BLOCKCHAIN SYLLABUS

Hi Folks,

Oranium Tech introducing some amazing content on Blockchain. Blockchain defined: Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network. An asset can be tangible (a house, car, cash, land) or intangible (intellectual property, patents, copyrights, branding).

Fundamentals of Blockchain

1)Introduction to Blockchain

- Challenges Faced by Modern
- Businesses
- What is Blockchain?
- Building Blocks of Blockchain
- Types of Blockchain
- Knowledge Check

2)Blockchain Pillars

- Introduction to Blockchain Pillars
- Cryptography
- Consensus
- Distributed Ledger
- Assisted Practice: Send a Message Using Symmetric Cryptography
- Assisted Practice: Sign a Message Using Asymmetric Cryptography
- Assisted Practice: Generate Hash Using Hash function
- Assisted Practice: Generate a Nonce Value
- Assisted Practice: Working on Distributed Ledger
- Assisted Practice: Working on Blockchain Transaction
- Knowledge Check
- LEP 1: Create Blockchain Network

3)Bitcoin Blockchain

- Introduction to Bitcoin
- Bitcoin Wallets
- Bitcoin Block
- Bitcoin Transaction
- Bitcoin Scripts
- Bitcoin Attacks
- Bitcoin Network
- Bitcoin Mining
- Assisted practice: Install a Software Wallet (combine software and web wallet)
- Assisted practice: Generate a Paper Wallet
- Assisted practice: Generate a Web Wallet
- Assisted Practice: Review and Analyze a Bitcoin Block on Explorer
- Assisted Practice: Analyze a Bitcoin Transaction
- Knowledge Check
- LEP 2: Conduct a Transaction
- Using Electrum Wallet

4)Ethereum Blockchain

- Introduction to Ethereum
- Swarm and whisper
- Remix IDE
- Truffle Framework
- Ethereum Networks
- Ethereum Wallets
- Ethereum Clients
- Web3.js
- NFT
- Assisted Practice: Exploring the Ethereum Mainnet
- Assisted Practice: Explore an Ethereum Test Network
- Assisted Practice: Install the Ganache Blockchain
- Assisted Practice: Explore the Ganache Blockchain
- Assisted Practice: Install Metamask and Set up the Wallet
- Assisted Practice: Connect Metamask to a Ganache Test Network
- Assisted Practice: Install Geth Client
- Assisted Practice: Set up a Private Blockchain node Network using geth
- LEP 3: Ether Transaction Using Metamask

5)Enterprises Blockchain

- Enterprise Blockchain
- Hyperledger
- Hyperledger Sawtooth
- Hyperledger Iroha
- Hyperledger Indy
- Hyperledger Burrows
- Hyperledger Fabric
- Hyperledger Fabric Transaction
- Fabric Network
- Fabric Network Types
- Fabric Explorer
- Node Js
- R3 Corda
- Corda Network
- Assisted Practise: Setup Hyperledger Fabric Prerequisite
- Assisted Practise: Setup Hyperledger Fabric
- Assisted Practise: Start and stop test network
- Assisted Practice: Explorer
- Assisted Practice: Create Node Js Application
- Assisted Practice: Create a Web Application using the Expressjs file approach
- Assisted Practice: Create Web Application using Expressjs Node Project Approach
- Knowledge Check
- LEP 4: Transform the Supply Chain

Blockchain Applications And Architecture

1) Ethereum Smart Contracts

- Smart Contract Lifecycle
- Solidity
- Solidity Variables
- Solidity Compilation and
- Deployment
- Solidity Functions
- Truffle
- Security Consideration
- Web3
- Assisted Practice: Generate the ABI and Bytecode of a Smart Contract

- Assisted Practice: Deploy a Smart Contract to Ganache Network
- Assisted Practice: Develop a Smart contract that stores ethers and transfers to a personal account
- Assisted Practice: Price Event Smart Contract
- Assisted Practice: Develop a Property Transfer Smart Contract using Remix IDE
- Assisted Practice: Create a Custom Token and Deploy it on Ropsten Network
- Assisted Practice: Truffle Setup and create a project
- Assisted Practice: Truffle Create MarketPlace contract
- Assisted Practice: Compile MarketPlace contract
- Assisted Practice: Deploy MarketPlace contract
- Assisted Practice: Access Smart Contracts Functions from the Frontend
- Knowledge Check
- LEP 1: Creating a Custom Bank Contract

2)Hyperledger Fabric Chaincode

- Chaincode
- Gradle
- Chaincode Java API
- Chaincode Development
- Chaincode Package, Install, Approve
- Assisted Practice: Set up Development Prerequisites
- Assisted Practice: Create
- New Gradle Project for Car Showroom
- Assisted Practice: Create Chaincode for Car Showroom
- Assisted Practice: Package the Chaincode
- Assisted Practice: Install the Chancode
- Assisted Practice: Approve the Chancode
- Assisted Practice: Commit the Chancode
- Assisted Practice: Access Chaincode Functions
- Assisted Practice: Chaincode Lifecycle steps from a shell file
- Knowledge Check
- LEP 2: Develop Chaincode for Property Ownership Application

3)Hyperledger Fabric SDK

- Fabric SDK Introduction
- Node SDK
- Assisted practice: Enroll Admin User
- Assisted Practice: Register and Enroll Client User
- Assisted Practice: Access Chaincode Functions
- Assisted Practice: Create Node Project and add dependencies

- Assisted Practice: Enroll admin user to the network
- Assisted Practice: Enroll register and enroll client users to the network
- Assisted Practice: Access Chaincode Functions using Rest API
- Knowledge Check
- LEP 3: Access Property Ownership Chaincode using Java SDK

4) Multichain

- Introduction to Multichain
- Multichain Installation
- Create a Multichain Instance
- Multichain Assets
- Multichain Streams
- Multichain Consensus
- Multichain API
- Assisted Practice: Set up Multichain in the Local Machine
- Assisted Practice: Create Multichain Instance with Two Nodes
- Assisted Practice: Create a Multichain Asset and Transfer It
- Assisted Practice: Create a Multichain Stream to Publish Data
- Assisted Practice: Perform Mining in Multichain
- Assisted Practice: Access Functions Using Multichain API
- Knowledge Check
- LEP 4: Create a Private Multichain Blockchain

5)IOTA and Blockchain use cases

- Introduction to IOTA
- Traditional Blockchain Challenges
- Healthcare Use Cases
- Government Use Cases
- Finance Use Cases
- Supply Chain Use Cases
- Knowledge Check

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Phone / WhatsApp Details / Mail Id

CHROMPET : 73053 43555 whatsapp / oraniumtech@gmail.com

VELACHERY : 73052 77748 whatsapp / oraniumtechvh@gmail.com