

Node & Express

Duration: 3 days

Prerequisite : good knowledge of Javascript OOPS ,DOM,CSS3 & HTML5

Day -1 :

Introduction:

Setting Up a Node Development Environment

Installing Node on Linux (Ubuntu)

Partnering Node with WebMatrix on Windows 7

Updating Node

Node: Jumping In

Hello, World in Node

Asynchronous Functions and the Node Event Loop

Reading a File Asynchronously

Taking a Closer Look at Asynchronous Program Flow

Benefits of Node

REPL:

REPL: First Looks and Undefined Expressions

Benefits of REPL: Getting a Closer Understanding of JavaScript Under the Hood

Multiline and More Complex JavaScript

REPL Commands

REPL and rlwrap

Custom REPL

Core Node:

Globals: global, process, and Buffer

global

process

Buffer

The Timers: setTimeout, clearTimeout, setInterval, and clearInterval

Servers, Streams, and Sockets

TCP Sockets and Servers

HTTP

UDP/Datagram Socket

Streams, Pipes, and Readline

Child Processes

child_process.spawn

child_process.exec and child_process.execFile

child_process.fork

Running a Child Process Application in Windows

Domain Resolution and URL Processing

The Utilities Module and Object Inheritance

Events and EventEmitter

Working with the Module System:

Loading a Module with require and Default Paths

External Modules and the Node Package Manager

Finding Modules

Colors: Simple Is Best

Optimist: Another Short and Simple Module

Underscore

Creating Your Own Custom Module

Packaging an Entire Directory

Preparing Your Module for Publication

Publishing the Module

Control Flow, Async Patterns, and Exception Handling

Promises, callbacks & callback hell

Sequential Functionality, Nested Callbacks, and Exception Handling

Asynchronous Patterns and Control Flow Modules

Step

Async

Node Style

Routing Traffic, Serving Files, and Middleware

Building a Simple Static File Server from Scratch

Middleware

Connect Basics

Connect Middleware

connect.static

connect.logger

connect.parseCookie and connect.cookieSession

Custom Connect Middleware

Routers

Proxies

Express Framework

Express: Up and Running

The app.js File in More Detail

Error Handling

A Closer Look at the Express/Connect Partnership

Routing

Routing Path

Routing and HTTP Verbs

Cue the MVC

Testing the Express Application with cURL

Day -2 :

Express, Template Systems, and CSS

The Embedded JavaScript (EJS) Template System

Learning the Basic Syntax

Using EJS with Node

Using the EJS for Node Filters

Using a Template System (EJS) with Express

Restructuring for a Multiple Object Environment

Routing to Static Files

Processing a New Object Post

Working with the Widgets Index and Generating a Picklist

Showing an Individual Object and Confirming an Object Deletion

Providing an Update Form and Processing a PUT Request

The Jade Template System

Taking the Nickel Tour of the Jade Syntax

Using block and extends to Modularize the View Templates

Converting the Widget Views into Jade Templates

Converting the main widgets display view

Converting the edit and deletion forms

Incorporating Stylus for Simplified CSS

Fully Fledged RESTful Service

Extensibility & Versioning

Working with arbitrary data

Linking

Implementing paging and filtering

caching

Supplying the Cache-Control header in Express

Discovering and exploring RESTful services

Structured Data with Node and Redis

Getting Started with Node and Redis

Building a Game Leaderboard

Creating a Message Queue

Adding a Stats Middleware to an Express Application

Node and MongoDB: Document-Centric Data

The MongoDB Native Node.js Driver

Getting Started with MongoDB

Defining, Creating, and Dropping a MongoDB Collection

Adding Data to a Collection

Querying the Data

Using Updates, Upserts, and Find and Remove

Implementing a Widget Model with Mongoose

Refactoring the Widget Factory

Adding the MongoDB Backend

Node Relational Database Bindings

Getting Started with db-mysql

Using Query String or Chained Methods

Updating the Database with Direct Queries

Updating the Database with Chained Methods

Native JavaScript MySQL Access with node-mysql

Basic CRUD with node-mysql

MySQL Transactions with mysql-queues

ORM Support with Sequelize

Defining a Model

Using CRUD, ORM Style

Adding Several Objects Easily

Overcoming Issues Related to Going from Relational to ORM

Graphics and HTML5 Video

Creating and Working with PDFs

Accessing PDF Tools with Child Processes

Taking page snapshots with wkhtmltopdf

Accessing data about a PDF file with PDF Toolkit

Creating a PDF uploader and dealing with graphics lag time

Creating PDFs with PDFKit

Accessing ImageMagick from a Child Process

Properly Serving HTML5 Video with HTTP

Creating and Streaming Canvas Content

WebSockets and Socket.IO

An Introduction to Socket.IO

A Simple Communication Example

WebSockets in an Asynchronous World

About That Client Code

Configuring Socket.IO

Chat: The WebSockets "Hello, World"

Using Socket.IO with Express

Real Time Dashboard:

Introduction

Loading static data from the server

Creating a server-side clock

Loading data from MongoDB

Real-time analytics

Handling connection timeouts

Bi-Directional Communication:

Introduction

Creating a simple chat room

Managing the socket life cycle

Emitting a private message to another socket

Sending messages to all the sockets, except for the sender

Building a multiplayer game

Day -3 :

Chat Rooms:

Introduction

Creating chat channels with namespaces

Joining rooms

Leaving rooms

Listing rooms the socket is in

Creating PRIVATE ROOMS

Setting up a default room

Securing Data:

Introduction

Implementing basic authentication

Performing token-based authentication

Handling server-side validation

Locking down the HTTP referrer

Using secure WebSockets

Load Balancing:

Introduction

Performing load balancing with the Nginx server

Using the Node.js cluster

Using Redis to pass events between nodes

Using Memcached to manage multiple nodes

Using RabbitMQ to message events across nodes

Streaming Binary Data:

Introduction

Broadcasting an image to other sockets

Uploading an image to the filesystem

Uploading an image to Amazon S3

Streaming audio

Streaming live video

Integrating with Mobile Apps:

Introduction

Throwing an alert when the socket connects

Pushing up data from the server

Responding to tap events from the device

Doing server-side pagination

Triggering hot deploys

Encryption, Authentication & Authorization:

Encrypting Data

Setting Up TLS/SSL

Working with HTTPS

Safely Storing Passwords

Authentication/Authorization with Passport

Authorization/Authentication Strategies: OAuth, OpenID, Username/Password Verification

The Local Passport Strategy

The Twitter Passport Strategy (OAuth)

Protecting Applications and Preventing Attacks

Don't Use eval

Do Use Checkboxes, Radio Buttons, and Drop-Down Selections

Scrub Your Data and Sanitize It with node-validator

Sandboxed Code

Scaling and Deploying Node Applications

Deploying Your Node Application to Your Server

Writing That package.json File

Keeping Your Application Alive with Forever

Using Node and Apache Together

Improving Performance

Deployment to a Cloud Service

Deploying to Windows Azure via Cloud9 IDE

Joyent Development SmartMachines

Heroku

Amazon EC2

Nodejitsu

Node, Git, and GitHub