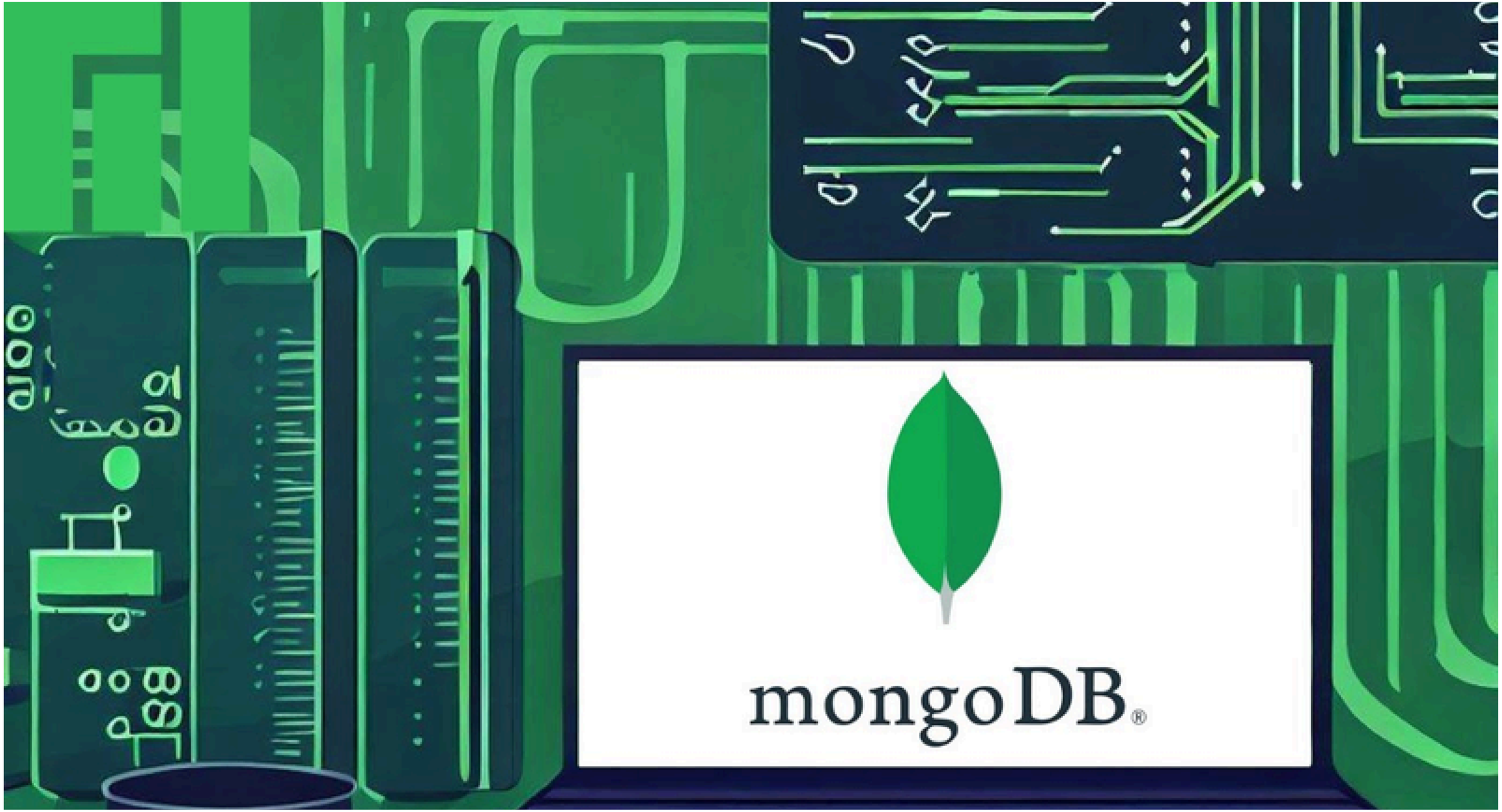

mongoDB®

AGENDA

DATA BASE

A database is an organiZed collection of structured or unstructured inforMation stored electronically on machine locally or in a cloud.These are managed using Database Management System(DBMS).

