Blockchain Architecture

What is Blockchain?

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

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

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

How is Blockchain Different Than What We Have Today?

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

What Does a Blockchain Application Look Like?

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

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

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

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