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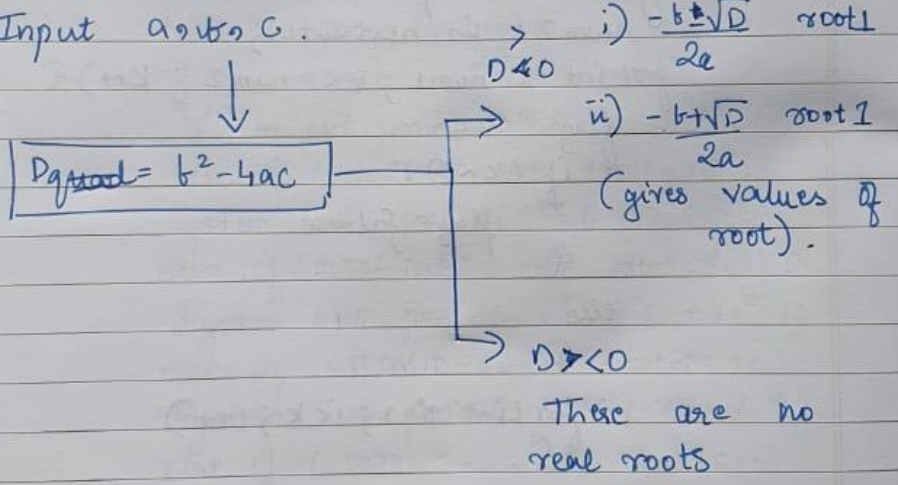
Week 3

1) Develope a Java Program that prints all real solutions to the quadratic eqn $ax^2+bx+c=0$ Read a, b, c and use quadratic formula. If the discriminate b^2-4ac is negative, display a message stating that there is no real roots.

Algorithm

→ a, b, c are variables
Quadratic determinant : b^2-4ac

→ Input a, b, c.




```
import java.util.*;
public class Quadratic{
    public Static void main (String[] args){
     int a, b, c;                    D
     double root1, root2, qtood;
     System.out.println("Enter a, b, c :");
     Scanner sc = new Scanner(System.in);
     int a = sc.nextInt();
     int b = sc.nextInt();
     int c = sc.nextInt();
     D= b*b - 4*a*c;
```

```
if (D>0)
{
    System.out.println("real roots are:\n");
    root1 = (-b + Math.sqrt(D)) / (2*a);
    root2 = (-b - Math.sqrt(D)) / (2*a);
    System.out.println("root 1 is "+root1+
        "root 2 is "+root2);
}
else if (D<0)
{
    System.out.println("Imaginary roots");
    System.out.println("These are no
        real solutions");
}
}
}
```

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 & display details and a method Calculate SGPA.

Algorithm.

i) Declare all Student details Variables.
ii) Create a function to Calculate SGPA
iii) Enter all the Student details
iv) Calculate the SGPA.
v) Print all the Student Details.
vi) exit.

```
import java.util.Scanner;
Class Student &GPA{
    int USN, i, j;
    String name = new String();
    int Credits[] = new int[5];
    int marks[] = new int[5];
    float SGPA(){
        float sum=0;
        for(int i=0; i<5; i++){
            sum = sum + (Credits[i] * marks[j]);
        }
    return sum/5;
    }
}
Public Class Main&& {
    public static void main(String []args){
    Scanner in = new Scanner(System.in);
    Student&GPA Stud1 = new Student&GPA();
    System.out.println("Enter Details");
    System.out.println("Enter USN :");
    Stud1.usn = in.nextInt();
    System.out.println("Enter name:");
    Stu1.name = in.nextLine();
    System.out.println("Enter the Credits");
    for(int j=0; j<5;j++){
        System.out.println("Enter Subject" + (j+1));
        int cd = in.nextInt();
        Stud1.Credits[j] = cd;
    }
    System.out.Println("Enter the marks");
    for(int j=0;j<5;j++){
        System.out.println("Subject" + (j+1));
        int mk = in.nextInt();
        Stud1.marks[j] = mk;
    }
```

Week 4.

Create a class Book which Contains four members, name, author, price, num-pages, Include a Constructor to set the value for the members. Include a toString() method that could display the Complete details of the books. Develope Java Program.

~~import java~~

Algorithm:

