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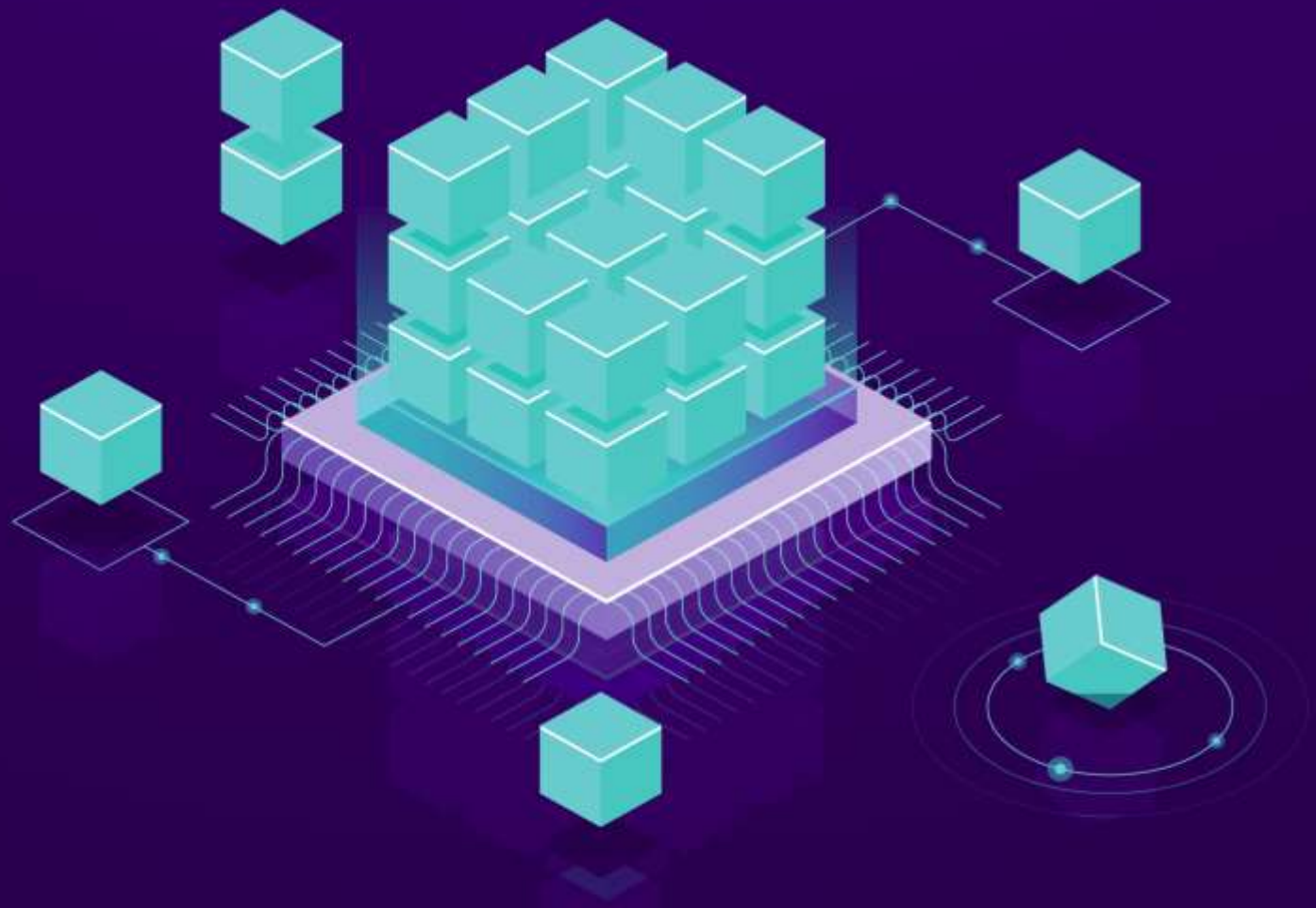

Madblocks Presents
3 Day BLOCKCHAIN Bootcamp

Topic:
Truffle Suite

YouTube LIVE

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Session by

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Today’s Agenda

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01 What is Ganache?

Quick Tour on Ganache – Personal Blockchain Network

02 Truffle Frmework

Quick Tour on Truffle Framework

03 Build your Dapp

A complete end-to-end process of creating Dapp

04 Deploy and Test the Dapp

Deploy and test the Dapp using Metamask and HTML Server

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Session – 1:
What is Ganache?

What is Ganache?

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What is Ganache?

– Ganache is a personal blockchain for rapid ethereum distributed application development.

– You can use Ganache across the entire development cycle of building dApp applications.

– It is used to develop, deploy and test your dApps.

