

## Data Structures Using C Language

### PRACTICAL QUESTIONS FOR MCA-P1 (LAB 1) & PGDCA –P1 (LAB-1)

1. Write a program to calculate the area and circumference of a circle using the relation. (  $\text{Area} = \pi r^2$  ) and  $\text{circumference} = 2\pi r$ .
2. Write a program to find the grade obtained by the students of a class.
3. Write a program to find the largest and the smallest from the given three integers.
4. Write a program to find sum, difference, product and quotient of any two integers as per the choice of the user.
5. Write a program to print a chart showing the temperature in centigrade from  $0^\circ$  to  $100^\circ$  to with their corresponding values in Farenhiet, using while loop and using the relation  $C / 5 = F-32 / 9$
6. Write a program to print the square and cube of n natural numbers using while loop.
7. Write a program to check whether a given integer is even or odd or zero. The program should continue until a 0 is entered from the keyboard.
8. Write a program to solve a quadratic equation.
9. Write a program to prepare the pay bill for the employees of a company
10. Write a program to check prime and unprime numbers.
11. Write a program to print the Fibonacci series for any number of terms.
12. Write a program to calculate the interest and total amount to be paid by entering the amount of loan and the number of years, either by simple interest method or by compound interest method as per the choice of the user.
13. Write a program to calculate the LCM and HCF of any set of positive integers.
14. Write a program to delete any element from any array.
15. Write a program to copy the value of one string variable to another variable.
16. Write a program to concatenate two strings.
17. Write a program to check whether any given word is a palindrome or not.
18. A company maintains the record of their employees as : Name, designation , Details of the pay like Gross pay, Provident Fund deductions, Professional tax and the Net pay. Keep the details of the pay within a separate structure
19. Accept ten names and print the given names in opposite order using array of pointers.
20. A program to search data from any array.
21. A program of selection sort , Bubble sort, Quick sort
22. To find the product of two matrices.

**RELATIONAL DATABASE MANGEMENT SYSTEMS**  
**PRACTICAL QUESTIONS FOR MCA-P1 (LAB 1)**

1. Display all the employees in alphabetical order from employee table.
2. Change the basic salary Rs,3000 where basic salary less than 2500 from employee table.
3. Change the basic\_sal = 3000 where job in clerk from employee table.
4. Delete all records from Dept table.
5. Add a column “ Telephone\_No“ of data type ‘number’ and size = ‘10’ to the employee table.
6. Create an index for client \_no on client\_mast table.
7. Display the length of each employee name from employee table.
8. Find average salary per job in each department \_no.
9. Display only those jobs where max sal  $\geq$ 3000.
10. Find out the difference between highest and lowest salaries.
11. Display the sequence root of 81.
12. Display the total number of working days of each employee from employee table.
13. Count the number of products having price greater than equal to 1200.
14. Calculate the average price of all the products from product –mast table.
15. Find out the employees who earn the highest salary in each dept\_no

## **C++ OBJECT ORIENTED PROGRAMMING**

### **PRACTICAL QUESTIONS FOR MCA-P2 (LAB 2) & PGDCA –P2 (LAB-2)**

1. Write a C++ program to calculate average marks scored by a student for 3 subjects.
2. Write a C++ program to find the area and perimeter of a circle and rectangle.
3. Write a C++ program to swap two numbers.
4. Write a C++ program to find largest of three numbers.
5. Write a C++ program to find the maximum number among three numbers.
6. Write a C++ program to generate Fibonacci series.
7. Write a C++ program to perform string manipulation.
8. Find the length of a string. Compare two strings, Concatenate two strings, Reverse a string, Copy a string to another location.
9. Write a C++ program to find quotient and remainder of 2 numbers.
10. Write a C++ program to manipulate the class account using classes and function. A user should be able to perform the following functions. a. Deposit money. b. Withdraw money, c. Calculate the interest d. Check the total balance in his account.
11. Write a C++ program to generate Prime numbers between 1 and 50.
12. Write a C++ program to perform matrix addition and multiplication.
13. Write a C++ program to check whether the given matrix is a sparse matrix or not.
14. Write a C++ program to overload unary minus operator.
15. Write a C++ program to calculate total sales and average sales made by a salesman.
16. Write a C++ program to for construction in Derived Class to produce the report a employee in a company.
17. Write a C++ program to display the student details using pointers.
18. Write a C++ program to convert ASCII value to its equivalent character.
19. Write a C++ program to overload a function to calculate volume of cube, cylinder and rectangular box.

