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MEAN Full Stack Developer Tutorial

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MEAN Full Stack Developer Tutorial

The abbreviation for the four main technologies that comprise the tiers of the technology stack—MongoDB, Express, Angular, and Node—is MEAN. Go through this MEAN full-stack tutorial for a basic understanding of every technology.

[MEAN Full Stack Developer Tutorial PDF](#)

Introduction to MEAN Full-Stack

The MEAN stack is a JavaScript-based platform for building scalable web applications. MEAN is the acronym for the four primary technologies, such as MongoDB, Express, Angular, and Node, and they make up the tiers of the technology stack.

In this tutorial, you will grasp the fundamental ideas about the following:

- Introduction to Web Layouts
- Frontend Development with HTML, CSS, and JavaScript.
- Backend Development with PHP
- Database Management with MySQL
- Dynamic Web Application Development with Angular.JS, Node.JS, Express.JS, and MongoDB.
- Integration of front-end and back-end

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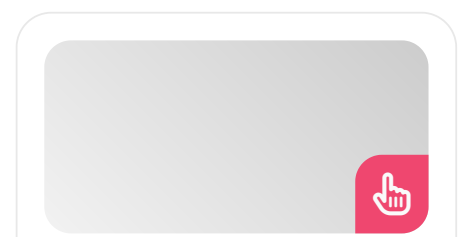


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technologies.

Understanding Web Layouts

The way all the visual components are arranged on a webpage is called a layout. We may direct the user experience more effectively by controlling the connection between page elements through deliberate layout.

Tips to Choose the Right Website Layout

There are two primary considerations to make when selecting a layout for your website:

Accommodate your content: The narrative you want visitors to your website to hear must be conveyed through its layout. Select one therefore whose arrangement will strengthen and bolster your point.

Use common layouts: The most well-known, tried-and-true website layouts are typically the best choice, while there is always an opportunity for originality. Users tend to recognize these classic layouts because they are based on design principles, past experiences, and preexisting expectations.

The following are the best layout ideas for the website:

- Z-pattern layout
- F-pattern layout
- Fullscreen image layout
- Split screen layout
- Asymmetrical layout
- Single column layout
- Box-based layout
- Cards layout
- Magazine layout
- Horizontal strips layouts

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Understanding of Frontend Development with HTML, CSS, and JavaScript

Websites can be designed using one of three front-end languages, each with unique applications and subtle differences.

HTML: HTML, or Hypertext Markup Language, provides the basic structure of a website, which is subsequently modified and expanded using technologies like CSS and JavaScript.

CSS: Cascading Style Sheet, layout, formatting, and presentation are all managed via CSS.

JavaScript: JavaScript can control the functionality of several things.

HTML: The Building Blocks of the Internet

For HyperText Markup Language, see HTML. With the help of this rather easy language, developers may design the fundamental framework of a website. The basis of even the most complex websites is HTML.

CSS: Way to Shape and Enhance the Blocks

The way various elements of a webpage appear to users is specified using the style sheet language, or CSS. Put another way, it's a method of enhancing the style and formatting of something you've already created using HTML.

JavaScript: Makes Webpage Interactive and Functional

The foundation of all web development is JavaScript. Nearly every website on the internet uses it, and all of the current web browsers support it.

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Published On: September 24, 2024

MEAN Stack Tutorial for Beginners 'M' refers to MongoDB, 'E' for Express, 'A' for Angular,...

How do HTML, CSS, and JavaScript work together?

The content of a website is created and structured using HTML, styled and formatted with CSS, and ultimately made user-interactive via JavaScript.

Step 1: HTML Part: The foundational framework of your website is created using HTML. Choosing the content and layout of your primary pages is part of this.

A main page with a header, some body text, and an image at the conclusion can be created with HTML's assistance.

The content of the webpage, its layout, and its destination are all indicated by HTML, after all.

Step 2: CSS Part: You may style what you've already produced with the aid of CSS.

To add color, styling, and themes—like background color—to your current HTML, you'll add CSS tags.

Using CSS, you can create a sense of place on your website instead of just a collection of data.

Step 3: JavaScript Part: Make your page more functionally complicated and engaging by using JavaScript.

Perhaps you want to animate an image, or perhaps you want your buttons to change color when a user hovers over them.

JavaScript allows you to add these ornamental components to your website to give it more personality and vitality.

Understanding of Backend Development with PHP

The process of using the PHP (Hypertext Preprocessor) programming language to create server-side logic and functionality is known as PHP backend development.

