Guidelines

Design and Analysis of Algorithm Laboratory (PC-CS493)

Students are advised to follow the guidelines to prepare Laboratory Copy for PC-CS493:
1. Lab Copy should be prepared in your own handwriting using A4 Sheets
2. Only one side of the A4 sheets will be in use
3. Use proper format (given below) to prepare the Lab Copy
4. File up the A4 sheets by properly filling **top sheets (one per assignment)** and **index page**
5. The terminologies like **"Problem definition, Algorithm and others"** must be written in the lab report along with associated descriptions

Assignment Number 1

Problem definition: Using Divide and Conquer Technique write a C program to *implement* Binary Search. Mention the Compiler used in your program. *Analyze* the complexity of Binary Search.

Algorithm: Write algorithm for Binary Search using divide and conquer [Reference: Fundamentals of Computer Algorithms by Sahni]

Program Code: Write recursive version of the code which you have made in Laboratory

Result and discussion: Write output of the code and provide a brief explanation of the output generated.

Complexity Analysis: Write the complexity analysis of Binary Search using divide and conquer method [Reference: Class Note / Fundamentals of Computer Algorithms by Sahni]

Assignment Number 2

Problem definition: Using Divide and Conquer Technique write a C program to *implement* Merge Sort. Mention the Compiler used in your program. *Analyze* the complexity of the implemented Sorting Algorithm.

Algorithm: Write algorithm for Merge Sort using divide and conquer [Reference: Fundamentals of Computer Algorithms by Sahni]

Program Code: Write recursive version of the code which you have made in Laboratory

Result and discussion: Write output of the code and provide a brief explanation of the output generated.

Complexity Analysis: Write the complexity analysis of Merge Sort using divide and conquer method [Reference: Class Note / Fundamentals of Computer Algorithms by Sahni]

Assignment Number 3

Problem definition: Using Divide and Conquer Technique write a C program to *implement* Quick Sort. Mention the Compiler used in your program. *Analyze* the complexity of the implemented Sorting Algorithm.

Algorithm: Write algorithm for Quick Sort using divide and conquer [Reference: Class Note]

Program Code: Write recursive version of the code which you have made in Laboratory

Result and discussion: Write output of the code and provide a brief explanation of the output generated.

Complexity Analysis: Write the complexity analysis of Quick Sort using divide and conquer method [Reference: Class Note]

Assignment Number 4

Problem definition: Using Divide and Conquer Technique write a C program to *implement* Max-Min Problem. Mention the Compiler used in your program. *Analyze* the complexity value of your program.

Algorithm: Write algorithm for Max-Min using divide and conquer [Reference: Class Note]

Program Code: Write recursive version of the code which you have made in Laboratory

Result and discussion: Write output of the code and provide a brief explanation of the output generated.

Complexity Analysis: Write the complexity analysis of Max-Min using divide and conquer method [Reference: Class Note]

Assignment Number 5

Problem definition: *Implement* Fractional Knapsack Problem using appropriate algorithm design technique. Mention the Compiler used in your program. *Analyze* the complexity value of your algorithm.

Algorithm: Write algorithm for Fractional Knapsack Problem using greedy method [Reference: Fundamentals of Computer Algorithms by Sahni]

Program Code: Write the code which you have made in Laboratory

Result and discussion: Write output of the code and provide a brief explanation of the output generated.

Complexity Analysis: Write the complexity analysis of Fractional Knapsack Problem using greedy method [Reference: Fundamentals of Computer Algorithms by Sahni]

Assignment Number 6

Problem definition: *Implement* Job sequencing with deadlines problem using appropriate algorithm design technique. Mention the Compiler used in your program. *Analyze* the complexity value of your algorithm.

Algorithm: Write algorithm for Job sequencing with deadlines problem using greedy method [Reference: Class Note / Fundamentals of Computer Algorithms by Sahni]

Program Code: Write the code which you have made in Laboratory

Result and discussion: Write output of the code and provide a brief explanation of the output generated.

Complexity Analysis: Write the complexity analysis of Job sequencing with deadlines problem using greedy method [Reference: Class Note / Fundamentals of Computer Algorithms by Sahni]

Important Dates

Group	Assignment Number	Date of Assignment	Date of Submission
	1	2/3/2022	9/3/2022
	2	9/3/2022	16/3/2022
A	3	16/3/2022	23/3/2022
	4	16/3/2022	23/3/2022
	5	23/3/2022	30/3/2022
	6	30/3/2022	20/4/2022

Group	Assignment Number	Date of Assignment	Date of Submission
	1	7/3/2022	14/3/2022
	2	14/3/2022	21/3/2022
B	3	21/3/2022	28/3/2022
	4	21/3/2022	28/3/2022
	5	28/3/2022	11/4/2022
	6	11/4/2022	25/4/2022