20. Write a C++ program to create a class template to find the maximum of two numbers.

**SOFTWARE ENGINEERING**  
**PRACTICAL QUESTIONS FOR MCA –P2 (LAB 2)**

1. Describe as many source of information as you can think of that should be consulted in order to perform a domain analysis for each of the following systems.
  - a. Airline Reservation System
  - b. The investments System
2. You are developing a system for managing the processes of a small town public library. List all the actors for this system.
3. An organization has three categories of employees : Professional staff, technical staff and support staff. The organization also has departments and divisions. Each employee belongs to either a departments or a divisions. Draw a class diagram corresponding to this. Assume that there will be different attributes or operations in all the classes, and that people will never need to change from one category to another.
4. Show a hierarchy of vehicle parts. Show how this hierarchy might be better represented using the General Hierarchy pattern.
5. Imaging you were planning to develop the following types of software projects. What different kinds of users should you anticipate? Consider each of the issues mentioned.
  - a. An air – traffic control system
  - b. A payroll system
6. Develop E-R diagram for the following
  - a. Customers make orders
  - b. People work in departments
  - c. Customers buy items
  - d. Deliveries of parts are made to customers.
7. The list of problems that are to be attempted during the prescribed lab sessions
  - a. Project Planning
  - b. Requirement Analysis
  - c. Design

d. Testing

8. Data flow model of a car assembly plant.
9. Assume that the size of an organic type software product has been estimated to be 32,000 lines of source code. Assume that the average salary of software engineers is Rs.15,000 per month. Determine the effort required to develop the software product and the nominal development time.
10. How to document the Functional Requirements?
  - a. Withdraw Cash from ATM
  - b. Search Availability in Library
11. Draw level 0 (context level) and level 1 data flow diagrams for the following students' Academic Record Management Software.
  - a. A set of courses are created. Each course consists of a unique course number, number of credits, and the syllabus.
  - b. Students are admitted to courses. Each student's details include roll number, address, semester number and the courses registered for the semester.
  - c. The marks of a student for various units credited are keyed in.
  - d. Once the marks are keyed in, the SWA (semester weighted average) is calculated.
  - e. The recent marks of a student are added to his previous marks and a weighted average based on the credit points for various units is calculated.
  - f. The marks for the current semester are formatted and printed.
12. State chart diagram for an order object.

**COMPUTER GRAPHICS IN C ++**  
**PRACTICAL QUESTIONS FOR MCA-P3 (LAB 3)**

1. Program to draw a line using DDA Line Drawing algorithm.
2. Program to draw a line using Bresenham's Line Drawing algorithm.
3. Program to implement circle using Bresenham's Circle Generating algorithm.
4. Program to draw Ellipse using Bresenham's Ellipse Generating algorithm.
5. Program to implement a circuit using DDA line Drawing algorithm.
6. Program to get inner and outer view of a house.
7. Program to implement cartoon using circle, Ellipse and ARC
8. Program to generate piechart and Bargraph using Pieslice and Bar
9. Program to generate Bar graph in three dimensions
10. Program to implement Two-Dimensional Transformations

**DESIGN AND ANALYSIS OF ALGORITHMS**  
**PRACTICAL QUESTIONS FOR MCA –P3 (LAB 3)**

1. Calculate the area and circumference of 10 circles by supplying the corresponding radii, one-by-one. Draw the flow chart and write an algorithm.
2. Draw the flowchart and write an algorithm of the Overtime calculation example.
3. Develop a flow chart and write an algorithm to convert any temperature from Centigrade to Fahrenheit, using the relation  $C / 5 = F - 32 / 9$ .
4. Develop a flow chart and write an algorithm to calculate the area of a triangle and circumference of a circle using the relations  $\text{Area} = \pi r^2$  and  $\text{circumference} = 2\pi r$
5. Develop a flow chart and write an algorithm to prepare the marksheet for the students of a class.
6. Develop a flow chart and write an algorithm to prepare salary for the employees and calculate the tax on salary based.
7. Develop a flow chart and write an algorithm to solve a quadratic equation.
8. Develop a flow chart and write an algorithm to check whether any given year is Leap or not.
9. Develop a flow chart and write an algorithm to check prime and unprimed numbers.
10. Develop a flow chart and write an algorithm to calculate the factorial of any positive number using recursive function.
11. Develop a flow chart and write an algorithm to calculate the bill amount for the book shop.
12. Develop a flow chart and write an algorithm to find the product of two matrices.
13. Write an algorithm for DFS.

