

KONGU ENGINEERING COLLEGE, PERUNDURAI – 638060  
DEPARTMENT OF INFORMATION TECHNOLOGY  
DATABASE MANAGEMENT SYSTEM TUTORIAL – 4

Roll No :


Date: 12.5.23

Max. Marks:20

1. Consider a B+-tree in which the maximum number of keys in a node is 5. What is the minimum number of keys in any non-root node?    A.1            **B.2**            C.3            D.4
2. A file is organized so that the ordering of data records is the same as or close to the ordering of data entries in some index. Then that index is called  
**A.Dense**            B.Sparse            C.Clustered            D.Unclustered
3. A clustering index is defined on the fields which are of type  
**A.non-key and ordering**    B.non-key and non-ordering            C.key and ordering  
D.key and non-ordering
4. Consider a table that describes the customers :            Customers(custid, name, gender, rating)  
The rating value is an integer in the range 1 to 5 and only two values (male and female) are recorded for gender.  
Consider the query “how many male customers have a rating of 5”? The best indexing mechanism appropriate for the query is  
A.Linear hashing    B.Extensible hashing            C.B+ Tree            **D.Bit-mapped hashing**
5. The physical location of a record determined by a formula that transforms a file key into a record location is  
**A. Hashed file**            B. B+Tree file            C. Indexed file            D. Sequential file
6. In the indexed scheme of blocks to a file, the maximum possible size of the file depends on:  
**A. The number of blocks used for index and the size of blocks**            B. Size of Blocks and size of Address  
C. Size of index            D. Size of Block
7. Which of the following is dense index?  
**A. Primary index**    B. Clusters index            C. Secondary index    D. Secondary non key index
8. Consider a table which contains the salary of employees. A new salary 15200 is inserted into this table after which the pointers are rearranged as shown in figure. Which of the following file organization is used to represent this?

- A. Sequential File Organization.**  
B. Heap File Organization.  
C. Multitable Clustering File Organization.  
D. Hash File Organization.

Salary	Ptr
10000	1
12000	2
12500	3
13250	4
17000	6
25000	7
15200	5



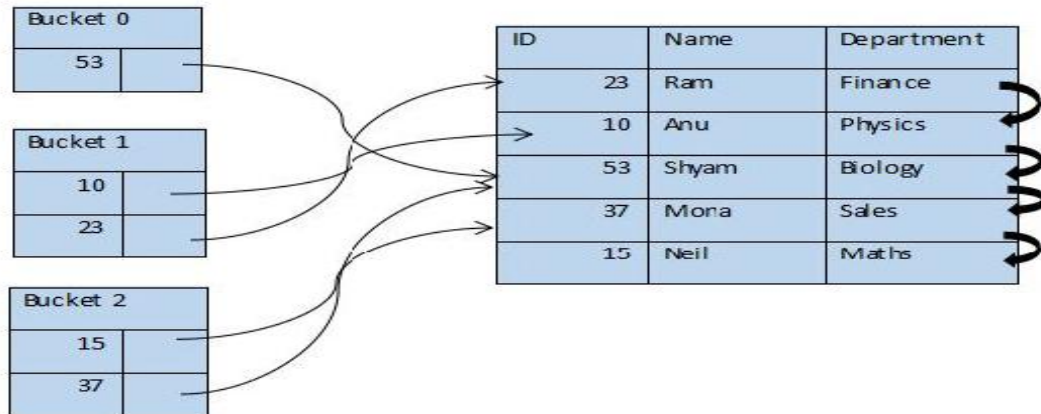
9. Consider a bitmap indexing scheme on the following data .The possible values of year, department and program are as follows: year = {2011, 2012, 2013, 2014}; department = {CS, EE}; program = {MS, MTech, PhD, BTech}; What will be the bitmaps used and the result for the query:  
Find out students from year 2013 that are enrolled in MTech program.  
**A. bitmap(2013) = 011100, bitmap(MTech) = 011010, result = 011000**  
B. bitmap(Year) = 0132, bitmap(Program) = 0330, result = 2  
C. bitmap(Year) = 0132, bitmap(Program) = 0330, result = 0130  
D. bitmap(2013) = 100011, bitmap(MTech) = 100101, result = 100111

Roll	Year	Department	Program
12111	2012	CS	PhD
13115	2013	CS	MTech
13121	2013	EE	MTech
13125	2013	EE	PhD
14111	2014	CS	MTech
14119	2014	CS	PhD

10. Secondary indices are:

- a) Clustering index    **b) Non-Clustering index**    c) Sparse index    d) Dense index

11. Identify the correct hash function used in the following hashing:



- a) Sum of digits of ID %8    **b) Sum of digits of ID %4**    c) Product of digits of ID %3    d) ID %3