To support the functionality and performance of online applications, it entails managing data, processing requests, communicating with databases, and putting business logic into practice.

Benefits of PHP

The following are the advantages of PHP to be used in backend web development:

- Open Source
- Platform Independent
- Beginner Friendly
- Performance and Stability
- Database Integration
- Efficiency
- Community Support

In-demand PHP Skills in the Job Market

- You ought to be well-versed in front-end languages such as JS, CSS, and HTML.
- An expert in PHP version 7.0 or higher is currently in high demand in the job market.
- Ajax, jQuery, MySQL, and numerous more PHP frameworks, such as Laravel and Slim, should be familiar to you.

Popular PHP Tools Used in Web Development

Here is a list of five tools that programmers use to work more efficiently and effectively.

- Cloud9 IDE
- Xdebug
- PHP Unit
- Behat
- phpMyAdmin

Basic Concepts to be well-versed in PHP for MERN Stack Development

- **Variables:** A variable name in PHP begins with the symbol "\$." Ex: \$x = 3.
- **Operators:** The arithmetic operations in PHP are the same as in any other computer language.

- **Functions:** Functions are named code chunks that can be used anywhere in the text and are reusable.
- **Conditional Statements:** These include if, if-else, and so on, just like other programming languages.
- **Loop Statements:** Programming constructs called loops are helpful for continually running a section of code to satisfy a condition. Ex: for, while, etc.
- **Arrays:** In PHP, an array is a unique kind of data container that may hold several bits of related data types together under the umbrella of a single variable.

MEAN Full Stack Developer Interview

Questions

Understanding of Database Management with MySQL

Oracle created MySQL, a relational database management system (RDBMS) built on structured query language (SQL). A database is a system for collecting organized data.

The acronym "MySQL" stands for "Structured Query Language," or "SQL." The most widely used standard language for database access is SQL.

You can utilize a language-specific API that conceals the SQL syntax, insert SQL statements into code written in another language, or enter SQL directly, depending on your programming environment.

Benefits of MySQL for MERN Full Stack Development

Below are the advantages of using MySQL:

- MySQL is open-source.
- Most popular among web developers
- It works well with client, server, or embedded systems.
- Easy to use and maintain.

- Scalable and reliable
- High availability
- Faster and less expensive
- Flexible and secure.

MySQL is popular for,

- Ecommerce app development
- Social platforms
- Content management system
- SaaS and ISVs.
- Online games
- IoT Monitoring System
- Digital Marketing

Dynamic Web Application Development with Angular.JS, Node.JS, Express.JS, and MongoDB

A dynamic website is made to provide various users with different materials according to a range of criteria, including user preferences, selection, and time zones.

Benefits of a Dynamic Website

- It is simpler to add and alter template pages using an intuitive UI.
- Websites can be changed instantaneously.
- You have the option to modify the theme's code or your CMS at a single time.
- It will be much simpler to maintain web pages.
- To make it much simpler to add new ones or delete old ones by category.
- An interactive website's real strength lies in its ability to remain dynamic.

MEAN Stack Frameworks for Dynamic Website Development

The MEAN Stack is a unique integrated solution for developing flexible and interactive web applications in the dynamic world of web development. It includes,

- MongoDB
- Express.JS
- Angular.JS

- Node.JS

Environmental Setup for MEAN Stack

The environmental setup for MEAN Stack development comprises the following:

Installing npm and Node.js: Add Node.js and npm to your development environment setup. Utilize Node.js's function as a JavaScript runtime on the server side and the package manager's involvement in module and dependency management.

Setting up MongoDB: Set up and install MongoDB, the NoSQL database that is a part of the MEAN stack. The advantages of MongoDB's efficiency, scalability, and flexibility in managing intricate, layered data structures are frequently seen in online applications.

Installing Angular CLI: Installing Angular CLI, a potent command-line interface for building and managing Angular applications, is the first step towards beginning AngularJS development.

Establishing an Express Server: Fundamentals of providing static files, managing HTTP requests, and server-side routing. It is beneficial to add features like error handling, logging, and authentication to your server-side functionality that can improve it with the help of middleware.

Establishing a MongoDB connection: Connect your Express server to MongoDB and take advantage of the Mongoose Object Data Modeling (ODM) tool's capabilities to create models, and schemas, and carry out CRUD actions on MongoDB collections.

Developing API Endpoints: Utilizing Express and Node.js, create RESTful API endpoints to communicate with your MongoDB database. Implement the handlers and routes required to manage CRUD activities.



