

1. Describe a DDA algorithm. Write a program to scan convert a line whose slope is between -45° and 45° (i.e., $|m| \leq 1$) using a DDA algorithm.
2. Write a program to scan convert a line using Bresenham's algorithm from point $P(x_1, y_1)$ to $Q(x_2, y_2)$.
3. Generate a circle using the polynomial method.
4. Generate a circle using the trigonometric method.
5. Scan convert a circle using a Bresenham's method.
6. Scan convert a circle using a mid-point circle method.
7. Scan convert an ellipse using the trigonometric method.
8. Write a program to draw the Indian Flag by using the primitives lines and circle.
9. Write a program to draw a Cycle using the graphics primitives lines and circles.
10. Modify the program of a cycle to convert the wheels into the rotating wheels (movement).
11. Write a program to design a human face using the graphics primitives circle, ellipse(s) and line segments.
12. Write a simple program to illustrate the translation of a point and then a line.

Suggested Books:

1. Donald Hearn and M. Pauline Baker, "Computer Graphics", PHI.
2. Steven Harrington, "Computer Graphics: A Programming Approach", TMH.

1. . Write steps to:

(i). Create a hyperlink in MS WORD.

(ii). Animate any text in Power Point.

2. Explain internal and external commands with 5 examples of each.

3. Explain the following commands along with the syntax and switches (if any):

(i).deltree(ii).ren (iii). mkdir (iv). attrib (v). cd (vi). xcopy (vii).tree(viii). Path (ix). Prompt

(x). date (xi). move (xii).copy (xiii). edit

4. Explain the booting process

5. Write steps to protect a file in MS EXCEL.

6. Create a list of 10 students with the following fields using MS-EXCEL.

Name	Marks Obtained					Total	Percentage
	English	Hin di	Mat hs	Physi cs	Chemist ry		

7. Format the cells having percentage less than 50% with red color.

8. Create a bar graph for the following values:

	A	B	C	D	E	F
MATC H						
RUNS	20 9	30 0	22 9	15 6	25 6	11 9

9. Write steps to sort a table in ascending order according to column C in MS EXCEL

10. What is a slide presentation? How is it useful?

11. Write steps to apply transitions to a slide.

12. Create a Power Point presentation on “Operating System” with 12-15 slides.

13. Create a New Year greeting card using Power Point presentation, which includes atleast 5 animations.

14. Create a macro in MS WORD such that on pressing ctrl+M, your personal details like name, date of birth, father’s name, etc.) will get displayed.

Suggested Books:

1. Peter Norton, “Introduction to Computers”, McGraw-Hill.
2. Rajaramon, V., “Fundamentals of Computers”, PHI.

1. WAP to compute net salary ? (NS=BP+HRA+TA +DA)

Where BP (Basic pay would be enter by user)

HRA=10% of BP

TA=5%of BP

DA=15%of BP2.

2. Write a program to insert and delete an item into/from sorted array.

3. WAP to print the sum of digits of any number?

4. WAP to generate fibonacci series? (1,1,2,3,4,5,8,13,21.....)

5. Write a menu driven program to find area of

A Circle

B Rectangle

C Triangle

6. Write a menu driven program using functions to find?

A Factorial of a number

B Reverse of a number

C factor of a number

7. Write a menu driven program to perform the following operation on input strings Using function and pointers. Do not use library functions for the same.

a) Find the length of the string

b) Reverse the string

c) Concatenate two strings

d) Compare two strings

8. WAP to reverse the words of a sentence. Eg If the sentence is : TODAY IS

MONDAY then it must be converted to MONDAY IS TODAY?

9. WAP using function to perform matrix multiplication?

10. WAP to sort a matrix of size r X c row wise and column wise and display all three matrices.

11. Write a recursive function Ackerman(m,n) that is defined as follows

Ackerman(0,n) =n+1 for n>0

Ackerman (m,0) = Ackerman(m-1,1) for m>0

Ackerman(m,n)=Ackerman(m-1,Ackerman(m,n-1) for (m, n)>0

12. WAP to create a two dimensional array of size r X c dynamically, store elements in it and find the sum of all the elements?

