**Name:** ISHAN KARMAKAR **Enrollment Number:** BT19CSE038 **Subject:** Software Lab - 04 **Assignment Topic:** MongoDB

……………………………………………………………………………………………………………………………………

**#. What is MongoDB?**

Ans: MongoDB is a [document database](https://www.mongodb.com/document-databases) used to build highly available and scalable internet applications. With its [flexible schema](https://www.mongodb.com/scale/mongodb-schema-design) approach, it’s popular with development teams using agile methodologies. Offering [drivers](https://docs.mongodb.com/drivers/) for all major programming languages, MongoDB allows you to immediately start building your application without spending time configuring a database.

**#. Why Use MongoDB?**

Ans: MongoDB is built on a scale-out architecture that has become popular with developers of all kinds for developing scalable applications with evolving data schemas.

As a document database, MongoDB makes it easy for developers to store structured or unstructured data. It uses a JSON-like format to store documents. This format directly maps to native objects in most modern programming languages, making it a natural choice for developers, as they don’t need to think about normalising data. MongoDB can also handle high volume and can scale both vertically or horizontally to accommodate large data loads.

MongoDB was built for people building internet and business applications who need to evolve quickly and scale elegantly. Companies and development teams of all sizes use MongoDB for a wide variety of reasons.

**#. How and When Did MongoDB Get Started?**

Ans: The database has its roots in the frustrations of Dwight Merriman, Eliot Horowitz, and Kevin Ryan, who co-founded MongoDB in New York City in 2007 after they struggled to build web-scale applications for DoubleClick, one of the pioneers of digital advertising technology that eventually became a part of Google.

The founders wanted to build a database that developers would love, a database that would break through the barriers in Relational Database Management Systems (RDBMS) that use the SQL query language.

The Mongo part of MongoDB is a slice of the word humongous, hinting at the large amount of data that MongoDB can process.

**#. What are the Advantages of MongoDB?**

MongoDB has become one of the most wanted databases in the world because it makes it easy for developers to store, manage, and retrieve data when creating applications with most programming languages.

To understand whether MongoDB is right for you, let’s look at the advantages of MongoDB for developers. You can also check out the top five MongoDB features.

**#. The Power of Document-Oriented Databases**

Ans: MongoDB is the pioneer of what has come to be called NoSQL databases, which developed because RDBMS systems based on SQL did not support the scale or rapid development cycles needed for creating modern applications.

NoSQL is an umbrella term; it includes document-oriented databases like MongoDB, columnar databases, in-memory databases, and more.

In MongoDB, records are stored as documents in compressed BSON files. The documents can be retrieved directly in JSON format, which has many benefits:

It is a natural form to store data.

It is human-readable.

Structured and unstructured information can be stored in the same document.

You can nest JSON to store complex data objects.

JSON has a flexible and dynamic schema, so adding fields or leaving a field out is not a problem.

Documents map to objects in most popular programming languages.

Most developers find it easy to work with JSON because it is a simple and powerful way to describe and store data.

Perhaps most importantly, the developer controls the database schema. Developers adjust and reformat the database schema as the application evolves without the help of a database administrator. When needed, MongoDB can coordinate and control changes to the structure of documents using schema validation.

MongoDB created Binary JSON format (BSON) to support more data types than JSON. This new format allows for faster parsing of the data. Data stored in BSON can be searched and indexed, tremendously increasing performance. MongoDB supports a wide variety of indexing methods, including text, decimal, geospatial, and partial.

**#. When Should You Use MongoDB?**

MongoDB is a general-purpose database used in various ways to support applications in many different industries (e.g., telecommunications, gaming, finances, healthcare, and retail). MongoDB has found a home in many different businesses and functions because it solves long-standing problems in data management and software development.

Typical use cases for MongoDB include:

* Integrating large amounts of diverse data: If you are bringing together tens or hundreds of data sources, the flexibility and power of the document model can create a single unified view in ways that other databases cannot. MongoDB has succeeded in bringing such projects to life when approaches using other databases have failed.
* Describing complex data structures that evolve: Document databases allow embedding of documents to describe nested structures and easily tolerate variations in data in generations of documents. Specialised data formats like geospatial are efficiently supported. This results in a resilient repository that doesn’t break or need to be redesigned every time something changes.
* Delivering data in high-performance applications: MongoDB’s scale-out architecture can support huge numbers of transactions on humongous databases. Unlike other databases that either cannot support such scale or can only do so with massive amounts of engineering and additional components, MongoDB has a clear path to scalability because of the way it was designed. MongoDB is scalable out of the box.
* Supporting hybrid and multi-cloud applications: MongoDB can be deployed and run on a desktop, a massive cluster of computers in a data centre, or in a public cloud, either as installed software or through MongoDB Atlas, a database-as-a-service product. If you have applications that need to run wherever they make sense, MongoDB supports any configuration now and in the future.
* Supporting agile development and collaboration: Document databases put developers in charge of the data. Data becomes like code that is friendly to developers. This is far different from making developers use a strange system that requires a specialist. Document databases also allow the evolution of the structure of the data as needs are better understood. Collaboration and governance can allow one team to control one part of a document and another team to control another part.