Module - 2: Node - Web Development with Node

Q1. What is Express.js

Express.js	Is a node js web application framework that provides broad features for building web and mobile applications. It is used to build a single page, multipage, and hybrid web application.
Install the express	npm install express

Module – 3: Node - Node with Mongodb

Q1. What is MongoDB?

MongoDB is a source-available cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with optional schemas.	
Advantages of mongodb	
Flexible Schema Design	The document-oriented approach allows non-defined attributes to be modified.
Aggregation Framework	MongoDB offers an Extract, Transform, Load (ETL) framework which eliminates the need for complex data pipelines.
Native Replication	Data gets replicated across a replica set without a complicated setup.
Security Features	Authentication and authorization are taken into account.
JSON	JSON is widely used across for fronted and API communication.

Q2. What is difference between Mongodb and SQL

	Mongodb	**SQL**
Paradigm	NoSQL, supports unstructured data.	Support structured data with schemas
Data storage	Collection containing JSON documents	Tables with rows and columns
Relationships	No support for table relationships	Support relationships with foreign keys and primary keys
Data Model	Non-relational	Relational
Schema	No predefined schema, dynamic structure	Predefined schema required for data structure
Query language	Limited document querying, no support for joins	Uses SQL for querying and advanced analytics functions

Q3. Create database for online shopping app.

Create database	**use shopping** [shopping is name of database.]

Q4. Create require collections for online shopping app and documents.

Create collection	**db.createCollection('collectionname')**[collectioname is name of collection of database.]
i. user	**db.createCollection('User')**
ii. Product category	**db.createCollection('Product category')**
iii. Product	**db.createCollection('Product')**
iv. Order	**db.createCollection('Order')**
v. Review	**db.createCollection('Review')**

Q5. Write command to show all data from product collection and sort in ascending order.

Showing the product collection data.	**db.Product.find().pretty()**
Sort in ascending order.	**db.Product.find().sort()**

Q6. Update product price for particulat product.

Many: Update product price	**db.Product.updateMany({ category: "Electronics" }, { $set: { price: 199.99 } })**
One: Update product price	**db.Product.updateOne({ _id: 2 }, { $set: { price: 99.99 } })**

Q7. Write command to delete particular document and collection.

Document	**use documentname** **db.dropDatabase()**
Collection	**db.mycollection.drop()**

Module – 6: Node - [API Authentication & Security]

Q1. What is Middleware in Express.js?–

Middleware	That have access to the request object (req), the response object (res), and the next function in the application's request-response cycle.

The next function is a function in the Express router which, when invoked, executes the middleware succeeding the current middleware.

Middleware functions can perform the following tasks:

- Execute any code.
- Make changes to the request and the response objects.
- End the request-response cycle.
- Call the next middleware in the stack.
- If the current middleware function does not end the request-response cycle, it must call next() to pass control to the next middleware function.

Q2. What is json web tokens?

A JSON web token (JWT) is JSON Object which is used to securely transfer information over the web (between two parties).	
Deserialized	JWT in the deserialized form contains only the header and the payload. Both of them are plain JSON objects.
Header	A header in a JWT is mostly used to describe the cryptographic operations applied to the JWT like signing/decryption technique used on it. It can be used for an authentication system and can also be used for information exchange. The token is mainly composed of header, payload, signature. These three parts are separated by dots(.).
Payload	The payload is the part of the JWT where all the user data is actually added. This information is readable by anyone so it is always advised to not put any confidential information in here.
Signature	This is the third part of JWT and used to verify the authenticity of token. BASE64URL encoded header and payload are joined together with dot(.) and it is then hashed using the hashing algorithm defined in a header with a secret key.

Q3. What is different between encryption and hashing.

Basis	**Encryption**	**Hashing**
Definition	It is the process to encode data securely such that only the authorized user who knows the key or password is able to retrieve the original data for everyone else it is just garbage.	It is a process to convert information to a shorter fixed value known as the key that is used to represent the original information.
Purpose	To transform data to keep it secret from others.	Hashing is indexing and retrieving items from the database.
Secure	More secure in comparison to encryption.	Less secure in comparison to hashing.
Example	RSA, AES and blowfish	MD5, SHA256
Key Management	Requires a secret key or algorithm to encrypt and decrypt data.	Does not require a secret key or algorithm to produce a hash value