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id	stream	grade
2322	CSE	A
1221	IT	A
3242	CSE	B
5850	ECE	B
1972	IT	A

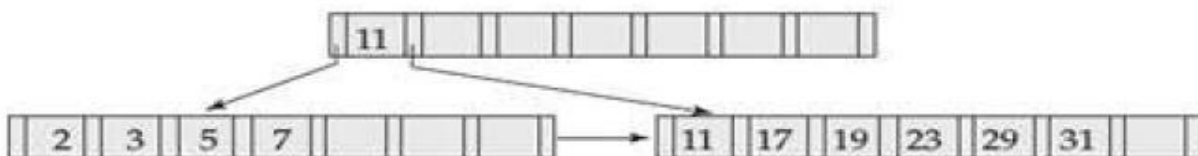
The Bitmap indices of stream IT and grade A are respectively:

- a) 01001 and 11001**    b) 01001 and 11011  
c) 01011 and 11001    d) 01011 and 11011

13. SQL command for creating index for the attribute grade

- A). CREATE BITMAP Grade on student(grade).    C) CREATE BITMAP Grade on grade(student).  
**B) CREATE BITMAP INDEX Grade on student(grade).** D).CREATE BITMAP INDEX Grade on grade(student).

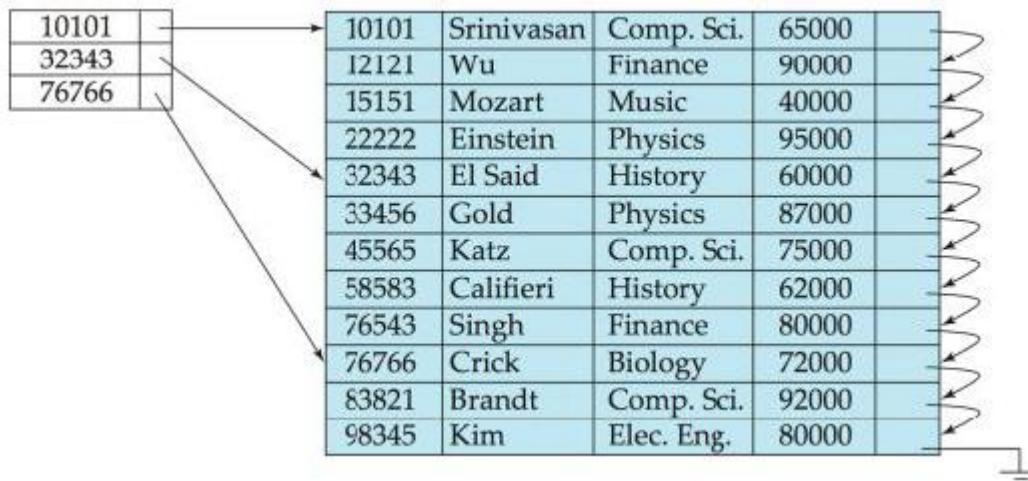
14. Consider the following B+ tree.



This is an example for

- a) Node with four pointers    b) Node with six pointers    **c) Node with eight pointers**  
d) Node with two pointers

15. Consider the following indexing:



- a) Primary and Dense indexing. b) Secondary and Sparse indexing.  
**c) Primary and Sparse indexing.** d) Secondary and Dense Indexing.

16. The schedule S is view serializable     S : R2(B); R2(A); R1(A); R3(A); W1(B); W2(B); W3(B);  
**A). True**    B. False

17. The schedule S is conflict serializable     S : R2(A); R3(C); W3(A); W2(A); W2(B); W3(C); R1(A);  
R1(B); W1(A); W1(B)  
A). True    **B. False**

18. The schedule S is conflict serializable.     S: R1(A); R2(A); R3(B); W1(A); R2(C); R2(B); W2(B); W1(C)  
The serial schedule order is

- A). **T3 → T2 → T1.** B). T1 → T2 → T3    C). T2 → T3 → T1.    D). T2 → T1 → T3.

19. Suppose a database schedule S involves transactions T1, ..., Tn. Construct the precedence graph of S with vertices representing the transactions and edges representing the conflicts. If S is serializable, which one of the following orderings of the vertices of the precedence graph is guaranteed to yield a serial schedule?

- (A) Topological order** (B) Depth-first order (C) Breadth-first order (D) Ascending order of transaction indices

20. Consider the following transaction involving two bank accounts x and y.

read(x); x := x - 50; write(x); read(y); y := y + 50; write(y)

The constraint that the sum of the accounts x and y should remain constant is that of

- (A) Atomicity **(B) Consistency** (C) Isolation (D) Durability