**Class Name and Section:** ISEM-501-50

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**Assignment** Essay – Current IT Topic

Compare one SQL database and one NoSQL database

Database is a collection of data organized into documents. Traditionally documents or files in database store data in tabular form and follow rigid type-scripting for each data attribute of a data point. Each data point has a unique data attribute known as key. When tables in a database are related to other tables in the database based on certain data attributes, database is known as relational database. These databases can then be easily queried by exploiting relation between various tables. Languages used to query such relational databases as per ANSI (American National Standards Institute) are known as structured query language (SQL). There are many SQL databases available in the market namely MS Access, MySQL, MS SQL Server, Oracle Database etc. In recent years with the advent of distributed file systems and multi-structure data types [1] like audio, video, documents, graphs etc. relational databases seem lacking. RDBMS are not equipped to utilize the parallel processing capabilities offered by DFS and preliminary requirement for cloud computing and Big Data. NoSQL databases store data not in related tabular forms but in flexible schema-less data models which can be easily scaled and used over distributed architectures. NoSQL are mostly data model types of Documents, Graphs, Key-value pairs and wide columns [2].

For this assignment, we will compare MySQL and MongoDB representative of SQL and NoSQL database respectively. Both MySQL and MongoDB are open source developed by Oracle and MongoDB Inc respectively with following differences [3],

1. MySQL stores data in tables with predefined schemas for tables with rigid type script for each column, MongoDB use JSON-like documents, the structure can be as required with no predefined schemas and follow dynamic schemas.
2. To access database MYSQL uses SQL language where as to access MongoDB database we use MongoDB query language.
3. In MySQL to change the structure of a table or add more data attributes to a record one must make a new table and copy information from older table where as in MongoDB simply push the new record with the modified structure. Updating MySQL data table schema can take anywhere from days to weeks whereas MongoDB table can be updated in a matter of few hours.
4. MongoDB offers Auto-Sharding i.e splitting database into smaller partitions for easier and faster access, MySQL does not offer any such provision.
5. Scaling operations for MySQL is more cumbersome as it involves upgrading the existing hardware and servers with higher computing prowess, which makes its expensive in terms of both money and time, whereas for MongoDB all you need to do is add more servers to the cluster.
6. MySQL allows for complex transactions which are not supported by MongoDB.

There are various instances in which a hybrid deployment of MySQL and MongoDB running in real life business environments. Over all its easier to program for MongoDB vis a vie MySQL database.

# References

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