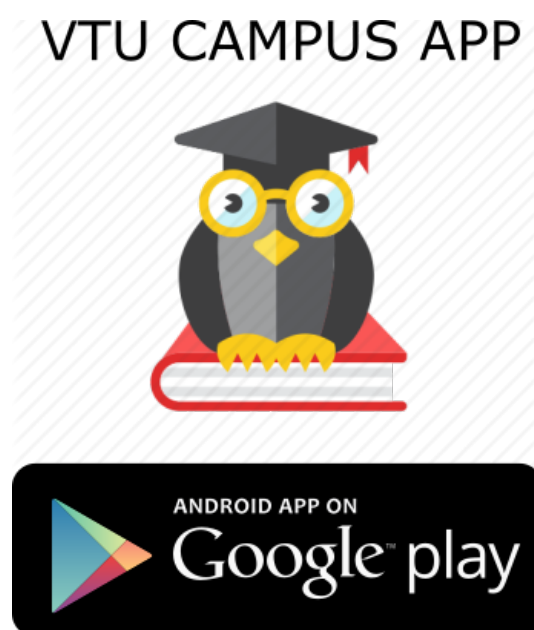


File Structures VTU CBCS Question Paper Set 2018



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Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018

File Structures

Time: 3 hrs.

Max. Marks: 100

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

PART – A

- 1 a. Explain the seeking operation in detail with respect to C stream and also C++ stream class. (08 Marks)
b. List and briefly explain the strength and weakness of CD-ROM. (05 Marks)
c. Write a C++ program to read the contents of a file and display the contents in reverse order on the terminal. (07 Marks)
- 2 a. Differentiate between fixed length record and variable length record with suitable examples. (04 Marks)
b. Explain the class hierarchy for record buffer object - IOBuffer. Also write only the class structure with main members and methods of class IOBuffer. (08 Marks)
c. Write a C++ program to pack the 'n' number of student records in a file. (Fixed length record structure can be used) (08 Marks)
- 3 a. Write a C++ function or algorithm to search a record using RRN. (06 Marks)
b. List the needs of data compression. Explain Run-length encoding algorithm with an example. (08 Marks)
c. Explain the various placement strategies. (06 Marks)
- 4 a. Define co-sequential processing. Explain the essential components of consequential processing model. (10 Marks)
b. Explain K-way merge algorithm with an example. (10 Marks)

PART – B

- 5 a. List the B-tree properties. Explain search and insert methods with respect to B-tree. (10 Marks)
b. Calculate the number of levels for a B-tree given 1000000 keys and order 512. (10 Marks)
- 6 a. Explain indexed sequential access. Explain block splitting and merging in the sequence set with suitable examples. (10 Marks)
b. Explain in detail simple prefix B⁺ tree maintenance. (10 Marks)
- 7 a. Define hashing. Differentiate between hashing and indexing. Explain simple hashing algorithm with an example. (10 Marks)
b. Explain double hashing and chained progressive overflow in detail (10 Marks)
- 8 Explain the following:
a. Tries
b. Unix directory structure
c. Field structures
d. Key sorting algorithm. (20 Marks)

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Sixth Semester B.E. Degree Examination, June/July 2013

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. What are file structures? What is the driving force behind the file structure design? (04 Marks)
 - b. Explain the functions READ and WRITE with parameters. (06 Marks)
 - c. What are the three distinct operations that contribute to the total cost of access on disk? (04 Marks)
 - d. Briefly explain the organization of data on Nine-Track tapes with a neat diagram. (06 Marks)
- 2
 - a. What are the different ways of adding structures to a file to maintain the identity of fields? Explain with example. (08 Marks)
 - b. Explain the concept of inheritance using the I/O buffer class hierarchy. (06 Marks)
 - c. What is RRN? Explain how does it support direct access with example. (06 Marks)
- 3
 - a. Briefly explain with example how spaces can be reclaimed dynamically in fixed length records. (08 Marks)
 - b. What are the limitations of keysort method? (03 Marks)
 - c. What are inverted lists? How does it improve the secondary index structure? (09 Marks)
- 4
 - a. Explain the object-oriented model for implementing co-sequential process. (10 Marks)
 - b. With example, explain K-way Merge and selection tree for merging large number of lists. (10 Marks)