Database are used for various data processing operations the most basic being the Create,Update,Read and Delete(CURD Operation).

SQL Database

SQL stands for Structured Query Language.
SQL lets you access and manipulate database.
It can execute queries against a database.
It can retrive data ,insert ,update ,delete records in a database.

NoSQL Database

- A NoSQL database has a dynamic schema for unstructured data. Data is stored in many ways which means it can be document-oriented, column-oriented, graph-based, or organized as a key value store. This flexibility means that documents can be created without having a defined structure first. Also, each document can have its own unique structure. The syntax varies from database to database, and you can add fields as you go.

Difference between SQL and NoSQL

SQL vs NoSQL

SQL	NoSQL
Data uses Schema	Schema-less (Schema Agnostic)
Maintain Relationship	No relations– though you can design relationship
Data distributed in multiple tables	Data in one table (embedded)
Monolithic, you can easily Scale-Up. Scale out is also possible but difficult (e.g. Azure Elastic Database tools)	Scale up and scale out- Globally distributed

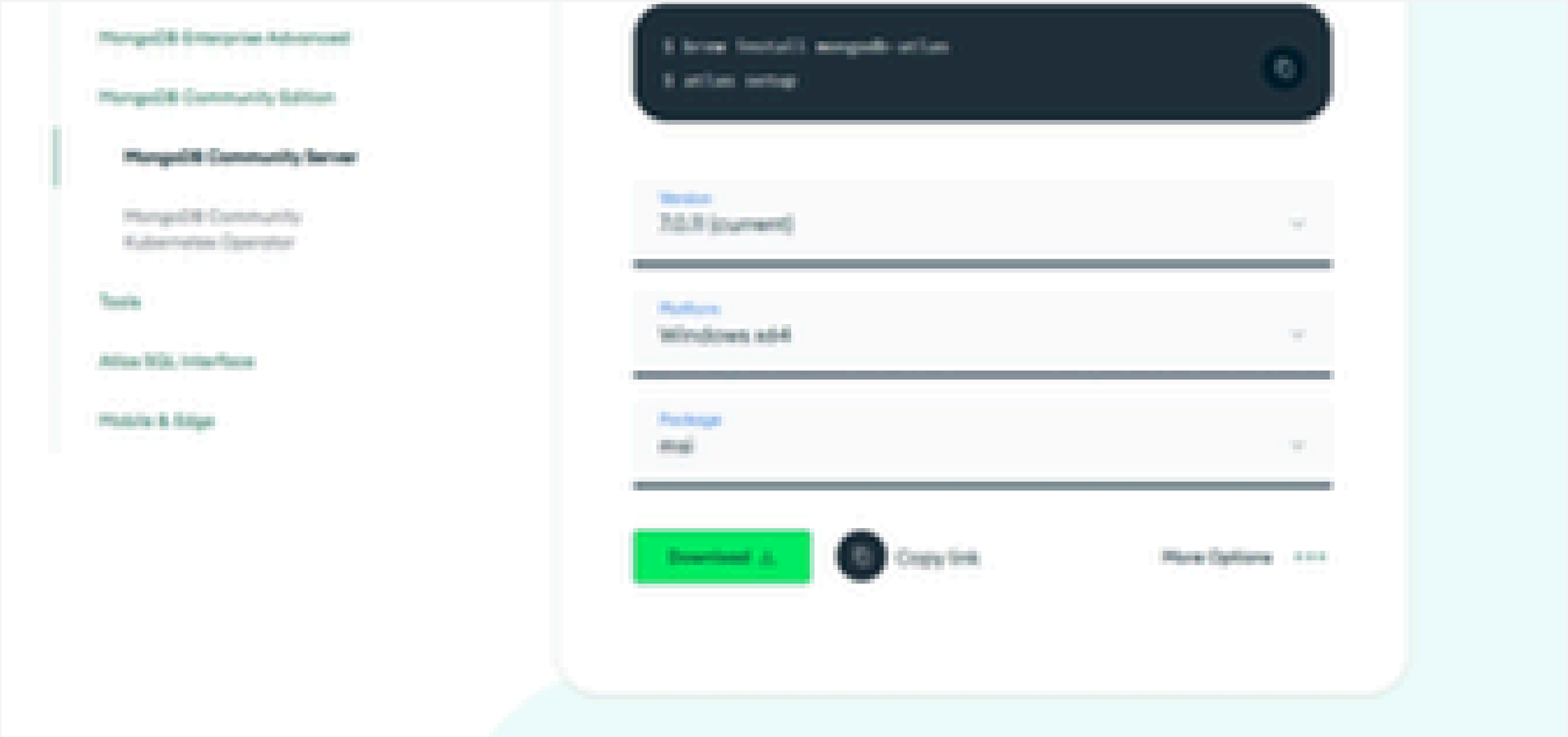
What is MongoDB

MongoDB community server: The source-available ,free-to-use ,and self-managed version of MongoDB.

>MongoDB shell : The MongoDB shell ,mongosh is a Javascript and Node.js REPL environment for interacting with MongoDB development in Atlas

