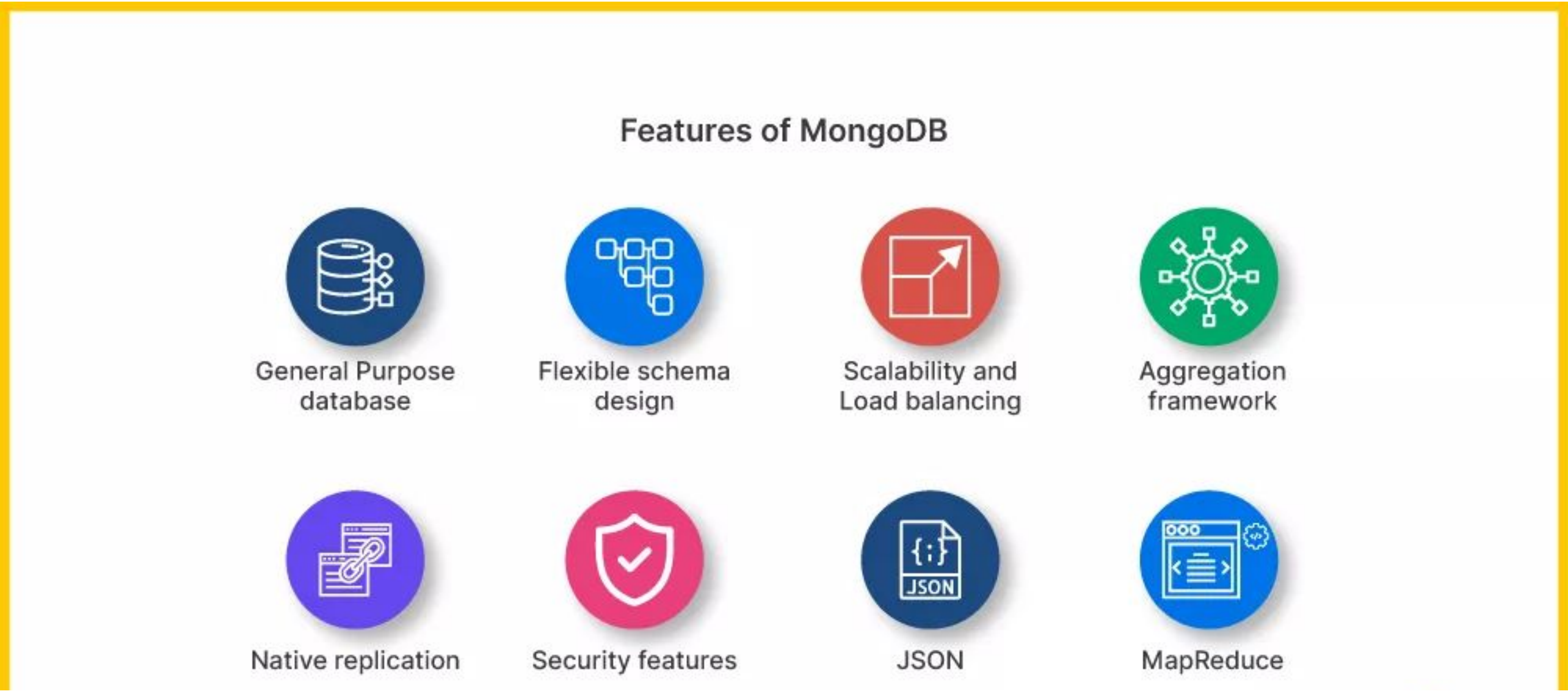
PyMongo

MongoDB

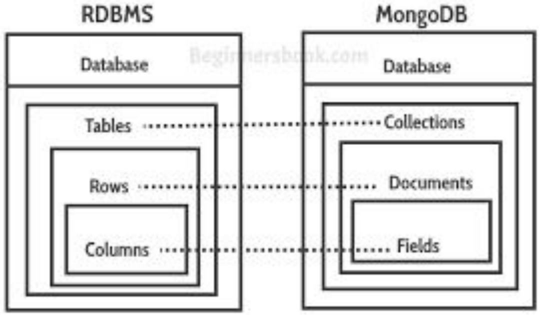
MongoDB is one of the most popular NoSQL database. It is a cross-platform, object-oriented database. Basically NoSQL means MongoDB does not store data in the table or relational format rather provide a different mechanism for storage and retrieval of data. This is called BSON which is similar to JSON. That’s why MongoDB offers high speed, high availability, and high scalability

