

Professional Certificate Program in
**Full Stack
Development - MERN**



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About the Program

In today's tech landscape, full-stack developers are in high demand. As organizations increasingly prioritize seamless user experiences, efficient data management, and versatile application deployment, the need for professionals with a comprehensive skill set to handle both front-end and back-end development has intensified.

This Professional Certificate Program in Full Stack Development - MERN by IITM Pravartak in partnership with Simplilearn, empowers you with the technical prowess demanded by this dynamic field. Through immersive training and hands-on projects, you'll master both front-end and back-end technologies. With a dedicated focus on MERN stack, which will help you enhance your versatility and enable you to develop efficient, scalable applications our curriculum encompasses a spectrum of topics such as dynamic front-end design, RESTful APIs, server-side logic, database management, and more, ensuring your readiness for contemporary web development.

Engage in hands-on practice through integrated labs, live virtual sessions led by industry experts, and collaborative peer interactions. As a full-stack developer, you'll be equipped to meet industry demands head-on and drive innovation in the ever-evolving digital realm.



Key Features of the Program



Earn a certificate
of completion from
IITM Pravartak and
Simplilearn.



Attend a 2-day
campus immersion
at IIT Madras
Research Park



Build a robust
Git portfolio,
showcasing your
proficiency in
building dynamic
web applications.



Work on 20+
hands-on projects
with integrated
sandboxed labs



Masterclasses from
IIT faculty



Leverage
Simplilearn's
JobAssist program

About IITM Pravartak

IITM Pravartak Technologies Foundation is the Technology Innovation Hub at IITM. It is funded by the Department of Science and Technology, Government of India, under its National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS).

The foundation offers a variety of skill development courses in areas such as full-stack development, data analytics, machine learning, and artificial intelligence. These courses are designed to help professionals and students develop the skills they need to succeed in the 21st-century workforce.





About Simplilearn

Simplilearn is the world's #1 online certificate program provider, enabling learners around the globe with rigorous and highly specialized training offered in partnership with world-renowned universities and leading corporations. We focus on emerging technologies and skills, such as data science, cloud computing, programming, and more, that are transforming the global economy. Our

hands-on and immersive training includes live virtual classes, integrated labs and projects, 24x7 support, and a collaborative learning environment. Over two million professionals and 2000 corporate training organizations across 150 countries have harnessed our award-winning programs to achieve their career and business goals.

Eligibility Criteria

For admission into this Professional Certificate Program in Full Stack Development - MERN, candidates:

- Should have a bachelor's degree with an average of 50% or higher
- May have a non-programming background
- Are not required to have prior professional experience

Application Process

The application process consists of three simple steps:



Submit an Application

Complete the application, including a brief statement of purpose explaining your interest and qualifications for the program.



Application Review

A panel of admissions counselors will review your application and statement of purpose to determine whether you qualify for acceptance.



Admission

An offer of admission will be made to qualified candidates. You can accept this offer by paying the program fee.

Talk to an Admissions Counselor

Our team of dedicated admissions counselors is prepared to address your questions or concerns about this program.

Our team is available to:

- Answer your questions about the application process.
- Discuss your financing options.
- Provide insight into the curriculum, program outcomes and more.

[Chat Now](#)

[Contact Us | 1-800-212-7688](#)

Demand for Full-Stack Developers

The demand for full-stack developers in India is high. According to a report by the National Association of Software and Services Companies (NASSCOM), the demand for full-stack developers in India is expected to grow by 25% by the end of this year.



