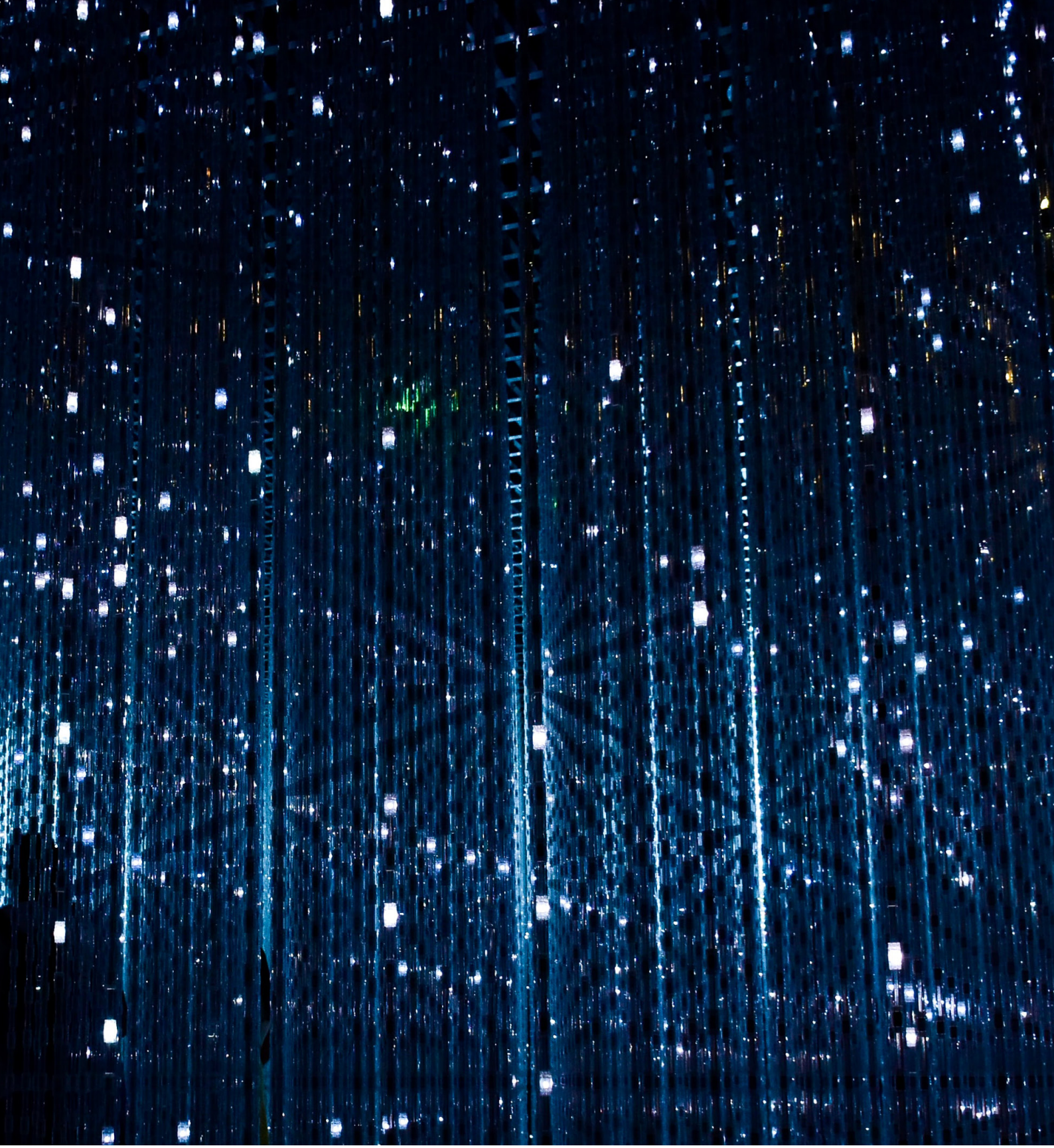

PROFESSIONAL CERTIFICATE IN SOFTWARE DEVELOPMENT (BACKEND)

Overview

Software development is the process of creating a set of programs, systems, or applications using various software tools and techniques. The word software in this context refers to computer software. There are several types of software development projects; technical, project management and corporate projects all require different approaches to software development. Software development is an integral part of any organization and plays a key role in the overall success of any business. From maintaining existing software and developing new applications, software developers ensure that companies can efficiently use their technology to run their business processes and make it easier for the users to access the needed information or perform tasks.

This Professional certificate program was developed with the consultation and recommendation of a team of software development experts using modern-day technologies and identifying today's industry needs.

This program will provide learners with the skills and knowledge to be successful in a software development (Back End) career for an entry level role. This program focuses on developing basic technical skills and will help learners to gain experience in some of the most common application areas of modern information technology

Key Takeaways

Learning Path way in advancing your career in Software Development (Back End).