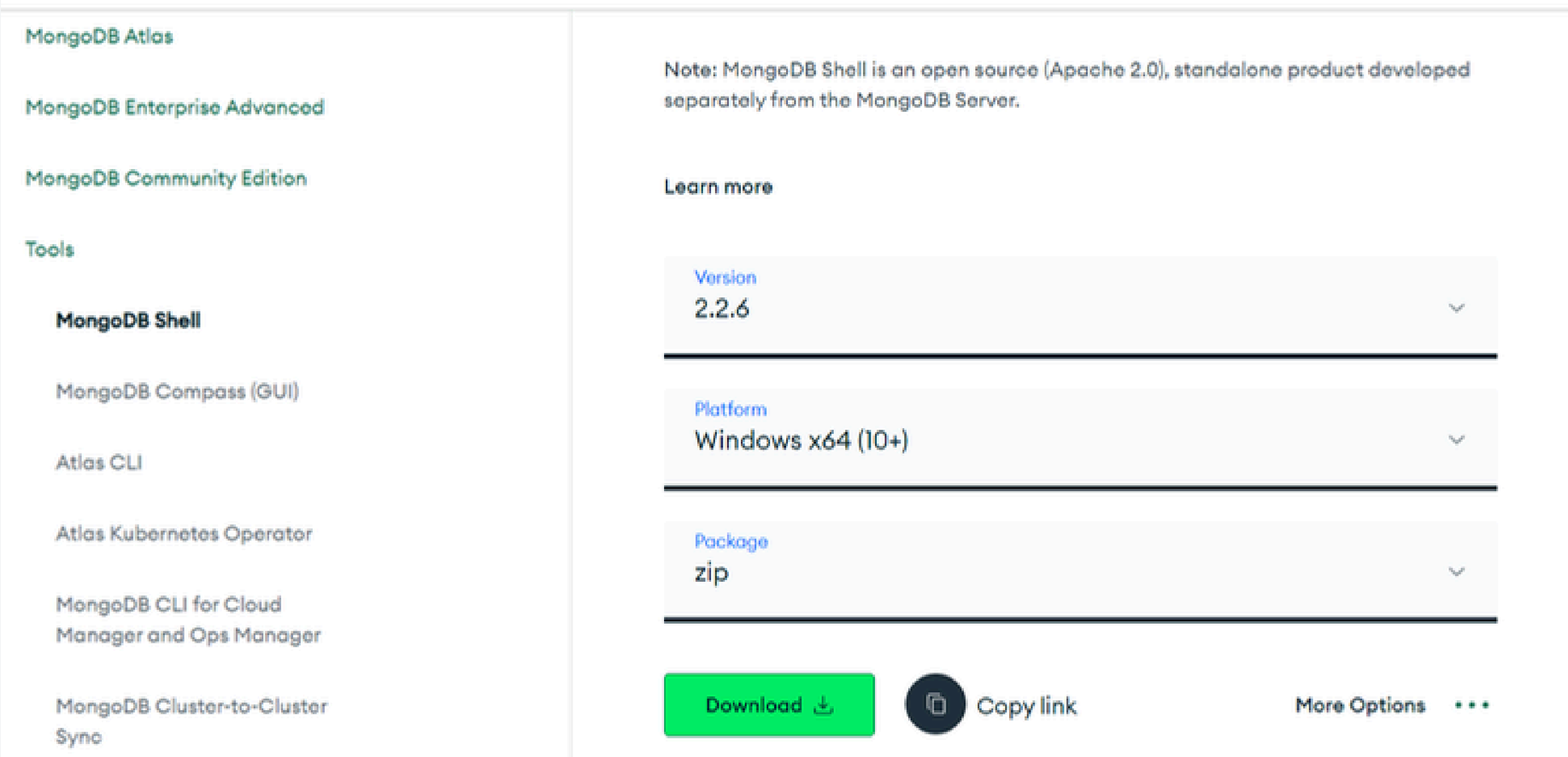
Install MongoDB Compass

The very first step is to install the MongoDB compass into your system.
Go to the official site of MongoDB compass and click the download now button



Installing MongoDB Shell (mongosh)

There are many ways to connect to your MongoDB database.We will start by using the MongoDB Shell, mongosh.
Use the official instructions to install mongosh on your operating system.
To verify that it has been installed properly, open your terminal and type: mongosh –version You should see that the latest verion is installed.
The version used in this tutorial is v1.3.1.



CREATE DATABASE USING MONGOSH

After connecting to your database using mongosh, you can see which database you are using by typing db in your terminal.
If you have used the connection string provided from the MongoDB Atlas dashboard, you should be connected to the myFirstDatabase database.

SHOW ALL DATABASES

To see all available databases, in your terminal type show dbs.

Notice that myFirstDatabase is not listed. This is because the database is empty. An empty database is essentially non-existant.

MongoDB Data types

- String - This is the most commonly used datatype to store the data. String in MongoDB must be UTF-8 valid.

- Integer - This type is used to store a numerical value. Integer can be 32 bit or 64 bit depending upon your server.

- Boolean - This type is used to store a boolean (true/ false) value.

- Double - This type is used to store floating point values.

- Min/ Max keys - This type is used to compare a value against the lowest and highest BSON elements.

- Arrays - This type is used to store arrays or list or multiple values into one key.

- Object - This datatype is used for embedded documents.

