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BLOCKCHAIN

Blockchain Foundation

- What is a blockchain?
- What are transactions and blocks?
- How do P2P systems operate?
- The most prominent consensus mechanisms
- Difference between private, consortium, and public networks
- What does the data structure look like?
- How do Smart Contracts work?
- What is the Ethereum Virtual Machine?
- What is a Hash?
- How do public/private keys work?

Ethereum Basics

- The Ethereum ecosystem, DApps.
- What is Ether, an account, a Faucet?
- What is Gas, OpCode Gas Costs?
- Consensus Model: Proof of work, Proof of Stake.
- Ethereum Wallet working and Installation.
- Where to Get Ethers, Purpose of Mining
- Mining hardware and Mining pools.
- How cloud mining, Mining Incentives
- Ethereum Mining from Wallet and Sending Ethers across different accounts.
- Managing Contracts with Wallet.
- Meta Mask and Execute Contracts Using Meta Mask.
- Ethereum Networks, Clients and BlockChain Explorers.
- How to create a Genesis First Node in Network
- Setting up Private Blockchain Environment using Ethereum Platform
- Geth CLI: Configuring the geth client
- Simulation of BlockChain Network Using TestRPC.
- Configuring, running and working with the go-ethereum client
- Ethereum Client using JavaScript Console
- Geth JavaScript API: Admin, Personal, Miner, Nonces, Txpool
- Account management and mining
- Understand the different stages of a contract deployment
- How to interact with a contract once deployed?
- What does the setup process for a private network look like?
- Account management and mining
- Compile, deploy and instantiate contracts

Linux Commands, Git Commands and Dockers

- Linux CommandsOverview
- Git commands Usage.
- DevOps Process, How CI and CD works.
- Dockers Tools Box Install and Setup Process
- Docker Commands.
- Linux Bash scripting
- Debugging the Scripts.

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Web3 & Truffle

- Web3 JS OverView
- Setup Web3 and Connecting to Node.
- Instantiate web3 and communicate with a contract from an JScript
- Test Web3 Version, Node Status API, Account List, balances API.
- Web3API Send Transactions and Transaction Object.
- Web3 API Smart Contract Compilation and Deployement.
- Building an interface to interact with a smart contract
- Setting up event-driven interfaces
- Adapting Truffle's default behavior
- Write functional tests for smart contracts
- How to manually test contract functionality?
- Events, Logs, Filter and Watch API
- Setting Up the Truffle Project
- Developing Contracts using Truffle.

Solidity

- Solidity Contract Structure.
- Solidity Basic Data Type and Conversions.
- Arrays and Special Arrays.
- Memory, Storage Key word Usage and locations.
- Time Units conversion and Global Variables.
- Introduction to Functions and Function Modifiers.
- Error Handling in Contracts.
- Hash Functions, Mappings, Enumerations and Structs.
- Contract classes and conditionals
- Events
- Inheritance & abstract contracts
- Libraries
- Types &Optimization

Hyperledger Fabric

- Introduction to Hyperledger
- Hyperledger architecture
- Difference between the Bitcoin, Ethereum and HyperLedgerArchitecture.
- Introduction to Hyperledger Fabric
- How to Create the Hyper Ledger Fabric Network
- Building your First Fabric Network.
- How to write the ChainCode
- Understanding about the Chain Code.
- Write Chain Code using GO language.
- Deploy and Test Chain Code in Fabric Environment.
- CryptoGen, YML tools usage.