Professional Blockchain Course

Forming your own Blockchain Solutions

Identify the Use Case

- The blockchain is not a solution for all the problems.
- There is a lot of hype, but you need to map the hype with the use.
- Having a concrete use case is essential to weave the solution around.
- Some of the widespread use cases are:
  - Payments
  - KYC
  - Smart asset
  - Land Records

Design a Workflow for Blockchain Integration

- Analyze whether you need a blockchain as a solution or there are other ways to solve the existing problem.
- Don't start churning up detailed technical specification without any validation.
- Blockchain should solve a problem for existing centralized systems, e.g., expensiveness, transparency, and reliability.
- Have a feasible layout on integrating the technology into your development strategy.

Identify the Consensus Mechanism

- Depending on your use case choose the Consensus Mechanism.
- Choose the mechanism which is apt for the Use Case.
- For example, A private Blockchain solution may not require expensive POW consensus.
- Some of the popular Consensus Mechanisms are:
    - Proof-of-Work
    - Proof-of-Stake
    - Delegated-Proof-of-Stake
    - Proof-of-Authority
    - Proof-of-Weight

Identify the Platform

- Depending on the consensus mechanism of your choice, choose the platform which fits your needs and plans.
- Blockchain started as open source, and there are many platforms available free to use.
- Some of the major platforms are:
  - Bitcoin
  - Ethereum
  - Multichain
  - Hyperledger
  - Corda
  - Quorum
  - BigChainDB
  - Stellar

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Design the Architecture

- The architecture includes elements such as the infrastructure, software, and hardware configuration.
- The solution may be architectured on the cloud, on-premises, or a hybrid model depending on the organization's need.
- Further architecture can be design according to permission-less, permissioned, public, private, or hybrid.

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Design the Blockchain Instance

- You need to plan your instance carefully.
- In specific platforms, it's difficult to configure some parameters once set.
- Things needed under configuration can be as following:
  - Permissions
  - Asset Issuance/ Reissuance
  - Atomic Exchanges
  - Key Management
  - Multi-Signature
  - Block Parameters
  - Limits
  - Network Protocols/ Handshaking
  - Key and Address Formats
  - Native Assets

Build the APIs for your Blockchain

- APIs are required by the developers and applications to interact with your Blockchain.
- Usually, platforms come with APIs, and if you are building from scratch, you need to look into design and schemas for your APIs carefully.
- As per your requirements you need to see which APIs to expose for your Blockchain.
- Some of the APIs that you might need:
  - Generating Key Pairs
  - Asset Issuance
  - Data Authentication
  - Checking Blockchain Parameters
  - Create and Read operations
  - Smart Contracts
  - Address Specifications

Designing the Front End

- You require a Front End for your users and administrators.
- Most platforms work on JSON format which can be collaborated with major programming languages.
- Some of the platforms offer SDKs to integrate existing front-end applications with Blockchain.
- You can use languages like HTML5, CSS, PHP, C#, Java, Javascript, Python, Ruby, Golang, Solidity, AngularJS Nodejs.
- Moreover, you can also use external storages like Cloud Storage, NoSQL, RDBMS, etc.

Future Prospects

- Once you have the stable application up and running, you can look into future integrations with other technologies.
- You can enhance the power of your Blockchain solution by integrating Artificial Intelligence, Biometrics, Internet of Things, Bots, Cloud, Cognitive services, Containers, Data Analytics, and Machine Learning.

THANK YOU

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