
1.rectangle
2.triangle
3.circle
4.exit

1
Enter length:
3
Enter breadth:
4
Area of rectangle is: 12.0
Enter height:
30
Enter breadth:
20
Area of triangle is: 300.0
Enter radius:
100
Area of circle is: 31400.0
invalid input

C:\Users\sanja\OneDrive\Desktop\1bm21cs062>
```

Q) 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 Cur-acct and Sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks:

- a) Accept deposit from customer and update the balance.
- b) Display the balance.
- c) Compute and deposit interest
- d) Permit withdrawal and update the balance

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

Developer a Jave program to cruth a clan Bonk that marlatur vino semen of account of the audomon ions realled severy account and the other covere tracent. import your wal scenner. import gave long melt; class Acount Slong no me, one type; und all-no! double bal, dep; Scennu vs - new ocennus (syptem. no) youd out (? dyptem. Out print en 1° Enter your nome 5); 10me = 55 new (2) appen. out print en (" Enter your aavent number"); acl-no = 33. next 9xt 17; Eyolen . Old grand on [" Enter your account type = (Sarungs / Current 747", ace-type = 55 month?", & P. J & D. P ("Enter the Bank belance"); pal = ss. hert Double (7) Word deep (2 6. 0.8 (" Warn: " Hrome); S. O. O ["A CLOCAT no: "+ & C-no)", Q. D. P (" persont type ." + accety per)"

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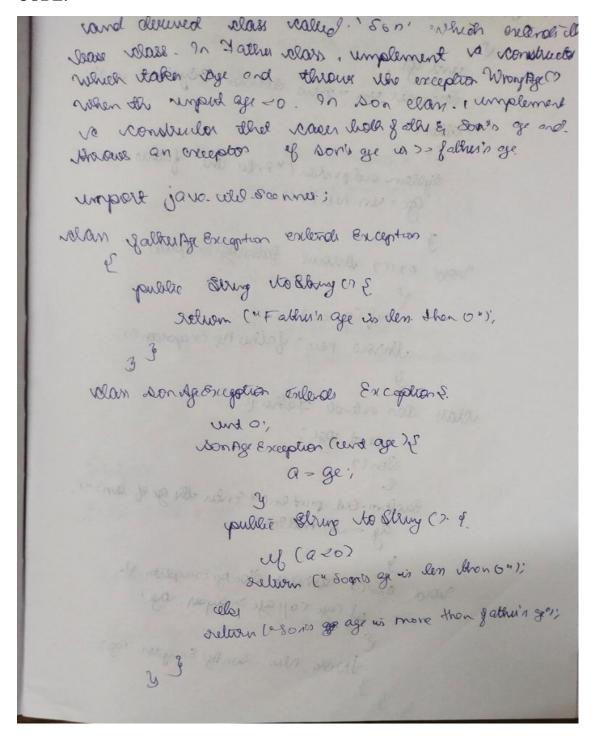
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     gen - Ss. ned Doubter;
   uf (bel & min)
        hal - gen
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          8.0.0 ( " Enter and to be willdown");
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             of (balsoom)
             bal--and;
             System . O. P ( " A occount balance after
              avullation is "that; 3
        ulse
        S. O. PTT he amount on't be well-dienny
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en k,
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                     case ?: SI. cel-content or head;
                      and 3: S.J. willideavel (7: bled;
                       case 4'. St. disp(1) bred?
                        cases: dery colidret;
```

```
Microsoft Windows [Version 10.0.22000.1098]
(c) Microsoft Corporation. All rights reserved.
C:\Users\sanja>cd C:\Users\sanja\OneDrive\Desktop\1bm21cs062
 ::\Users\sanja\OneDrive\Desktop\1bm21cs062>javac swm.java
 ::\Users\sanja\OneDrive\Desktop\1bm21cs062>java Bank
Enter your Name:
Sanjana
Enter your Account Number:
1100110
Enter your Account type: (Savings/Current)
Savings
Enter the Bank Balance:
1000000
Enter your choice:
1.Deposit
2.Calculate interest
4.Display
5.Exit
Enter the amount to be deposited:
Balance Amount: 1012222.0
Enter your choice:
1.Deposit
2.Calculate interest
3.Withdraw
4.Display
Enter amount to be withdrawn:
Account Balance after withdrawal is:912222.0
Enter your choice:
1.Deposit
2.Calculate interest
3.Withdraw
1.Display
Enter your choice:
1.Deposit
2.Calculate interest
3.Withdraw
4.Display
5.Exit
Enter Time in years and Rate of interest
Account Balance after compounding interest: 1181353.9444380002
Enter your choice:
1.Deposit
2.Calculate interest
3.Withdraw
4.Display
5.Exit
Name: Sanjana
Account Number: 1100110
Account Type: Savings
Current balance is: 1181353.9444380002
Enter your choice:
1.Deposit
2.Calculate interest
3.Withdraw
4.Display
5.Exit
C:\Users\sanja\OneDrive\Desktop\1bm21cs062>
```

Q) 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.

