"Certified JavaScript Back-End Developer: Master Server-Side Programming"

Course Introduction:

The "JSPB – Certified Professional JavaScript Programmer (Back End)" course is designed to equip aspiring and experienced developers with the knowledge and skills necessary to master JavaScript for server-side development. This comprehensive curriculum will delve into the core concepts, tools, and best practices required to build robust, scalable, and efficient back-end applications using JavaScript. By the end of this course, participants will be proficient in designing, developing, and deploying back-end solutions with a focus on performance, security, and maintainability.

Module 1: Introduction to JavaScript for Back-End Development

• Overview of JavaScript's Role in Back-End Development: Understand the evolution of JavaScript as a versatile programming language for server-side applications.

• Setting Up the Development Environment: Learn how to configure development tools, including Node.js, npm, and integrated development environments (IDEs).

• JavaScript Fundamentals Refresher: Review key JavaScript concepts such as syntax, data types, and control structures to ensure a solid foundation.

Module 2: Node.js Fundamentals

• Introduction to Node.js: Explore the architecture and features of Node.js, and understand its role in back-end development.

• Asynchronous Programming with Node.js: Master asynchronous patterns using callbacks, promises, and async/await to handle non-blocking operations.

• Modules and Packages: Learn how to organize code using Node.js modules and manage dependencies with npm.

Module 3: Working with Databases

• Introduction to Databases and CRUD Operations: Understand the basics of relational and non-relational databases and perform Create, Read, Update, and Delete operations.

• Connecting to Databases with Node.js: Learn how to connect to and interact with databases such as MongoDB and PostgreSQL using JavaScript.

• Data Modeling and Schemas: Explore how to design and implement data models and

schemas to ensure data integrity and efficiency.

Module 4: Building RESTful APIs

• Principles of RESTful Architecture: Understand the principles of REST and how they apply to building scalable APIs.

• Creating RESTful Endpoints with Express.js: Learn how to use Express.js to create and manage RESTful endpoints efficiently.

• Handling Requests and Responses: Gain skills in processing HTTP requests and sending appropriate responses with headers and status codes.

Module 5: Authentication and Authorization

• Introduction to Authentication and Authorization: Understand the importance of securing applications with authentication and authorization techniques.

• Implementing JWT and OAuth: Learn how to implement JSON Web Tokens (JWT) and OAuth for secure user authentication and authorization.

• Securing APIs and User Data: Explore best practices for securing APIs and protecting sensitive user data.

Module 6: Real-Time Communication with WebSockets

• Introduction to WebSockets: Discover the benefits and use cases of WebSockets for real-time communication in applications.

• Implementing WebSockets with Socket.io: Learn how to use Socket.io to build real-time features such as chat applications and live notifications.

• Managing Real-Time Data Flows: Understand how to efficiently manage and scale real-time data flows in your back-end applications.

Module 7: Error Handling and Debugging

• Error Handling Strategies: Explore techniques for effective error handling and logging in JavaScript applications.

• Debugging Node.js Applications: Gain skills in using debugging tools and techniques to identify and resolve issues in Node.js applications.

• Performance Monitoring and Optimization: Learn how to monitor application performance and implement optimizations for improved efficiency.

Module 8: Testing and Deployment

• Introduction to Testing Frameworks: Understand the importance of testing and explore popular testing frameworks such as Mocha and Chai.

• Writing Unit and Integration Tests: Learn how to write comprehensive unit and integration tests to ensure application reliability.

• Deployment Strategies and Tools: Explore best practices for deploying JavaScript back-end applications using platforms like Heroku and AWS.

Module 9: Advanced JavaScript Concepts

• Exploring Advanced JavaScript Features: Delve into advanced JavaScript concepts such as closures, prototypes, and event loops.

• Building Scalable Applications: Learn architectural patterns and strategies for designing scalable and maintainable back-end applications.

• Introduction to Microservices: Understand the principles of microservices architecture and how to implement it using JavaScript.

Course Conclusion and Certification

• Review and Assessment: Recap key concepts and assess your understanding through quizzes and practical exercises.

• Final Project: Develop a comprehensive back-end application to demonstrate your skills and knowledge gained throughout the course.

• Certification and Next Steps: Receive your certification and explore further learning opportunities and career paths in back-end development.

This course will empower you with the skills needed to excel in the dynamic field of back-end development, ensuring you are well-prepared for professional challenges and opportunities.