Introduction to JavaScript and Nodejs

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1.   Course Objective

- Learn the history and the basics of the JavaScript.
- Understand the JavaScript and the Document Object Model.
- Understand how the DOM is formed, what Nodes and Elements are and how to select items from the DOM.
- Understand the technical concepts behind the Nodejs.
- Structure a Node application in modules.
- Build a Web server and understand how it really works.
- Use NPM and manage Node Package.
- Build web application and API using Express.
- Connect to a Mysql.

2.   Pre-requisite / Target Audience

- Basic Knowledge of Programming.
- Basic Knowledge of HTML, CSS and Bootstrap.
- Knowledge of Object oriented programming will be added as advantage.

3. JavaScript Course Content

1. What is JavaScript
    - Introduction
    - History of JavaScript
    - Introduction to Web Console
    - Adding JavaScript to HTML
    - Example and Implementation

2. JavaScript Basics
    - Data Types and Variables
    - Operators
    - Strings and Numbers
    - Conditional statements and logic
    - Arrays
    - Loops
    - Looping through Arrays
    - Break and continue loops
    - Example & Implementation

3. Functions and Objects
    - Functions in JavaScript
    - Argument and return values
    - Variable scope
    - let and const
    - Objects and constructors
    - JSON
    - Callback Functions
    - Closures
    - Example & Implementation

4. JavaScript DOM Elements
    - DOM: Document Object Model
    - Query Selectors
    - Access and change elements, classes and attributes
    - Add DOM elements
    - Apply CSS to elements
    - Example & Implementation

5. Working with Browser Events
    - What are DOM events?
    - Typical DOM events
    - Trigger functions with event handlers
    - Add and use event listeners
    - Pass argument via event listeners
    - Example & Implementation

6. Inbuilt Methods
    - Example & Implementation

7. Inheritance
   - Prototypes (prototype based inheritance)
   - Example & Implementation

8. ES5 and ES6 standards
   - Synchronous/Asynchronous concepts
   - Arrow Functions
   - Object Destructuring
   - Async/Await Function in JavaScript
   - Promises
   - Example & Implementation

4. NodeJs Course Content

1. Introduction to NodeJs
    *   NodeJs Basics
    *   Node Package Manager (NPM)
    *   Node modules
    *   Import/Export modules in ES6
    *   Node CLI
    *   Creating HTTP server with nodejs
    *   File System
    *   Asynchronous and event Loop
    *   Example & Implementation

2. NodeJs Framework – ExpressJs

    *   Introduction to Framework and Express
    *   Model-View-Controller pattern in Express
    *   Middlewares
    *   Templating engine (Pug/handlebars/Jade)
    *   Routing
    *   HTTP protocol
    *   HTTP Request Object
    *   HTTP Response Objective
    *   User Authentication with JWT (JSON Web Token)
    *   Error handling
    *   Example & Implementation

3. NodeJs and Mysql
    *   Introduction to Mysql database and Relational Database
    *   Introduction to Object Relational Mapper (ORM) and Sequelize.
    *   Crud Operations with Front-end Templates
    *   Example & Implementation

4. REST API
    *   Introduction to API and REST architecture.
    *   Postman
    *   Building APIs with express
    *   Using Mysql as database in expressJS app with Sequelize ORM
    *   Swagger implementation

5. Project

After the completion of the course, students need to do a submit a project with project documentation to the tutor that you have learned in the course.