

CS – 14: NODE JS

Objectives:

- Understand the JavaScript and technical concepts behind Node JS
- Structure a Node application in modules
- Understand and use the Event Emitter
- Build a Web Server in Node and understand how it really works
- Use npm and manage node packages
- Build a web application and API more easily using Express
- Understand how to Connect to database in Node

Pre-Requisites: Basic Knowledge of JavaScript and OOPS

Sr. No	Topics	Details	Weightage in %	Approx Lectures
1	Introduction, Set up Development Environment, Other JavaScript Based Technologies	<ul style="list-style-type: none"> • Features and advantages of Node JS • Traditional Web Server Model • Node.js Process Model, • Asynchronous programming with Node.js • Types of applications that can be developed using Node.js • Install Node.js on Windows • working in REPL • Node JS Console • Creating a Node File with JavaScript • Accessing a Node.js File Through the Command Line Interface • Using Node.js in IDE • Node.js vs JavaScript • Node.js vs AJAX • Node.js vs JQuery • Node.js vs Angular JS 	20	12
2	Node.js Basic, Node.js Modules, Node Package Manager (NPM)	<ul style="list-style-type: none"> • Primitive Types • Object Literal, Functions, Buffer, Access Global Scope • Module, Module Types: Core Modules, Local Modules, Third Party Modules, Module Exports. • Using Modules in a Node.js File • Using the Built in HTTP, URL, Query String Module • Creating a Custom Module 	20	12

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		<ul style="list-style-type: none"> • NPM, Installing Packages Locally • Adding dependency in package.json • Installing packages globally • Updating packages 		
3	Creating Web Server, File System, Debugging Node.js Application	<ul style="list-style-type: none"> • Handling HTTP requests • Sending requests • Reading, Writing a File • Writing a file asynchronously • Opening a file • deleting a file • Other IO Operations: Append, Rename, Truncate • File System Module with URL Module Create, Read, Remove a Directory 	20	12
4	Event, Database Connectivity	<ul style="list-style-type: none"> • EventEmitter class • Methods and Events of EvenEmitter Class • Returning event emitter • Extend EventEmitter Class • Passing Arguments and 'this' to listeners • Asynchronous and Synchronous call • Handle Events only Once, Error Events • Connection string for database connectivity, • Configuring, Working with insert, select command, Updating records, Deleting records, Drop tables, Ordered Result Set 	20	12
5	Express and Node.js	<ul style="list-style-type: none"> • Introduction to Express Framework • Express Server Request-Response Routes • Route Parameters • Multiple Route Callback/Handler Functions • Methods of Response Object • Chaining Route Handlers • Send Static Files • Accept User Input • File Upload with Express • Manage Cookies • Send file as a response • Templates and Express. 	20	12
		Total	100	60

References Books

1. Dhruti Shah, "Node.JS Guidebook", BPB Publications, 2018.
2. Sebastian Springer, Node.js: The Comprehensive Guide (Grayscale Indian Edition) Paperback - Shroff/Rheinwerk; First edition,2022
3. <https://nodejs.org/en/docs/>

Course Outcome:

After completion of the course students will be able:

- Understand Node JS and REPL terminal.
- Experiment with Node JS Modules and Node Package Manager.
- Develop applications to handle events in Node JS
- Make use of Web Server to manage database.
- Demonstrate Express Framework