KONGU ENGINEERING COLLEGE, PERUNDURAI, ERODE - 638 060
(Autonomous)
COURSE PLAN - PRACTICAL COURSE

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				Revision -1 IQAC
Name of the Faculty	Dr.R. Manjula Devi	Designation & Dept.	Assistant Professor (SrG)/CSE	Academic Year: 2019-2020
Programme & Department of the Students	BE , CSE	Course Code & Name	18CSL31 – Data Structures Laboratory	Semester & Section: III Sem , A Sec

1. Course Outcomes:

On completion of the course, the students will be able to		Blooms Levels
CO1	Identify the appropriate data structure for solving the given problem	K3
CO2	Use a data structure to implement another data structure	K3
CO3	Synthesize operations like searching, insertion, deletion and traversing on various data structures	K3

Mapping of COs with POs, PSOs

COs / POs & PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
													3	1
CO1	3	2	1	1	1								3	1
CO2	3	2	1	1	1								3	1
CO3	3	2	1	1	1								3	1
Average	3	2	1	1	1									

1 – Slight, 2 – Moderate, 3 – Substantial

2. Teaching Learning Plan (Practical)

S.No.	Experiments Planned	CO Mapped	BT Level
1.	Experiments on Singly Linked List for the given application • Insertion • Deletion • Display	CO1 CO3	K3
2.	Experiments using Singly Linked List	CO1	K3

			CO3	
	• Polynomial Addition		CO1	K3
3.	Experiments using Circularly Linked List for the given application		CO3	
	• Insertion			
	• Deletion			
	• Display		CO1	K3
4.	Experiments using Stack			
	• Balancing Parenthesis			
	• Infix to Postfix			
	• Expression Evaluation		CO3	K3
5.	Experiments using Queue for the given application			
	• Enqueue			
	• Dequeue		CO3	K3
6.	Experiments using Priority Queue for the given application			
	• Enqueue			
	• Dequeue		CO3	K3
7.	Experiments using Binary Search Tree for the given application			
	• Insertion			
	• Deletion			
	• Display			
	• Find		CO2	K3
8.	Experiments on Graph Traversal techniques			
	• Searching		CO3	K3
9.	Experiments using AVL tree for the given application			
	• Insertion			
	• Deletion			
	• Display			
	• Find		CO2	K3
10.	Experiments on Graph			
	• Order the vertices for the given application		CO3	K3
11.	Experiments on Red Black tree			
	• Insertion			
	• Deletion			
	• Display			

3. Laboratory Experiment Schedule

S.No.	Batch Allocation for Cycle of Experiments	Actual Date	
		Batch 1	Batch 2
1.	A music player needs to store Illayaraja"s hit songs. Develop a C program to implement the following operations: i. Read the hit songs of Illayaraja and store it in the beginning of the music player ii. Get a song „x" and search „x" in music player. If „x" is present then play the song otherwise add to the list of the songs iii. Display the songs in the music player and count the number of songs in the music player iv. Select a song „x" from music player and play the previous and next song v. Print the play list in reverse order		
2.	Perform the following polynomial operations: i. Add $10x_5 + 2x_3 - 1$ to $8x_4 - x_3 + 16x_2$ ii. Subtract $100x_4 - 19x_2 - 7x$ from $150x_3 + 8x - 14$		
3.	When multiple applications are running on a PC, it is common for the operating system to put the running applications on a list and then to cycle through them, giving each of them a slice of time to execute and then making them wait while the CPU is given to another application. When the operating system reaches the end of the list it can cycle around to the front of the list. Assist the operating system to perform the above operations using the appropriate data structure.		

4.	a. Perform infix into postfix expression conversion.
	b. Consider that you are given the following C program:
	
	void main()
	{
	printf("KONGU";
	if((a>b)&&(b>c)
	}
	
	When the program is executed, the compiler reports an error "Missing parenthesis". Show how the compiler detects the error.		

