HTML

- HTML Structure
- HTML Elements
    - Block-level Elements
    - Inline Elements
    - HTML Lists
    - Void Elements
    - HTML Forms
- HTML Attributes
- Multiple class names as an HTML attribute value
- Navigation within the webpage
- Getting URLs for our own Images
- Linking HTML and CSS Files

CSS

- CSS Properties
    - Text Properties
    - Background Properties
    - Font Properties
- CSS Box Model
- CSS Flexbox
- CSS Media Queries
- CSS Selectors
    - class selector
    - id selector
    - universal selector
- CSS Inheritance
- CSS Colors
- CSS Specificity & Cascade
- CSS Units - percentage, px, vh/vw
- CSS Gradients
- Inline Styles
- Reusability of CSS Rulesets
- Responsiveness

Bootstrap

- How to use Bootstrap
- Predefined Styles in Bootstrap
- Flexbox Properties
- Bootstrap Components
  - Carousel
  - Navbar
  - Modal
  - Spinner
  - Bootstrap Containers
- Bootstrap Utilities
  - Embed
  - Bootstrap Flex Utilities
  - Bootstrap Display Utilities
  - Bootstrap Position Utilities
- Bootstrap Grid System
  - Container
  - Row
  - Column
  - Creating Multiple Column Layouts
  - Column Wrapping
  - The Layout at different Breakpoints
- Bootstrap Spacing Utilities
- Bootstrap Background Color Utilities
- Bootstrap Sizing Utilities
- Bootstrap Icons

SQLite

- Data
- Database
- Database Management System(DBMS)
  - Advantages
- Types of Databases
  - Relational Database
  - Non-Relational Database
- SQL Querying
  - Create
  - Insert
  - Select
  - Update
  - Delete Rows
  - Drop Table
  - Alter

- Comparison Operators - =,>, <, >=, <=
- String Operations - LIKE
- Logical Operators - AND, OR, NOT
- IN, BETWEEN Operator
- ORDER BY, DISTINCT
- Pagination - LIMIT, OFFSET clauses
- Aggregations - COUNT, SUM, MIN, MAX, AVG
- Alias
- Group By, Group By with Having
- Expressions
- SQL Functions
- CASE Clause
- Set Operators
- Modelling Databases
  - Entity, Attributes, Attributes of an Entity, Key Attribute, Entity Type,
  - Relationships
    - One-to-One Relationship
    - One-to-Many or Many-to-One Relationship
    - Many-to-Many Relationship
  - Cardinality Ratio
  - Creating a Relational Database
    - Primary Key
    - Foreign Key
- JOINS
  - Natural JOIN, Inner JOIN, Left JOIN, Right JOIN, Full Join, Cross Join, Self Join
- Views
- Subqueries
- Transactions - ACID Properties
- Indexes

Python

- Variables and Data Types
- Inputs and Outputs Basics
- Type Conversion
- String Slicing
- Operators
  - Relational
  - Logical
  - Arithmetic
- Conditional Statements
- Nested Conditional Statements
- Loops

- Nested Loops
- Loop Control Statements
- Patterns
- String Methods
- Comparing Strings & Naming Variables
- Rounding Numbers
- Floating Point Approximation
- Floating Point Errors
- Comments
- Lists, Tuple, Set, Dictionaries
- Tuples and Sequences
- List Slicing
- Nested Lists & String Formatting
- Functions
- Extended Slicing
- Arbitrary Function Arguments
- Built-in Functions
  - abs()
  - all()
  - any()
  - reversed()
  - enumerate()
- List Methods
  - copy()
  - reverse()
- Introduction to OOP
  - Objects
  - Classes
  - Attributes & Methods
  - Inheritance
  - Super Class & Sub Class
  - Composition
  - Overriding Methods
- Python Standard Library
- Built-in Functions
- Modules
- Map, Filter and Reduce
- Scope & Namespaces
- Errors & Exceptions
- Working With Dates & Times
- Problem Solving

JavaScript

- DOM and Event Fundamentals
  - Variables
  - Document Object Model (DOM)
    - Methods
    - Properties
    - Events
- Primitive Types & Conditionals
- Conversions
- String Manipulations
- Conditional Statements
- Comparison Operator
- Input Element and Math Functions
  - Math.random()
  - Math.ceil()
  - HTML Input Element
- DOM Properties
- DOM Manipulations
- More DOM Manipulations
  - Creating an HTML Element
  - Accessing HTML element using id attribute
  - Appending to an HTML Element
  - Adding Event Listeners Dynamically
  - Providing Class Names Dynamically
  - Removing Class Names Dynamically
- Data Structures
- Arrays
- Functions
- Objects
  - Object Destructuring
  - Object Methods
- Todos Application
- JavaScript Built-in Functions
- Storage Mechanisms
- JavaScript Object Notation (JSON)
  - JS Object vs JSON Object
  - JSON Methods
- Array Methods
- Callbacks & Schedulers
- Event Listeners
- Hypertext Transfer Protocol (HTTP)
  - HTTP Methods
  - HTTP Version
  - HTTP Responses
  - Making HTTP Requests using Fetch

