Course Content

Course Description:

This instructor-led 3 day Blockchain Architecture training is for technical leaders who need to make decisions about architecture, environment, and development platforms. The Certified Blockchain Solution Architecture exam is included with class. The class covers the following topics:

- What is Blockchain
- How does Blockchain work
- Types of Blockchains
- How is Blockchain different from what we have today
- What are use cases for Blockchain
- What does a Blockchain app look like
- How do I design a Blockchain app
- How do I develop a Blockchain app
- How do I test a Blockchain app

Topics:

Chapter 1: What is Blockchain

- Blockchain Basic Principles
- Centralized and Decentralized Ledgers
- Mechanics of Blockchain
- What is a Block?
- How are Blocks Chained Together?

Chapter 2: How Does Blockchain Work

- Benefits and Drawbacks of Blockchain
- Cryptography
- Public Key Cryptography
- Cryptographic Hashing
- Blockchain Consensus
- Proof of Work Consensus
- Proof of Stake Consensus
- Other Consensus Mechanisms Explained
- Lifecycle of a Public Blockchain Transaction

Chapter 3: Types of Blockchains

- Public vs Private Blockchains
- Open vs Closed Blockchains
- Open Source Blockchain Projects
- Blockchain Smart Contracts
- Tokens and Coins
- Using Gas in Ethereum
- "Blockless" Solution Platforms

Chapter 4: How is Blockchain Different Than What We Have Today

- Types of Networks
- Centralized Networks
- Distributed Networks
- Decentralized Networks
- Software vs Firmware
- Blockchain vs Database

Chapter 5: What Does a Blockchain Application Look Like?

- Blockchain Application Architecture
- Integrated Development Environment (IDE)
- User Interaction Layer
- Middle/Interface Layer
- Smart Contracts/Chaincode

Chapter 6: How Do I Design a Blockchain Application?
- Guiding Design Principles
- Personas (User Types)
- User Stories (Application Interaction)
- Application Functional Requirements
- Application Technical Requirements
- Design Tasks
- Fundamental Design Questions

Chapter 7: How Do I Develop a Blockchain Application?
- Fundamental Design Concepts
- Calling External Contracts
- Error Handling
- Pull vs Push Payments
- On-Chain Data
- Local Testing Recommendations
- Not Using Agile Development Process
- Technology Design Decisions
- Monolithic vs Modular
- Complexity Models

Chapter 8: How Do I test a Blockchain Application?
- Blockchain Testing Approaches
- Unit Testing
- Developer Level Testing
- Configuration & Environment Testing
- Load/Performance Testing
- Volume/Stress Testing
- Regression Testing
- Application Bug Classifications
- User Load Testing
- Key Blockchain Architecture Testing Questions

Chapter 9: Use Cases for Blockchain
- Real world implementations of Blockchain