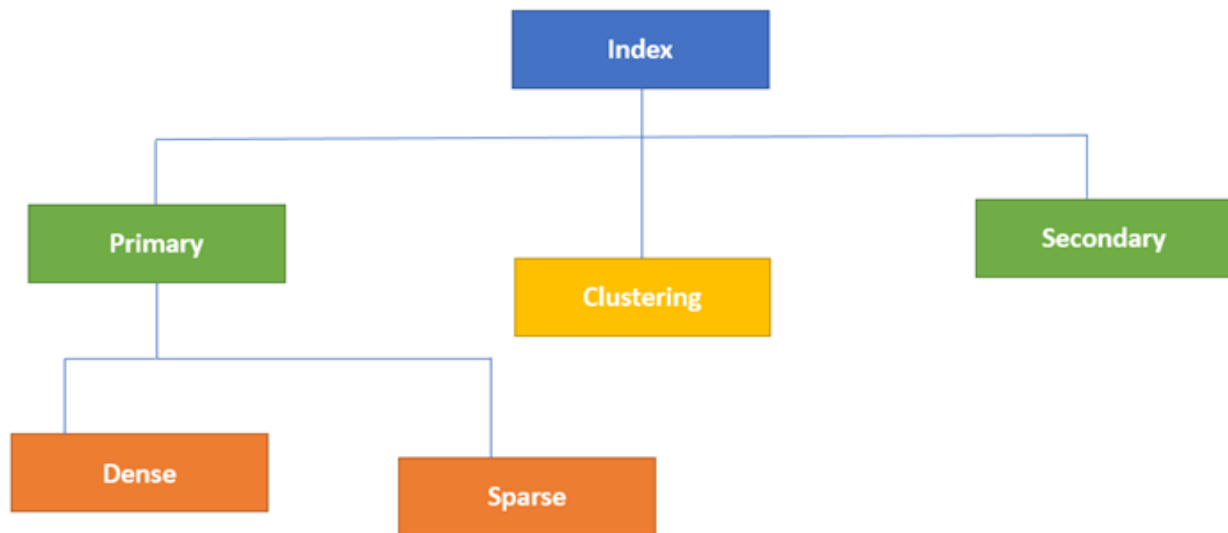# Indexes in a data warehouse

What is it?

Indexing is a data structure technique that enables fast retrieval of data.

Types

➢ Primary/Unique Indexing:

The Primary/Unique Index is a fixed length, ordered file containing two fields.

1. Sparse Index

It is an index record that only shows up for a subset of the file's values. You can solve the problems caused by dense indexing in DBMS by using a sparse index. The same data block address is stored across a number of index columns in this type of indexing, and when data needs to be retrieved, the block address is requested.

2. Dense index

Every search key that has value in the database is represented by a record in a dense index. The method records in this indexing contain the search key value and a pointer to the actual record on the disc.

- *The secondary index*

A field that has a different value for every record can generate the secondary index in a DBMS and should be considered a candidate key. Another name for it is *a non-clustering index.*

- *Clustering index*

In a clustered index, actual records rather than pointers are kept in the index. Non-primary key columns, which might not be unique for each record, are occasionally used to generate the index.

- *Multilevel Index*

A primary index cannot fit in memory, hence multilevel indexing is generated in a database. This kind of indexing strategy allows you to keep every record on the disc as a sequential file, cut down on the number of disc accesses, and build a sparse base on that file.

- *B-tree index*

The most popular data structure for tree-based indexing in DBMSs is the b-tree index. It is a multilayer format of balanced binary search trees in DBMS tree-based indexing. The B tree's leaf nodes all represent actual data references.

➤ References

- https://www.guru99.com/indexing-in-database.html
- https://www.ibm.com/docs/en/db2-warehouse?topic=indexes-types
- https://pediaa.com/what-is-the-difference-between-primary-and-secondary-index/#:~:text=Difference%20Between%20Primary%20Index%20and%20Secondary%20Index&text=A%20primary%20index%20is%20an,index%20and%20may%20have%20duplicates.