

## 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.