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10IS63

Sixth Semester B.E. Degree Examination, June/July 2016
File Structures

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Explain briefly the evolution of file structures design. **(05 Marks)**

b. Suppose it is needed to store a backup of a large mailing list with one million records of 1 hundred bytes record on a 2400 foot reels of 6250 bpi –tape with an internal block gap of 0.3 inch and tape speed is 200 inches per second.

i) What would be the minimum blocking factor required to fit the file on to the tape?

ii) If a blocking factor of 50 is used how long would it take to read one block including the gap?

iii) How long it would take to read to entire file? **(08 Marks)**

c. Explain the functions of READ, WRITE and SEEK with parameters. **(07 Marks)**

2 a. What are the different ways of adding structures to a file to maintain the identity of fields ? **(10 Marks)**

b. Explain the concept of inheritance using I/O buffer class hierarchy. **(06 Marks)**

c. Define the following terms:

i) File access method ii) Meta-data iii) RRN iv) Template class. **(04 Marks)**

3 a. How spaces can be reclaimed from deletion of records from fixed length record file and variable length record file? **(10 Marks)**

b. What is data compression? Explain different techniques available for data compression. **(10 Marks)**

4 a. Explain the object-oriented model for implementing co-sequential process. **(08 Marks)**

b. With example, explain K-Way merge and selection tree for merging large number of lists. **(06 Marks)**

c. Write a algorithm for heap sorting method for insertion. Show the construction of heap tree for following sequence FDCGHIBEA **(06 Marks)**

PART – B

5 a. Define a B-tree. Explain the creation of a B-tree, with examples. **(10 Marks)**

b. What are the properties of B-tree? Explain worst case search. **(06 Marks)**

c. List the four properties of B* trees. **(04 Marks)**

6 a. With an example, explain adding a simple index to the sequence set. **(10 Marks)**

b. Explain how to load a simple prefix B+ tree. **(10 Marks)**

7 a. Suppose that 1000 locations are allocated to hold 700 records in randomly hashed file and that each address can hold 4 records (bucket size = 4). Compute the following values:
   i) The packing density.
   ii) The expected number of addresses with no records assigned to them by hash function.
   iii) The expected number of addresses with exactly one record assigned.
   iv) The expected number of addresses with one record plus one or more synonyms.
   v) The expected number of overflow records assuming that only 4 records can be assigned to each home address. **(10 Marks)**

   b. Explain the different collision resolution techniques. **(10 Marks)**

8 a. Explain how extendible hashing works. **(10 Marks)**

   b. Write short notes on:
   i) Dynamic hashing.
   ii) Storage fragmentation. **(10 Marks)**

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