BLOCKCHAIN COURSE CONTENTS

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Day 1

- Introduction to Blockchain
  - What is Blockchain?
  - History of Blockchain
  - Explaining Distributed Ledger
  - Blockchain ecosystem
  - Explaining Distributed Ledger
- Types of Blockchain
  - Private/Consortium/Permission-less
  - Public/Permissioned implementation difference
  - What Blockchain has to offer across Industry?
  - Companies currently using Blockchain
  - Overview of what we are going to study in this course
- Key Concepts of the Blockchain
  - Mining -Mining algorithm
  - Node, peer and block explanation
  - Merkle tree and Blockchain
  - Consensus Mechanisms- proof of work , proof of stake
  - How Bitcoin Blockchain works?
  - What is Transaction?

Day 2

- Introduction to Ethereum
  - Ethereum : Blockchain with smart contract
  - What is Ether?
  - Bitcoin vs Ethereum Blockchain
  - What is Ethereum wallet?
  - What is Smart Contract?
  - Ethereum clients
  - Geth Introduction
  - Setting up Private Blockchain using Geth
- Learn Solidity
  - Introduction to solidity
  - Hands on solidity

- Understand and implement different use-cases
- Implement and deploy smart contract on Blockchain

Day 3

- Implement Dapp
  - Setting up the environment
  - Tools to install – Truffle , Metamask ,Testrpc
  - Implement and deploy your first Dapp
  - Different usecases for implementation of Dapp
- Future Scope
  - Talk about the future of the Blockchain
  - What is Hyperledger?
  - What is Hashgraph?
  - Discussion on current research on Blockchain
  - Understand current industry challenges and needs

- **Blockchain 3.0**

  - Lightning Network
  - NEO
  - Introduction to IOTA and Tangle Architecture
  - Blockchain as a service (BAAS)
  - Blockchain API
  - Blockchain interview questions and answers (Blockchain FAQs)

ADDITIONAL OPTIONAL TOPICS
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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 OS, Linux/Ubuntu, AWS, and Cloud virtual machines, Development Environment topology, Fabric Under Hood: concepts and terminologies, ledger implementation; Dev Environment walkthrough: Orderer and CA Server, Peer and CouchDB setup, Peer nodes: Anchor Peers, and Endorsing Peers, Client nodes, Orderer nodes, Endorsement Policies, Membership Service Provider and

Certification Authority, and Chaincode Development.

Hyperledger Composer

Hyperledger Composer and its benefits, Hyperledger conceptual components, the structure and example: business network automated auction market for cars, model, metadata, script file, ACL, open-development toolsets, archive, business networks testing, business networks modeling, Hyperledger Composer playground, and using Hyperledger Composer to develop applications.

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 streams, 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.