**VISUAL C ++ PROGRAMMING**  
**PRACTICAL QUESTIONS FOR MCA-P4 (LAB 4)**

1. SDK PGM to Display the user defined window
2. Displaying the Given Message.
3. Displaying set of lines.
4. Displaying Rectangles with different colour.
5. Window Controls
6. Manipulation of Dialog Box
7. Displaying the Application form
8. Checking Password using Dialog Box
9. MFC Program for Standard Window
10. Program for user defined Icon && cursor
11. MFC Program for Window Control
12. MFC Program to create the Font Dialog Box.
13. MFC Program for colour dialog box.
14. MFC Program for deleting a file using Dialog box.
15. MFC Program for copy File Dialog Box.
16. MFC program for Notepad.

**INTERNET PROGRAMMING ( JAVA)**  
**PRACTICAL QUESTION FOR MCA-P4 (LAB 4)**

1. Converting Temperature in Fahrenheit into Temperature in Celsius.
2. Program for student Mark-List preparation
3. Program for reverse and finding sum of individual digits of a given number
4. Program to generate Fibonacci series
5. Program for finding Factorial of a given number
6. Program for find whether a given number is prime or not.
7. Program for sorting the given numbers in Ascending and Descending order.
8. Program for Matrix Multiplication
9. Program for finding roots of the given quadratic equation
10. Program for finding volume of a sphere (Concept: Class and Object)
11. Program for preparing Employee salary Report (Concept : Array of Objects)
12. Program for implementing stack Operations (Concept : Constructor)
13. Program for checking whether a given number is palindrome or not  
(Concept : Abstract Class).
14. Program for Electricity charge calculation (Concept : Implementing Multiple Inheritance).
15. Program to find area of Triangle and Rectangle (Concept : Package , Interface).
16. Program for queue implementation (Concept : Exception Handling; User defined Exception).
17. Program to implement Multi- Threading (Concept: Multi- Threading by extending Thread class).
18. Program for simple Railway Reservation System (Concept : IO Streams: DataInput Stream & DataOutputStream).
19. Program to display graphical components (Concept : Graphics class)
20. Program to display an image (Concept : Pixel Grabber Class : Getting pixels of an image)

**RELATIONAL DATABASE MANGEMENT SYSTEMS**  
**PRACTICAL QUESTIONS FOR MCA-P5 (LAB-5)**

1. Write a PL / SQL Block to find out the square of a number.
2. Write a PL / SQL Block to compute the area of the circle and square
3. Write a PL / SQL Block to conversions of Celsius to Fahrenheit and vice versa
4. Write a PL / SQL Block to find the Largest from the three numbers.
5. Write a PL / SQL Block to find factorial value of any number.
6. Write a PL / SQL Block to accept the marks for three subjects from a student, calculate its average and print Distinction.
7. Write a PL / SQL Block to accept the emp number employee table and calculate the tax on salary based.
8. Write a PL / SQL Block to display the first 10 odd numbers .
9. Write a PL / SQL Block to print the Fibonacci series.
10. Write a PL / SQL Block to calculate the electricity bill.
11. Display all clerks from emp table using cursor.
12. Update all Sal < 1000 to Sal = 2000 using cursor.
13. Create a function for Simple Interest.
14. Create a recursive function for Fibonnaci series.
15. Create a package for checking the Even or Odd numbers.
16. Create a package for bank transactions for account debit and credit.

**MULTIMEDIA SYSTEMS**  
**PRACTICAL QUESTIONS FOR MCA-P5 (LAB-5)**

1. Write a routine to transform an environment map to the surface of a sphere.
2. Write a procedure to fill the interior of a given ellipse with a specified pattern.
3. Define and implement a procedure for changing the size of an existing rectangular fill pattern.
4. Set up an algorithm for displaying thick lines with either butt caps, round caps or projecting square caps. These options can be provided in an option menu.
5. Write a procedure to implement high lighting as a blinking operation.
6. Write a program to scan convert the interior of a specified ellipse into a solid color.
7. Program to Reflect a triangle W.R.T X Axis
8. Program to Animate any two Dimensional Object.
9. Program to implement the Ball Bouncing using Random number.
10. Generation of moving colour circles and colour Random Lines.