Integration of front-end and back-end technologies

In the process of developing websites and applications, the front end and back end must be integrated. It guarantees that both components work together efficiently and exchange information to provide a thorough and useful user experience.

Frontend

All of the code that runs in the user's browser is included in the front end, which also contains text styles, colors, photos, tables, buttons, charts, animations, backgrounds, and navigation menus.

The front end consists of:

User Interface: It handles the portion of the application that users see and interact with. It covers information display, element placement on the screen, navigation, and the user experience as a whole.

User Interaction: This feature lets users use menus, buttons, forms, and other interface elements to interact with the application. Real-time interactions like button clicks and page scrolling are included.

Design and Style: This section uses technologies like HTML, CSS, and JavaScript to control the application's visual appearance, including the colors, fonts, graphics, and general design.

Accessibility: Incorporating features such as alt tags for photos and screen reader assistance ensures that people with disabilities can use the program.

Backend

The server and cloud procedures that make up a website's backend, sometimes referred to as the "server side," are where its logical components are

set up. Included in it are components of the system, libraries, and application packages that the user does not directly deal with.

In the backend are:

Business Logic: This is in charge of the business logic of the program, which includes handling authorization and authentication, processing data, and carrying out intricate tasks like database management, computations, and payment processing.

Data Storage: It is in charge of organizing, managing, and storing data in file systems or databases. It is also in charge of obtaining the data that the front end requests.

Security: To safeguard the application and data, this puts security procedures like authorization and authentication into practice. Additionally, it functions to protect the program from dangers like security breaches.

Scalability and Performance: This enhances the application's performance and guarantees that it can manage an increasing workload. It may involve the use of cache storage solutions and load balancing.

Integration: It is the process of integrating an application with other systems and services, including internal systems, external APIs, and third-party services.

Integration of Frontend and Backend

To guarantee seamless functionality, extensive testing is necessary throughout frontend and backend integration. Logs and debugging tools are essential for locating and fixing communication issues.

- APIs, or application programming interfaces, are the main means of communication between the front end and the back end.

- They are tools that link systems or software and allow them to communicate with one another.
- The frontend uses HTTP methods like GET, POST, PUT, and DELETE to interact with the backend.
 - For example, the frontend may send a GET request to the backend to retrieve data during page loading.
 - On the other hand, a form can send a POST request to the backend to transfer the form data.

Security measures must be implemented on both the front end and the back end to guarantee secure communication and limit access to specific resources to authorized users only.

Example: the usage of security tokens, user authentication, and authorization.

The front end is responsible for handling errors that may occur during communication between the front end and back end, including unexpected server responses, network issues, and issues with data validation.

To show the data to the user in a comprehensible and logical manner, the front end needs to process and parse the data that is efficiently sent from the backend.

For an application to perform properly, the front end and back end must be properly integrated via an API.

When properly implemented, it makes it possible for both parts to perform together, providing a strong user experience and guaranteeing the functionality of the program.

Benefits of Frontend and Backend Integration

There are various advantages to developing websites and applications with frontend and backend code separate.

The following significant advancements are the outcome of this division:

- Clarity and Maintainability
- Independent Scalability
- Code Reusability
- Facilitates Teamwork
- Effective Collaboration
- Technological Flexibility
- Adaptability
- Enhanced Security
- Efficient Testing Process

Examples of Frontend

Frontend programs are in charge of the user interface and experience (UX) and are designed to run within a web browser. They improve:

- Gmail
- Facebook
- Netflix
- Amazon
- Spotify
- Google Docs
- Asana

Examples of Backend

Backend applications are server-based programs that manage databases, process data, and handle business logic. Among the instances are:

- Online Booking System
- Content Management System (CMS)
- Customer Relationship Management System (CRM)
- eCommerce Platforms like Shopify
- Inventory Management System
- Data Backup and Storage System
- Data Analysis Applications

The backend is concerned with functionality and business logic, while the frontend is more concerned with display and user experience.

Both are necessary for an application to succeed, and their efficient cooperation is critical to providing users with a full and fulfilling experience while guaranteeing security and effectiveness in the program's functioning.

MEAN Full Stack Developer Project

Conclusion

Learning the MEAN Full Stack is simple and beneficial. We hope this MEAN Full Stack tutorial will be useful for you to grasp the fundamental skills of web development. Gain expertise with our [MEAN Full Stack training in Chennai](#) and begin your career.

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