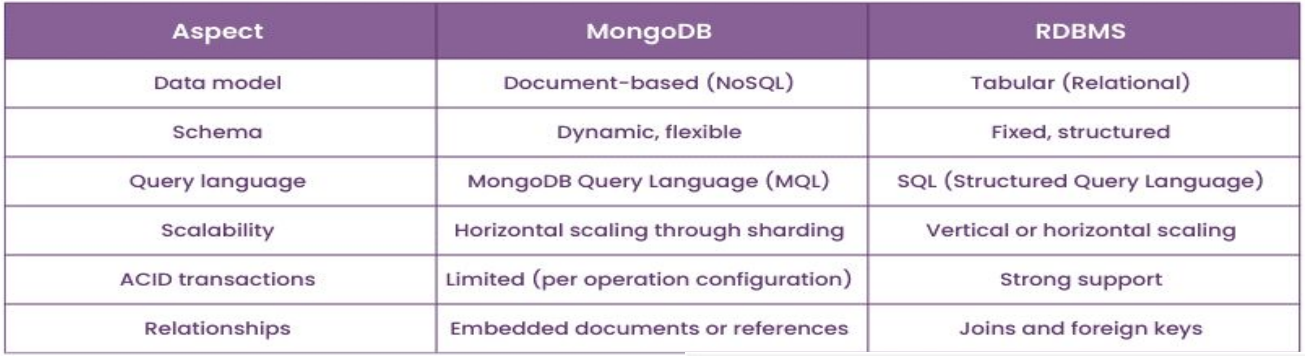
```
{
  "_id": ObjectId("60b8d295f1d7f1123e8b4567"),
  "username": "johndoe",
  "email": "johndoe@example.com",
  "age": 28,
  "isActive": true,
  "profile": {
    "firstName": "John",
    "lastName": "Doe"
  },
  "hobbies": ["reading", "traveling"]
}
```

Features of MongoDB

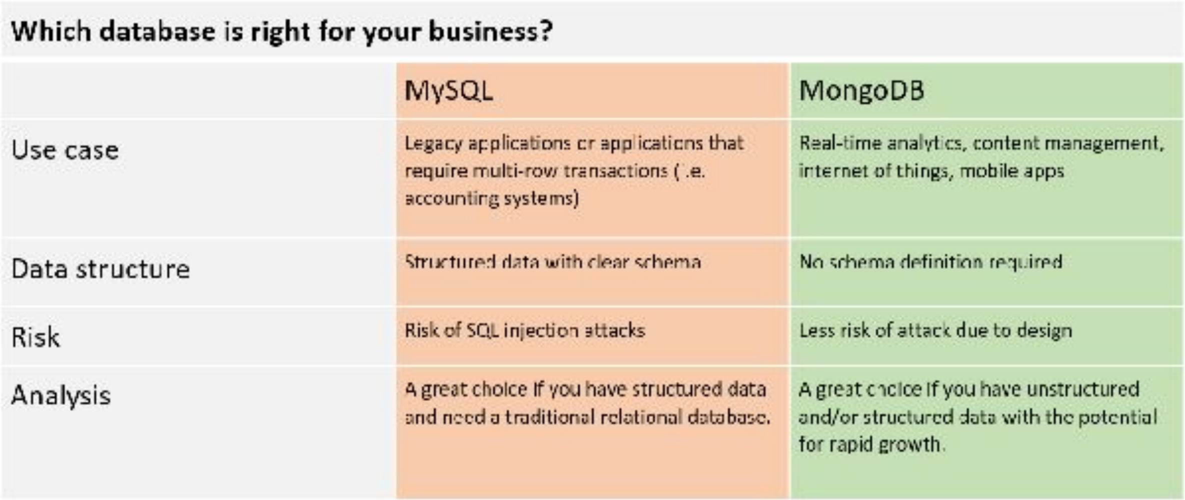


RDBMS vs MongoDB





Aspect	MongoDB	RDBMS
Data model	Document-based (NoSQL)	Tabular (Relational)
Schema	Dynamic, flexible	Fixed, structured
Query language	MongoDB Query Language (MQL)	SQL (Structured Query Language)
Scalability	Horizontal scaling through sharding	Vertical or horizontal scaling
ACID transactions	Limited (per operation configuration)	Strong support
Relationships	Embedded documents or references	Joins and foreign keys



Which database is right for your business?

