④ I. Data Fragmentation & Fragmentation is the task of dividing a table into a set of smaller tables. The subset of the table are called fragments. Fragmentation can be of three types → Horizontal, Vertical and Hybrid.

Fragmentation should be done in a way so that the original table can be reconstructed from the fragments. This is needed so that the original table can be reconstructed from fragments whenever required.
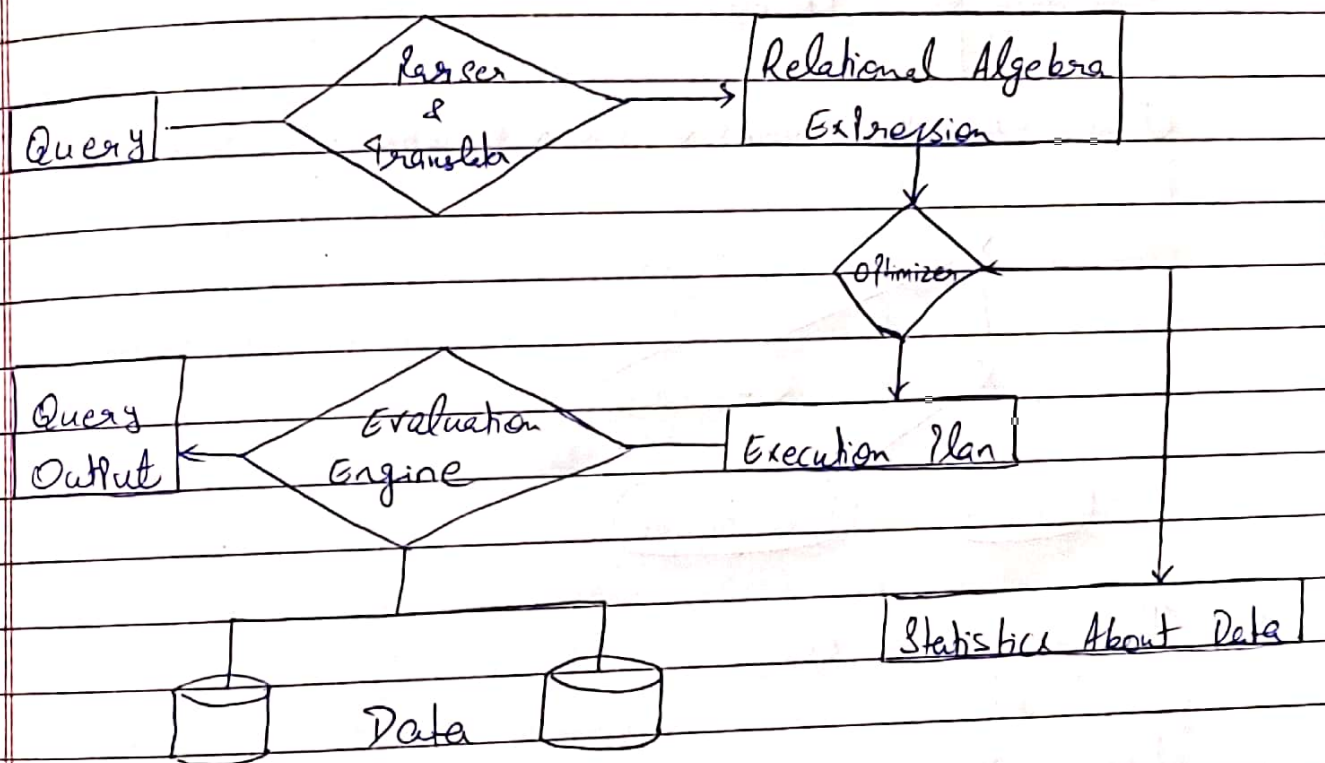
II. Data Replication And Allocation :- Replication is useful in improving the availability of data. The most extreme case is replication of the whole database at every site in the distributed system, thus creating a fully replicated distributed database. This can improve availability remarkably because the system can continue to operate as long as at least one site is up.

It also improves performance of retrieval for global queries because the results of such queries can be obtained locally from any one site; hence a retrieval query can be processed at the local site where it is submitted, if that site include a server module.

In other extreme form full replication involves having non-replication - that is each fragment is stored at exactly one

site. In this case, all fragments must be dis-joint, except for the repetition of primary keys among vertical fragments. This is also called Allocation.

II. Query Processing refers to the range of activities involved in extracting data from a database. The activities include translation of queries in high level database language, into expression that can be used at the Physical level of the ~~file~~ file system, a variety of query optimization transformations, and actual evaluation of queries. The step involved in processing a query are.

It can be done using –
- Parsing and Translation
- Optimization
- Evaluation.