13. WAP to sort a matrix of size r X c row wise and column wise and display all three matrices.

Suggested Books:

1. Balagurusamy E., "Programming in ANSI C", 4th Edition, Tata McGraw Hill.

2. Kanetkar Yashwant, "Let Us C", 8th Edition, BPB Publication.

1. Write a program to add of two polynomials using arrays.
2. Write a program to insert and delete an item into/from sorted array.
3. Write a program to convert an Infix expression into Postfix expression.
4. Write a program to evaluate a given Postfix Expression.
5. Write a program to implement a circular queue.
6. Write a program to implement deque (Double Ended Queue).
7. Write a program to perform following operations using single linked.
 - i) Inserting an element
 - A) At beginning
 - B) At a particular location
 - C) In the last
 - ii) Deletion of an item
 - A) At beginning
 - B) At a particular location
 - C) In the last
 - iii) Displaying the element
 - iv) Exit
8. Write a program to perform following operations using double linked list.
 - i) Inserting an element
 - A) At beginning
 - B) At a particular location
 - C) In the last
 - ii) Deletion of an item
 - A) At beginning
 - B) At a particular location
 - C) In the last
 - iii) Displaying the element
 - iv) Exit
9. Write a program to reverse a linked list (using nodes address).
10. Write a program to concatenation of two linked lists.
11. Write a program to sort a Linked list.
12. Write a program to perform following operations on a binary search tree.
 - i) Inserting the element
 - ii) Deletion of an item
 - iii) Display the element in Preorder and In-order sequences
 - iv) Exit

Suggested Books:

1. Horowitz and Sahani, "Fundamentals of data Structures", Galgotia.
2. Lipschutz, "Data Structure", TMH.

1. WAP to find GCD and LCM of a number using recursion
2. WAP create a new data type for fraction and implement all its functions (lowest terms, mixed fractions, add, subtract , multiply and divide) depending on user choice
3. WAP to print the binary value of a number from 0 to 15 using bitwise operator
4. WAP to input a string and print its binary value and also print its compliment
5. WAP to check whether a particular switch is on or off. If ON then switch it OFF and if OFF then switch it ON.
6. WAP to input information of 20 people i.e. their name , age , gender , identity and vehicle they have (using all bits of integer variable except name) and print the data
7. WAP to open a file in read mode. Encrypt the data (using compliment) and store it in another file
8. Make a file using two pointers. First pointer to open a file in read mode and the second pointer to open a file in write mode. Encrypt the data of first file using XOR. Add 1 to the character and then XOR it with the original character. Store the result in second file.
9. WAP to open a file in binary mode.Store the record of people until the user wants to quit
- 10.WAP to copy one file to another at DOS prompt
- 11.WAP to write contents in any new file at command prompt
- 12.WAP to print the following at command prompt
argv[0] Address of file1 Name of file 1
argv[1] Address of file2 Name of file 2
argv[2] Address of file3 Name of file 3

Suggested Books:

1. Kanitkar Yashwant , "Let us C" , BPB
2. Balagurusami E., "Programming in ANSI C", 4th Ed., TMH

1. Introduction To Ms Access DBMS
 - 1.1 Understanding Ms – Access Interface
 - 1.2 Using **“Northwind”** sample database
 - 1.2 Creation of tables , forms , Relationships etc
- 2 Creating a sample application in MS Access
 - 2.1 Designing tables
 - 2.2 Creating Relationships
 - 2.3 Entering Data
 - 2.4 Creating forms
- 3 Introduction to Oracle
 - 3.1 using oracle interface
 - 3.2 Creating users and granting permissions
 - 3.3 Viewing tables and other objects
 - 3.4 Viewing data dictionary
 - 3.5 Setting Environment variables
 - 3.6 Using Dual Tables
4. More DML & DDL statements in oracle
 - 4.1 Creating Tables
 - 4.2 Viewing table structure
 - 4.3 Inserting Data in tables
 - 4.4 View data collectively and selectively
 - 4.5 Updating table data
- 5 Advance table manipulation
 - 5.1 Creating tables from other tables
 - 5.2 Creating tables from other tables without data
 - 5.3 Creating tables from other tables with selected columns
- 6 Using Keys
 - 6.1 Creating Primary Key, Foreign Key, Composite keys
- 7 Implementing constraints
 - 7.1 Using check, unique, default , Not Null etc
- 8 More Queries
 - 8.1 Designing simple queries using ‘select’, ‘where’, ‘and’, ‘or’ operators
 - 8.2 Ordering Data by ‘order by’
- 9 Use of Aggregate functions
 - 9.1 Aggregate functions like count(), sum(), avg(), min(), max() etc
- 10 Using string and other functions
 - 10.1 Using Substr() , upper() , lower() , initcap() etc
- 11 Using and Implementing joins
 - 11.1 Using various joins like Outer, inner, left outer etc
- 12 Using Set Operators in Queries
 - 12.1 Using Union, Intersection, Difference, Cartesian product
 - 12.2 Queries with division operator.

