
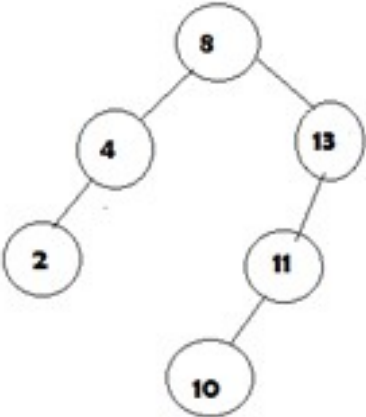
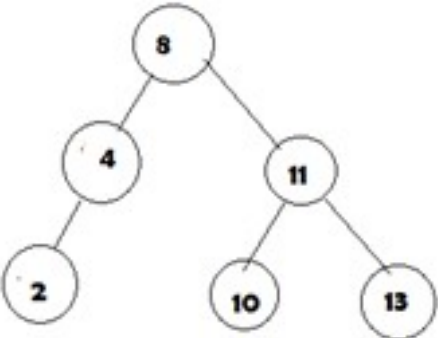
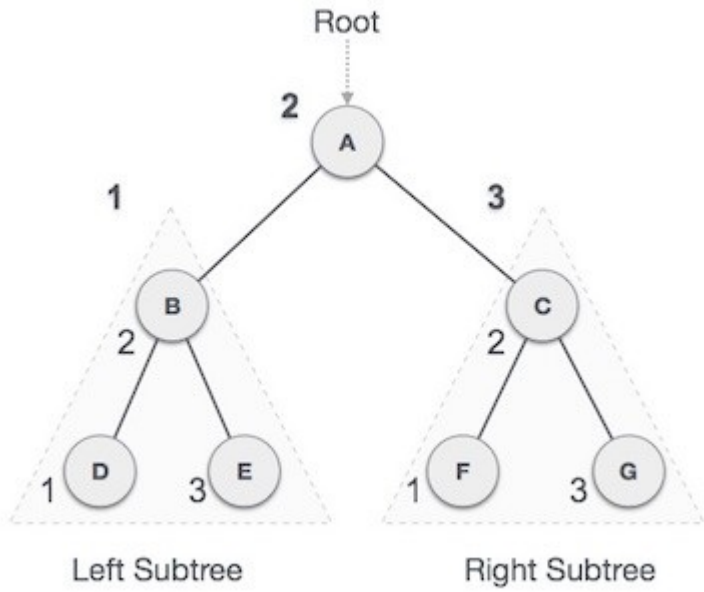


SET-A

Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2018			
Course: Data Structure using C (CSEG2002)		Semester: III	
Programme: B.Tech-E&CE		Time: 03 hrs.	
Max. Marks: 100			
Instructions:			
SECTION A			
Q1	Multiple Choice Questions:		Marks
	I) What is an AVL tree? a) a tree which is balanced and is a height balanced tree b) a tree which is unbalanced and is a height balanced tree c) a tree with three children d) a tree with atmost 3 children	II) Binary trees can have how many children? a) 2 b) any number of children c) 0 or 1 or 2 d) 0 or 1	4
	III) QuickSort can be categorized into which of the following? a) Brute Force technique b) Divide and conquer c) Greedy algorithm d) Dynamic programming	IV) What is an internal sorting algorithm? a) Algorithm that uses tape or disk during the sort b) Algorithm that uses main memory during the sort c) Algorithm that involves swapping d) Algorithm that are considered 'in place'	
Q2	Which of the below diagram is following AVL tree property?		
	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>(a)</p> </div> <div style="text-align: center;">  <p>(b)</p> </div> </div>		4
Q3	Data Structure Multiple Choice Questions:		
	I) Process of inserting an	II) A linear collection of data elements	4
			CO1,2

	<p>element in stack is called ____</p> <p>a) Create b) Push c)Evaluation d) Pop</p>	<p>where the linear node is given by means of pointer is called?</p> <p>a) Linked list b) Node list c) Primitive list d) None of the mentioned</p>		
	<p>III) Which of the following properties is associated with a queue?</p> <p>a) First In Last Out b) First In First Out c) Last In First Out d) None of the mentioned</p>	<p>IV) With what data structure can a priority queue be implemented?</p> <p>a) Array b) List c) Heap d) All of the mentioned</p>		
Q4	<p>Diagrammatically illustrate: Circular Singly Linked List. Memory Representation of circular linked list</p>		4	CO1
Q5	<p>Elaborate about Applications of Stack.</p>		4	CO2
SECTION B				
Q6	<p>Write an algorithm to implement BFS in Graph.</p>		10	CO5
Q7	<p>What are the commonly used asymptotic notations to calculate the running time complexity of an algorithm? Illustrate any one with help of diagram.</p>		10	CO1
Q8	<p>List down and Elaborate five operations in stack.</p>		10	CO2
Q9	 <p>The output of inorder traversal of above tree is D → B → E → A → F → C → G What is The output of pre-order traversal of above tree?</p>		10	CO3
SECTION-C				
Q10	<p>Create the binary search tree using the following data elements.</p>		20	CO4,3

