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Softcrayons

MERN STACK

Empowering minds shaping futures

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PROFESSIONAL CERTIFICATION IN

MERN STACK ...

PROSPECTUS

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Key Advantages of Choosing Softcrayons

FOR STUDENTS

Supplemental Learning Resources: Softcrayons offers offline and online courses, educational materials, and additional resources that can complement and enhance college students' learning.

Skill Development: Softcrayons offer courses and certifications focused on developing specific skills that are in high demand in the job market.

Career Exploration: Softcrayons offer a wide range of courses across various discplines, enabling college students to explore different fields and potential career paths.

Industry Relevance: Softcrayons frequently collaborates with industry professionals and experts to ensure that the knowledge and skills imparted are relevant and aligned with current industry practices and trends.

FOR FREELANCER & JOB SEEKER

Flexibility: Softcrayons offers online courses and programs that can be accessed from anywhere.

Skill Development: To acquire in-demand skills according to the latest industry trends and technologies to stay competitive in the job market.

Key Advantages of Choosing Softcrayons

Certifications: Softcrayons provides you with Professional Certifications and helps you with Resume Enhancement.

Career Support: Softcrayons also offers career counseling and job placement assistance, which can be invaluable for freelancers seeking new projects or job seekers looking for employment.

FOR ENTREPRENEURS AND BUSINESS OWNER

Upskilling and Reskilling: As the business landscape evolves rapidly, Softcrayons ensure that you stay up-to-date with the latest trends, technologies, and best practices.

Flexible Learning: Online courses offered by Softcrayons allow you to learn at your own pace, fitting your studies around your busy schedules.

Entrepreneurial Skills Development: Softcrayons offers courses and programs specifically designed to help entrepreneurs develop essential skills.

Cost-effective: Softcrayons provides more affordable learning options that help you invest in your professional development without straining your budget.

About The Program

The MERN stack is a popular web development framework that combines four key technologies: MongoDB, Express.js, React, and Node.js. This full-stack JavaScript solution enables developers to build dynamic web applications efficiently.

MongoDB, a NoSQL database, stores data in flexible, JSON-like documents. Express.js, a minimal and flexible Node.js web application framework, handles server-side logic and API development. React, a powerful JavaScript library, creates interactive user interfaces with reusable components. Node.js, a JavaScript runtime, allows server-side execution of JavaScript code.

The MERN stack's main advantage is its use of JavaScript throughout the entire development process, from database to server to client-side scripting. This uniformity simplifies development, reduces context-switching, and allows for easier code sharing between front-end and back-end. The stack's modular nature also facilitates scalability and maintenance of web applications. With its robust community support and extensive libraries, MERN has become a go-to choice for modern web development projects.

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MERN STACK

TRAINING CURRICULUM

1 KEY COMPONENTS OF MERN STACK

– Foundations

- **Basic programming concepts (variables, data types, control structures, functions, etc.)**
- **Familiarity with JavaScript, including ES6 features**
- **Understanding of web development fundamentals (HTML, CSS, HTTP, etc.)**

– Backend Development

- **Node.js and its ecosystem**
- **Express.js for building RESTful APIs**
- **MongoDB and Mongoose (the MongoDB ODM) for data management**
- **Basic understanding of server-side rendering (SSR) and API development**

– Frontend Development

- **React.js and its core concepts (components, state, props, lifecycle methods, etc.)**
- **React ecosystem (React Router, Redux, etc.)**
- **Responsive design and UI/UX principles**
- **Integrating the frontend with the backend API**

– Full-Stack Development

- **Connecting the frontend (React) with the backend (Express.js and MongoDB)**
- **Handling user authentication and authorization**
- **Implementing CRUD (Create, Read, Update, Delete) operations**
- **Deploying the full-stack application (e.g., using platforms like Heroku, AWS, or DigitalOcean)**

– Additional Topics

- **Testing (unit, integration, and end-to-end testing)**
- **Debugging and troubleshooting**

- **Continuous Integration and Continuous Deployment (CI/CD)**
- **Modern frontend tooling (Webpack, Babel, ESLint, etc.)**
- **Understanding of web security best practices**

2 React.js

– Introduction to React

- **Introduction to React and its core concepts**
- **Setting up development environment (Node.js, npm, create-react-app)**
- **Understanding JSX and its benefits**
- **Creating a simple React component**

– Components and Props

- **Creating and composing components**
- **Passing data to components using props**
- **Handling events in React**
- **State and lifecycle methods**

– State Management

- **Understanding state and its role in React**
- **Managing state with setState**
- **Lifting state up**
- **Handling forms in React**

– Hooks

- **Introduction to Hooks**
- **Exploring useState, useEffect, and other built-in Hooks**
- **Building custom Hooks**
- **Refactoring class components to functional components with Hooks**

– React Router

- **Setting up React Router for navigation**
- **Creating nested routes**

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- Passing parameters to routes
- Implementing programmatic navigation

– Context API and Redux

- Understanding global state management
- Implementing state management with Context API
- Introduction to Redux for managing complex state
- Setting up Redux in a React application