Suggested Books:

1. Korth, Silbertz, Sudarshan, "Database System Concepts", 4th Ed. McGraw Hill.
2. Date C. J. , "An Introduction to Database System", 7th Ed. Pearson Education.

1. Write an interactive, menu driven program that will contain the following options:
 - create a data file containing names, address and telephone number of a subscriber.
 - Display the information of all the subscriber/ desired subscriber.
 - Update the subscriber information, whenever required.
 - Delete the information of a unwanted subscriber.
2. Write a program to sort a list of numbers by bubble sort using template functions.
3. Write a program to read a list containing item name, item code, and cost interactively and produce a three column output as shown below.

NAME	CODE	COST
Excel Book	1001	250.50
JSP Book	1002	200.70
C++ Book	1003	190.75

Note that the name and code are left- justified and the cost is right justified with a precision of two digits. Trailing zeros are shown.

4. Write a program to show the utility of THIS pointer by using suitable example.
5. Illustrate how pointer to a derived class object are used
6. Assume that a bank maintains two kinds of accounts for customers. One called as saving account and the other as current account. The saving account provides compound interest and withdrawal facilities but no cheque facility. The current account provide cheque facility but no interest . The current account 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 necessary member functions in order to achieve the following tasks:
 - a) Accept deposit from a customer and update balance.
 - b) Display the balance.
 - c) Compute and deposit interest.
 - d) Permit withdrawal and update the balance.
 - e) Check for the minimum balance, impose penalty, necessary, and update the balance.
7. How we can solve ambiguity in case of multiple inheritance. Illustrate with example.
8. How to make private member inheritable. Illustrate with example.
9. Define a class String. Use overloaded == operator to compare two strings. By using member function and friend function both.
10. When a friend function is compulsory. Explain with example.
11. Write a program to overload + operator to add two objects.
12. A friend function cannot be used to overload the assignment operator =. Explain with example.

Suggested Books:

1. E. Balagurusamy, "Object Oriented Programming with C++," 4/ed, TMH.
2. B. Stroustrup, "The C++ Programming Language," Addison-Wesley.

1. Write a program to calculate absolute error ($E_a = \Delta x = |X^T - X^A|$), where X^A is the approximate value of exact number X^T .
2. Write a program to calculate relative error ($E_r = |X^T - X^A| / |X^T|$), where X^A is the approximate value of exact number X^T .
3. Write a program to find out a solution of algebraic and transcendental equations by using “Bisection Method”.
4. Write a program to find out a solution of algebraic and transcendental equations by using “Regula-Falsi Method”.
5. Write a program to find out a solution of algebraic and transcendental equations by using “Newton Raphson Method”.
6. Write a program to find out a solution of algebraic and transcendental equations by using “Fixed Point Iterative Method”.
7. Write a program to find out a solution of algebraic and transcendental equations by using “Secant Method”.
8. Write a program to find out solutions of a set of simultaneous linear equations by using “Gauss Elimination Method (direct method and pivoting)”.
9. Write a program to find out solutions of a set of simultaneous linear equations by using “Gauss Jordan Method (direct method and pivoting)”.
10. Write a program to find out solutions of a set of simultaneous linear equations by using “Gauss Seidal Method”.
11. Write a program to implement “Newton’s forward Interpolation formula”.
12. Write a program to implement “Newton’s backward Interpolation formula”.

Suggested Books:

1. Peterson Abraham & Silbesschatz, Peter Galvin, “Operating system concepts”, 6th Ed., Wiley India.
2. Mandnick and Donovan, “Operating systems”, Tata Mc–Graw Hill.

