MERN Stack Assignment 2

1. **What is MongoDB replication?**

   MongoDB replication is the process of creating a copy of the same data set in more than one MongoDB server. This can be achieved by using a Replica Set. A replica set is a group of MongoDB instances that maintain the same data set and pertain to any mongDB process.

   Replication enables database administrators to provide:

   Data redundancy
   High availability of data
   Maintaining multiple MongoDB servers with the same data provides distributed access to the data while increasing the fault tolerance of the database by providing backups.

   Additionally, replication can also be used as a part of load balancing, where read and write operations can be distributed across all the instances depending on the use case.

2. **What are some of NodeJs' features?**

   Following are some of the important features that make Node.js the first choice of software architects.

   - Asynchronous and Event Driven − All APIs of Node.js library are asynchronous, that is, non-blocking. It essentially means a Node.js based server never waits for an API to return data. The server moves to the next API after calling it and a notification mechanism of Events of Node.js helps the server to get a response from the previous API call.

   - Very Fast − Being built on Google Chrome's V8 JavaScript Engine, Node.js library is very fast in code execution.

   - Single Threaded but Highly Scalable − Node.js uses a single threaded model with event looping. Event mechanism helps the server to respond in a non-blocking way and makes the server highly scalable as opposed to traditional servers which create limited threads to handle requests. Node.js uses a single threaded program and the same program can provide service to a much larger number of requests than traditional servers like Apache HTTP Server.

   - No Buffering − Node.js applications never buffer any data. These applications simply output the data in chunks.

   - License − Node.js is released under the MIT license

3. **What is MongoDB's database type?**

   MongoDB is a database based on a non-relational document model. Thus, as a so-called NoSQL database (NoSQL = Not-only-SQL), it differs fundamentally from conventional relational databases such as Oracle, MySQL or the Microsoft SQL Server.

4. **How does Node prevent code from being blocked?**

   An async callback may be called when an event happens or when a task completes. It prevents blocking by allowing other code to be executed in the meantime.

   Instead of the code reading top to bottom procedurally, async programs may execute different functions at different times based on the order and speed that earlier functions like http requests or file system reads happen. They are used when you don't know when some async operation will complete.

   You should avoid "callback hell", a situation where callbacks are nested within other callbacks several levels deep, making the code difficult to understand, maintain and debug.

5. **What exactly do you mean when you say "pure components"?**

   Pure Components do not depend or modify the state of variables outside their scope. These are the building blocks of Functional Programming. Before we get into the details of Pure Components in React, we need to understand the concept of Pure Functions in JavaScript.