5.	Write a program to show how the evaluation of an expression takes place in a computer. For example: printf("%d",(2* 5 +(7+9))); will produce the output 26. printf("%d",(2*(5 +(7+9)))); will produce the output 42.		

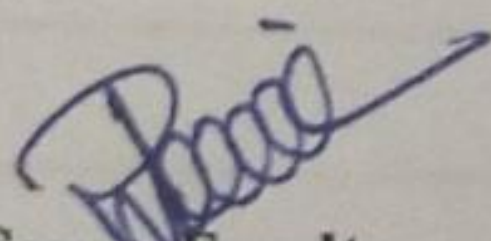| 6.	Assume 'n' number of air planes are waiting for the instruction to land. The services are provided from the ground station on first come first serve basis.
	  i. Display the order in which the air planes are serviced
	  ii. Display the air planes in the order of waiting time in air (Lowest to highest)		

7.	Implement the following service using priority queue.
	    Vehicle Type Priority (Assume lowest value has highest priority)
	
	    Medium Passenger Vehicle 2
	    (Bus)
	    Light motor vehicle(cars) 4
	    Ambulance 1
	    Medium goods vehicle 3		

8.	Suppose the customer is getting online orders placed and he wants to maintain the live data in sorted order of prices. For example, he wishes to know the number of items purchased at cost below a given cost at any moment. Or he wishes to know number of items purchased at higher cost than given cost. Help the customer to implement the above scenario.		
9.	Google maps uses graphs for building transportation systems, where intersection of two(or more) roads are considered to be a vertex and the road connecting two vertices is considered to be an edge, Visit the roads using BFS and DFS.		
10.	Consider that the height of the student has to be maintained in a tree. The tree height must be balanced at all the time. Implement it with a suitable data structure.		
11.	A person wants to travel from a home city to all other cities. Find the order in which the person has to visit the cities (No need to return back).		

12.	Implement the operations of Red Black tree:
	    i. Store a number on to the tree
	    ii. Delete a number from the tree
	    iii. Display all the numbers in the tree		

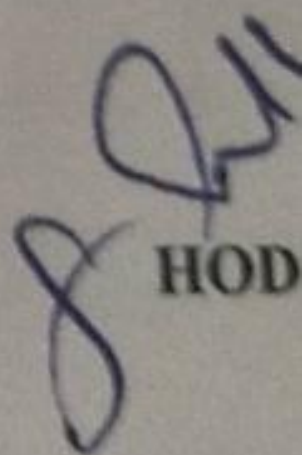ICT/ LMS Tools used: -
- C Compiler

5. Assessment Rubrics

Scale / Dimension		Level 1 Excellent	Level 2 Above Average	Level 3 Average	Level 4 below Satisfactory	Level 5 Poor
Conduct of Experiment (25)	Prior Preparation (10)	Complete understanding of the data structures and its applications in all aspects. (10-9)	Partial understanding of the data structures and its applications. (8-7)	Incomplete understanding of the data structures and its applications. (6-5)	Incomplete understanding of the data structures without its applications. (4-3)	Not Prepared (2-0)
	Experimental Setup(15)	Design an efficient algorithm for the given problem. Evidence of typical cases tested (15-13)	Design a correct algorithm but not efficient for the given problem. Evidence of typical cases tested (12-9)	Design a correct algorithm but not efficient for the given problem. Evidence of few cases tested (9-6)	Design an incorrect algorithm for the given problem. Evidence of only one or two cases tested (6-4)	Not able to design an algorithm. N evidence of testing (3-0
Record(15)	Experiment completion(15)	All experiments with record are complete. (15-13)	All experiments are complete, but some record are somewhat incomplete. (12-9)	One or more experiment are incomplete, but some record are somewhat incomplete.(9-6)	One or more experiment are missing, or all records are severely incomplete (6-4)	All experim with record incomplete
Viva(10)	Question & Answer(10)	Answered all the questions without confusion (10-9)	Answered all the questions with confusion (8-7)	Answered only few questions (6-4)	Answered only few questions with confusion (4-3)	Not able t answer (2

Course Faculty   Course Coordinator   HOD