PAGE No.
DATE / /

33132

Group A
Assignment No. 1

- Aim: Study and compare with suitable example various NoSQL database system.

- Problem Statement:
Study and design with suitable example using following database system:
1) Relational : SQL / postgre SQL / mySQL
2) Key - Value : Riak / Redis
3) Columnar : HBase
4) Document : MongoDB / CouchDB
5) Graph : Neo4j
Compare the different database system based on points like efficiency, scalability, characteristics and performance.

- Objective:
1) To study different types of NOSQL databases.
2) To study advantages of various NOSQL databases.
3) To study of difference in NOSQL and RDBMS.
4) To compare the different database system based on points like efficiency, scalability, characteristics and performance.

- Theory:

- What is a database?
- A database is a separate application that store

a collection of data. Each database has one or more distinct APIs for creating, accessing, managing, searching & replicating the data it holds.

- What is dbms ?
- A software system that enables users to define, create, maintain and control access to the database. The DBMS is the application that interacts with the users and the database.

Typically, a DBMS provides the following facilities:-

1) It allows users to define database, usually through a Data Definition Language.
2) It allows users to insert, update, delete & retrieve data from the database, usually through a data manipulation language.

- Popular types of DBMS :

A) Key - Value :

- A key value store or key value database, is a data storage paridigm designed for storing, retrieving, and managing associative arrays, known as a dictionary or hash.

1) Riak :

Riak is a distributed NOSQL key-value data stor that offers high availability, fault tolerance, simplicity & scalability. In addition to the open-source version, it comes in a supported enterprise version & cloud storage device.

2) Redis :

Redis is an in-memory database open-source software project implementing a networked, in memory key-value store with optional durability. Redis supports different kinds of abstract data structures such as strings, lists, maps, set, stored seds, spatial indexes.

- Advantages of DBMs :-

1) Data redundancy and inconsistency
2) Difficult in accessing data
3) Data isolation.
4) Less integrity problems
5) Less atomicity problems
6) Less concurrent-access anomalies
7) Less security problem
8) Reduced development time.
9) Uniform data administration.
10) Easy recovery from crashes.

- Disadvantages of DBMs :

1) More complexity
2) More size
3) Additional costs
4) Performance
5) Higher impact of failure.

- Conclusion :-
Study of various open source RDBMS and NoSQL database systems. Compare the different database systems based on points like efficiency, scalability, characteristics and performance.