

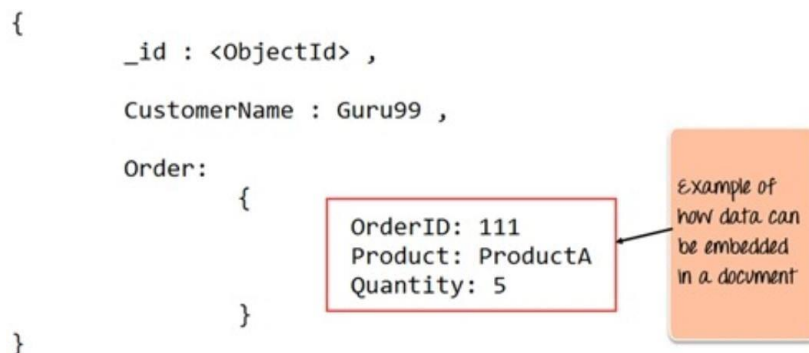
## CLASS 1



### MongoDB: An Introduction

The most popular NoSQL database, is an open-source document-oriented database. The term 'NoSQL' means 'non-relational'.

example:



### The Basics of MongoDB:

- MongoDB, developed by MongoDB Inc., is an open-source document-oriented database.
- It uses JSON-like documents with optional schemas, allowing for a more flexible and dynamic data model.
- This approach contrasts sharply with the rigid structure of relational databases, where data is organized into tables with fixed columns and rows.

### Database Management System:

This is the software that acts like the filing cabinet manager. It allows you to store, retrieve, update, and manage all the data within the database.

### **Data Types:**

Databases can hold various kinds of information, including text, numbers, images, videos, and more.

## **Key Features of MongoDB**

### **1.Document Model:**

- MongoDB stores data in BSON (Binary JSON) format, which is more efficient for storage and retrieval than plain JSON.

### **2. Schema Flexibility:**

- The schema-less nature of MongoDB allows developers to evolve their data model without having to perform costly schema migrations, making it easier to adapt to changing requirements.

### **3. Scalability:**

- MongoDB supports horizontal scaling through sharding, which distributes data across multiple servers.

### **4. High Performance:**

- With features like in-memory computing, indexing, and efficient querying, MongoDB provides high performance for read and write operations.

### **5. Replication and High Availability:**

- MongoDB offers replication through replica sets, ensuring data redundancy and high availability.

### **6. Rich Query Language:**

- MongoDB supports a powerful and flexible query language that allows for complex queries, aggregations, and data transformations.

## **Use Cases for MongoDB:**

### **1. Web and Mobile Applications:**

- MongoDB's flexibility and performance make it an excellent choice for web and mobile applications that require rapid development cycles and scalability. It powers many e-commerce platforms, social networks, and content management systems.

### **2. Big Data and Analytics:**

- MongoDB is capable of handling large volumes of data, making it suitable for big data applications. It integrates well with data processing frameworks like Apache Spark for real-time analytics and insights.

### **3. Content Management Systems:**

- The schema-less nature of MongoDB is ideal for managing diverse content types, such as articles, videos, and images, without the need for predefined schemas.

#### **4. IoT and Sensor Data:**

- For Internet of Things (IoT) applications, MongoDB can efficiently store and process data from a multitude of sensors, allowing for real-time monitoring and analysis.

#### **5. Catalogs and Inventory Management:**

- E-commerce platforms and other businesses use MongoDB to manage product catalogs and inventory systems that require flexibility in data models and the ability to handle large datasets.

### **Advantages of Using MongoDB:**

#### **Dynamic Schema:**

- The ability to handle dynamic schemas makes MongoDB particularly useful for applications where the data structure can evolve over time.

#### **Strong Community and Ecosystem:**

- MongoDB has a large and active community, providing a wealth of resources, tools, and support. The MongoDB ecosystem includes a range of drivers, tools, and cloud services like MongoDB Atlas.

### **Mongodb Insallation Process**

<https://www.geeksforgeeks.org/how-to-install-mongodb-on-windows/>

#### **Mongodb Shell**

<https://www.mongodb.com/docs/mongodb-shell/install/#install-mongosh>