– Asynchronous Data Fetching

- Fetching data from external APIs
- Using Axios or Fetch API for data fetching
- Handling loading and error states
- Integrating data fetching with useEffect Hook

– React Best Practices

- Code organization and folder structure
- Improving performance with React.memo and useMemo
- Debugging React applications
- Testing React components with Jest and React Testing Library

– Styling in React

- CSS Modules
- Styled-components
- Using third-party CSS frameworks with React (e.g., Bootstrap, Material-UI)

– Advanced Topics and Next Steps

- Server-side rendering with Next.js
- Introduction to React Native for mobile app development
- Exploring advanced React patterns and techniques
- Building a final project: A real-world React application

3 MongoDB

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– Introduction to NoSQL and MongoDB

- **Overview of database systems (SQL vs. NoSQL)**
- **Introduction to MongoDB and its key features**
- **Advantages and use cases of MongoDB**

– MongoDB Data Model

- **Document-oriented data model**
- **Collections and documents**
- **BSON (Binary JSON) data format**
- **Schema design best practices**

– MongoDB Installation and Setup

- **Installing MongoDB on different operating systems (Windows, macOS, Linux)**
- **Starting the MongoDB server (mongod) and client (mongo)**
- **Configuring MongoDB environment variables and paths**

– MongoDB Shell and Basic Operations

- **Navigating the MongoDB shell (mongo)**
- **Creating, reading, updating, and deleting (CRUD) documents**
- **Querying data using find(), sort(), limit(), and skip()**
- **Projecting specific fields in query results**

– MongoDB Data Types and Operators

- **Supported data types (string, number, boolean, date, ObjectId, etc.)**
- **Using dot notation and embedded documents**
- **Comparison operators (=, >, <, >=, <=, !=)**
- **Logical operators (and, or, not)**
- **Array operators (elem Match, in, nin)**

– MongoDB Collections and Indexes

- **Creating, renaming, and dropping collections**
- **Indexing data for efficient queries**
- **Single-field, compound, and geospatial indexes**
- **Unique, sparse, and TTL (time-to-live) indexes**

– MongoDB CRUD Operations

- **Inserting new documents (insert(), insertOne(), insertMany())**
- **Querying and reading documents (find(), findOne())**
- **Updating existing documents (update(), updateOne(), updateMany())**
- **Deleting documents (remove(), deleteOne(), deleteMany())**

– Aggregation Framework

- **Understanding the aggregation pipeline**
- **Using stages like $match, $group, $project, $sort, $lookup, etc.**
- **Creating custom aggregation pipelines**
- **Performing advanced data analysis and transformations**

– MongoDB Security

- **User authentication and authorization**
- **Role-based access control (RBAC)**
- **Encryption at rest and in transit**
- **Auditing and monitoring**

– MongoDB Operations and Administration

- **Backup and restore strategies**
- **Monitoring and troubleshooting**
- **Performance tuning and optimization**
- **Integrating MongoDB with other technologies**

– MongoDB in the Real World

- **Case studies and real-world applications**
- **Best practices and design patterns**
- **Ecosystem and tools (Compass, Atlas, Robo 3T, etc.)**
- **Future trends and developments in MongoDB**

4 Node.js

– Introduction to Node.js

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- What is Node.js and why use it?
- Understanding the Node.js runtime environment
- Exploring the Node.js architecture and event-driven, non-blocking I/O model

– Getting Started with Node.js

- Installing Node.js and setting up the development environment
- Running and executing Node.js scripts
- Understanding the Node.js command-line interface (CLI)
- Working with the Node.js REPL (Read-Eval-Print Loop)

– Node.js Core Modules

- Exploring the built-in core modules (e.g., `fs`, `http`, `path`, `os`)
- Reading and writing files using the `fs` module
- Working with file paths and the `path` module
- Accessing system information with the `os` module

– Asynchronous JavaScript in Node.js

- Understanding the event loop and non-blocking I/O
- Working with callbacks, Promises, and async/await
- Handling asynchronous file I/O operations
- Implementing asynchronous server-side logic

– Node.js Event Emitter

- Understanding the Event Emitter module
- Creating and handling custom events
- Implementing event-driven programming patterns
- Working with streams and the `events` module

– Node.js Web Server Development

- Creating a basic HTTP server using the `http` module
- Handling HTTP requests and responses
- Routing and URL parsing
- Serving static files and handling dynamic content

– Node.js Package Management

- **Introduction to the Node Package Manager (npm)**
- **Installing, managing, and versioning packages**
- **Creating and publishing your own npm packages**
- **Managing dependencies and devDependencies**

– Node.js Modules and Exports

- **Understanding the CommonJS module system**
- **Creating and consuming custom modules**
- **Exporting and importing functionality**
- **Organizing code into modular structures**

– Database Integration (MongoDB or MySQL)

- **Connecting Node.js applications to MongoDB**
- **Using the Mongoose ODM (Object Document Mapping)**
- **Interacting with MySQL databases using Node.js drivers**
- **Performing CRUD (Create, Read, Update, Delete) operations**

