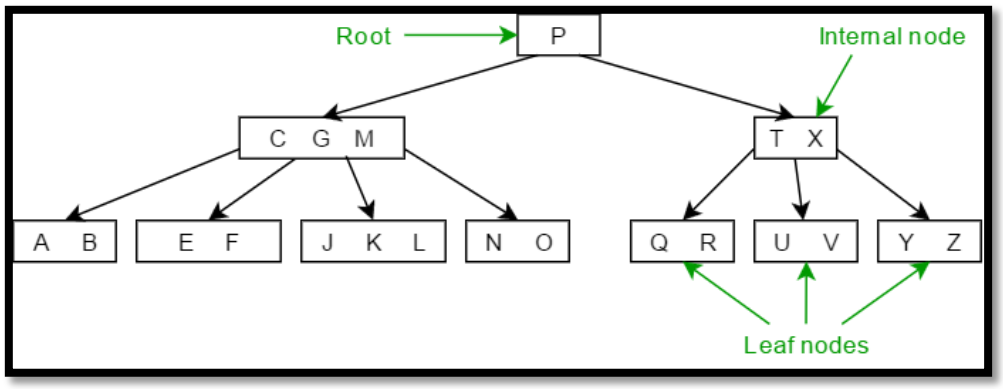
Types of Indexes and Partitions

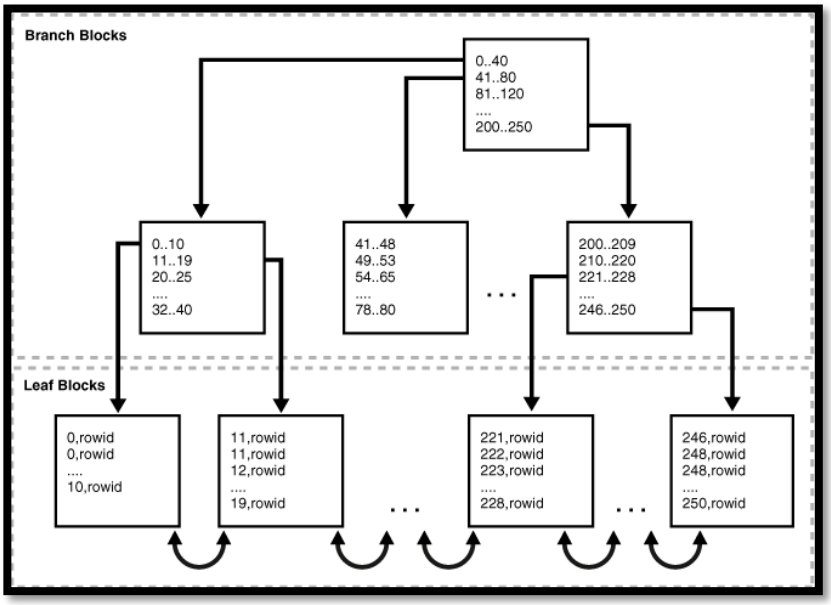
1. B-Tree Indexes

These indexes are the standard index type. They are excellent for primary key and highly-selective indexes. Used as concatenated indexes, B-tree indexes canretrieve data sorted by the indexed columns.



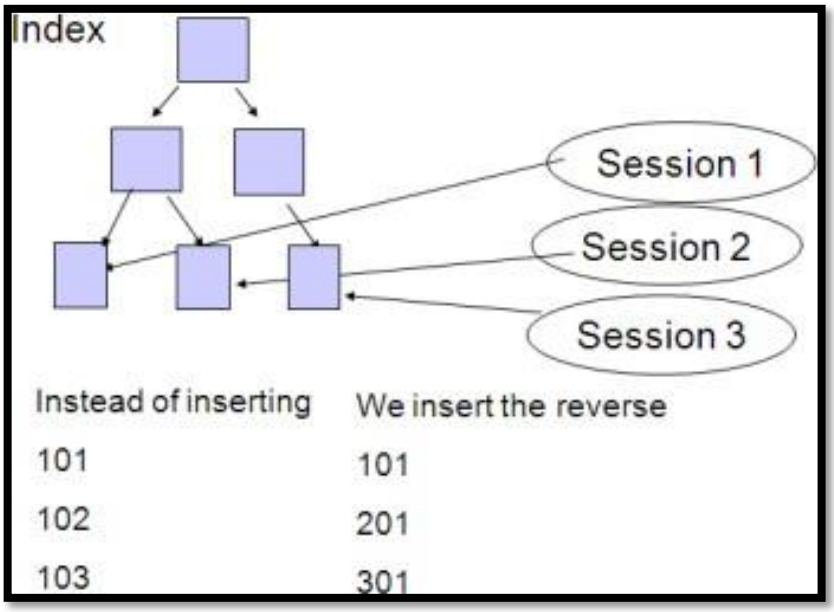
2. Index-Organized Tables

An index-organized table differs from a heap-organized because the data is itselfthe index.



