Quick inside. Course Overview

Ethereum Blockchain Platform

- Welcome
- Quick Inside. Course Overview
- Introduction to Ethereum
- Ethereum Nodes
- Links to Original Bitcoin & Ethereum White Papers
- Ethereum Accounts and Ethereum Address
- Ether (ETH)
- Gas and Opcodes
- Ethereum Block Explorer
- Ethereum Transactions, Blocks and Mining
- Quiz for Ethereum Blockchain

Quick inside. Course Overview

Programming Environment

- Tools and Frameworks
- Remix IDE
- Smart Contract Compilation, ABI and Bytecode
- Installing Metamask and Sending Ether. MyEtherWallet
- Rinkeby Authenticated Faucet
- Contract Deployment on Rinkeby Using Remix and Metamask
- Quiz

Quick inside. Course Overview

Solidity Programming Language

- Smart Contract Architecture
- Solidity Basic Syntax
- Variables Basics
- Functions, Setters and Getters
- Variable Types: Bool and Int
- Fixed-Size Arrays and Dynamic Arrays
- Structs, Enums and Mappings
- The Constructor
- Built-in Global Variables
- Contract Address and Balance: Sending Ether to a Contract, Payable Functions
- Access the Contract Balance
- Variables and Functions Visibility: Private, Public, Internal, External
- Course Resources for Download: Contracts ready to be used in real-world app.

Quick inside. Course Overview

The Lottery Smart Contract

- Planning & Design
- Defining State Variables & Constructor
- Enter the Lottery
- Validation. The Require Statement.
- How to Select the Winner
- Random Numbers in Solidity
- Selecting the Winner and Sending Contract Balance
- Resetting the Lottery
- Contract Review
- Deployment to Rinkeby Test Network
- Final Words. The Power of Ethereum

Quick inside. Course Overview

The Auction Smart Contract

- Planning and Design
- Defining State Variables and Constructor
- Function Modifiers
- Place a Bid
- Testing the placeBid() Function
- Cancel the Auction
- Important Security Consideration. Withdrawal Pattern.
- Finalize the Auction
- Testing the contract. Final words.
- Scalability. Thinking about the deployment of thousands of Auctions.
- Contract that Deploys Another Contract
- Auction Contract Creator

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The FundRaising Smart Contract

- Solving a Real Problem
- Planning and Design
- Defining State Variables and Constructor
- Contribute to the FundRaising Campaign
- Get Refund
- Create a Spending Request
- Vote for a Request
- Make a Payment
- Testing the Contract
- Events
- Adding Events to the Contract

Quick inside. Course Overview

Implementing an ERC20 Token

- Contract Inheritance
- Abstract Contracts and Interfaces
- Ethereum Tokens. What is ERC20?
- Token Contract State Variables
- Token Contract Constructor and Mandatory Functions
- Testing and Deployment of ERC20 Token on Rinkeby Testnet
- ERC20 Token - allowed, transferFrom(...) and approve(...) Functions
- ERC20 Token - Full Implementation
- Final Tests

Quick inside. Course Overview

Implement and run an ICO

- What is an ICO?
- Planning the ICO Smart Contract
- ICO State Variables and Constructor
- ICO States. ICO Emergency Stop and Restart
- The Invest Function
- ICO Testing
- Locking Up Tokens
- Burn Tokens
- ICO and ERC20 Token Deployment on Rinkeby Testnet. Testing the ICO

Quick inside. Course Overview

IPFS - The Interplanetary File System

- Ethereum and IPFS
- What is IPFS and How It Works
- Installing IPFS on Linux
- Running an IPFS Node on Linux
- Installing and Running an IPFS Node on Window