





**BLOCKCHAIN::**

 You’ll learn the ins and outs of blockchain like only a blockchain programmer knows. Using only a few Python libraries, we’ll build a cryptocurrency from the ground up. Even if you have very little programming experience, we can help you through it! You’ll learn about digital signatures, hashing and proof-of-work mining. We’ll design and build a scheme for decentralized consensus including communicating over TCP/IP sockets. Bring your basic knowledge of Python, and you’ll emerge on the other side with a grasp of cryptocurrencies better than 99% of your peers and with a working prototype you can build on.

* Build a cryptoco in from scratch using Python
* Digitally sign messages and verify signatures
* Design and build a tamper-proof blockchain to store any kind of data
* Secure your blockchain with a proof-of-work requirement
* Open sockets to communicate transactions and block with peers
* Build a wallet and miner for your crypto coin





### Introduction to Blockchain

### Blockchain introduction

### Blockchain technology

### network, and its mechanism

### Blockchain history,

### Blockchain benefits

### blocks and transactions in Blockchain

### peer-to-peer systems

### block structure in Blockchain,

### dynamic shared ledger

### digital signatures,

### building Blockchain solutions,

### using hashes as addresses,

### Bitcoin keys storage,

### using a key as identity,

### Bitcoins trade and transactions,

### Blockchain ecosystem core,

### Blockchain layers: data layer,

### consensus layer, and network layer.

**Detailed Study of Blockchain**

### Bitcoin introduction,

### what is Bitcoin?,

### Bitcoins network,

### Bitcoin mining,

### Bitcoin wallets,

### Blockchain alternatives,

### smart contract,

### public network and private consortium,

### Ethereum virtual machine,

### Ethereum environment,

### Merkle tree,

### Dapps, Decentralized Autonomous Organization (DAO),

### double-spend problem,

### Blockchain impact on cryptocurrencies,

### Bitcoin mechanics, transcriptions, scripts,

### peer-to-peer network, blocks, and security measures.

### Blockchain and Bitcoin

### Identification of Bitcoins and their era

### where and how to get Bitcoins

### identifying Bitcoin wallets

### Jaxx wallet

### defining the selling of Bitcoins

### comparing between Bitcoin and Blockchain

### transaction and transaction scripts

### defining scripts in Bitcoin

### describing various transaction forms in Bitcoin,

### listing the nodes in Bitcoin network, etc.

### Bitcoin Mining

### Understanding Bitcoin Economics

### what is Bitcoin mining?,

### fabrication of block header,

### defining mining

### understanding more about mining: identification of the successful mining,

### types of mining pools,

### what is solo mining?

### listing the problems in solo mining

### benefits of pooled mining,

### consensus, independent verification of mining,

### autonomous verification of mining,

### the checklist for the mining verification,

### combining transactions into blocks,

### combining verified transactions,

### portrayal of difficulty, condition of difficulty

### , the creation of block header,

### main chain, orphan block,

### the creation of a new block,

### independent validation of the new block,

### race for Bitcoin mining and hash race,

### difficulty with the hashing power of miners, etc.

### Ethereum and Working with Smart Contracts

### Understanding Ethereum

### defining Smart Contracts

### Ethereum cryptocurrencies identification

### Ethereum transactions

### the consensus mechanism in Ethereum

### listing various development technologies

### how to identify Ethereum clients

### defining platform functions

### understanding and describing Solidity operators and functions

### the MetaMask setup

### Ethereum network interfacing

### the first smart contract

### Ethereum accounts and how to go about receiving Ether

### structuring a contract

### declaring a function

### deploying and redeploying a contract; comparing between Wei and Ether, Remix testing

### what is a gas transaction?, etc.

### Hyperledger

### Understanding Hyperledger Blockchain and Hyperledger consensus algorithm

### explaining Hyperledger Iroha

### identifying different Hyperledger components

### learning about Channels, Policies, and Chaincodes

### , listing various Hyperledger Explorer components

### defining Hyperledger Composer

### Hyperledger introduction:

### what is Hyperledger?

### distributed ledger technology and its challenges Hyperledger Fabric Developer Environment tools

### their usage, and their setup on: Windows, Mac O

### , Linux/Ubuntu, AWS, and Cloud virtual machines

### Development Environment topologyFabric Under Hood: concepts and terminologies

### ledger implementation; Dev Environment walkthrough: Orderer and CA Server

### Peer and CouchDB setup, Peer nodes: Anchor Peers, and Endorsing Peer

### , Client nodes, Orderer nodes

### Endorsement Policies

### Membership Service Provider and Certification Authority, and Chaincode Development.,

### Creating a Private Blockchain with MultiChain

### Defining MultiChain and describing its various streams

### creating and deploying a private Blockchain

### explaining how to connect to Blockchain

### identifying MultiChain interactive mode

### defining the Transaction Metadata

### listing Native assets, streams and mining

### Bitcoin to private Blockchain

### the hand-shake process

### the aim of MultiChain

### various use cases of MultiChain; MultiChain permission and assets

### the basics of retrieving from stream

### consensus model

### MultiChain flexibility

### deployment options

### speed and scalability

### downloading and installing, initializing and connecting to Blockchain from a second server

### connection permission

### creating a new address, permission to create assets

### new assets, native assets, connected peers, checking asset balance

### verifying transactions, and resending assets.