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paper code: U228-143 (RE-FF)

MAY 2019/ENDSEM REEXAM

S.Y.B.TECH.(INFORMATION TECHNOLOGY) (SEMESTER- II)

COURSE NAME: DATA STRUCTURES AND FILES

COURSE CODE: ITUA22173

(PATTERN 2017)

Time: [2 Hours]

[Max. Marks: 50]

(*) Instructions to candidates:

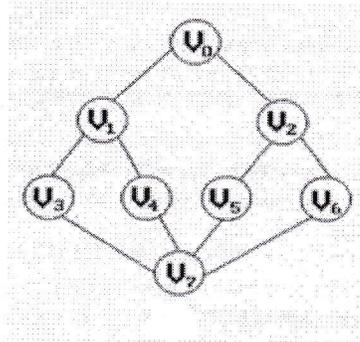
- 1) Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8
- 2) Figures to the right indicate full marks.
- 3) Write suitable examples wherever necessary.
- 4) Draw suitable diagrams if required.

Q.1) a) Write a non recursive function in C++ to traverse a binary tree in postorder traversal. Explain with the help of an example. [6]

OR

b) Write a function in C++ to search a node in BST. Explain with the help of an example. Comment on the time complexity of searching in BST. [6]

Q.2) a) Write DFS traversal algorithm for graph. Represent the given graph using adjacency list representation. Perform DFS on the same (Show steps). [6]



OR

b) Write Prim's algorithm. Compare Prim's algorithm with Kruskal's algorithm. [6]

Q.3) a) Define Hashing. Describe the term collision with respect to hashing. List and explain different open addressing methods for collision resolution. [6]

OR

b) Describe approaches to balance trees. Explain with example all rotation types for balancing in AVL trees. [6]

Q.4) a) Write pseudocode for delete root in heap and the supporting functions. [4]

OR

b) Write Huffman algorithm. Build Huffman tree for the given data: [4]

Symbol	frequency
a	.12
b	.40
c	.15
d	.08
e	.25

Q.5) a) Insert following keys in a B tree of order 5: [6]

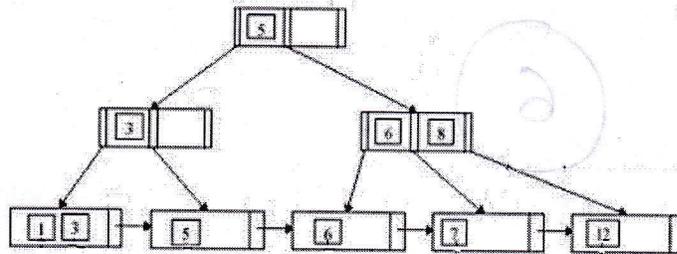
40,35,70,22,89,99,12,1,32,22,55,78,82,29,41,8,14

b) Discuss B+ tree and compare it with B-trees. [4]

c) Explain splay tree with example. [4]

OR

Q.6) a) Identify the given data structure and summarize its characteristics. [6]



b) List the types of multi-way trees and explain applications of the same. [4]

c) Explain R-B tree in detail. Compare it with AVL tree. [4]

Q.7) a) Explain index sequential file with advantages, disadvantages and example. [6]

b) Write a pseudo code for searching a record in direct access file. [4]

c) Write syntax of following functions and explain with example. [4]

i) seekg() ii) tellp()

OR

Q.8) a) List and compare different types of file organizations. Give an example of each. [6]

b) Write and explain the algorithm for inserting a record in index sequential file. [4]

c) Write syntax of functions for opening and closing file in C++. Explain different file opening modes in C++. [4]