ASSIGNMENT NO :- 5

Aim :- Develop a responsive web design using Express Framework to perform CRUD Operations and deploy with Node JS. Use MongoDB.

Objectives :-
- Develop a Full-stack Web Application
- Demonstrate Backend Development and Deployment Proficiency.

Theory :-

Q1] What is the role of Express.js as a web framework for Node.js?

→ **Express.js :-** A minimal and flexible Node.js web framework for building robust web applications:

Key features :-

1) **Routing :-** Define routes for handling HTTP requests

2) **Middleware :-** Use functions to process request and responses

3) **Template Engines :-** Integrate with templating engines for dynamic content.

1

4) Error Handling :- Centralized error handling for better debugging.

Benefits:

1) Simplifies building RESTful APIs and web applications.

2) Highly customizable and extensible.

Q2) Explain the concept of CRUD operations in the context of a web application.

→ CRUD :- Create, Read, Update, Delete.

Web application Context:

- Create :- Add new data.
- Read :- Retrieve existing data.
- Update :- Modify existing data.
- Delete :- Remove data.

HTTP Methods :-

- POST : Create
- GET : Read
- PUT /PATCH : Update
- DELETE : Delete

Q3) Why is MongoDB a suitable choice for this project?

→ • Flexible Schema : MongoDB's NoSQL nature allows for dynamic schema changes without downtime.
• Scalability :- Supports horizontal scaling with sharding
• Performance :- Fast query performance with indexing.
• JSON-like Documents :- Stores data in BSON format, aligning well with Javascript / Node.js
• Ease-of Use : Simple to integrate with Node.js using Mongoose or the native MongoDB drivers.

Q4) What steps are involved in deploying a Node.js and Express applications?

→ Steps :-

1) Prepare the Application:-

• Ensure all dependencies are listed in Package.json.
• Set up enviromonment variables

2) Choose a Hosting Platform:

• Options : Heroku, AWS, Digital Ocean, Vercel, Render.

3) Deploy:-

• Use Git for version control and deployment.
• Configure the platform - specific deployment process.

4) Set Up a Database :-

- Host your MongoDB instance.

5) Monitor and Maintain :-

- Use tools like PM2 for Process management and E logging
- Monitor performance and handle errors.