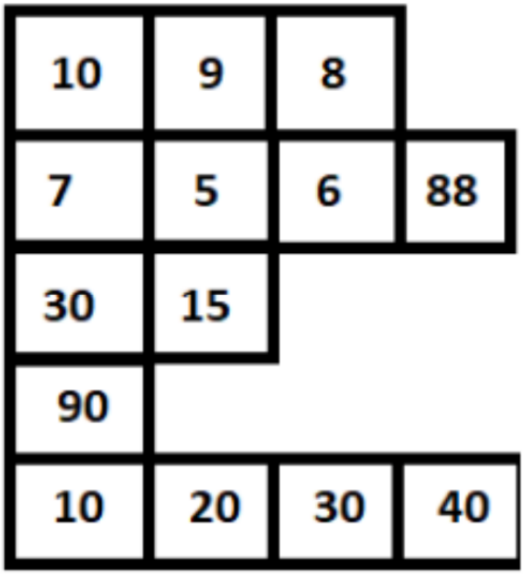
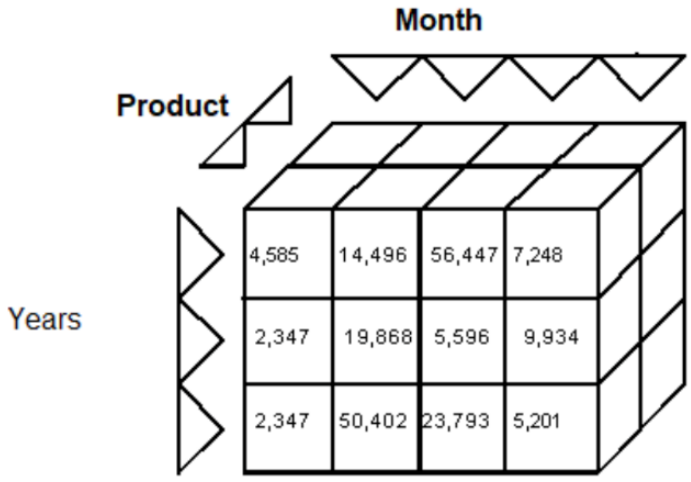
Q1. Apply the Jagged Array Concept to the following array representation. The Following Jagged array stores the details of quantity of 4 different products on 5 different days. Find out the total quantity of all products in all the days



Q2. Write a Program to find the total sales of last 3 years month sales of four different products of a company using multidimensional array



Q3. Write a Java program to a.print a string entered by user. b.To input and display the sentence "I love VIT". c.to find the length of the string "Computer". d to check if the letter 'e' is present in the word 'wonderful'. e to check if the word 'chance' is present in the "Place to learn and a chance to grow". f.to find the first and the last occurence of the letter 'e' and character ',' in "Hello, World".

Q4. Develop a java program that takes your full name as input and displays the abbreviations of the first and middle names except the last name which is displayed as it is. For example, if your name is Robert Brett Roser, then the output should be R.B.Roser.

Q5. Write a program to find the number of vowels, consonents, digits and white space characters in a string.

Q6. Input a string of alphabets. Find out the number of occurrence of all alphabets in that string. Find out the alphabet with maximum occurrence.

Q7. Read "N" numbers and store them into an array, then find the smallest and biggest of among the given 'n' numbers.

Q8. Program to count the positive and negative numbers stored in an array.

Q9. Use two-dimensional array to store two matrices and perform addition and subtraction with the help of two separate user defined methods.

Q10. Solve the following problem statement using Loop, Selection and Arrays Concept of Java.

Q11. Write a user defined static method to find the factorial of a given number. Use this factorial function to estimate the Binomial Co-efficient.

$$C(7,3) = \binom{7}{3} = \frac{7!}{3!(7-3)!} = \frac{7!}{3! \cdot 4!}$$

$$= \frac{7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{3 \cdot 2 \cdot 1 \cdot 4 \cdot 3 \cdot 2 \cdot 1}$$

$$= \frac{5040}{144} = 35$$

Q12.

1.

Define a class account to represent a bank account. Include the following :

Data members :

- Account number
- Name of the depositor
- Type of account
- Balance amount in the account

Member functions :

- To assign initial values
- To deposit an amount
- To withdraw an amount after checking the balance
- To display name and balance

Instantiate this class and create object to invoke the methods in a Test Driver Class.

