

ADVANCED BLOCKCHAIN SERVICES

By Dr. Vishwanath Rao

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?
- Implement Dapp
 - Setting up the environment
 - Tools to install – Truffle , Metamask ,Testrpc
 - Implement and deploy your first Dapp
 - Different usecases for implementation of Dapp

Creating blockchain from scratch

DAY 2

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
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- Introduction to Hyperledger
 - Hyperledger architecture
 - Consensus
 - Hyperledger API and Application Model
 - Network Topology
 - Exploring Hyperledger frameworks
 - Business Network Deployment on Hyperledger Composer Playground
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- HLF Overview - Building Blocks of Blockchain Solution
 - HLF Overview - HLF Architecture HLF Architecture - Part 1
 - HLF Overview - HLF Architecture HLF Architecture - Part 2
 - HLF Transaction Flow
 - Environment Setup - HLF Prerequisites
 - Environment Setup - HLF Setup and test
 - Environment Setup - Integrate Fabric Explorer
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- Binaries and Creating the test network
 - Chaincode Install and Instantiate, Chaincode Walkthrough
 - Chaincode invoke and query.
 - Fabric 2.2.x Chaincode Lifecycle
 - FabCar - Walk through

DAY 3

- What Is MultiChain?
 - Privacy and Permissions in MultiChain
 - Mining in MultiChain
 - Multiple configurable Blockchains using MultiChain
 - Setting up a Private Blockchain
 - Setting up a private Blockchain
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- Design your Own Chaincode - NPCI defined Project design and Architecture
 - Design your Own Chaincode - Asset Design and Channel Design
 - Design your Own Chaincode - Contract APIs and its methods
 - Design your Own Chaincode - CouchDB Rich Queries

- Design your Own Chaincode - Private Data Collection
- Understanding HLF Test Network - Defining Orgs in a Network, cryptoConfig.yaml and configtx.yaml
- Understanding HLF Test Network - Generating certificates and the
- Understanding HLF Test Network - Creating and Joining the Channel and anchor peer updates
- Understanding HLF Test Network - Installing and instantiating chaincode
- Understanding HLF Test Network - Execute transactions, modify and update contracts

DAY 4

- Implement NPCI Project Network - Defining Orgs in a Network, cryptoConfig.yaml and configtx.yaml
- Implement NPCI Project Network - Generating certificates and the genesis block
- Implement NPCI Project Network - Creating and Joining the Channel and anchor peer updates
- Implement NPCI Project Network - Installing and instantiating your custom chaincode
- Implement NPCI Project Network - Execute transactions, modify and update contracts
- Implement NPCI Project Network
- Understanding HLF Test Network - Fabric CA and MSP
- Implement NPCI Project Network - Generate Certificates using Fabric CA
- Implement NPCI Project Network - Pluggable Transaction Endorsement and validation, ACLs
- Implement NPCI Project Network - Securing communication using TLS
- Implement NPCI Project Network - Redo network with Fabric CA

DAY 5

- Understanding HLF Test Network - Adding another peer to an existing Organization
- Implement NPCI Project Network - Adding another peer to an existing

Organization

- Understanding HLF Test Network - Adding another organization to an existing network
- Implement NPCI Project Network - Adding another peer to an existing Organization

- Understanding NodeJS SDK - fabric Network, Gateway, Channel Discovery
- Understanding NodeJS SDK - Wallet, fabric-Commons
- Understanding NodeJS SDK - Sample Code Walkthrough
- Implement NPCI Project - NodeJS SDK functions
- Understanding NodeJS SDK - Chaincode query, Block query, Channel query

- Implement NPCI Project - NodeJS SDK functions
- Understanding Chaincode Events and Client subscription
- Implement NPCI Project - Chaincode and Client SDK Changes
- Understanding Basic REST and JWT Integration (Postman)
- Implement REST APIs, Input validation, JWT, Postman Integration, HTML UI Integration
- Project presentation and Demo by teams

- **Blockchain 3.0**

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