Jobs

100K+

Full stack job
posting available
in India

Source: Indeed



Growth

30%

Year-over-year
increase in
demand

Source: LinkedIn

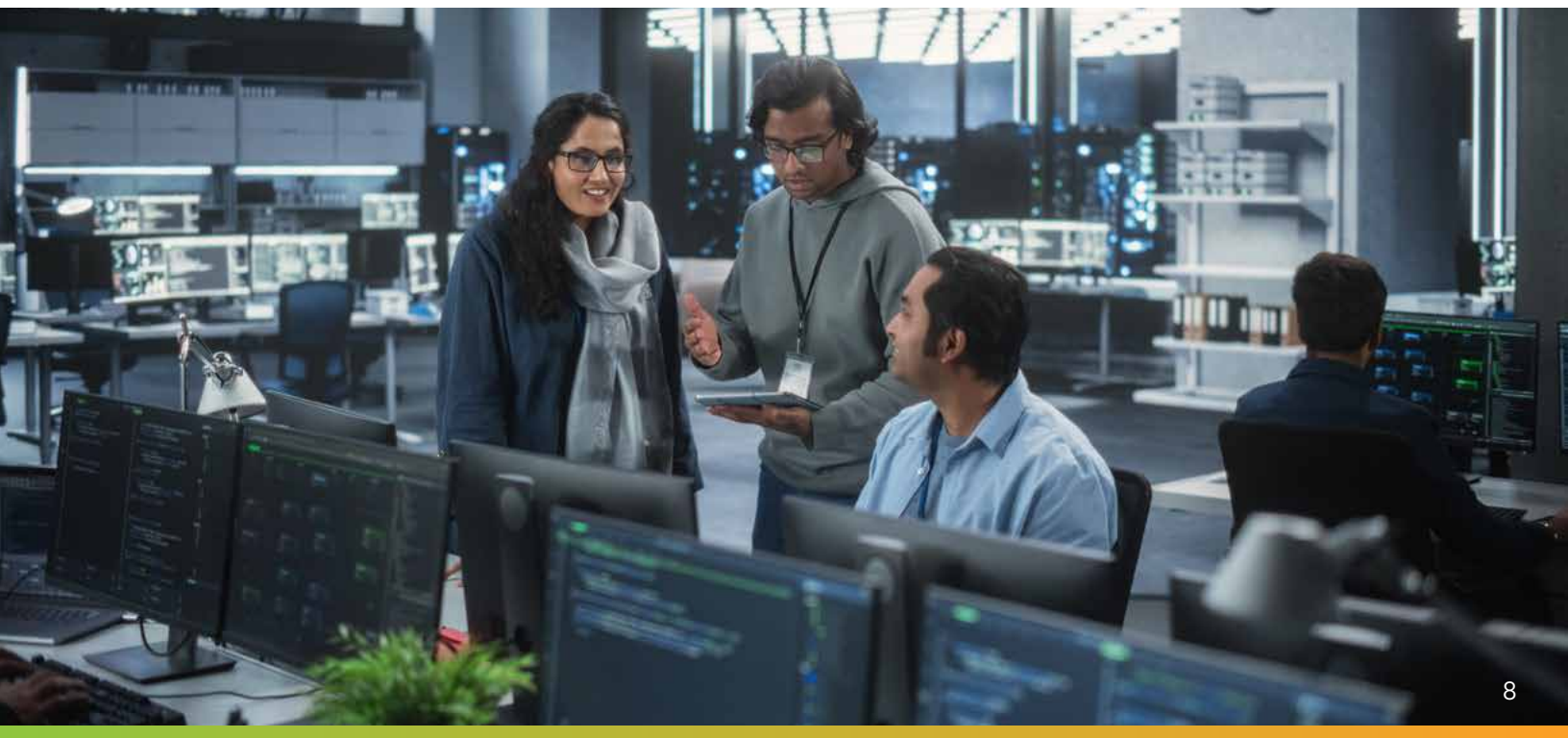


Salary

₹6L-₹20L

Average annual
salary

Source: Glassdoor



Career Outlook

In today's digital age, the demand for full-stack developers is notably substantial, something which salaries in this field often reflect. Factors such as the company size, geographical location, and industry can significantly influence compensation levels. Taking these variables into consideration, we have compiled an estimate of what you can expect to earn in the following roles:

Full Stack Developer

Job Role: A full-stack developer develops complete web apps, handling front-end design, back-end logic, and database integration, ensuring user experience, scalability, and tech evolution for seamless, innovative digital solutions.



