Section 2

Question 2 (300 – 400)

Scenario:

You are hired as a database consultant for a well-known bank based in Dublin which is facing difficulty with managing social media information through their traditional relational database management system (RDBMS).

The head of IT in the bank has requested that you address this problem by

**Compiling a report based on the advantages and disadvantages of NoSQL and relational SQL approaches in the banking sector.**

The report will be posted to higher bank authorities for final approval.

• Discuss in detail why a NoSQL database system is considered to be the best selection for the bank in this instance as opposed to a RDBMS for the management and storage of social media information.

• Describe which two main types of NoSQL database methods (Key-value stores, Wide-column databases, Document stores and Graph databases) can be considered as useful in solving the bank’s problem, based on available technologies (Cassandra, MongoDB, Hbase,.. etc.).

• Illustrations can be used to enhance the level of understanding of the bank authorities.

NoSQL DB vs RDBMS for the management and storage of this Bank’s social media information.

RDBMS

RDBMS stores data tables and has fixed schema. RDBMS uses SQL to manage tables. You join the tables to find the right data. RDBMS is well tried and trusted. RDBMS has the ACID principles (atomicity, consistency, isolation and durability). These principles are the bedrock of its security and reliability.

NoSQL

NoSQL is any non-relational database that allows us to store and retrieve data with high speed and versatility. The data is easy to access as there is less structure. NoSQL is schema free. It’s easily installed into cheap hardware. More data for less cost and support. Instead of ACID, NoSQL has “Eventual Consistency”. This is as data inconsistency in systems is to be expected; if there is no new updates to data, it will return to the last update.

Why is NoSQL better for management and storage of social media?

Firstly; data on Social Media grows and changes exponentially. People use it more and more every day. For this we need a simpler database. We shouldn’t use RDBMS as it requires people with SQL knowledge to update and manage it. With so much data, we need many administrators rather than rely on a few experts.

Secondly NoSQL is a far cheaper database system, and we need this considering the amount of data.

Thirdly accepts that there is data inconsistency in large systems, and this is an enormous system, so for fluidity and flexibility we require “Eventual Consistency”.

Describe which two main types of NoSQL database methods could help the bank out with this problem, based on available technologies.

NoSQL DB methods to help the bank deal with your data issues:

* “Key-value stores”. This is a database which uses arrays as a data model. Every item is assigned a key. This allows for speedy storage and management of data.
* “Document stores”. This stores data in documents.

These are simple ways of speeding up the process of storing and managing your data.

For this problem I would recommend Cassandra as its highly scalable database which can deal with a lot of data from many different servers. It was created at Facebook, and so comes from a social media background. It is used by some of the biggest IT/Net/Social Media’s in the world.

This should convince you to use a NoSQL DB like Cassandra over RDBMS.