10/03/22: 8 Questions. (NB why Null value Bit-map's are used.)

Type of Questions:-

↳ where are variable length records used.

↳ How will the variable length records used.

Chapter-10 & 11

↳ Classification of storage Heirarchy
How to use, when to use, what to use,
Evaluation metrics of the storage heirarchies.

↳ why do we use magnetic disks?
↳ To store databases.

→ What's the use of using magnetic disks than flash memory?
↳ DB's are mainly designed to store Peta bytes of data and hence magnetic disks are cheaper than flash memory. But the trade off for the magnetic disks is it is slow to Read.

→ Cache Hits & misses.
↳ What's the importance of locality of reference?
↳ Examples of Hits & misses (real world).
↳ Maximise Hits (Access Pattern).
Ex:- If you look at a Photo on FB and click the next Photo is an Access Pattern. (Pre load the Photo and store it in the cache.)
↳ Temporal locality means time with access to store.

Magnetic disks:

→ Why, how is arm, tracks & sectors used.

→ Access time includes

↳ Seek time: Positioning the arm to the

→ why is reading contiguous data is important.

Ans) For contiguous data (store the data continously on the disk) needs only 1 seek time as the Arm do not need to move.

↳ Rotational latency:

→ How is B-Tree, B^+-Tree and Hash Tree used for Access time.

Data is stored contiguously

Data is not stored contiguously

So it makes to read the data faster for Range Queries.

→ Evaluation Metrics of a disk.

→ Block

↳ What is the benifit of having a small block size, and what is the disadvantage of having a big block?

→ Sequential Pattern vs Random Access Pattern

↳ Based on how the data is stored on the disk, give an example for sequential vs Random Access

Ans)

↳ How many seeks are required for a query where Find all the names that start with 'm'.

Ans) It depends on the index structure, as the data needs to be read (log n) times (or another method)

↳ If the data is not stored with Index structure then how many seeks are required for the above query.

Ans.) Do a linear search then "1" seek is required.

→ why does disk Fragmentation happen?
Ans) (see the slide.)

RAID levels :
↳ some Scenario will be given, we need to tell which RAID level to use and why.
(slide 53)

→ Pros & cons of Fixed length Records, variable length.
→ Evaluation Criteria of Fixed length & variable length records.
Ans) updating time of the records.

→ Advantages & disadvantages.

→ (slide No. 72)

→ what type of Query better work for colum oriented and Row Oriented.
Ans) If ID is required then if the data is stored in column oriented then it needs to read more pages to get the ID's. but where as for the row oriented only one page is enough to get the ID's.

→ why do you need to use buffer-Replacement Policy.
↳ LRU & MRU.

Chapter-11.

→ Evaluation Metrics for Indices.

→ what is the main difference btw ordered indices and Hashes.

Ans) The way the data is stored physically in sorted order of a Primary key. (for ordered Indices)

→ In what kind of queries is Hash index used and why?

Ans) For a point query, it requires O(1) so hash indexes are preferred over ordered indices.

→ Dense VS Sparse Index. and in what scenario is one used over the other

→ Primary Index VS Secondary Index and in what scenario is one used over the other.

→ what are the benifits of Secondary Index and why are secondary Index needs to be dense Index?

→ why were B^+-Trees created and Benifits of B^+-Tree? (slide 27) ☆

→ Difference btw B^+-Tree File organization & Index.

(slide 50) ☆☆

→ The difference btw single insertion & bulk loading?

→ why B^+-Trees are preferred over B-Trees?

→ (slide 55, 56, 57) ☆

→ An example for creating Indices.

→ Static, Dynamic Hashing (Basic)

→ (Slide 86)* :

→ (Slide 86)**.

→ Advantages & Dis Advantages of Bit map indices

→ why are Bit map indices used (Real World Example).