Q13. Develop a Java Program to perform the following using classes and objects with constructors (Default, Single Argument, Two Argumemnt and multi argumemnts).

a) Get as input the marks of 5 subjects of a student

b) Calculate total and Average of marks of a student

c) Print the formatted result with total and Average

Q14. Find the net salary of employee is by first taking the values of basic salary, income tax, provident fund and professional tax in the main function and directly use the below formula. Net Salary = Salary – Income Tax – Public Provident Fund – Professional Tax. Create a class named as “Employee” and add the required set of member data and methods to calculate the netsalary of 5 employee using an array of objects.

Q15. We create a distance class with the following: feet and inches as data members method to input distance method to output distance method to add two distance objects We create two objects of distance class , add them and output the added distance.

Q16. Create complex number class in Java, that can hold the real and imaginary part of the complex number as member elements. There will be some methods that are used to handle this class. In this example we are creating one complex type class, a method to display the complex number into correct format. Also implement a method addComplex that will add two complex number and return another complex as a resultant object.

Q17. Develop an overloaded method named as Square() that will find square of byte, short, int, long ,float, double as per the type of format parameter that it has. If no parameter is passed then it has to find the square of 1.

Q18. Develop a overload method add() with different parameter to add the values passed over the formal parameter. If String is passed as parameter you should convert into integer and then start adding and returning the added value. If the parameter could also be a type of Distance or Complex Class.

Q19. Write a program to demonstrate the knowledge of students in basic Java concepts.

Eg., Write a program to read the First name and Last name of a person, his weight and height using command line arguments. Calculate the BMI Index which is defined as the individual's body mass divided by the square of their height.

Category	**BMI Range-Kg/m^2**
Underweight	< 18.5
Normal (healthy weight)	18.5 to 25
Overweight	25 to 30
Obese Class	Over 30

Display the name and display his category based on the BMI value thus calculated.

Q20. Read two names of your friend and order them in alphabetical order using Compare Methods of String Class.

Q21. Write a program that outputs a person's "gangsta name."

- First initial
- *Diddy*
- Last name (all caps)
- First name
- *-izzle*

Example:

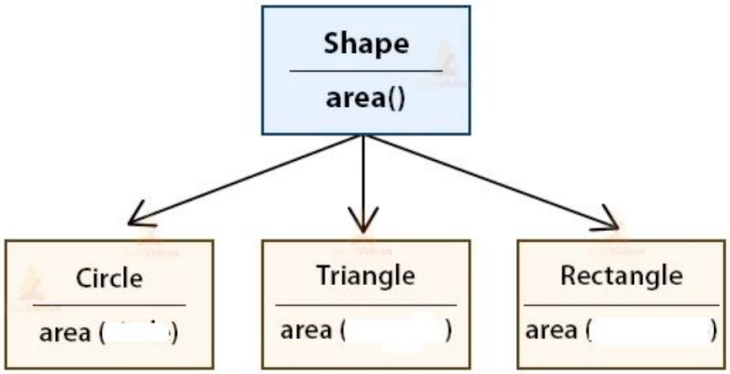
input: “Marge Simpson”
output: “M. Diddy SIMPSON Marge-izzle”

Q22. Develop a overload method add() with different parameter to add the values passed over the formal parameter. If String is passed as parameter you should convert into integer and then start adding and returning the added value. If the parameter could also be a type of Distance or Complex Class..

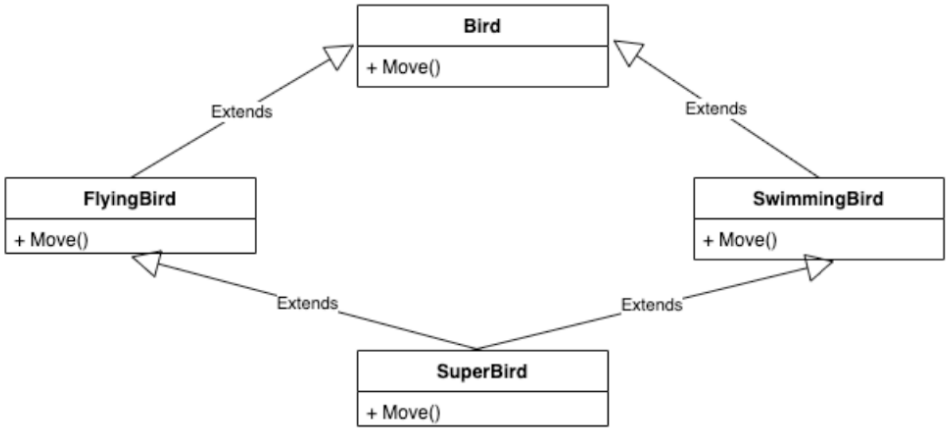
Q23.