Average Annual Salary Range

₹ 8,00,000 - ₹ 18,00,000

Web Developer

Job Role: A web developer develops captivating user experiences, translating designs into responsive websites using HTML, CSS, JavaScript, and React, ensuring seamless navigation.



Average Annual Salary Range

₹ 6,00,000 - ₹ 10,00,000

Backend Developer

A backend developer architects web app foundations, handling server logic, data storage, and APIs. Also, they ensure efficient data flow, scalability, and security for robust applications.



Average Annual Salary Range

₹ 6,50,000 - ₹ 12,00,000

Program Outcomes

Upon successful completion of this Professional Certificate Program in Full Stack Development - MERN, you will:

- Earn a certificate of completion from IITM Pravartak and Simplilearn.
- Craft a robust Git portfolio as a full-stack developer, showcasing your proficiency in building dynamic web applications.
- Master MERN stack - Build dynamic apps using MongoDB, Express, React, and Node.js for seamless end-to-end web development.
- Excel in cloud deployment, efficiently scaling and hosting applications.

Who Should Enroll in this Program

This program is designed to train professionals who will be responsible for full-stack development in their respective organizations and is recommended for individuals pursuing positions including, but not limited to:



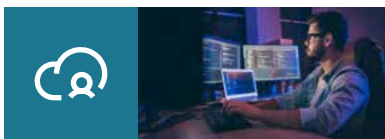
Full Stack Developer



Web Developer



Backend Developer



Software Engineer



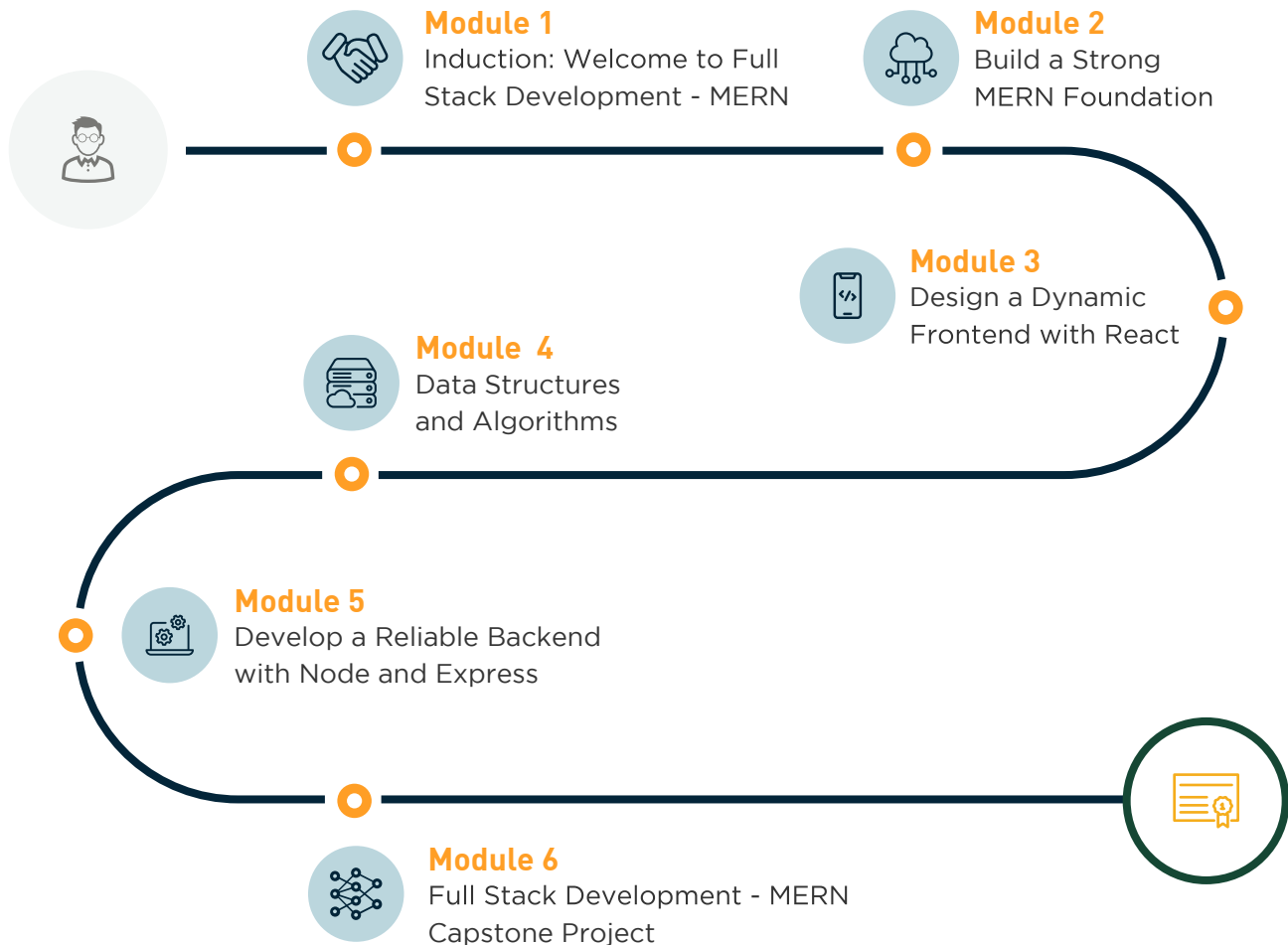
Application Developer



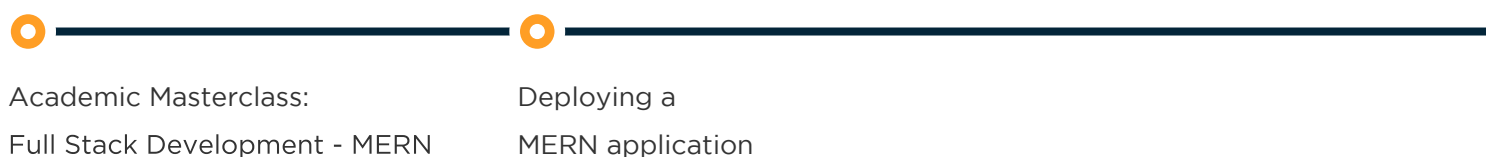
Database Administrator

Learning Path Visualization

Core Topics



Electives



Learning Path Details

Module

1

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Induction - Welcome to the Full-stack Development - MERN Program