1. Write a program to create an abstract class **Vehicle**, and then create classes **TwoWheelers**, **ThreeWheelers** and **FourWheelers** by extending the **Vehicle** class. Show the concept of Inheritance, **super()**, overloaded constructors.
2. Write a program to create a class **Employee** having all details about an employee, this class also have a static field “count”, implement constructors such that this static field contains the total number of instances created for **Employee** class.
3. Write a program using the concept of “method overloading” to compute the area of a circle, rectangle and a triangle.
4. Write a program to input n numbers using arrays and then print the average of them, try to access an array variable which is outside the array index and then handle the “**ArrayIndexOutOfBoundsException**” exception. If user enter the value of n as 0, then show how JAVA can also create zero element array and handle the “**DivisionByZero**” exception, depict the working of “try”, “catch” and “finally”.
5. Write a program to create your own exceptions and depict the working of “throw” and “throws”
6. Implement three classes: **Storage**, **Counter**, and **Printer**. The **Storage** class should store an integer. The **Counter** class should create a thread that starts counting from 0 (0, 1, 2, ...) and stores each value in the **Storage** class. The **Printer** class should create a thread that keeps reading the value in the **Storage** class and printing it.
7. Write a program to ask user to input n numbers and then create two different **Sets**, one for odd and another for even numbers. Depict that **Sets** cannot have duplicate values, also show that the intersection of both the above sets is an empty set.
8. Write a program to create a class **Student** which contains all information about a student, like roll number, name, DOB, and marks in five subjects. Create instances of the **Student** class for each student and put the object in a **Map**, the key should be student’s roll number and value should be respective object of **Student** class. Iterate over this **Map** to retrieve all records.
9. Write a program to establish connection to Oracle/MySQL and delete all records having employee id less than 10 from the table “Employee” and after deleting the rows, add a new column “salary” to the table “Employee”
10. Write a program to ask user to enter a file name, if that file exist then copy all its contents to another file
11. Create an application using Servlets and JSPs which asks users to enter username and passwords, the application then verifies the username and password from the database using JDBC connection and present a welcome screen if the account is authenticated.
12. Create an application using Servlets, JDBC and JSPs which present a form to enter employee id, if that employee id exists in employee table in database then the respective record is opened for editing otherwise a new form is opened to create a new record with that employee id.

Suggested Books:

1. Margaret Levine Young, “The Complete Reference Internet”, TMH..
2. Naughton, Schildt, “The Complete Reference JAVA2”, TMH.

Problem 1:

Write a program to use multiple Main() methods in a single application namespace. Also discuss the compilation and execution scenario for the same, citing Command Line and IDE Execution environments.

Problem 2:

Write an interactive program to create a graphical class hierarchy. Create an abstract base class called Figure and derive two classes, Close and Open from that. Declare two more classes called Polygon and Ellipse using the class Close. Create derived classes Line and PolyLine from class Open. Define three objects Triangle, Rectangle and Pentagon of the class Polygon. All classes must have appropriate Constructors, Member functions & Member variables.

Problem 3:

Write a program to input your personal details like name, age, course and area of interest and display the same in proper formatting.

Problem 4:

Create a class TimePeriod which should store the time in seconds. Then create a property Hours which converts the given time in hours.

Problem 5:

Write a program to implement '?' operator using ForEach System.

Problem 6:

Write a program to create an array MyIntArray of type Integer and another array MyObjArray of type Object and then copy last 2 elements from MyObjArray to MyIntArray:

- a) using Array.Copy Method
- b) without using Array.Copy Method

Problem 7:

Write a program to simulate a background process that receives messages to add new employees to the employees list. Implement a static array as queue. Use a single cast delegate for this implementation.

Problem 8:

Write a program to find area of Triangle, Square and Rectangle using Method Overloading.

Problem 9:

Write a program to input 2 matrices of size 3x3 and display its addition to the console.

Problem 10:

Write a program to implement data access from a Microsoft Access data storage using a DataReader object via a GridView control.

Problem 11:

Write a program to implement ADO.NET data access from Microsoft SQL Server data storage using a DataSet object via a GridView control.

Problem 12:

Write a program which uses windows DataGridView control to display all records containing Roll Number, Name and Course field from 'STDDetails' table of 'STData' MS Access database.

