15IS62

USN

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
File Structures

Time: 3 hrs.
Max. Marks: 80

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

Module-1

1 a. Define seek time, Rotational delay and Transfer time with respect to disk access. **(04 Marks)**
   b. Suppose we want to store a backup copy of a large file with one million 100 byte-records. If we want to store the file on 6250 bpi tape that has an interblock gap of 0.3 inches and each data block contain one 100-byte records, how much tape is needed? **(04 Marks)**
   c. Briefly explain journey of a byte from users data are to disk. **(08 Marks)**

OR

2 a. Discuss the different methods for organizing the records of a file. **(10 Marks)**
   b. What are different buffering strategies? Explain briefly. **(06 Marks)**

Module-2

3 a. Describe the limitations of binary searching and internal sorting. **(08 Marks)**
   b. Explain the operations required to maintain an indexed file, in detail. **(08 Marks)**

OR

4 a. Give reasons for data compression. Explain Run-length encoding algorithm with an example. **(08 Marks)**
   b. Describe the method to improve the secondary index structure. **(08 Marks)**

Module-3

5 a. What are the hardware-based improvements that could lead to substantial decrease in time while file merging? Explain. **(08 Marks)**
   b. What is redistribution? Explain redistribution during insertion and deletion of elements in B-trees. **(08 Marks)**

OR

6 a. Apply K-way merge technique for large number of lists with an example. **(08 Marks)**
   b. Discuss paged binary tree. What are its advantages and disadvantages? **(08 Marks)**

Module-4

7 a. With neat sketch, Discuss simple prefix B+ tree and its maintenance. **(08 Marks)**
   b. Explain the internal structure of index set blocks with suitable diagram. **(08 Marks)**

OR

8 a. Explain with an example adding a simple index to sequence set. **(08 Marks)**
   b. Defined indexed sequential access. Explain block splitting and merging due to insertion and deletion in a sequence set. **(08 Marks)**

1 JAN 2020

Module-5

9   a.   Explain the simple hashing algorithm with example.   **(08 Marks)**

     b.   Describe the process of collision resolution by progressive overflow.   **(08 Marks)**

OR

10   a.   Suppose that 1000 addresses are allocated to hold 500 records in a randomly hashed file, and that each address can hold one record. Compute the following values.
       i)   The packing density for the file.
       ii)   The expected number of address with no records assigned to then by hash function.
       iii)   The expected number of addresses with one record assigned.
       iv)   The expected number of overflow records, if only one record in assigned to each home address.   **(08 Marks)**

     b.   Explain, how does extendible hashing works?   **(08 Marks)**

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