

Unit IV

6. Write a program in C using pointers to read an array of integers and print its elements in reverse order. 15
7. Define a structure data type called time_struct containing three members integer hour, integer minute and integer second. Develop a program in C that would assign values to the individual members and display the time in the following format : 15 : 45 : 40. 15

Unit V

8. Write the algorithm for quick sort. Explain it with suitable data and iteration.. Also write a program for the same. Also write its order of complexity for all three cases. 15
9. Write the algorithm for binary search. Explain it with suitable data and iteration. Also write a program for the same. Also write its time complexity. 15

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B.Tech. EXAMINATION, 2024

(First Semester)

(C Scheme) (Re-appear Only)

(Common for all branches)

CSE101C

Programming for Problem Solving

Time : 3 Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

Unit I

1. (i) Explain the concept of recursion.
- (ii) Define a circular list.
- (iii) How two algorithms can be compared, write any two metrics ?
- (iv) Define a macro.
- (v) Why and when do we use the #define directive.
- (vi) List different storage classes of C variables.
- (vii) Differentiate between linear and binary search. $2 \times 7 = 14$
- (viii) Define a dangling reference. 1

Unit II

2. Explain the need of an Operating System. Explain different types of services offered by operating systems to the users of a computer system ? Differentiate between kernel and shell of an operating system. 15

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3. Write an algorithm, draw the flowchart and then write a program in C language to calculate the roots of a quadratic equation. Include comments wherever necessary in the program. 15

Unit III

4. (i) Write a function in C language that will return 1 if its argument is a prime number otherwise it will return a 0. 8
- (ii) Write a function in C language that can be called to return the largest element of an $m \times n$ matrix. 7
5. Design and code an interactive modular program in C that will use functions to compute the column average and row average of a matrix of size $M \times N$. The output of the program should print the entire matrix with averages shown in respective columns and rows. 15

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P.T.O.