Define a class point such that it will store two integer x co-ordinate and y-coordinate of a point. Define another class named as Geometry which will have member as a point object to store the x-coordinate and y-co-ordinate. Define a class that will be extended from Geometry named "Line" that will hold two points where as one point is inherited from geometry another point is defined within the "Line" class. Define a method findLengh() of a line that wil point the distance between two points of a line.

Q24. Implement the principle of polymorphic principle over the following inheritance to find the area of different geomentrical objects where as the super class (Shape) should be an abstract class. Test all the are methods of the children with array of objects.



Q25. Demonstrate the usage of interfaces and default method for the following inheritance that handles the diamond problem of multilevel inheritance.



Q26. Define an outer class named BanakCustomer which represents avvountno,Accountname,loanamount and EMI_Amount. It also define an inner class named “EMICalc” as its member. The EMICalc also defines two instance variavle interestrate and number_of_terms with additional method double findEMI(double loanamount) that will calculate and return the EMI of the loanamount as per the following formula.Test this method for a sample account.

$$E = P \times r \times \frac{(1+r)^n}{(1+r)^n - 1}$$

Where,

E is the EMI
P is the principal amount
r is the monthly rate of interest
n is the number of months

Q27. Define a custom exception named as "BalanceNotSufficient" which has an instance variable that stores the balance amount.Define a constructor with one argument that will assign the parameter passed to the instance member.Define another method in the custom exception such as getAmount() that will return the amount stored in the amount of the exception object.Test this custom exception class in a BankAccount class which has the following instance variable such as

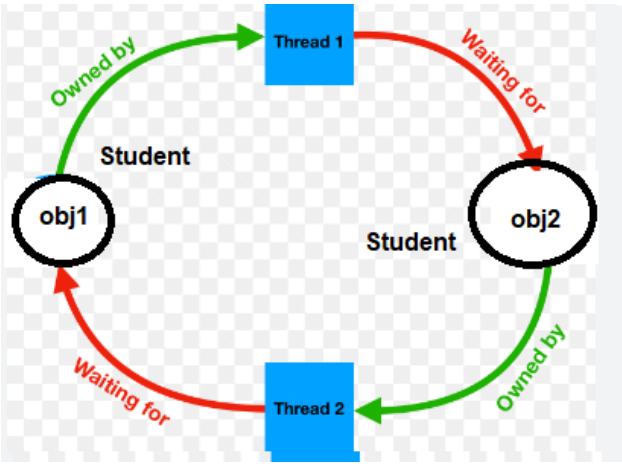
class BankAccount{
int accno;
int balance;
void doCredit(int amount); void doDebit(int amount); }

The doCredit() method should deposit the amount to the balance whereas the doDebit() will withdraw the amount from the balance Check the balance for each debit and raise an exception of BalanceNotSufficient if the balance is less that the amount to be withdrawn. Test the methods with sample driver class using try{} catch{} block.

Q28. Write a program to demonstrate the knowledge of students in multithreading. Eg., Three students A, B and C of B.Tech-IT II year contest for the PR election. With the total strength of 240 students in II year, simulate the vote casting by generating 240 random numbers (1 for student A, 2 for B and 3 for C) and store them in an array. Create four threads to equally share the task of counting the number of votes cast for all the three candidates. Use synchronized method or synchronized block to update the three count variables. The main thread should receive the final vote count for all three contestants and hence decide the PR based on the values received

Q29. Implement with Java Code for demonstrating the dead lock over the following situation where as resource 1 and resource 2 are two different object of a sample class.

But the objects are accesses as shown in the resource allocation pattern.



The obj1 object student class stores the CAT-1,CAT-2 and FAT marks of subject of a student in a particular subject. Similarly the obj2 object of student class stores CAT- 1,CAT-2 and FAT marks of another subject of the same student . Estimate the Total average marks scored by the same student in these two different subjects with the help of two threads whereas each thread estimate the average of Exams of student.

Q30. Write a program to demonstrate the knowledge of students in File handling. Eg., Define a class 'Donor' to store the below mentioned details of a blood donor.

