NO-SQL

- Not only SQL
- SQL is not the only solution or language for database challenges
- type of DBMS (database management system)
- New Technology

Characteristics:-

1. open source and free
2. Cluster-friendly (ability to run on large Database Clusters)
3. Design for 21st century web (high traffic websites)
4. Non-relational (no relationships)
5. Schema-less

Attendees:-

MongoDB

CouchDB (Relax)

project voldemort

Hypertable

Cassandra

Dynomite

Apache HBASE

HISTORY

mid 1980s - > Rise of RDBMS

Benefits of RDBMS

- SQL (common for all RDBMS)
- Complex Transactions
- Reporting tools available
- Integration mechanism between applications
- Data persistence (Read and Write Consistency)

Problems with RDBMS model :-

- IMPEDANCE MISMATCH
- multiple fields in the memory (RAM) work as a single logical

NoSQL Data Models:-

Documents database

- store documents
- e. g. MongoDB,Couch

Key-Value database

- based on hashing algorithms
- form the value of the field it will generate the data address
- project voldemort, Riak, Redis.

Column database

- every column is a file (index-organized table).
- e. g. Cassandra, Apache HBASE

Graph database

- store graphs (satellite, geo mapping, etc)
- Neo4j (NoSQL for the Enterprise).

MySQL vs NoSQL

MySQL	NoSQL
More functionality	Less functionality
Less performance	More performance
Structured Data	Unstructured Data
Table Scalability	Horizontal Scalability
joins support	No joins support
support for complex transactions	No support for complex transactions
constraints support	No constraints support
Database	Database
Tables	Collections
Rows	Documents (document within document is supported)(no upper limit)

When to use NoSQL:-

- Ability to store and retrieve large amount of data.
- storing relationships between the elements is not important.
- Dealing with growing lists of element e. g Twitter posts, internet server logs, Blogs, etc.
- The Data is not structured or the structure is caching with time .
- Prototypes of fast application need to be developed.
- Constraints and validations logic is not required to be implemented by the database.

When to not use NoSQL:-

- Complex transaction need to be handled.
- joins need to be handled by the database.
- Validation should be handled by the database.

- Syntax of NoSQL Collection:-

```
{"fname":"Atul","lname":"Patil"}
```

_id field

- every document has an _id field.
- equivalent to primary key in RDBMS.
- generated by MongoDB.(by default it is added by the drivers)

ObjectId

("ansd189125k3k4k5k5kn4n5")

_id is lightweight occupies 12 bytes storage generated by the client machine to reduce the load on server.

Many supported Platforms/languages:-

driver for PHP, Perl, C++, .Net, Python, Ruby, etc.

all major OS (32/64 bit).

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