- Null - This type is used to store a Null value.

- Symbol - This datatype is used identically to a string; however, it's generally reserved for languages that use a specific symbol type.

- Object ID - This datatype is used to store the document’s ID.

- Binary data - This datatype is used to store binary data.

- Regular expression - This datatype is used to store regular expression

MongoDB Commands

```
mongo
```

Open a terminal and start the MongoDB shell by typing mongo.

Create and Use a Database

```
use blog
```

Create (if not exists) and use the 'blog' database

CREATE COLLECTIONS

```
// Create a 'posts' collection
db.createCollection("posts")

// Create a 'users' collection
db.createCollection("users")
```

Create two collections: posts for storing blog posts and users for storing user information.

Insert Operations

Insert a single document into 'posts' collection

```
db.posts.insertOne({
    title: "Introduction to MongoDB",
    content: "MongoDB is a NoSQL database.",
    author: "John Doe",
    tags: ["mongodb", "nosql", "database"]
})
```

Insert multiple documents into 'users' collection

```
db.users.insertMany([
    {
        username: "johndoe",
        email: "johndoe@example.com",
        age: 30
    },
    {
        username: "janedoe",
        email: "janedoe@example.com",
        age: 28
    }
])
```

Update Operations

Update a document in 'users' collection

```
db.users.updateOne(
    { username: "johndoe" },
    { $set: { age: 31 } }
)
```

```
db.posts.updateMany(
    { tags: "mongodb" },
    { $addToSet: { tags: "database" } }
)
```

Delete Operations

Delete a document from ‘users’ collection

```
db.users.deleteOne({ username: "janedoe" })
```

Delete multiple documents from ‘posts’ collection

Thank you!