i) Create Book Class
ii) Intialize instance Variables.
iii) Create a Constructor to accept Values
iv) Create a function to read the inputs give by User.
v) Create toString func^n file and return the values.
vi) In main intialize the object with n
vii) Create an array for multiple objects.
viii) Display the Contents.

```
import java.util.*;
Class Book {
    String name;
    String author;
    int price;
    int num_pages;
    Book(String name, String author, int price, int num_pages)
    {
        this.name = name;
        this.author = author;
        this.num_pages = num_pages;
    }
void Read()
{
    Scanner s = new Scanner(System.in);
    System.out.println("Enter the name of the book");
    name = s.next();
    System.out.println("Enter the author of the book");
    author = s.next();
    System.out.println("Enter the price of the book");
    price = s.nextInt()
    System.out.println("Enter the no of pages of
                        the book");
    num_pages = s.nextInt();
}
Public String toString()
{
    return ("Name : "+Name +"\n" + "Author : "+author
    +"\n" + "Price : "+price +"\n" + "Number of pages :
     "+num_pages);

}
```

```
public class BookMainFunc {
    public static void main (String args[])
    {
        Scanner a = new Scanner (System.in);
        Book b1 = new Book("7th Habit", "STEPHEN COVEY", 100
            , 345);
        System.out.println("Same i/p: \n" + b1);
        System.out.println("Enter the no of books");
        int n = a.nextInt();
        Book b[] = new Book[n];
        for (int i=0; i<n; i++)
        {
            b[i] = new Book();
            System.out.println("Enter the details of "
                + (i+1) + "th Book");
            b[i].Read();
        }
        for (int i=0; i<n; i++)
        {
            System.out.println("Details of book" + (i+1));
            System.out.println(b[i]);
        }
    }
}
```

→ Lab Exercises - 4 and 5

Develop a Java program to create an abstract class named shape that contains 2 integers and an empty method named printArea(). Provide three classes name Rectangle, Triangle and Circle such that each one of the classes contains the method printArea() that prints the area of the given shape

```
import java.util.*;

class Shape {
    int sl;
    int sb;
    void printArea(){
    }
    Scanner s_inp = new Scanner (System.in);
}
class Rectangle extends Shape{
    void printArea(){
        System.out.println("Enter the length of Rectangle");
        sl = s_inp.nextInt();
        System.out.println("Enter the breadth of Rectangle");
        sb = s_inp.nextInt();
        System.out.println("the area of Rectangle is :" + (sb * sl));
    }
}
class Triangle extends shape {
    void Print Area(){
```

```
        System.out.println("Enter the height :");
        sl = S_inp.nextInt();
        System.out.println("Enter the base :");
        sb = S_inp.nextInt();
        System.out.println("Area of triangle is :"
                + (0.5*sb*sl));
    }
}
class Circle extends Shape {
    void printArea(){
        System.out.println("Enter the radius :");
        s1 = S_inp.nextInt();
        System.out.println("area of circle is :"
                + (3.143* s1 *s2));
    }
}
Public class MainA {
    public static void main (String[] args)
    {
        Rectangle R1 = new Rectangle();
        Triangle T1 = new Triangle();
        Circle C1 = new Circle();
        R1.PrintArea();
        T1.PrintArea();
        C1.PrintArea();
    }
}
```

LAB 5

```
package Java1;
import java.util.Scanner)

Class Bank
{
    int deposit_balance;
    int withdraw_balance;
    String Customername;
    String Account_Number;
    String Account_Type;
    int Balance = 27800;
    void Accept()
    {
      Scanner s = new Scanner(System.in);
      System.out.println("Enter the Customer name\n");
      Customer name = s.next();
      System.out.println("Enter the Account no\n");
      Account_Number = s.next();
      System.out.println("Enter the Account type\n");
      Account_Type = s.next();
    }
    void display()
    {
    System.out.println("Customer name : "+Customer name);
    System.out.println("Account number : "+Account_number);
    System.out.println("Account type : "+Account_type);
    }
}
class cur_acct extends Bank{

    int updated_balance;
    int after_withdrawn;
    int updated_last_balance;
```

```
int cdepo_ba(){

    updated_balance = Balance + deposit_balance;
    return updated_balance;
}
  int cwith_ba(){
    After_cwithdrawn = ((updated_balance) - (withdraw_
    return After_cwithdrawn;                balance));
}
int minimum()
{
    if ((After_cwithdrawn)<=(2000))
      {
        updated_lost_balance = ((After_cwithdrawn) - (200));
        System.out.println("you have minimum
                balance below 2000 so u have
                    lost 200 rs");
    return updated_lost_balance;
}
else
  return After_cwithdrawn;
}
}
Class sav_acct extends Bank{

  int Supdated_balance;
  int After_swithdrawn;
  int updated_lost_Sbalance;
  int Compound_interest;
  int Sdepo_ba(){

Supdated_balance = Balance + deposit_balance;
return Supdated_balance;
}
```

```
int interest()
{
    double r = 0.08;
    int n = 12;
    int t = 5;
    Compound_interest = (int)((Supdate_balance)*
        (Math.pow((1 + (r/n)), (n*t))));
    return Compound_interest;
}

int Swith_ba(){                                    balance
    After_swithdrawn = ((Compound_interest) - (withdraw
    return After_swithdrawn;
}
int minimum()
{
    if((After_Swithdrawn) <= (1000))
    {
        updated_lost_Sbalance = ((After_Swithdrawn) - (100)
        return updated_lost_Sbalance;
    }
else
return After_withdrawn;
}
}

class transactions{
public static void main (String args[]){
    Scanner r = new Scanner (System.in);
    Curr_acct CA = new Curr_acct();
    CA.accept();
```