In this introductory module, you'll explore the program's structure, curriculum, and learning outcomes. Understand what lies ahead and how this program can propel you toward your professional goals.

Learning Outcomes

- Get acquainted with your peers
- Get a complete understanding of the program
- Map your career goals to the certificate program experience

Module

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Build a strong MERN Foundation

In this module, you will learn about the building blocks of HTML, CSS, Javascript and gain knowledge of Agile and Scrum methodologies to deliver projects on time. You'll also develop a comprehensive understanding of Git to manage version control systems with key concepts of SQL.

Learning Outcomes

By the end of this module, you will be able to:

- Acquire a comprehensive knowledge of HTML and CSS, enabling you to create visually appealing and responsive web interfaces that seamlessly adapt across devices

- Have a strong command of Git, allowing you to efficiently track changes, manage code collaboration, and contribute effectively within a team environment
- Become proficient at planning and managing projects using Agile methodologies

Course Curriculum

- Lesson 01 - Planning projects with Agile
 - Lesson 02 - Version control system: Git
 - Lesson 03 - HTML/CSS
 - Lesson 04 - Javascript
 - Lesson 05 - Bootstrap
-

Module



Design a Dynamic Frontend with React

Build a robust React foundation, unleashing your potential to create and manage captivating user interfaces. Embark on a guided curriculum through this module, spanning JSON Server operations, React essentials, advanced rendering and more, to elevate your expertise and unlock limitless possibilities in modern web development.

