**For each of the three partitioning techniques, namely, round-robin, hash partitioning, and range partitioning, give an example of a query for which that partitioning technique would provide the fastest response.**

Step 1:

Rows are distributed equally among divisions using round-robin partitioning. You do not need to define the partitioning columns, in contrast to hash partitioning. Round-robin partitioning involves rotating the partitions to which new rows are assigned. There can be no primary keys in the table.

The function of one or more columns (the hash partitioning keys) in each record forms the basis for partitioning. Each input record's one or more fields are examined by the hash partitioner (the hash key fields). The same processing node receives records that have identical values across all of the hash key fields.

The range partitioner ensures that all records with the same key field values are in the same partition and makes sure that all partitions are roughly the same size so that the sorting work is distributed evenly across all processing nodes.

Step2:

Round-robin partitioning provides good speed and a quick response time when relations are large and queries read all of the relations.

Hash partitioning: This provides the quickest answer for point queries because each disc can handle one query at a time. Even a whole relation scan can be carried out effectively if the hash partitioning is uniform.

Range partitioning: This provides a quick response for range queries that access a new tuple.

What is the motivation for storing related records together in a key-value store?

Step 1:

A key-value store, often known as a key-value database, is a type of software programme used for data storage that organises data into a set of distinct identifiers with each having a corresponding value. This set of data is referred to as a "key-value pair." A data item's unique identification serves as the "key," and its value might either be the data being identified or its location.

Step 2:

In a standard relational database design, rows and columns make up tables that hold the data. Many characteristics of the data to be stored in the table are specified in advance by the database developer. Inflexibility is introduced, however there are also major opportunities for optimizations like data compression and efficiency surrounding aggregations and data access.

Contrarily, key-value stores are often far more adaptable and provide very quick read and write performance, in part because the database searches for a single key and returns its corresponding value rather than conducting intricate aggregations.

Over conventional row-column-based databases, a key-value store has a few benefits. A key-value store can be extremely quick for read and write operations because of the straightforward data format that lends it its name. Furthermore, key-value stores are incredibly adaptable, which is a valuable advantage in contemporary programming as we produce more data without using conventional structures.

Key-value stores may also use less storage space and frequently scale virtually linearly with the number of nodes since they do not need placeholders for optional data, such as "null."

Example

Depending on the limitations imposed by the database software, the key could be anything, but it must be distinct from other keys in the database to avoid confusion when looking for the key and its value. Anything, including a list or another key-value pair, could be the value. You can specify a data type for the database in some database software.

Explain the idea using the notion of an entity group.

Step 1:

Entity Group

For each entity group, a separate number is created by the system. At the enrollment requirement group or enrollment requirement level, it can be utilised to construct a condition.

Step 2:

Programs, plans, subplans, or student groups are examples of comparable objects that are put together to form entity groupings for usage in a condition. As an illustration, suppose you have a requirement that a student must be enrolled in one of five plans in order to enrol in the course. The five plans are grouped together into an entity group in order to simplify the criteria. Academic plans must be included in the entity group, according to the definition of the criterion. This makes it possible to compare numerous items that are comparable to one another.