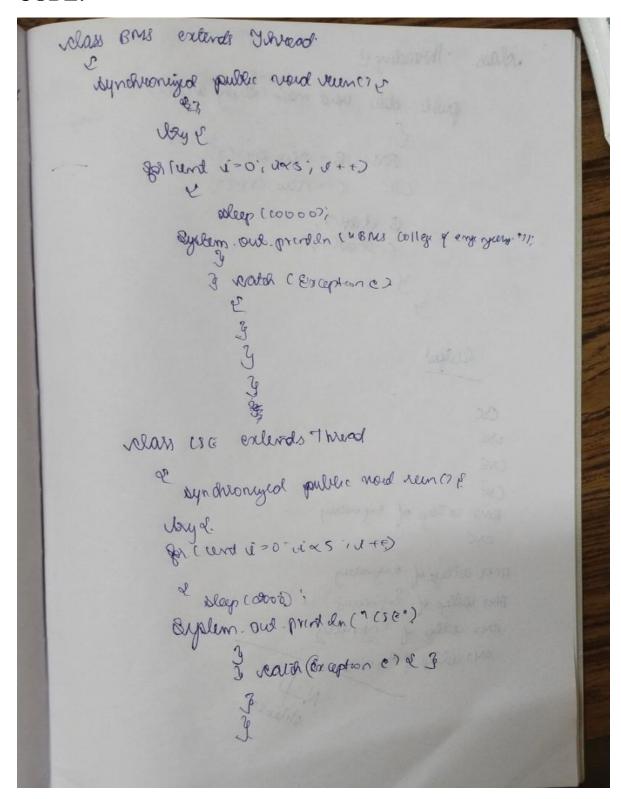


class Tathu deanner un = new deenner Csyslam. un! Halker (7 Eyelem outproten (" snew the father is go: 4) age - Un. Ned Irot 17 wood exico theories faller Agrex coplies of (agreo) Moraro new Yalher Age Exagoran (1) Was Don enteroly Father of and age; Sone Syptem. Out print line " Enter the go of son: "), ag = um. resid 9 rdco: hold one or Whoms Son Age Exception V. of case collage > super. age, 3 3 3

MON Excels & public state void main (Chings) args) of Son 5 - New Soner" dry of s. called to the state of the state of olan cope entrai throw of t card (falle Age Engotion te) & System. out. print (e); 4m & 8. exa(); Oateh (Son Age Exception @) pr System: out print du (0); Pertous Entu falhuir ge: 73 Enter son's oge: Son's age is more than yother's age

```
C:\Users\sanja\OneDrive\Desktop\1bm21cs062>javac except.java
C:\Users\sanja\OneDrive\Desktop\1bm21cs062>java except
Enter the father's age:
13
Enter the age of son:
19
Son's age is more than father's age
C:\Users\sanja\OneDrive\Desktop\1bm21cs062>_
```

Q) 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.



```
whose threading ?

public date was now (slavy argsel)

E

BMS B = new Brys(1);

CIE (= new GE(1);

B. start(1);

(. start(1);

y

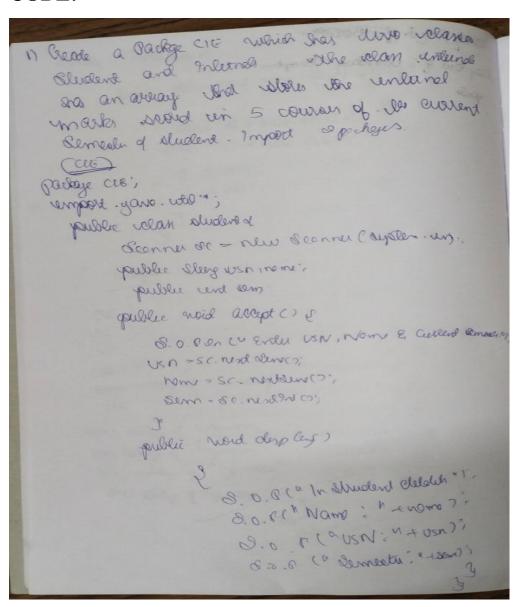
y
```

Q) 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.



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2 Syptem. Oat. ont 1 4 Ends Sugar 1 = (1 +1) en

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     Stut-display (7:
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      8. 2.0 (1170tol mark of dudent "+(y-1)7": "+1860g)
        20.00;
```

```
Enter student 1 details
Enter USN, Name and Current semester:
1BM21CS062
SANJANA
Enter CIE marks of subject 1
Enter CIE marks of subject 2
Enter CIE marks of subject 3
Enter CIE marks of subject 4
50
Enter CIE marks of subject 5
Enter SEE marks of subject 1
50
Enter SEE marks of subject 2
50
Enter SEE marks of subject 3
50
Enter SEE marks of subject 4
Enter SEE marks of subject 5
50
Details of student 1
Student Details
Name: SANJANA
USN: 1BM21CS062
Semester: 3
Total marks in subject 1: 100
Total marks in subject 2: 100
Total marks in subject 3: 100
Total marks in subject 4: 100
Total marks in subject 5: 100
```