Learning Outcomes

By the end of this module, you will be able to:

- Master CRUD operations using JSON Servers, allowing you to efficiently create, read, update, and delete data, enhancing your ability to manage data within applications
- Seamlessly integrate APIs with React applications, enabling you to fetch and display data from external services

- Establish a strong foundation in React, comprehending its core concepts, enabling you to create and manage dynamic user interfaces efficiently

Course Curriculum

- Lesson 01 - JSON server (CRUD operations)
 - Lesson 02 - React introduction and basic concepts
 - Lesson 03 - Rendering, LifeCycle and React Hook concepts
 - Lesson 04 - ReactHook useReducer, useEffect and custom hooks management
 - Lesson 05 - React Context API & Redux
 - Lesson 06 - Data retrieval using Redux
 - Lesson 07 - API calling with React
-

Module



Data Structures and Algorithms

In this module, you will understand core data structures like—arrays, linked lists, stacks, queues, trees, heaps, and graphs—enabling you to select the optimal data structures for diverse scenarios. You will also understand essential algorithms for searching, sorting, and string manipulation which will empower you with potent problem-solving skills.

Learning Outcomes

By the end of this module, you will be able to:

- Gain a solid understanding of fundamental data structures, including arrays, linked lists, stacks, queues, trees, heaps, and graphs, enabling you to select the appropriate structure for various scenarios

- Develop proficiency in solving problems using various searching, sorting, and string manipulation algorithms, equipping you with essential problem-solving skills

Course Curriculum

- Lesson 01: Introduction to data structures
- Lesson 02: Arrays and linked lists
- Lesson 03: Stacks and queues
- Lesson 04: Hashing and hash tables
- Lesson 05: Trees, heaps and priority queues
- Lesson 06: Graphs
- Lesson 07: Searching and sorting algorithms
- Lesson 08: Recursion and backtracking
- Lesson 09: Greedy algorithms
- Lesson 10: Graph and string algorithms

Module

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Develop a Reliable Backend with Node and Express

The meticulously structured curriculum of this module dives deep into mastering NoSQL concepts for efficient non-relational data management and crafting scalable server-side applications with adeptness in asynchronous operations, which sets the stage for your success in modern application development,

Learning Outcomes

After completing this module, you will be able to:

- Design a logging and monitoring solution
- Become skilled in MongoDB, mastering NoSQL database concepts and efficiently handling non-relational data storage, retrieval, and management
- Develop proficiency in Node.js, enabling you to build scalable, server-side applications, handle asynchronous operations, and optimize performance

Course Curriculum

- Lesson 01: SQL
 - Lesson 02: MongoDB
 - Lesson 03: Node.js
 - Lesson 04: Express.js
-

Module

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Full Stack Development Capstone Project

The capstone projects designed in this training will provide you with the opportunity to apply your full-stack development skills and tackle real-world industry problems. You will also learn to create and manage your own Git portfolio.

Learning Outcomes

- Apply your newly acquired skills to overcome industry-relevant challenges
- Learn how to create and manage your Git portfolio
- Obtain a capstone evaluation from industry experts
- Exhibit problem-solving capabilities through your results from the capstone projects

