Domineum Academy

NITDA Blockchain Scholarship Curriculum
Curriculum Dates:
Start Date: 8th December, 2022
End Date: 22nd December, 2022

Curriculum Overview
Introdution to Bitcoin Theory

Course Overview

Bitcoin Theory covers the design of Bitcoin as a system as prescribed by Satoshi Nakamoto. This course is open to anyone who is interested in Bitcoin and is the beginner course in this series. Some technical experience would be helpful to complete the course, however it is open to anyone regardless of experience.

Chapters: 13
Duration: 9 Hours
Difficulty: Beginner

- Chapter 1: Abstract (Approx 45 mins)
  - ◯ 00 Abstract read-through
  - ◯ 01 Peer-to-peer cash
  - ◯ 02 Digital signatures and trusted third parties
  - ◯ 03 Abstract Assessment No.1
  - ◯ 04 Peer to Peer network
  - ◯ 05 Time Chain and Proof of Work
  - ◯ 06 CPU Power
  - ◯ 07 Abstract Assessment No.2
  - ◯ 08 Cooperation in the network
  - ◯ 09 Network structure

- ◯ 10 Messaging between nodes
- ◯ 11 Abstract Video
- ◯ 12 Abstract Assessment No.3

● Chapter 2: Introduction (Approx 45 mins)
- ◯ 00 Introduction read-through
- ◯ 01 Commerce on the internet
- ◯ 02 Non reversible transactions
- ◯ 03 Introduction Assessment No.1
- ◯ 04 Privacy in commerce
- ◯ 05 The paradigm of fraud acceptance
- ◯ 06 What is needed...
- ◯ 07 Introduction Assessment No.2
- ◯ 08 Protecting sellers from fraud
- ◯ 09 Proposed solution
- ◯ 10 Security and honesty
- ◯ 11 Introduction Video
- ◯ 12 Introduction Assessment No.3

● Chapter 3: Transactions (Approx 45 mins)
- ◯ 00 Section read-through
- ◯ 01 Electronic Coins
- ◯ 02 Spending a coin
- ◯ 03 Transactions Assessment No.1
- ◯ 04 Payee verification
- ◯ 05 Existing solutions
- ◯ 06 First Seen Rule
- ◯ 07 Transactions Assessment No.2
- ◯ 08 Broadcasting Transactions
- ◯ 09 Achieving Consensus
- ◯ 10 Proof of acceptance
- ◯ 11 Transactions Video
- ◯ 12 Transactions Assessment No.3

● Chapter 4: Timestamp Server (Approx 15 mins)
- ◯ 00 Section read-through

- ◯ 01 Timestamped Hashes
- ◯ 02 A chain of timestamped hashes
- ◯ 03 Timestamp Server Video
- ◯ 04 Timestamp Server Assessment No.1

● Chapter 5: Proof of Work (Approx 60 mins)
- ◯ 00 Section read-through
- ◯ 01 Hashcash
- ◯ 02 Scanning random space
- ◯ 03 Proof of Work Assessment No.1
- ◯ 04 Nonce
- ◯ 05 Immutable Work
- ◯ 06 Chained effort
- ◯ 07 Proof of Work Assessment No.2
- ◯ 08 One CPU, one vote
- ◯ 09 The majority decision
- ◯ 10 The honest chain
- ◯ 11 Proof of Work Assessment No.3
- ◯ 12 Attacking the longest chain
- ◯ 13 Controlling the block discovery rate
- ◯ 14 Proof of Work Video
- ◯ 15 Proof of Work Assessment No.4

● Chapter 6: Network (Approx 45 mins)
- ◯ 00 Section read-through
- ◯ 01 Running the Network
- ◯ 02 Network Assessment No.1
- ◯ 03 The longest chain
- ◯ 04 Simultaneous blocks
- ◯ 05 Network Assessment No.2◯ 06 Breaking the tie
- ◯ 07 Missed messages
- ◯ 08 Network Video
- ◯ 09 Network Assessment No.3

● Chapter 7: Incentive (Approx 45 mins)
- ◯ 00 Section read-through

- ◯ 01 The Coinbase Transaction
- ◯ 02 Coin Distribution
- ◯ 03 Incentive Assessment No.1
- ◯ 04 Mining analogy
- ◯ 05 Transaction fees
- ◯ 06 The end of inflation
- ◯ 07 Incentive Assessment No.2
- ◯ 08 Encouraging honesty
- ◯ 09 The attacker’s dilemma
- ◯ 10 Incentive Video
- ◯ 11 Incentive Assessment No.3