PART – B

- 5
 - a. In detail, discuss paged binary tree. What are its advantage and disadvantage? (10 Marks)
 - b. What is B-tree? With example explain the following operations in B-tree:
i) Deletion; ii) Merging; iii) Redistribution. (10 Marks)
- 6
 - a. What is indexed sequential access? Explain the block splitting and merging due to insertion and deletion in sequence set with example. (10 Marks)
 - b. Explain simple prefix B⁺ trees and its maintenance, with diagram. (10 Marks)
- 7
 - a. What is hashing? Explain the simple hashing algorithm with example. (10 Marks)
 - b. Explain any two different collision resolution techniques. (10 Marks)
- 8
 - a. Briefly discuss the working of extendible hashing. (10 Marks)
 - b. Write short notes on: i) Dynamic hashing; ii) Storage fragmentation. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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Sixth Semester B.E. Degree Examination, June/July 2014

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. With a neat sketch, explain UNIX directory structure. (05 Marks)
b. Differentiate between the physical file and the logical file. (05 Marks)
c. Explain the following functions:
i) Open a file ii) Close a file (10 Marks)
- 2 a. What is a record? Explain different methods for organizing records of a file with example. (11 Marks)
b. Explain briefly how to manipulate buffers using classes. (09 Marks)
- 3 a. What are the limitations of binary search and internal sorting? (08 Marks)
b. Explain the different operations required to maintain indexed file. (12 Marks)
- 4 a. Explain how co-sequential processing is implemented in a general ledger program. (10 Marks)
b. Explain how much time a merge sort takes to sort a given file. (10 Marks)

PART – B

- 5 a. What is B-tree? Explain deletion, merging and redistribution of elements on B-trees. (10 Marks)
b. Write a note on problem associated with paged binary trees. (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. What is Hashing? Explain the three different steps used in a simple hashing algorithm. (10 Marks)
b. Briefly explain the different collision resolution techniques by progressive overflow. (10 Marks)
- 8 Write short notes on:
a. Extendible hashing
b. Pinned records
c. CD-ROM strengths and weaknesses
d. K-way Merge (20 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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Sixth Semester B.E. Degree Examination, June/July 2015
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. Briefly explain History of file structure design. (06 Marks)
- b. Explain the sector based data organization in magnetic Disk with a neat diagram. (08 Marks)
- c. Explain the organization of data on Nine – Track Tapes with a neat diagram. (06 Marks)
- 2 a. Define Field and Record. Explain the different methods for organizing fields and records of a file, with examples. (12 Marks)
- b. Define RRN (Relative Record Number). Explain how does it support direct access with example. (06 Marks)
- c. Distinguish between File access and File organization. (02 Marks)
- 3 a. What is redundancy reduction? Explain how Run – Length – Encoding helps in redundancy reduction with an example. (06 Marks)
- b. Explain How space can be reclaimed in files, using record deletion and storage compaction technique. (06 Marks)
- c. Write an algorithm for searching a record from a file using (i) Binary search (ii) Sequential search. (06 Marks)
- d. Define Indexing and its significance in File structures. (02 Marks)
- 4 a. What is co – sequential processing and what are assumptions and components of the model? (08 Marks)
- b. Explain the object – oriented model for implementing Co-Sequential process. (06 Marks)
- c. Explain the K – Way merge algorithm with an example. (06 Marks)

PART – B

- 5 a. What are the two – major drawbacks with binary search to search a simple sorted index on secondary storage. (02 Marks)
- b. Define B – Tree. Show the B – Tree of order – 4 (four) that result from loading the following sets of keys in order. i] CGJXNSUOAEBHIF ii] CSDAMPIBWNGURKE (08 Marks)
- c. With example explain the following operations in B – Tree, with example.
i) Deletion ii) Merging iii) Redistribution. (10 Marks)
- 6 a. What is indexed sequential access? Explain the Block splitting and merging due to insertion and deletion in sequence set with example. (10 Marks)
- b. Explain the internal structure of index set blocks. (10 Marks)
- 7 a. Define Hashing? Discuss the various collision resolution techniques with example to avoid collision. (10 Marks)
- b. Suppose that 10,000 addresses are allocated to hold 8000 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 them by the hash function.
iii) The expected number of addresses with one record assigned.
iv) The expected number of overflow records. (10 Marks)
- 8 a. Write short notes on the following:
i) Dynamic Hashing ii) Linear Hashing iii) Extendible Hashing. (12 Marks)
- b. Explain, How does Extendible Hashing works? (08 Marks)

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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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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- 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:
- The packing density.
 - The expected number of addresses with no records assigned to them by hash function.
 - The expected number of addresses with exactly one record assigned.
 - The expected number of addresses with one record plus one or more synonyms.
 - 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:
- Dynamic hashing.
 - Storage fragmentation. (10 Marks)

Time: 3 hrs.

