

PRACTICUM - 3

NON-RELATIONAL DATABASE

A hypothetical scenario where a non – relational database is the best solution. I've selected a scenario of a Automotive Industry, Ford-Automotive Industry and the requirements are, Customer Details, Vehicle Model, Service records, Customer satisfaction surveys, Insurance Details, Warranty Information and the Data requirements are, Customer name, service history, insurance information, Warranty Information, survey responses.

From the many options to choose, Considering the form a NoSQL database should take MongoDB, Apache Cassandra, Redis, Couchbase and Apache HBase in our discussion. One of the popular picks is MongoDB, uses JavaScript object notation like objects to store document-oriented database. MongoDB is making it ideal for applications with large datasets as it is highly scalable, also provides aggregation capabilities as well as powerful search. One of the popular picks is MongoDB, uses JSON-like objects to store document-oriented database. Nevertheless, MongoDB is not the only choice. Cassandra, a distributed database built to manage large quantities of data with excellent availability, is another common option. For applications requiring high throughput and quick queries Cassandra is ideal.

Then there is Redis, for storing data in a key-value format an in-memory data structure store is designed. Redis is suitable for applications that needs a high degree of performance and distributed caching. Finally, the application's unique requirements determine the form of a NoSQL database.

Cassandra or MongoDB might be a better choice, if the application requires scalability and Redis may be the way to go if performance is a priority.

This non-relational solution would be ideal since it is cost-effective, efficient, and scalable for my data storage requirements. We can store our data in a form that is easy to access, alter, and query by utilizing a NoSQL database. The data may be simply dispersed across different servers, improving dependability and scalability.

We don't need to worry about converting my data into a schema-based format or the overhead of maintaining a database schema since NoSQL databases are schema-less. Enormous volumes of data can be handled using NoSQL databases easily. Since the data is spread across numerous servers, with low effort and cost, the database may be expanded to match the application's requirements. They are suitable for storing massive datasets as NoSQL databases are built to manage big volumes of data effectively, NoSQL databases are ideal for applications that demand high availability and minimal latency. A NoSQL database is the perfect answer if our program has to reply promptly to queries or be accessible around the clock.

NoSQL databases is an ideal choice for applications that need to handle high volumes of traffic as they can also handle large amounts of concurrent requests. Enormous volumes of data can be handled using NoSQL databases easily. Since the data is spread across numerous servers, with low effort and cost, the database may be expanded to match the application's requirements.

In conclusion, this non-relational solution would work best for our data storage needs because it provides a cost-effective, efficient, and scalable solution. They are suitable for storing massive

datasets as NoSQL databases are built to manage big volumes of data effectively, NoSQL databases are ideal for applications that demand high availability and minimal latency. It is also suitable for applications that require low latency and high availability, and for handling large amounts of data. NoSQL databases are ideal for applications that demand high availability and minimal latency. All of these benefits make a NoSQL database the best solution for this particular scenario.

This is a basic prototype for an online database that tracks employee ages in the business. The examples below demonstrate the kind of data that my solution is intended to accommodate:

-Employee Name: Sai Shankar

-Job Role: Telematics Engineer

-Age in Firm: 1 Year

-Employee Name: Suresh Kumar

-Job Role: Production validation Test Engineer

-Age in Firm: 10 Years

The database's goal is to track client data for an online platform as well as the items that customers may buy. It is intended to incorporate customer information such as contact information, payment methods, and order history, as well as product information such as item availability and pricing.

The database is designed with the following tables:

Customers: This table stores the contact, payment, and order history information for customers. It contains the following columns: Customer ID, Name, Email, Phone Number, Address, Payment Method, Order History.

Vehicles: This table has Information regarding a Vehicle. It contains the following columns: VIN number, Manufacture year, Last Service Odometer, Engine Type, Model, License.

The database may be used to store and retrieve product and customer information. Using the customer ID in the Customers table Customers' orders in the orders table may be linked. Similarly, Products table can be used to link products with their orders in the Orders table using the product ID.

Customer data, such as contact information, payment method, and order history, may be tracked using the database. It may also be used to keep track of product information like availability and pricing. The database may also be used to track orders, such as who placed the order, what product was ordered, and how much was ordered.

A firm that specializes in selling and monitoring rare products may store and retrieve inventory data using a non-relational database. The goods in the company's inventory are continually changing, and each thing is unique with no evident connections. A non-relational database may rapidly and effectively store and retrieve data on these entities without the need to build

complicated relationships or join tables. Furthermore, non-relational databases are better suited to dealing with massive volumes of data and can process data more quickly than relational databases.

Inseting values:

```
Atlas atlas-pk8j6l-shard-0 [primary] database> db.automobiles.info.insert([{'customer_name':'suresh ','phone_number':'789456123 ','payment_method':'creditcard ','purchase_date':'10/01/2022 ','vehicle_manufacture_year':'2022 '},{
'customer_name':'Kittu ','phone_number':' 987456123','payment_method':'creditcard ','purchase_date':'10/02/2022 ','
'vehicle_manufacture_year':'2022 '},{'customer_name':'Mittu ','phone_number':' 231654789','payment_method':'credit
card ','purchase_date':'10/03/2022 ','vehicle_manufacture_year':'2022 '},{'customer_name':'vijay ','phone_number':
'456123789 ','payment_method':'cash ','purchase_date':'10/04/2022 ','vehicle_manufacture_year':'2022 '},{'customer
_name':'raju ','phone_number':' 897456123','payment_method':'cash ','purchase_date':'10/05/2022 ','vehicle_manufact
ure_year':'2022 '},{'customer_name':'siddu ','phone_number':'852963741 ','payment_method':'cash ','purchase_date':
'10/06/2022 ','vehicle_manufacture_year':'2022 '},{'customer_name':'sai ','phone_number':'456852963 ','payment_met
hod':'cash ','purchase_date':'10/07/2022 ','vehicle_manufacture_year':'2022 '},{'customer_name':'ravi ','phone_numbe
r':'236598741 ','payment_method':'cash ','purchase_date':'10/08/2022 ','vehicle_manufacture_year':'2022 '}}])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("639d4197ca6ffa82bc8bcdbe"),
    '1': ObjectId("639d4197ca6ffa82bc8bcdbe"),
    '2': ObjectId("639d4197ca6ffa82bc8bcdbe"),
    '3': ObjectId("639d4197ca6ffa82bc8bcdbe"),
    '4': ObjectId("639d4197ca6ffa82bc8bcdbe"),
    '5': ObjectId("639d4197ca6ffa82bc8bcdbe"),
    '6': ObjectId("639d4197ca6ffa82bc8bcdbe"),
    '7': ObjectId("639d4197ca6ffa82bc8bcdbe")
  }
}
```