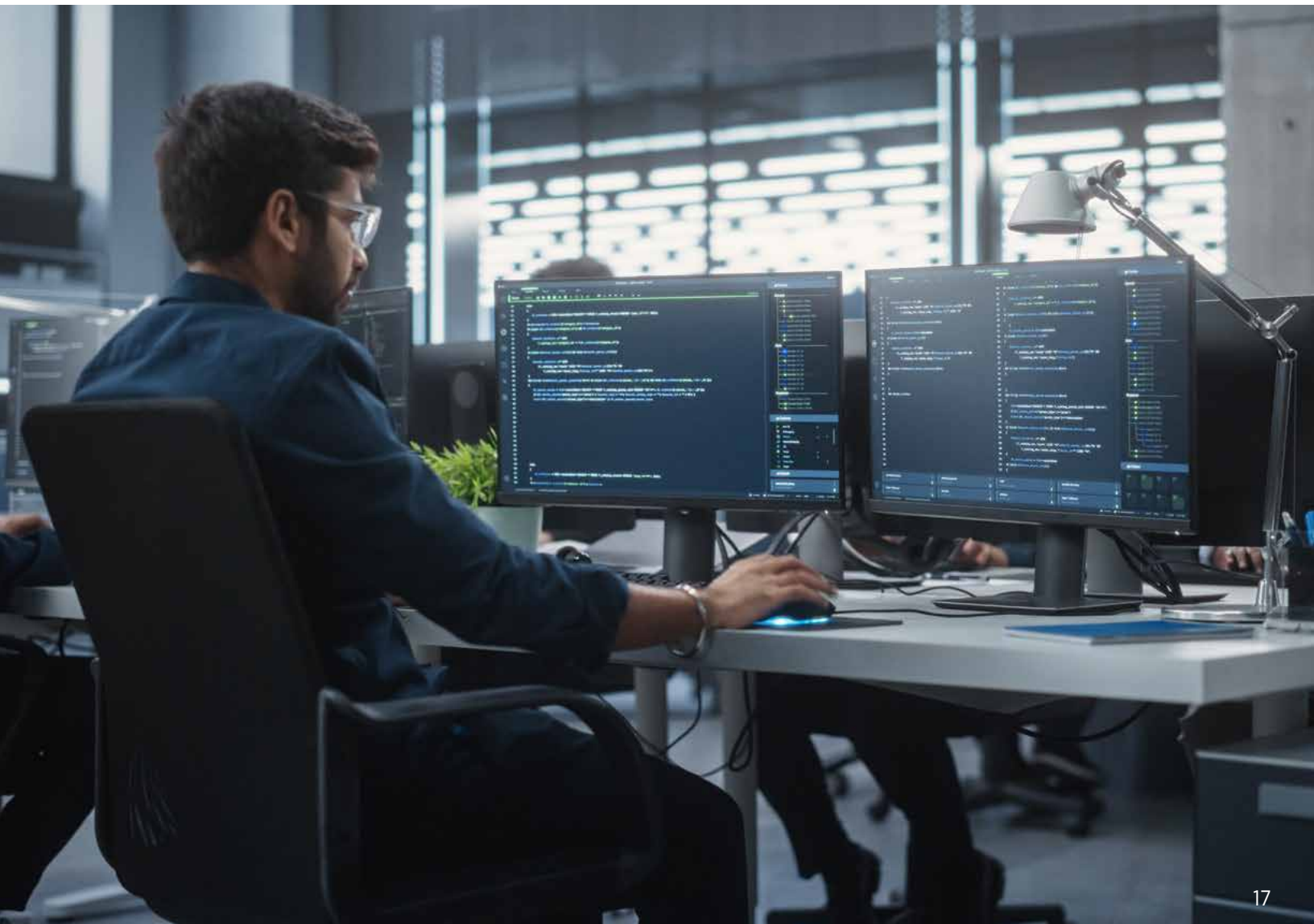
Electives

1. Academic Masterclass: Full Stack Development - MERN

Attend online masterclasses conducted by faculty from IIT. Gain insights about advancements in full-stack development and understand why it has become essential for any organization to understand, implement, and invest in this domain to scale up.

2. Deploying a MERN application

Learn how to create seamless development and production environments using containerization with a widely used tool: Docker and manage your applications on Amazon S3 servers.



