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CS-62

BACHELOR OF COMPUTER APPLICATIONS (PRE-REVISED) (BCA)

Term-End Examination

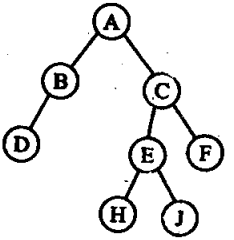
December, 2019

CS-62 : C-PROGRAMMING AND DATA STRUCTURES

Time : 2 Hours *Maximum Marks : 60*

Note : *Q. No. 1 is compulsory. Answer any three questions from the rest. All algorithms should be written nearer to C-language.*

1. (a) Traverse the following binary tree into preorder, inorder and postorder : 3



(b) Write a code fragment for inorder traversal of a binary tree. Also show a binary tree representation using C-language. 7

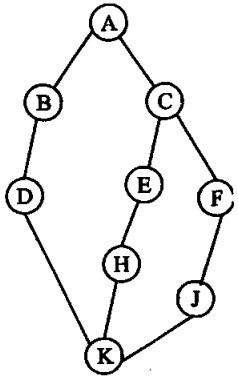
(c) Build a height balanced tree for the following set of integers : 5

5, 10, 15, 7, 3, 20, 25, 18, 4, 9, 27

Show all the intermediate steps.

(d) Give an example of union data type in 'C'. 2

(e) Apply BFS algorithm to traverse the following graph and list the vertices in the order of their visit : 3



(f) Evaluate the following postfix expression using stack : 3

10 5 3 + * / 6 / 7 +

Show each step for the same.

(g) Write pseudocode for implementing insertion operation on circular queue data structure. 5

(h) Define the following terms : 2

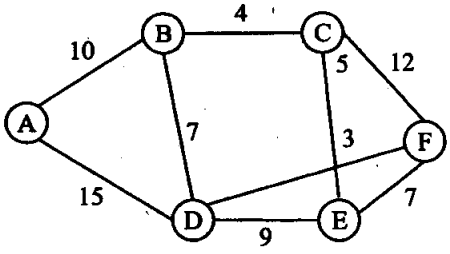
(i) Command line arguments

(ii) Ternary operator

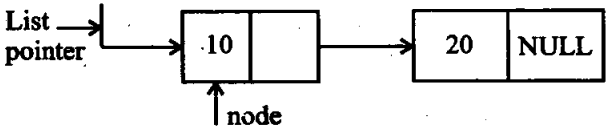
2. (a) Write a program in C-language to accept a string as command line argument and check whether it is palindrome or not. 5

   (b) Given a set of an unsorted integer numbers, apply binary search algorithm to search for a number with array. Show all the steps. 5

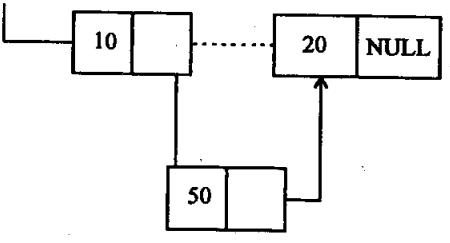
3. Write Kruskal's algorithm for constructing a minimum cost spanning tree and show all the intermediate steps. Apply the algorithm to the following graph : 10



4. (a) Write and explain code fragment in C-language to create a two node linked list : 5



(b) Write a code fragment to insert a new node as shown below : 5



5. (a) Write examples of any ***two*** bitwise operators in C-language. 4

(b) Apply merge sort algorithm to sort the following numbers : 6

20, 25, 5, 10, 8, 40, 50, 45

Show all the intermediate steps.