Problem 13:

Write a program to implement 'ExecuteQuery', 'ExecuteNonQuery' and 'ExecuteScalar' methods of Command object.

Problem 14:

You are a Windows Forms developer recently hired by Adventure Works to create an Internal Windows Forms application which will be the administrator version of a highly successful website that uses frames for navigational purposes and presents a complex UI with several controls and images. Your job is to make the look and feel of the Microsoft Windows application user interface match the website experience as closely as possible. What are some possible strategies that could be used to design this user interface (UI)?

Problem 15:

You are writing an application that needs to display a common set of controls on several different forms. What is the fastest way to approach this problem? Document your assumptions (if any) while making recommendations.

Problem 16:

Write a program containing the following controls:

- A ListBox
- A Button
- An Image
- A Label

The listbox is used to list items available in a store. When the user clicks on an item in the listbox, its image is displayed in the image control. When the user clicks the button, the cost of the selected item is displayed in the control. Extend the above program to add the following controls:

- Two labels
- A TextBox
- A Button

One of the labels is displayed adjacent to the textbox, displaying the message "Enter the quantity:" When the user enters the quantity in the textbox and clicks the button, the total cost is evaluated and displayed in another label.

Suggested Books:

1. C Xavier, "Web Technology & Design", New Age International.
2. Ramesh Bangia, "Web Technology", Laxmi Publications Pvt Ltd.

1. Consider this form:

Name:	<input type="text"/>
Class	<input type="text"/>
Subject	<input type="text"/>
DOB:	<input type="text"/>
Submit	<input type="button" value="Submit"/>

Create necessary coding for the form given above

- Write an HTML code for creating a form, which accepts the birth date from the user in a textbox and display the day of the week in a message box on the click of a button.
- Create an internal hyperlink from the top of your page to the bottom of the same page.
- Write a HTML Page to demonstrate all the followings events:
 - onClick
 - onChange
- Consider the following web Page layout:

Enter the details

Enter your national

Enter your Age

Write the JavaScript code to be embedded in the above HTML code for the click event of the button, which will display the alert message "Eligible for Voting".

- Demonstrate with example to explain different ways to insert stylesheets in HTML Document.
- Write a HTML code to draw the following Figure (Hut):

```

/\--\ /\--\
/\ \ /\ \
/___\--/___\__\
| oo | | oo | | | | | |
| _ | | _ | oo |
| | | |vV| | | |vV|
vvVVVvVvVvVvVvVv
    
```

- Write an HTML Page to scroll the text message from right to left at the status bar of Browser window.
- Design a web page to show your CV. It should contain all the necessary details.
- Write an HTML code to demonstrate the countdown clock at the status bar.
- Write a HTML program to demonstrate the use of following tags
 - DIV
 - SPAN

12. Write a code for given below snapshot to reverse the foreground and background colors.

**Suggested Books:**

1. C Xavier, "Web Technology & Design", New Age International.
2. Ramesh Bangia, "Web Technology", Laxmi Publications Pvt Ltd.

1. Write a shell script to input two numbers and perform all mathematical operations on them
2. Write a shell script to print the information about the current user & print the current month, date and year.
3. Write a shell script to input a file name and print its number of lines, word and characters
4. Write a shell script to input a file name, if that file doesn't exist then create a file with that name and put some data in it, if that file already exist then display error
5. Write a shell script to take 3 command line arguments (two numbers and an operator (+, -, /, *, %)), perform the computation on two numbers as per the operator
6. Write a shell script to input a word, print the number of characters in that word and also print the word that much number of times.
7. Write a shell script to input a number and find whether it is palindrome or not
8. Write a shell script to input a word and then print the second last character of that word. Give error if word is less than two characters
9. Write a shell script to print the list of all those users who are currently logged in (only username to be printed)
10. Write a shell script to input a string and count the number of vowels.
11. Write a shell script to print the list of all those files in the current directory which have owner permission either "read, execute" or "write, execute"
12. Write a shell script to ask user to input a file name, if that file exists, check the owner permission of that file. Grant "write" permission if the owner does not permission to write.

Suggested Books:

1. Peterson Abraham & Silbesschatz, Peter Galvin, "Operating system concepts", 6th Ed., Wiley India.
2. Mandnick and Donovan, "Operating systems", Tata Mc-Graw Hill.