Capstone Projects



Fintech Sector

Create a dynamic and responsive online banking web application to deposit, withdraw, and transfer money between accounts.



Food Delivery Services

Create a food delivery app using MERN stack. Apply the skills you have learned to solve problems that the food delivery industry faces today.



Entertainment sector

Create an application for the entertainment industry using your knowledge and skills in back-end technology, API development, HTML, and CSS.



Healthcare Services

Create an integrated healthcare application using MERN stack and incorporate the best data security practices applicable to the healthcare industry.

Tools Covered





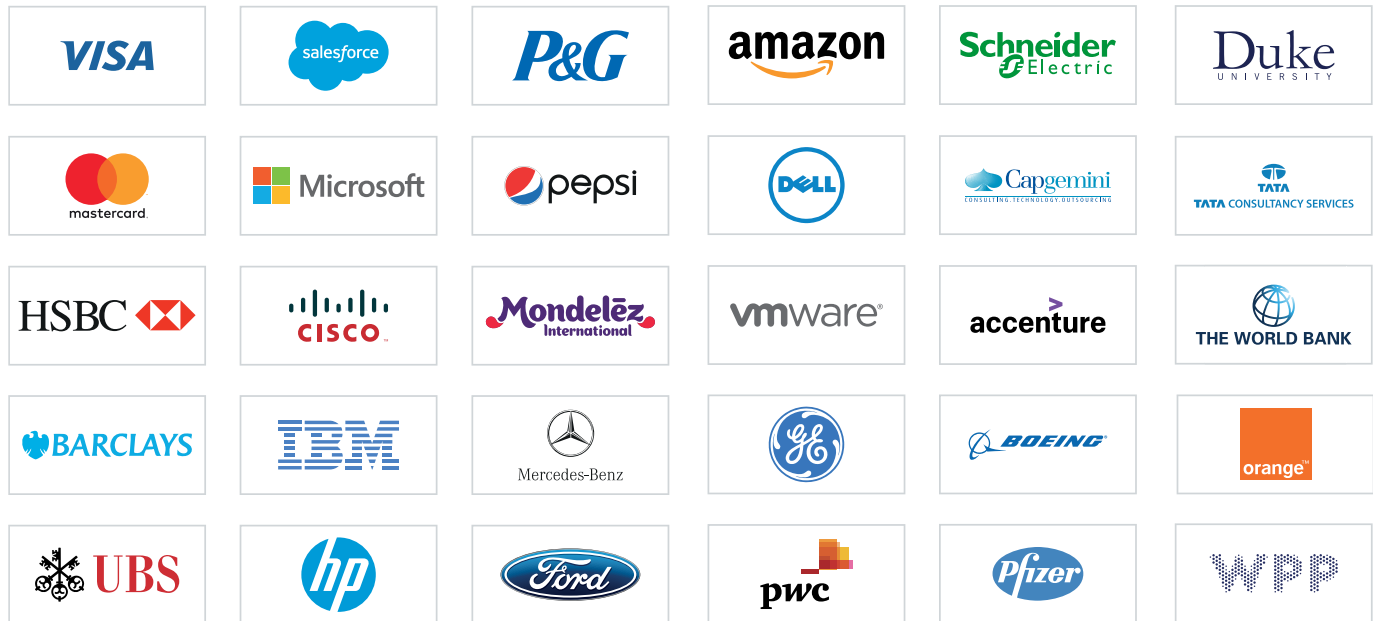
Certificate

Upon completion of this program, you will receive a certificate of completion from **IITM Pravartak** and **Simplilearn**.






You will also receive certificates from Simplilearn for each of the courses in the learning path. These certificates will testify to your skills as an expert full-stack developer.

Corporate Training

Top clients we work with:



Features of Corporate Training:

-  Tailored learning solutions
-  Flexible pricing options
-  Enterprise-grade learning management system (LMS)
-  Enterprise dashboards for individuals and teams
-  24X7 learner assistance and support



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