● Chapter 8: Reclaiming Disk Space (Approx 30 mins)
- ◯ 00 Section read-through
- ◯ 01 Spent transactions
- ◯ 02 The Merkle Tree
- ◯ 03 Reclaiming Disk Space Assessment No.1
- ◯ 04 Compacting blocks
- ◯ 05 Block Headers
- ◯ 06 Reclaiming Disk Space Video
- ◯ 07 Reclaiming Disk Space Assessment No.2

● Chapter 9: Simplified Payment Verification (Approx 45 mins)
- ◯ 00 Section read-through
- ◯ 01 Full network nodes◯ 02 Merkle Branches
- ◯ 03 Simplified Payment Verification Assessment No.1
- ◯ 04 Transaction acceptance
- ◯ 05 Verification during attack situations
- ◯ 06 Maintaining an attack
- ◯ 07 Simplified Payment Verification Assessment No.2
- ◯ 08 Invalid Block Relay System
- ◯ 09 Businesses running nodes
- ◯ 10 Simplified Payment Verification Video
- ◯ 11 Simplified Payment Verification Assessment No.3

● Chapter 10: Combining and Splitting Value (Approx 30 mins)

◯ 00 Section read-through
◯ 01 Dynamically sized coins
◯ 02 Inputs and Outputs
◯ 03 Combining and Splitting Value Assessment No.1
◯ 04 A typical example
◯ 05 Fan-out
◯ 06 Combining and Splitting Value Video
◯ 07 Combining and Splitting Value Assessment No.2

● Chapter 11: Privacy (Approx 45 mins)
◯ 00 Section read-through
◯ 01 Traditional Models
◯ 02 Privacy in Bitcoin
◯ 03 Privacy Assessment No.1
◯ 04 Public records
◯ 05 Stock Exchange Comparison
◯ 06 Key Re-use
◯ 07 Privacy Assessment No.2
◯ 08 Linking inputs
◯ 09 Linking the owner◯ 10 Privacy Video
◯ 11 Privacy Assessment No.3

● Chapter 12: Calculations (Approx 60 mins)
◯ 00 Section read-through
◯ 01 Attacking the chain
◯ 02 Things the attacker cannot achieve...
◯ 03 The only thing the attacker can achieve...
◯ 04 The Binomial Random Walk
◯ 05 The Gambler’s Ruin
◯ 06 Exponential odds
◯ 07 Waiting for confirmation...
◯ 08 Attack via proof of work
◯ 09 Vanishing probabilities
◯ 10 Calculations Video
◯ 11 Calculations Assessment No.1

● Chapter 13: Conclusion (Approx 15 mins)
  ◯ 00 Section read-through
  ◯ 01 Conclusion
  ◯ 02 Conclusion Video

● Bitcoin Theory Final Assessment

Introdution to Javascript

Course Overview

In this course you will be introduced to JavaScript. It will discuss the history of JavaScript and how JavaScript is used to manipulate the HTML and CSS of a webpage after loading from the server. It will teach you to write simple JavaScript statements, create variables, arrays, assign values to these variables and arrays and read values from them.

Objectives:

● Identify interactions on web pages created with JavaScript.
● Articulate, in general terms, the importance of how JavaScript was developed and how that impacts the way ● ● JavaScript is written.
● Identify properly formed semantic HTML.
● Articulate major concepts in CSS.
● Identify properly formed CSS syntax.
● Write simple JavaScript statements in the web browser console.
● Assign and retrieve values from variables and arrays in JavaScript.

Course Outline

1. Introduction to JavaScript
2. JavaScript Variables
3. JavaScript Arrays
4. Module Summary

Introdution to GoLang

Course Overview

This course covers the fundamental elements of Go: data types, protocols, formats, and writing code that incorporates RFCs and JSON.

Course Outline

- Overview
  - ◯ Objects
  - ◯ Concurrency
  - ◯ Installing Go
  - ◯ Workspaces & Packages
  - ◯ Go Tool
  - ◯ Variables
  - ◯ Variable Initialization

- Data Types
  - ◯ Pointers
  - ◯ Variable Scope9m
  - ◯ Deallocating Memory5m
  - ◯ Garbage Collection5m
  - ◯ Comments, Printing, Integers7m
  - ◯ Ints, Floats, Strings9m
  - ◯ String Packages5m
  - ◯ Constants4m
  - ◯ Control Flow8m
  - ◯ Control Flow, Scan

- Composite Data Types
  - ◯ Arrays
  - ◯ Slices
  - ◯ Variable Slices
  - ◯ Hash Tables

- ◯ Maps
- ◯ Structs

- Protocols and Formats
  - ◯ RFCs
  - ◯ JSON
  - ◯ File Access, ioutil6m
  - ◯ File Access, os