- ○ HTTP Response Object Properties and Methods
- ● Modern JS Concepts
  - ○ Spread Operator
  - ○ Rest Parameter
  - ○ Functions
  - ○ Template Literal
  - ○ Ternary Operator
  - ○ Switch Statement
  - ○ Arrow Functions
- ● Factory Function
- ● Constructor Property
- ● Built-in Constructor Function
- ● Instance Methods
- ● this
- ● Immutable and Mutable Values
- ● Variables
- ● Prototypal Inheritance
  - ○ Built-in Constructor Functions
  - ○ Built-in Array Constructor Function
  - ○ Prototype Property
  - ○ Built-in Function Constructor Function
  - ○ Instance Specific and Prototype Properties
- ● JS Classes
  - ○ Class
  - ○ Inheritance in JS Classes
  - ○ this in classes
- ● JS Promises
  - ○ Synchronous and Asynchronous Execution
  - ○ JS Promises
  - ○ Async/Await

React JS

1. **Components & Props**
   - ○ **Component**
     - ■ **Properties (Props)**
     - ■ **Component is Reusable**
     - ■ **Component is Composable**
   - ○ **Third-party Packages**
     - ■ **create-react-app**
     - ■ **Pre-Configured tools**
2. **Lists & Keys**
   - ○ **Keys**

- - - **Babel**
    - **Embedding Variables and Expressions in JSX**
    - **Nesting JSX elements**
  - **Fetch**
  - **Route Props**
    - **Match**
9. **Authentication & Authorization**
   - **Client-Server Communication**
     - **Authentication**
     - **Authorization**
   - **Authentication Flow**
   - **Route Parameters**
     - **History**
10. **Authentication & Authorization - Part 2**
    - **JWT Token**
    - **Storage Mechanisms**
    - **Cookies**
      - **Why Cookies?**
      - **Local Storage**
      - **Cookies vs Local Storage**
      - **Third Party Package js-cookie**
    - **Redirect Component**
    - **withRouter**
11. **Authentication & Authorization - Part 3**
    - **Router Switch**
    - **Wrapper Component**
      - **Protected Route**
12. **Authentication & Authorisation - Part 4**
    - **Integrating APIs**
    - **API Call Possible Views**
      - **Success View**
      - **Failure View**
      - **Loading View**
    - **Best Practices**
      - **State Variable-isLoading**
      - **State Variable-apiStatus**
      - **Adding Initial State**
13. **React Concepts**
    - **Reconciliation**
    - **React Batch Updating**
    - **setState() Syntax**
    - **Children Prop**
      - **Passing Text as Children**
      - **Accessing Children**

- - Controlled vs Uncontrolled Input
  - Props vs State
  - State should be minimal
  - User defined functions should be in the arrow function syntax
  - Using Redirect Component in Callbacks or Event Listeners
  - Using `history.replace()` in `render()` instead of Redirect Component
  - Missing `withRouter()` to have history prop
  - When request object keys are incorrect
  - Not Updating the State when required
  - setState() Callback Function
  - React Icons
    - Installing React Icons
    - Searching React Icons
    - Importing React Icons
14. **Third-Party Packages**
  - Third-Party Packages
    - Advantages
    - Selecting a Third-Party Package
  - Third-Party Package
    - React Player
    - Recharts
    - React Chrono
    - React Slick
    - React Popup
15. **React Context**
  - Prop Drilling
  - React Context
    - Creating Context
    - Context Properties
    - How to Access the Value?
  - Consumer Component
    - Understanding Syntax
  - Provider
    - Syntax
  - Context Flow For Windows App
  - Best Practice
  - Context
  - Using Context in methods
16. **Styled Components**
  - Styling React Components
    - Using CSS
    - CSS-in-JS
  - Styled Components
  - Advantages of Styled Components

- - Extending Styles
    - The "as" prop
    - Boolean Attribute
17. **Common Mistakes**
    - **Missing Export Statement**
    - **Missing Import Statement**
    - **Missing Extending the React Component Class**
    - **class vs className**
    - **onclick vs onClick**
    - **Event Listeners inside Class Component**
    - **Passing Event Handler**
    - **Modifying the State Directly**
    - **Calling setState() from render()**
    - **Invoking Event Handler**
    - **setState() is Asynchronous**
    - **React Component should return a single JSX element**
        - **Fragments**
    - **Props are Read-only**
    - **Rendering Promise Object**
    - **Using Link and Route Components without BrowserRouter**
    - **Providing Wrong Route Path**
    - **Missing exact keyword**
    - **Missing Switch**
    - **Placing Common component inside Switch**
    - **Providing the same PATH for multiple Routes**
    - **Missing Colon(:) while providing Path Parameters**
    - **Accessing Promise Object**
    - **Ordering of Routes inside Switch**
18. **Best Practice**
    - **Updating a Property of an Item inside List**
19. **Debugging using Developer tools**
    - **Debugging**
    - **Browser Developer Tools**
    - **React Developer Tools**
20. **Hooks**
    - **useState Hook**
    - **useEffect Hook**
        - **Making API calls with Hooks**
        - **Schedulers with Hooks and Race condition**

