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18IS61

Sixth Semester B.E. Degree Examination, Feb./Mar. 2022
File Structures

Time: 3 hrs.

Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a. Define file structures and highlight some key developments in the history of the file structure design. **(08 Marks)**
    b. Calculate the space required on tape, if we want to store 1 million 100 bytes records on 7250 bpi tape that has an internal block gap of 0.3 inches and with a blocking factor of 50. **(06 Marks)**
    c. Explain the functions of OPEN, READ and write with parameters. **(06 Marks)**

OR

2   a. Discuss about the various ways of adding structure to a field to maintain the identity of fields. Explain each with an example. **(08 Marks)**
    b. Explain different buffer management strategies. **(06 Marks)**
    c. Write brief notes on :
       i)   Sequential search
       ii) Direct access
       iii) RRN. **(06 Marks)**

Module-2

3   a. Explain with example, how spaces can be reclaimed form deletion of records in the variable length records. **(08 Marks)**
    b. Describe the limitations of binary searching and internal sorting. **(08 Marks)**
    c. Discuss about the need of data compression techniques with one example. **(04 Marks)**

OR

4   a. Illustrate the operations required to maintain an indexed file. **(10 Marks)**
    b. Discuss about the methods to improve the secondary index structure using inverted list. **(10 Marks)**

Module-3

5   a. Explain the model for implementing the consequential processes with example. **(08 Marks)**
    b. Apply k-way merge technique for merging large number of lists. Demonstrate with example. **(08 Marks)**
    c. Brief about the conceptual toolkit for external sorting. **(04 Marks)**

OR

6   a. Define B-tree. Construct the B-tree for the following set of keys of order 4.
       C G J X N S U O A E B H I F K L Q R T V. **(10 Marks)**
    b. Illustrate the deletion merging and redistribution operation with suitable B-tree example. **(10 Marks)**

Module-4

7 a. Describe the structure of indexed sequential access. **(04 Marks)**
b. Explain simple prefix B$^+$ tree. Maintenance with neat sketch. **(10 Marks)**
c. Compare B-tree, simple prefix B$^+$ tree and B$^+$ tree. **(06 Marks)**

OR

8 a. Explain the internal structure of index set blocks. **(10 Marks)**
b. Describe the sequence of loading a simple prefix B$^+$ tree. **(10 Marks)**

Module-5

9 a. What is hashing? Explain different steps in hashing algorithm with example. **(10 Marks)**
b. Describe the collision resolution by progressive overflow method with an example.

(10 Marks)

OR

10 a. Discuss the working principle of extendible hashing and explain its performance. **(10 Marks)**
b. Explain dynamic hashing and linear hashing with appropriate diagrams. **(10 Marks)**

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