Define a database

A database is a collection of information that is organized so that it can be easily accessed, managed and updated.

2. What is a relationship and what are they?

A relationship is established between two database tables when one table has a foreign key that references the primary key of another table.

3. Safaricom Hackathon series is considering implementing a Database to help in

running the Hackathon. The Product owner has identified that the Database

should at least meet the following criteria: Highly scalable, highly available and

linearly scalable with proven fault-tolerance.

As a Database Administrator, what database solution would you recommend and

Why?

Cassandra, Apache Database

1.Data is automatically replicated to multiple nodes for fault-tolerance.

2.Choice between synchronous and asynchronous replication for each update.

4. Compare NoSQL & RDBMS using the following criteria:

* Data format

A NoSQL database gives you a chance to build an application without having to define the schema first unlike relational databases which make you define your schema before you can add any data to the system.

* Storage mechanism

Relational databases were built in an era where data was fairly structured and clearly defined by their relationships. NoSQL databases are designed to handle unstructured data

* Querying
* Scalability

It’s much cheaper to scale a NoSQL database than a relational database because you can add capacity by scaling out over cheap, commodity servers. Relational databases, on the other hand, require a single server to host your entire database. To scale, you need to buy a bigger, more expensive server.

Relational databases were built in an era where data was fairly structured and clearly defined by their relationships. NoSQL databases are designed to handle unstructured data

5. What are the different types of NoSQL databases?

Key-value stores -Every item in the database is stored as an attribute name (or "key") together with its value.

Wide-column stores -store data together as columns instead of rows and are optimized for queries over large datasets. The most popular are Cassandra and HBase.

Document databases-pair each key with a complex data structure known as a document. Documents can contain many different key-value pairs, or key-array pairs, or even nested documents. MongoDB is the most popular of these databases.

Graph databases-are used to store information about networks, such as social connections.

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**Section Two**

MongoDB Exercise:

1. By Default, Which Database Does Mongodb Connect To?

Running mongo will enter the shell and connect to the "local" database.

• Write a MongoDB query to display all the documents in the collection restaurants.

As per the code provided

• Write a MongoDB query to display all the restaurant which is in the borough Bronx.

db.restaurants.find({ : "borough": "Bronx" }).pretty()

Question 3

db.booksdb.insert(

{

“ISBN”:”9780992461256”,

“Title”: “MongoDB for Beginner’/s'”,

“author”: “James Smith & Adam”

“Price”:

}

)

db.booksdb.updateOne(

{ “ISBN”:”9780992461256”},

{

$set: { "price": "19.99” },

}

)