Node JS

- **Introduction to Node JS**

- ○ **MERN Stack**
- ○ **Node JS**
- ○ **Running JavaScript Using Node JS**
  - ■ **Node REPL (Read-Eval-Print-Loop)**
  - ■ **Node CLI**
- ○ **Module**
  - ■ **Common JS Module Exports**
    - ■ **Default Exports**
    - ■ **Named Exports**
  - ■ **Modern JS Module Exports**
    - ■ **Default Exports**
    - ■ **Named Exports**
- ○ **Core Modules**
  - ■ **Path**
- ○ **Package**
  - ■ **Node Package Manager (NPM)**
- ○ **Steps to create a Node JS Project**
- ○ **Third-Party Packages**
  - ■ **date-fns**
- ● **Introduction to Express JS**
  - ○ **HTTP Server**
    - ■ **Server-side Web Frameworks**
  - ○ **Express JS**
  - ○ **Network Call using Express JS**
    - ■ **Handling HTTP Request**
  - ○ **Testing Network calls**
  - ○ **Network Call to get a Today's Date**
  - ○ **Network Call to get HTML content as an HTTP Response**
    - ■ **Sending file as an HTTP Response**
  - ○ **Application Programming Interface (API)**
  - ○ **Database**
  - ○ **SQLite**
    - ■ **SQLite CLI**
  - ○ **SQLite Methods**
    - ■ **Open**
    - ■ **Executing SQL Queries**
  - ○ **SQL Third-party packages**
  - ○ **Connecting SQLite Database from Node JS to get the books from Goodreads Website**
    - ■ **SQLite Database Initialization**
    - ■ **Goodreads Get Books API**
  - ○ **SQLite Methods**
    - ■ **get()**
    - ■ **run()**

- ○ **Node JS Third-party packages**
  - ■ **Nodemon**
- ○ **GoodReads API**
  - ■ **Get Book**
  - ■ **Add Book**
  - ■ **Update Book**
  - ■ **Delete Book**
  - ■ **Get Author Books**
- ● **REST APIs**
  - ○ **Get Books API**
    - ■ **Filtering Books**
  - ○ **REST APIs**
    - ■ **Why Rest Principles?**
    - ■ **REST API Principles**
- ● **Debugging Common Errors**
  - ○ **Importing Unknown Modules**
  - ○ **Starting Server in Multiple Terminals**
  - ○ **Starting Server outside the directory**
  - ○ **Accessing Wrong URL**
  - ○ **Missing Function Call**
  - ○ **Importing Unknown File**
  - ○ **Request Methods**
  - ○ **Missing colon(:)**
  - ○ **Accessing Path Parameters**
  - ○ **Query Formatting**
  - ○ **Replacing SQLite Methods**
  - ○ **HTTP Request URL**
    - ■ **Missing '?'**
    - ■ **Missing '&' between Query Parameters**
    - ■ **Replacing '&' with ',' in Query Parameters**
  - ○ **Accessing Unknown Database**
  - ○ **Accessing Wrong Port Number**
- ● **Authentication**
  - ○ **Installing Third-party package bcrypt**
  - ○ **Goodreads APIs for Specified Users**
    - ■ **Register User API**
    - ■ **Login User API**
  - ○ **Authentication Mechanisms**
  - ○ **Token Authentication mechanism**
    - ■ **Access Token**
    - ■ **How Token Authentication works?**
  - ○ **JWT**
    - ■ **How JWT works?**
    - ■ **JWT Package**

- - **Login User API by generating the JWT Token**
  - **How to pass JWT Token?**
  - **Get Books API with Token Authentication**
  - **Middleware functions**
    - **Multiple Middleware functions**
  - **Logger Middleware Implementation**
    - **Defining a Middleware Function**
    - **Logger Middleware Function**
    - **Get Books API with Logger Middleware**
  - **Authenticate Token Middleware**
  - **Get Books API with Authenticate Token Middleware**
  - **Passing data from Authenticate Token Middleware**
  - **Get User Profile API with Authenticate Token Middleware**

MongoDB

Non Relational Databases(MongoDB)

- Introduction to MongoDB
- CRUD operations
- Querying Documents
- Agregations
- Nested Documents

Github

Error Handling and Debugging:

Hosting Platforms : render, Netlify, or Vercel.