LABORATORY HANDOUT

Data structure Lab (BCAMJ-206)

BCA (Hons.)- 2nd SEMESTER

ACADEMIC YEAR (2024-25)

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Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
BCAMJ-206	Data Structures using C Lab	Major	3	0	0	2	50	0	50

COURSE OUTCOMES

At the end of the course the student will be able to:	
CO1	Implement lists, stacks, queues, and trees using arrays in C.
CO2	Create the different types of linked lists and perform its operations using C.
CO3	Create data structure and perform its operations using C.
CO4	Identify the data structure to develop programs for real world applications.
CO5	Assess the applicability of given data structure for a particular use-case scenario.

LIST OF EXPERIMENTS

S.No.	Title
1	Implement a List using Array and develop functions to perform insertion, deletion and linear search operations.
2	Implement a Stack using Array and develop functions to perform push and pop operations.
3	Write a program to check if a given expression is correctly parenthesized using Stacks.
4	Write a program to evaluate postfix, prefix and infix expressions using Stacks.
5	Write a program to convert an infix expression to its corresponding postfix and prefix expressions and vice- versa.
6	Implement a Queue using Array and develop functions to perform enqueue and dequeue operations.
7	Implement a Singly Linked List and develop functions to perform insertion, deletion and linear search operations.
8	Implement a Doubly Linked List and develop functions to perform insertion, deletion and linear search operations.
9	Implement a Circular Linked List and develop functions to perform insertion, deletion and linear search operations.
10	Implement a Stack using Linked List and develop functions to perform push and pop operations.
11	Implement a Queue using Linked List and develop functions to perform enqueue and dequeue operations.
12	Implement a Priority Queue using Linked List and develop functions to perform enqueue and dequeue operations.
13	Implement a Binary Tree using Array and develop functions to perform traversal, searching, insertion and deletion operations.
14	Implement a Binary Search Tree using Array and develop functions to perform traversal, searching, insertion and deletion operations.
15	Implement a Binary Tree using Linked List and develop functions to perform traversal, searching, insertion and deletion operations.
16	Implement a Binary Search Tree using Linked List and develop functions to perform traversal, searching, insertion and deletion operations.

ADDITIONAL WEB RESOURCES

1.	Welcome to Virtual Labs
2.	https://youtu.be/Db9ZYbJONHc?si=NFELIbzgliSOKa1n

LAB REPORT INSTRUCTIONS

- Provide specific title of the lab experiment.
- Theory: Provide a concise abstract (typically 100-200 words) that summarizes the purpose, methods, key findings, and significance of the experiment.
- Materials/ Equipment: List all materials, components, and equipment used in the experiment. Include specifications when applicable.
- Software/Simulation Tools:
- Experimental Procedure: Describe the step-by-step procedure for conducting the experiment. Be detailed and clear in your instructions. Include diagrams or schematics to illustrate the setup, connections, and component placement. Explain any variations or adjustments made to the standard procedure.
- Observation & Calculations/Analysis: Detail the data you collected during the experiment. Include descriptions of measurements and any calculations made. Use tables, charts, or graphs to present data clearly. Discuss any trends, patterns, or significant observations. Interpret the data in the context of the experiment's objectives. Ensure that all figures, tables, and equations are correctly labeled.
- Results: Summarize the key findings of the experiment. Present results in a clear and organized manner using tables and graphs. Include units of measurement and labels for data points.
- Conclusion: Provide a concise summary of the experiment's key points and outcomes.

GRADING AND ASSESSMENT

- **Program writing**: 10 marks
- **Program Implementation:** 10 marks
- **File Maintenance:** 10 marks
- **Viva**: 10 marks
- **Attendance**: 10 marks
- **Lab Overall Marks**: 50 marks

COURSE POLICIES

- **Attendance**: Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Late Submissions**: Manuals and projects must be submitted by the specified timelines.

FACULTY INFORMATION

- **Office Hours**

  Monday (12:55 PM - 1:45 PM)
  Friday (12:55 PM - 1:45 PM)

- **Contact Information**

  archana.bca@mietjammu.in

RUBRICS FOR LAB CONTINUOUS EVALUATION

Parameters	Performance			
	Low	**Medium**	**High**	**Marks**
Execution of the Experiment	Student was not able to setup and conduct the Experiment completely	Student was able to setup and conduct the experiment but measurement/results/observations were not correct	Students was able to set and conduct the experiment and the measurement/results/observations were not correct	10
	0-2 Marks	3-6 Marks	7-10 Marks	
Record	Student was not able to describe the detailed procedure and could not record the measurement.	Student was able to describe the detailed procedure partially or with some inaccuracy.	Student was able to describe the detailed procedure accurately and record all measurements correctly.	10
	0-2 Marks	3-6 Marks	7-10 Marks	
Viva Voice	Students could not demonstrate sufficient knowledge of foundation, functional or applied aspects related to the experiment during viva.	Students demonstrated sufficient knowledge of foundation, functional or applied aspects related to the experiment during viva.	Students demonstrate strong knowledge of foundation, functional or applied aspects related to the experiment during viva	10
	0-2 Marks	**3-6 Marks**	**7-10 Marks**	
Total Marks				**30**