Printing Values:

```
Atlas atlas-pk8j61-shard-0 [primary] database> db.automobiles.info.find()
[
  {
    _id: ObjectId("639d4112ca6ffa82bc8bcd5"),
    customer_name: 'suresh ',
    phone_number: '789456123 ',
    payment_method: 'creditcard ',
    purchase_date: '10/01/2022 ',
    vehicle_manufacture_year: '2022 '
  },
  {
    _id: ObjectId("639d4112ca6ffa82bc8bcd6"),
    customer_name: 'Kittu ',
    phone_number: ' 987456123',
    payment_method: 'creditcard ',
    purchase_date: '10/02/2022 ',
    vehicle_manufacture_year: '2022 '
  },
  {
    _id: ObjectId("639d4112ca6ffa82bc8bcd7"),
    customer_name: 'Mittu ',
    phone_number: ' 231654789',
    payment_method: 'creditcard ',
    purchase_date: '10/03/2022 ',
    vehicle_manufacture_year: '2022 '
  },
  {
    _id: ObjectId("639d4112ca6ffa82bc8bcd8"),
    customer_name: 'vijay ',
    phone_number: '456123789 ',
    payment_method: 'cash ',
    purchase_date: '10/04/2022 ',
    vehicle_manufacture_year: '2022 '
  },
  {
    _id: ObjectId("639d4112ca6ffa82bc8bcd9"),
    customer_name: 'raju',
    phone_number: ' 897456123',
    payment_method: 'cash ',
    purchase_date: '10/05/2022 ',
    vehicle_manufacture_year: '2022 '
  },
  {
    _id: ObjectId("639d4112ca6ffa82bc8bcd10"),
    customer_name: 'siddu ',
    phone_number: '852963741 ',
    payment_method: 'cash ',
    purchase_date: '10/06/2022 ',
    vehicle_manufacture_year: '2022 '
  },
]
```

```
{
  _id: ObjectId("639d4112ca6ffa82bc8bcdbb"),
  customer_name: 'sai ',
  phone_number: '456852963 ',
  payment_method: 'cash',
  purchase_date: '10/07/2022 ',
  vehicle_manufacture_year: '2022 '
},
{
  _id: ObjectId("639d4112ca6ffa82bc8bcdbc"),
  customer_name: 'ravi ',
  phone_number: '236598741 ',
  payment_method: 'cash ',
  purchase_date: '10/08/2022 ',
  vehicle_manufacture_year: '2022 '
},
```

Updating a record:

```
Atlas atlas-pk8j61-shard-0 [primary] database> db.automobiles.info.update({'customer_name': 'raju'}, {'$set': {'payment_method': 'creditcard'}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
Atlas atlas-pk8j61-shard-0 [primary] database> db.automobiles.info.find({'customer_name': 'raju'})
[
  {
    _id: ObjectId("639d4112ca6ffa82bc8bcd9"),
    customer_name: 'raju',
    phone_number: '897456123',
    payment_method: 'creditcard',
    purchase_date: '10/05/2022 ',
    vehicle_manufacture_year: '2022 '
  }
]
```

Removing a record:

```
Atlas atlas-pk8j61-shard-0 [primary] database> db.automobiles.info.remove({'customer_name': 'Mittu'})
```

Count of the data:

```
Atlas atlas-pk8j61-shard-0 [primary] database> db.automobiles.info.find().count()
16
```

Printing sorted data:

```
Atlas atlas-pk8j6l-shard-0 [primary] database> db.automobiles.info.find().sort({'customer_name':1})
[
  {
    _id: ObjectId("639d4112ca6ffa82bc8bcdcb6"),
    customer_name: 'Kittu ',
    phone_number: ' 987456123',
    payment_method: 'creditcard ',
    purchase_date: '10/02/2022 ',
    vehicle_manufacture_year: '2022 '
  }
]
```

```
{
  _id: ObjectId("639d4197ca6ffa82bc8bcdbf"),
  customer_name: 'Mittu ',
  phone_number: ' 231654789',
  payment_method: 'creditcard ',
  purchase_date: '10/03/2022 ',
  vehicle_manufacture_year: '2022 '
},
```

```
{
  _id: ObjectId("639d4197ca6ffa82bc8bcdcl"),
  customer_name: 'raju',
  phone_number: ' 897456123',
  payment_method: 'cash ',
  purchase_date: '10/05/2022 ',
  vehicle_manufacture_year: '2022 '
},
{
```

And so on

References :

<https://www.ford.com/>

<https://www.commercialsolutions.ford.com/>

<https://fordpro.com/en-us/telematics>

<https://bstrategyhub.com/swot-analysis-of-ford-2019-ford-swot-analysis/>