3. Reverse key indexes

In this type of index, the bytes of the index key are reversed, for example, 103 isstored as 301. The reversal of bytes spreads out inserts into the index over manyblocks.



4. Function-based indexes

This type of index includes columns that are either transformed by a function, such as the UPPER function, or included in an expression. B-tree or bitmap indexes canbe function-based.

5. Fast full indexes

A fast full index scan is a full index scan in which the database accesses the data in the index itself without accessing the table, and the database reads the indexblocks in no particular order.

1. Range Partitioning

Range partitioning maps data to partitions based on ranges of partition key values that you establish for each partition. It is the most common type of partitioning andis often used with dates. For example, you might want to partition sales data into monthly partitions.

2. Hash Partitioning

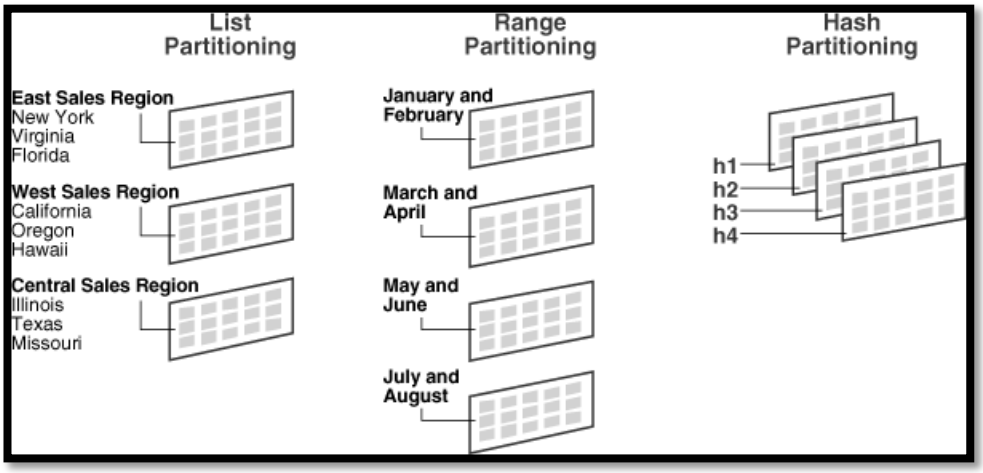
Hash partitioning maps data to partitions based on a hashing algorithm that Oracleapplies to a partitioning key that you identify. The hashing algorithm evenly distributes rows among partitions, giving partitions approximately the same size. Hash partitioning is the ideal method for distributing data evenly across devices.
Hash partitioning is a good and easy-to-use alternative to range partitioning whendata is not historical and there is no obvious column or column list where logical range partition pruning can be advantageous.

3. List Partitioning

List partitioning enables you to explicitly control how rows map to partitions. Youdo this by specifying a list of discrete values for the partitioning column in the description for each partition. This is different from range partitioning, where a range of values is associated with a partition and with hash partitioning, where youhave no control of the row-to-partition mapping. The advantage of list partitioning is that you can group and organize unordered and unrelated sets of data in a naturalway.

4. Composite Partitioning

Composite partitioning combines range and hash or list partitioning. Oracle Database first distributes data into partitions according to boundaries established by the partition ranges. Then, for range-hash partitioning, Oracle uses a hashing algorithm to further divide the data into sub partitions within each range partition.For range-list partitioning, Oracle divides the data into sub partitions within each range partition based on the explicit list you chose.



5. Bitmap Indexes

Bitmap indexes are widely used in data warehousing environments. The environments typically have large amounts of data and ad hoc queries, but a low level of concurrent DML transactions. For such applications, bitmap indexing provides:

- Reduced response time for large classes of ad hoc queries.
- Reduced storage requirements compared to other indexing techniques.
- Dramatic performance gains even on hardware with a relatively small number of CPUs or a small amount of memory.
- Efficient maintenance during parallel DML and loads.