Max. Marks:100

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

PART – A

1.
 - a. With an example bring out the differences between physical file and logical file. (04 Marks)
 - b. Suppose it is needed to store a back up of a large file with 1 million records of 100 bytes records on a 7500 bpi tape that has an internal gap of 0.1" and with a blocking factor of 60. Calculate effective recording density. (06 Marks)
 - c. Bring out the differences between constant linear velocity and constant angular velocity. Justify how constant linear velocity is more suitable for audio CD. (06 Marks)
 - d. With suitable example, explain how seeking is done using CH streams. (04 Marks)
2.
 - a. What are the different ways of adding structures to a file to maintain the identity of records? Explain each with an example. (10 Marks)
 - b. Design and develop a program in C++ to read a series of names, one per line, from a file and write out those names spelled in reverse order to another file. Do not use strrev () function. (10 Marks)
3.
 - a. Discuss the limitations of secondary key index. Explain "linking the list of reference" technique to overcome the limitation. (10 Marks)
 - b. Briefly explain with example how spaces can be reclaimed dynamically in fixed length record file. (07 Marks)
 - c. What are the limitations of keysort method? (03 Marks)
4.
 - a. Apply K-way merge technique for merging large number of lists. Demonstrate with an example. (10 Marks)
 - b. Using co-sequential match based on a single loop, demonstrate intersection of two lists. (10 Marks)

PART – B

5. a. What is B-tree? With example explain the following operations in B-tree:
(i) Deletion (ii) Merging (iii) Redistribution. (10 Marks)
b. Construct a B-tree for the following set of keys : (order 4). Show every step clearly.
C G J X N S U O A E B H I F K L Q R T V (10 Marks)
6. a. Compare the strengths and weakness of B+ trees and B-trees. (05 Marks)
b. Write short notes on indexed sequential access. (05 Marks)
c. Explain the simple prefix B+ tree and its maintenance. (10 Marks)
7. a. What is Hashing? Write an hashing algorithm and explain with an example. (10 Marks)
b. Suppose you have a file with 8000 records. 2000 address bucket size 5, in which 20% of the records account for 80% of the access. When the file is loaded you load the active 20% of the records first. After the active 20% of the records are loaded and before the other records are loaded, what is the packing density of the partially filled file? Using this packing density compute the percentage of the active 20% that would be overflow records. Comment on the results. (10 Marks)
8. a. Explain how extendible hashing works. (10 Marks)
b. Write short notes on dynamic hashing and linear hashing. (10 Marks)

Sixth Semester B.E. Degree Examination, Dec. 2013/Jan. 2014

File Structure

Time: 3 hrs.

Max. Marks: 100

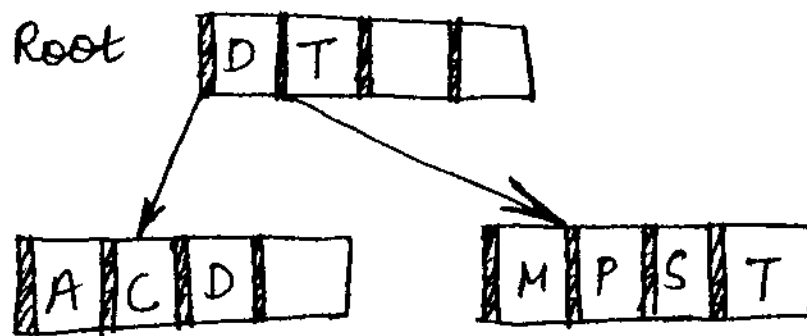
**Note: Answer FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1
 - a. What is seeking and how is it supported in C++ streams. (06 Marks)
 - b. Explain the strengths and weaknesses of CD – ROM. (08 Marks)
 - c. Explain the following :
 - i) Physical file
 - ii) Logical file
 - iii) Open function
 - iv) Close function. (06 Marks)
- 2
 - a. What are the ways in which records can be organized in a file? Explain each with a example. (10 Marks)
 - b. What are self – describing files? How it is supported in fixed length record structures, explain with an example. (10 Marks)
- 3
 - a. Explain how to reclaim space in files for fixed-length record structures. Also list their merits and demerits. (10 Marks)
 - b. What is an index? What are the operations performed to maintain an index file. (10 Marks)
- 4
 - a. Write and explain the procedure to merge two lists consisting of names using co-sequential processing, with example. (10 Marks)
 - b. What is co-sequential processing? Give assumptions made for the same and what are its components. (10 Marks)

PART – B

- 5
 - a. Give the formal definition of B – tree properties. (06 Marks)
 - b. Given the B – tree of order $M = 4$ as shown in the Fig. Q5(b) below. Insert the keys. I, B, W, N, G, U, R into the B – tree one after the other in a sequence. Also, show the steps for every key inserted, with neat diagrams. (14 Marks)

Fig. Q5(b) B – tree with order $M = 4$.