5 Express.js

– Introduction to Express.js

- **Overview of Node.js and the need for a web framework**
- **What is Express.js? Its features and benefits**
- **Understanding the Express.js ecosystem and its core components**

– Setting up the Development Environment

- **Installing Node.js and npm (Node Package Manager)**
- **Creating a new Express.js project**
- **Configuring the development environment (text editor, terminal, etc.)**

– Express.js Fundamentals

- **Understanding the Express.js application structure**
- **Handling HTTP requests (GET, POST, PUT, DELETE)**
- **Defining routes and route parameters**

- **Sending responses (text, JSON, HTML)**
- **Middleware functions and their importance**

– Routing and Handling Requests

- **Defining basic routes and route handling**
- **Working with route parameters and query strings**
- **Implementing route-level middleware**
- **Handling different HTTP methods (GET, POST, PUT, DELETE)**

– Serving Static Files and Middleware

- **Serving static files (HTML, CSS, JavaScript, images)**
- **Understand the role of middleware in Express.js**
- **Implementing custom middleware functions**
- **Using built-in middleware (body-parser, morgan, etc.)**

– Template Engines and Views

- **Understanding the concept of template engines**
- **Integrating template engines (e.g., Handlebars, Pug, EJS)**
- **Passing data from the server to the templates**
- **Rendering dynamic HTML pages**

– Handling Form Data and POST Requests

- **Parsing form data from POST requests**
- **Validating and sanitizing user input**
- **Handling file uploads using middleware (e.g., multer)**
- **Implementing CRUD (Create, Read, Update, Delete) operations**

– Middleware and Error Handling

- **Error handling and middleware chain**
- **Implementing custom error-handling middleware**
- **Logging and debugging in Express.js applications**

– Routing and Middleware Organization

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- **Modularizing routes using the Router module**
- **Organizing middleware and route handling**
- **Implementing application-level and router-level middleware**

– Express.js and Asynchronous Operations

- **Working with asynchronous operations (callbacks, Promises, async/await)**
- **Handling asynchronous data sources (databases, external APIs)**
- **Implementing asynchronous flow control patterns**

– Security and Best Practices

- **Securing Express.js applications (HTTPS, CSRF protection, helmet)**
- **Handling user authentication and authorization**
- **Implementing rate limiting and other security measures**
- **Logging, monitoring, and error reporting**

Projects

- **Develop a full-stack MERN application (e.g., e-commerce, social media, task management)**
- **Implementing CRUD operations**
- **User authentication and authorization**
- **Integrating third-party APIs or services (if needed)**
- **Deployment and scaling**

Final Project: Students will work on various projects and a final MERN project also be made that incorporating both frontend and backend concepts learned throughout the course.

This syllabus covers the core concepts and technologies of the MERN Stack, starting with introductions to each component, followed by their integration and advanced topics. The Final Project at the end allows students to apply their knowledge and skills to build a real-world MERN Stack application.

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PLACEMENT COMPANIES

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Testimonials of Students

Sukhpreet Kaur
2 reviews
★★★★★ 2 weeks ago NEW

Hlo mam I'm Sukhpreet your Softcrayons tarining institute in student my training is digital marketing course 😄 I'm very becoz I'm digital marketing beginner but my experience to much becoz my trainer is very intelligent and supportive and nature is very friendly 😊

Manish Malik
1 review
★★★★☆ 2 weeks ago NEW

I'm new student in softcrayons my starting classes all gud my softcrayons experience to much better becoz my trainer is very experienced

Aman Bhardwaj
2 reviews
★★★★★ 5 months ago

I am Aman Bhardwaj, Recently I completed a Digital Marketing course from Softcrayons. After completing my course I got a placement at SNVA Ventures with a good salary package. If you want to do a course and boost your career in the Digital Marketing field. I will recommend you visit Softcrayons.
If I talk about the environment and faculty then Softcrayons have a very good and friendly environment and their faculty is highly experienced in the Digital Marketing field. Specifically, Yashvant sir is one of the best trainer and they have great experience in the Digital Marketing field.
Thank you Softcrayons and all staff who helped me boost my career in the Digital Marketing field.

Shivam Sharma
1 review
★★★★★ 2 months ago

I got the chance to study with the best teacher and they provided me a good career guidance. a veryb great place to learn programming and start your career.

Lalita Tiwari
1 review
★★★★★ 5 months ago

I heared about softcrayons through friends and I enroll myself here, and done my course. I suggest you all to join softcrayons. Hope you do great.

Tanish Chandrawal
5 reviews
★★★★★ 5 months ago

It is good institute, practical oriented practice is very good. This institute is very useful for graduate students to make carrier in IT. 100% job guarantee is available for all students.Very good Institute for Cloud Computing like Azure, AWS, GCP.

Aman Vishwakarma
2 reviews
★★★★★ 2 months ago

Hie guys I'm aman softcrayrons institute students for AutoCAD.. softcrayrons institute is best training institute sarfaraz sir is best teacher for softcrayrons. And best institute softcrayrons

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