Name, age, Address, Contactnumber, bloodgroup, date of last donation

Create 'n' objects of this class for all the regular donors at Vellore. Write these objects to a file. Read these objects from the file and display only those donors'

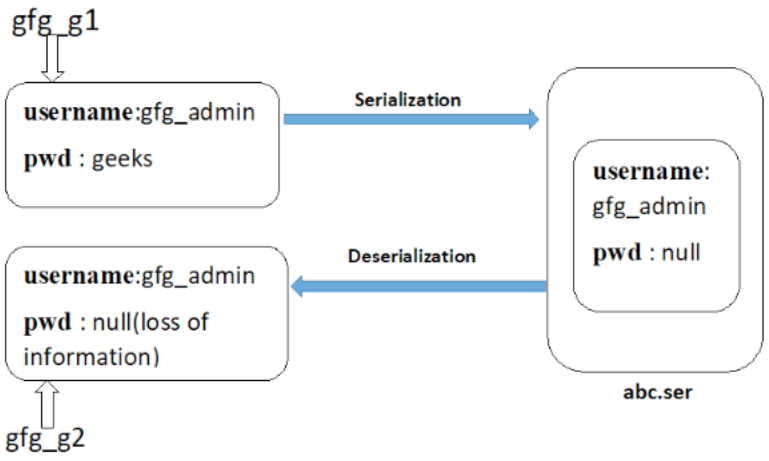
details whose blood group is ‘A+ve’ and had not donated for the recent six months.

Q31. Develop a Java Program to write the following strings of lines into a file yourname.txt

Hello I am Geeks for Geeks
Hello I am a Good Intern
Hello World Bye World
Hello Hadoop Good Bye Hadoop

- Use scanner for reading the above file to count the frequency of each word stored in the file
- Use Piped Streams such that one thread read the above file and filters word “Good” then pushes the remaining words into a piped output stream whereas this piped output stream is connected to a piped input stream. Intern another thread will read all the bytes from the piped input stream and displays content.

Q32. Use Object Serialization and Deserialization over the following scenario with transient feature



Q33. Write a program to demonstrate the knowledge of students in working with Java collection framework. Eg., Assume only a maximum of 3 courses can be registered by a student for week end semester classes. Create a hashmap 'h1' with 'n' key-value pairs where keys are the names of students and values are the courses registered by them. Create another hashmap 'h2' with 'm'key-value pairs where keys are the names of courses offered for B.Tech-IT and values are the names of faculty handling the courses. Write appropriate code to

- Add or remove a student from h1
- Iterate over the maps and display the key-value pairs stored in them
- Given a student name, fetch the names of all those who teach him/her. Eg:, if the elements of h1 are

Stud name	Courses registered
A	Python, maths, c
B	c, c++
C	C++, physics,chemistry

And if the elements of h2 are

Course name	Faculty
Python	111
Maths	222
C	333
C++	444
Physics`	555
Chemistry	666
Digital electronics	777

For the student "B", faculty should be displayed as 333 and 444.

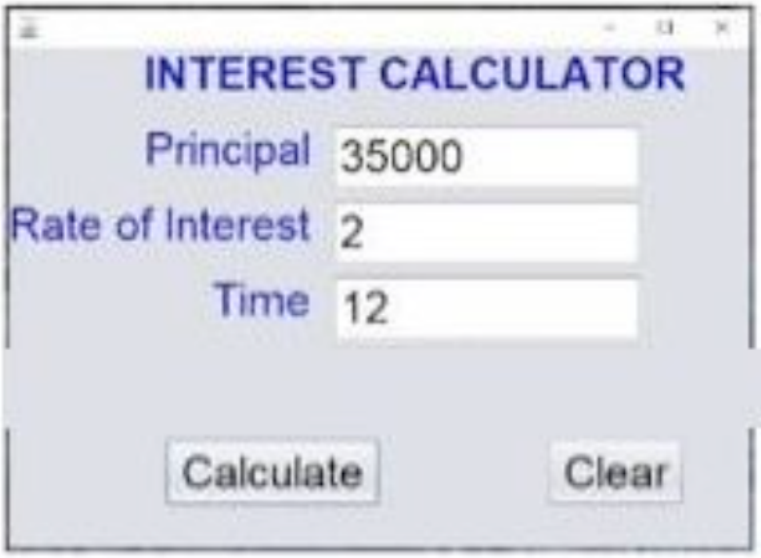
Q34. Create the following two collection (hash map/hash table) and perform insertion. Traverse the maps for displacing the First Name of the Pupil with their class name

Pupil Table			
Pupil ID	**First Name**	**Last Name**	**ClassID**
1	Bob	Jones	1
2	Bill	Jones	2
3	Fred	Jones	1

ClassTable		
Class ID	**Class Name**	**Room**
1	CompSci 101	S16
2	English 101	M42

Q35. Using Array list with in Array List store the 4 students 5 subject marks. An then Traverse the array list to find average marks of each student.

Q36. Develop a JavaFx Application for getting the information to calculate the simple interest and display the calculated simple interest in the console screen.



Q37. Create a customer table in a database with the following schema

Insert multiple rows in to the table Display phone no and fname of all the customer who have ordered the food id “Pizza”.