1. Build foundational knowledge on HTML, CSS and Java
2. Understand the use of Java and State Management
3. Introduction and Exploration of Object-Oriented Programming with C#
4. Introduction and Exploration of Data Structures and Data Base
5. Introduction to Legacy Technology and Node.js
6. Working on a real-life Project

Who Is This Program For?

This program covers the tools and skills needed to communicate with others to build a high-quality piece of software. You'll solve problems using languages such as HTML, Java etc, to organize your project with planning, writing unit tests and testing them all in an integrated environment. By the end of this program you'll be ready to start building a web app from scratch. The course will provide a deeper understanding of software development and its importance in modern life. With the right set of skills, one can produce the most amazing products for our day-to-day needs. It also ensures that people are able to figure out solutions for their problems, knowing that there are still people behind the computer screens who are able to do cool things.

It is ideal for:

- Individuals that love to analyze
- Individuals that are deliberate
- Individuals that are pragmatic
- Individuals that are risk-averse

Program Syllabus

Module 1: Foundation Knowledge

Intro to CSS and HTML: Intro to Text, Images, Lists, CSS Selectors (Classes, IDS, children, pseudo-classes, etc.), Box Model, Color, Positioning (Static, Fixed, Relative, Absolute), FlexBox, Media Queries, Animations with Keyframes and Transition.

JavaScript: Introduction to JavaScript, Alerts and console logging, Integers, strings, and variables, Undefined variables and modifying values of variables, Boolean operators, comparing values, if statements, while loop, for loops, defining functions, Event handling, setting an elements inner HTML, DOM, Using JavaScript to Manipulate the DOM

Module 2: JavaScript

JavaScript: In-depth knowledge on Arrays, Text areas and getting the value of inputs, Functions - parameters and return values, Multiple parameters in functions, Flexible function parameters, Classes explained, Class constructor, instance variables, and static variables, Extending classes, Encapsulation, Abstraction, polymorphism. Consuming Restful Api with axios and JavaScript fetch Api.

State Management: Introduction to Redux, Connect function, Dispatch action + simple reducer, Add logger to dispatch, Redux Promises, Middleware improvements, Add API, Reducer improvements, Spinner component, Redux thunk, Caching improvements, Enhancers

Module 3: C#

Object Oriented Programming: Fundamentals Of OOP with C#, exploring Abstraction, Encapsulation, Polymorphism and Inheritance. Identifying Classes from Requirements Building Entity Classes Building Entity Classes - Methods Separation of Responsibilities Establishing Relationships Leveraging Reuse through Inheritance Building Reusable Components Understanding Interfaces Async and await in .Net

Module 4: Data Structure and Data Base

Introduction to Data Structure: Introduction and exploration of to Data structures and algorithms using C#. Also, introduction to IO operations Complex Data structures in C# -Collections, Generics, Delegates, Lambdas. -Arrays, Lists, and Collection Equality - Collection Performance, Inside Dictionaries and Sorted Dictionaries -High performance Modifications with Linked Lists -Stacks -Queues - Concurrency and Concurrent Collections- - Merging Data with HashSets and Sorted Sets - Read-only and Immutable Collections -Collection Interfaces -IO programming with Files and Stream

Unit Testing: Understanding the purpose of writing Tests Understanding the difference between a Test Project and the Main project Know the different testing libraries in .Net Mock methods, Clear understanding of this principles using clear examples. Knowing what and where to apply them SR: Coupling, Cohesion, and Concerns OCP: Balancing Abstraction and Concreteness OCP: Approaches to OCP and New Behavior LSP: Detecting LSP Violations in Your Code and fixing the ISP: The Problem with ISP Violations ISP: Detecting and fixing ISP violations DIP:

Understanding Dependency Inversion Principal DIP: Properly Structuring Your Dependencies.

Intro to LINQ: Understand LINQ as an Integral part of C# Appreciate the ease that LINQ brings to manipulating collections Write LINQ queries over collections of files, objects etc. Trap and report LINQ based errors

Data Base Design: Understand Database design using SQL Server - Ability to write T- SQL Script in stored procedures and functions - good exposure ADO.net - Understand Typed Datasets, - Understand and use Linq2Sql. Some knowledge of ORMs at this point such as EF, NHIbernate and LINQ Connect

Module 5: Legacy Technology and Node.js

Entity Framework: Introduction and exploration EF as a provider for LINQ to connect to data sources, Introduction and exploration of legacy technologies in Web development in .Net, Exploration of Model, view and controller, Explore the fundamentals of working with MVC applications

MVC: Deeper understanding of MVC applications, Working with data in MVC app with and without scaffolding known best practices.

Data Rendering: Explore Webgrid for data rendering - Working with EF 6 in MVC applying - Deploying MVC applications - Working with NoSQL Db in MVC (Mongo db)

Node.js: Introduction and Exploration of Node.js

Module 6: Capstone Project

Project: Research on real life problem and Application of previous learning to find an adequate solution.

Featured Tools and Technology

During this program you'll get hands-on experience with the latest industry tools, including:

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