1. What is MongoDB?

MongoDB is a NoSQL database that was developed using the open-source platform. There is a paid version available that is cloud-based and requires lower maintenance. The software consists of server software that can be interacted with via a CLI called the "MongoDB Shell". The use of this CLI greatly facilitates setup, interaction, and maintenance.

2. What are the key features of MongoDB?

Indexing can speed up queries, which is especially useful when dealing with complex queries or large amounts of data. The CLI supports all major CRUD (create, read, update, delete) operations. Auto-replication can be easily implemented for redundancy and availability. MongoDB also supports sharding, allowing for upward scalability, among other useful features. It additionally supports multiple storage engines, providing greater flexibility.

3. Select two MongoDB data types and explain what they are, how they are used, and why they are important. When answering question three (3), provide an example, in code, of the selected data type

(1) Object:

This data type enables document embedding, allowing an object to have its own attributes or pieces of data. It provides a way to create hierarchical or nested structures within a document. The “engine” item below is the object in this example.

{

"brand": "Ferrari",

"year": 2022,

"color": "Lime Green",

"engine": {

"type": "V12",

"displacement": 6.3,

"horsepower": 949

}

}

(2) regular expression

A regular expression is a sequence of characters that represents a search pattern. I like this because it means I can store a bunch of regexes for data analysis, searching, or even input validation (if I want to be an evil overlord of my database). In the provided example, the "ipAddress" field is matched against the regular expression to validate an IP address format.

{

"name": "Server 1",

"ipAddress": {

"$regex": "^\\d{1,3}\\.\\d{1,3}\\.\\d{1,3}\\.\\d{1,3}$"

}

}

(3) MaxKey and MinKey

MaxKey and MinKey are special values used to define maximum and minimum values for an object. They are typically used for comparison purposes or to represent undefined or unknown values. The “online” object is the MaxKey in this example.

{

"name": "My Minecraft Server",

"address": "mc.example.com",

"players": {

"online": $MaxKey(16),

},

"status": "active"

}