	MySQL	MongoDB
Use case	Legacy applications or applications that require multi-row transactions (i.e. accounting systems)	Real-time analytics, content management, internet of things, mobile apps
Data structure	Structured data with clear schema	No schema definition required
Risk	Risk of SQL injection attacks	Less risk of attack due to design
Analysis	A great choice if you have structured data and need a traditional relational database.	A great choice if you have unstructured and/or structured data with the potential for rapid growth.

High Volume Data Feeds

Machine Generated Data

- More machine forms, sensors & data
- Variably structured

Securities Data

- High frequency trading
- Daily closing price

Social Media / General Public

- Multiple data sources
- Each changes their format consistently
- Usage Logs

Ad Targeting

- Large volume of users
- Very strict latency requirements
- Sentiment Analysis

Real time dashboards

- Expose data to millions of customers
- Reports on large volumes of data
- Reports that update in real time

Social Media Monitoring

- Join the conversation
- Games
- Customized Surveys

Metadata

Product Catalogs

- Diverse product portfolio
- Complex querying and filtering
- Multi-faceted product attributes

Data analysis

- Data mining
- Call records
- Insurance Claims

Biometric

- Retina Scans
- Fingerprints

Content Management

News Site

- Comments and user generated content
- Personalization of content and layout

Multi-device rendering

- Generate layout on the fly
- No need to cache static pages

Sharing

- Store large objects
- Simpler modeling of metadata

MongoDB

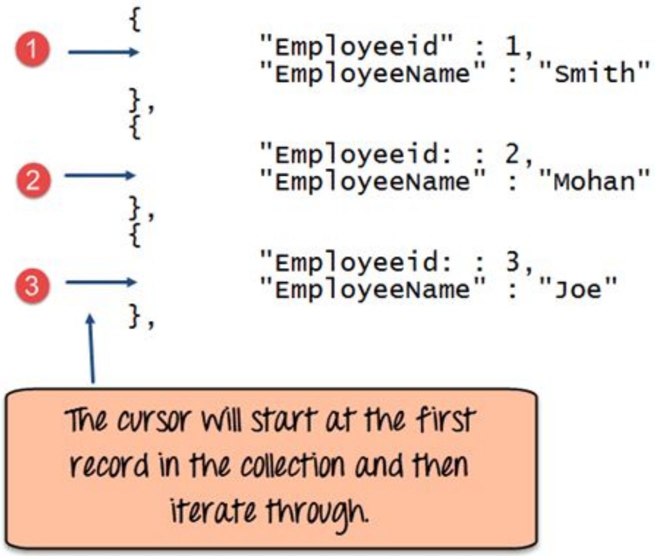
Fields are the key-value pairs within a document. Each field has a key (a string) and a value, whic

data type (string, number, array, object, etc.). Fields in MongoDB are similar to columns in a relati

Example of Fields in a Document:

In the document above:

- **"_id"**: ObjectId("60b8d295f1d7f1123e8b4567")
- **"name"**: "Alice"
- **"email"**: "alice@example.com"
- **"age"**: 30
- **"address"**: { "street": "456 Maple St", "city": "Somewhere", "state": "CA", "zip": "67890" }
- **"hobbies"**: ["painting", "cycling"]



```
{
        "Employeeid" : 1,
        "EmployeeName" : "Smith"
},
{
        "Employeeid: : 2,
        "EmployeeName" : "Mohan"
},
{
        "Employeeid: : 3,
        "EmployeeName" : "Joe"
},
```

The cursor will start at the first record in the collection and then iterate through.

Collection

A collection in MongoDB is a group of documents. Collections are similar to tables in a relational database. However, unlike tables, collections do not enforce a schema, allowing documents within the same collection to have different structures.

MongoDB Cursor

A cursor in MongoDB is an object that allows you to iterate over the results of a query. When you execute a query, MongoDB returns a cursor to the result set, which you can use to retrieve documents one by one or in batches

MongoDB

1. Visit mongodb.com
2. Mongodb - https://www.mongodb.com/try/download/community
3. Mongo shell - https://www.mongodb.com/try/download/shell