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- 6 a. Compare B+trees and simple prefix B+trees. (08 Marks)
b. With a suitable diagram, explain the internal structure of index set blocks. (10 Marks)
c. What is indexed sequential access? (02 Marks)
- 7 a. What is hashing? Explain a simple hashing algorithm, with example. (10 Marks)
b. What is collision? Explain double hashing and chained progressive overflow techniques, with diagram. (10 Marks)
- 8 Write short notes on :
a. Extendible hashing performance
b. Dynamic hashing
c. Buddy bucket
d. Trie. (20 Marks)

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Sixth Semester B.E. Degree Examination, Dec.2015/Jan.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. What do you mean by file structure? Explain in brief a short history of file structure design. (04 Marks)
 - b. Bring out the differences between physical files and logical files. (05 Marks)
 - c. Define the following terms :
i) Seek time ii) Rotational Delay iii) Transfer time (06 Marks)
 - d. With neat sketch, explain UNIX directory structure. (05 Marks)
- 2
 - a. What do you mean by a record? Explain different methods for organizing records of a file with an example. (10 Marks)
 - b. Explain the tools available in UNIX for sequential processing of a file. (04 Marks)
 - c. Write a Pack() and unpack () methods in C++ for employee id, employee name, employee designation, employee contact number fields for variable length records. (06 Marks)
- 3
 - a. Explain the different limitations of binary searching and internal sorting. (06 Marks)
 - b. Explain the algorithm for keysort. (06 Marks)
 - c. Explain the different operations required to maintain an indexed file. (08 Marks)
- 4
 - a. Explain how co – sequential processing is implemented in a general ledger program. (10 Marks)
 - b. Explain how much time merge sort takes to sort a given file. (10 Marks)

PART – B

- 5
 - a. What do you mean by B – tree? Explain deletion, merging and redistribution of elements on B – tree. (10 Marks)
 - b. What are paged binary trees? Explain the problems associated with paged binary trees. (06 Marks)
 - c. Mention the four properties of B* trees. (04 Marks)
- 6
 - a. Define indexed sequential access. Explain the block splitting and merging due to insertion and deletion in a sequence set with example. (10 Marks)
 - b. Explain simple prefix B⁺ trees and its maintenance. (10 Marks)
- 7
 - a. What do you mean by hashing? Explain the simple hashing algorithm with example. (10 Marks)
 - b. What is collision? Explain the process of collision resolution by progressive overflow. (10 Marks)
- 8

Write a short note on :

i) Linear Hashing	ii) AVL trees
iii) Strengths and weakness of CD Rom	iv) Pinned Records.

(20 Marks)

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Sixth Semester B.E. Degree Examination, Dec.2016/Jan.2017
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. What are the three distinct operations that contribute to the total cost of access on disk? (04 Marks)
b. Implement UNIX command grep. Display output of your program on standard output. (06 Marks)
c. Explain the following functions:
 i) Open a file (10 Marks)
 ii) Close a file.
- 2 a. What is a record? Explain different methods for organizing records of a file with example. (11 Marks)
b. Explain the concept of Inheritance using the I/O buffer class hierarchy. (06 Marks)
c. Explain the tools available in UNIX for sequential processing of file. (03 Marks)
- 3 a. Briefly explain with example how spaces can be reclaimed dynamically in fixed length records. (08 Marks)
b. Explain the different operations required to maintain indexed file. (12 Marks)
- 4 a. Explain how co-sequential is implemented in a general ledger program. (10 Marks)
b. Explain with an example, the K-way merge algorithm. (10 Marks)

PART – B

- 5 a. In detail, discuss paged binary tree. What are its advantages and disadvantages? (10 Marks)
b. What is B-tree? Explain deletion, merging and redistribution of elements on B-tree. (10 Marks)
- 6 a. What is indexed sequential access? Explain the block splitting and merging due to insertion and deletion in sequence set with example. (10 Marks)
b. With a diagram, explain simple prefix B⁺ trees and its maintenance. (10 Marks)
- 7 a. What is hashing? Explain the simple hashing algorithm with example. (10 Marks)
b. What is collision? Explain the process of collision resolution by progressive over flow technique. (10 Marks)
- 8 a. Explain the working of extendible hashing in detail. (10 Marks)
b. Write short notes on:
 i) Pinned records
 ii) Dynamic hashing. (10 Marks)

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2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.