	<p>43, 10, 79, 90, 12, 54, 11, 9, 50</p> <ol style="list-style-type: none"> 1. 1) Insert 43 into the tree as the root of the tree. 2. 2) Read the next element, if it is lesser than the root node element, insert it as the root of the left sub-tree. 3. 3) Otherwise, insert it as the root of the right of the right sub-tree. <p>Diagrammatically represent process of creating BST.</p>		
Q11	<p>List down steps which should be taken to enqueue (insert) data into a queue. Write Algorithm for enqueue operation. Implementation of enqueue() in C programming language</p> <p>Or</p> <p>List down steps which should be taken to dequeue (remove) data into a queue. Write Algorithm for dequeue operation. Implementation of dequeue () in C programming language</p>	20	CO1

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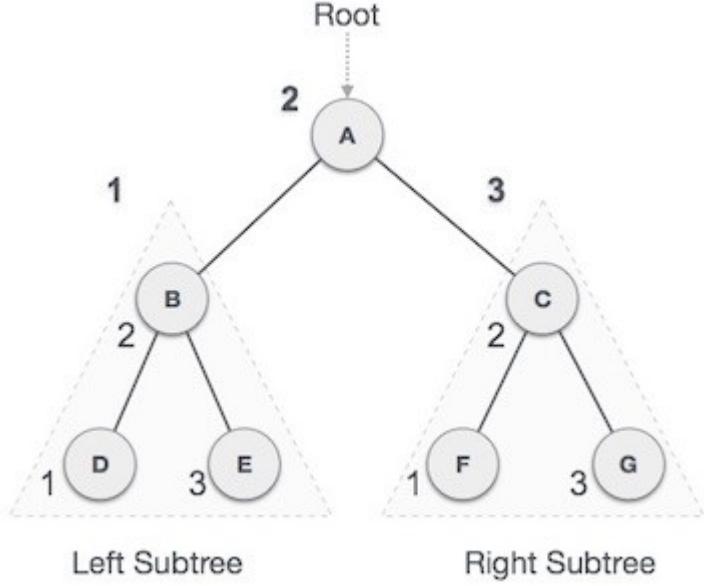
Time: 03 hrs.

Max. Marks: 100

Instructions:

SECTION A

Q1	Data Structure Multiple Choice Questions	Marks	
	<p>I. Why we need to a binary tree which is height balanced?</p> <p>a) to avoid formation of skew trees b) to save memory c) to attain faster memory access d) to simplify storing</p>		
	<p>II. Disadvantage of using array representation for binary trees is?</p> <p>a) difficulty in knowing children nodes of a node b) difficult in finding the parent of a node c) have to know the maximum number of nodes possible before creation of trees d) difficult to implement</p>		
	<p>III. Which of the following is not true about QuickSort?</p> <p>a) in-place algorithm b) pivot position can be changed c) adaptive sorting algorithm d) can be implemented as a stable sort</p>	4	CO 4,5
	<p>IV. What is an external sorting algorithm?</p> <p>a) Algorithm that uses tape or disk during the sort b) Algorithm that uses main memory during the sort c) Algorithm that involves swapping d) Algorithm that are considered 'in place'</p>		
Q2	What is the maximum height of an AVL tree with p nodes?	4	CO 3
Q3	Data Structure Multiple Choice Questions		
	<p>I. Process of removing an element from stack is called _____</p> <p>a) Create b) Push c) Evaluation d) Pop</p>		
	<p>II. In linked list each node contain minimum of two fields. One field is data field to store the data second field is?</p> <p>a) Pointer to character b) Pointer to integer c) Pointer to node d) Node</p>	4	CO1,2
	<p>III. What is the term for inserting into a full queue known as?</p> <p>a) overflow b) underflow c) null pointer exception</p>		
	<p>IV. What is not a disadvantage of priority scheduling in operating systems?</p> <p>a) A low priority process might have to wait indefinitely for the CPU b) If the system crashes, the low priority</p>		

	d) all of the mentioned	systems may be lost permanently c) Interrupt handling d) None of the mentioned		
Q4	Elaborate about Applications of Stack.		4	CO1
Q5	Diagrammatically illustrate: Circular Doubly Linked List. Memory Representation of circular Doubly linked list		4	CO2
SECTION B				
Q6	Write an algorithm to implement DFS in Graph.		10	CO4,5
Q7	 <p>The output of inorder traversal of above tree is D → B → E → A → F → C → G What is The output of Post-order traversal of above tree?</p>	10	CO3,4	
Q8	List down and Elaborate five operations in stack.		10	CO2
Q9	What are the commonly used asymptotic notations to calculate the running time complexity of an algorithm. Illustrate any one with help of diagram.		10	CO1
SECTION-C				
Q10	List down steps which should be taken to enqueue (insert) data into a queue. Write Algorithm for enqueue operation. Implementation of enqueue() in C programming language Or List down steps which should be taken to dequeue (remove) data into a queue. Write Algorithm for dequeue operation. Implementation of dequeue () in C programming language		20	CO2

Q11	Write a C program to implement BST operations.	20	CO3
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