Ganache UI

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Ganache UI

– Ganache UI is a desktop application supporting ethereum technology

– In addition, ethereum version of ganache-cli is known as testRPC.

– All versions of Ganache is available for Windows, Linux and Mac;

Let’s download from

https://www.trufflesuite.com/ganache

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Session – 2:
Truffle Framework

Truffle Framework

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Truffle Framework

– A world-class development environment, testing framework and asset pipeline for blockchains using Ethereum Virtual Machine, for developers life become easier for developing dApps.

– Built-in smart contract compilation, linking, deployment and binary management.

– Interactive console for direct contract communication.

Truffle Commands

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Install Truffle – npm install truffle

Steps:

1. Creating a Project

– mkdir MetaCoin

– cd MetaCoin

Truffle Commands

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Install Truffle – npm install truffle

Steps:

1. Creating a Project

2. Exploring the Project

– truffle unbox metacoin

contracts/: Directory for Smart Contracts

migrations/: Directory for Scriptable Deployment Files

test/: Directory for test files to check Smart Contracts

truffle.js: Truffle Configuration file

Truffle Commands

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Install Truffle – npm install truffle

Steps:

1. Creating a Project

2. Exploring the Project

3. Testing the Project

– **truffle test ./test/TestMetaCoin.sol**

Truffle Commands

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Install Truffle – npm install truffle

Steps:

1. Creating a Project

2. Exploring the Project

3. Testing the Project

4. Compiling the Project

– **truffle compile**

Truffle Commands

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Install Truffle – npm install truffle

Steps:

1. Creating a Project

2. Exploring the Project

3. Testing the Project

4. Compiling the Project

5. Migrating the Project

– **truffle develop**

Truffle Commands

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Install Truffle – npm install truffle

Steps:

1. Creating a Project

2. Exploring the Project

3. Testing the Project

4. Compiling the Project

5. Migrating the Project

6. Interacting with Smart Contract

– **migrate**
– **truffle console**

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Questions??

Every engineer has a tendency to tinker on a problem, lets answer few of them.

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Session – 3:
Build your dApp

What are dApps?

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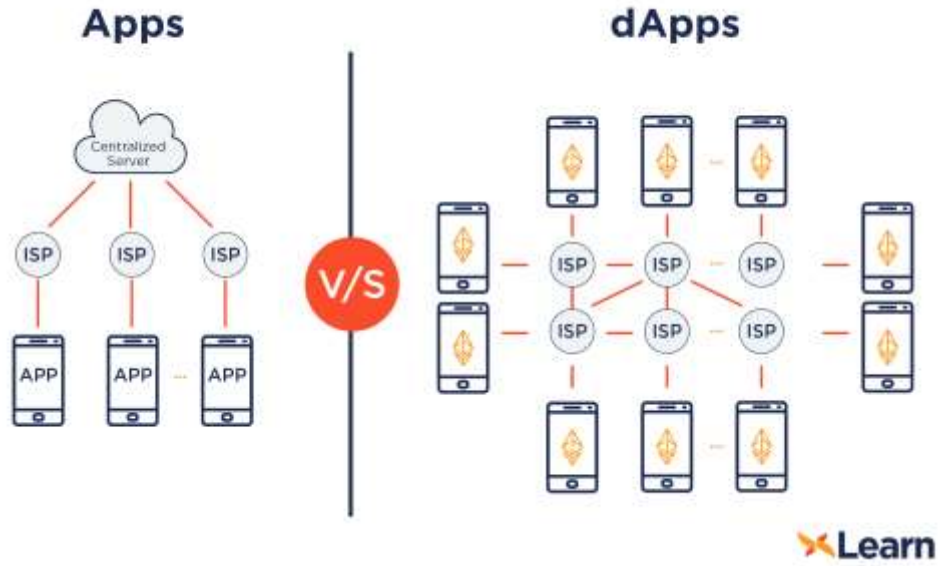
What are dApps?

– dApps are software applications that communicate with ethereum blockchain network.

– dApps also looks like a generic centralized application either a mobile app or web app.

– the front end remains same, where as back end differs from centralized to de-centralized.



Problem Statement

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Lets explore the world popular decentralized application (dApp) for the pet shop, and through this let us understand how to build your decentrailzed application on ethereum blockchain.

Usage:

Pete Scandlon of Pete's Pet Shop is interested in using Ethereum as an efficient way to handle their pet adoptions.

The store has space for 16 pets at a given time, and they already have a database of pets. As an initial proof of concept, Pete wants to see a dapp which associates an Ethereum address with a pet to be adopted.

Requirements

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To create the smart contract and deploy it using some front-end logic on ethereum blockchain, we need few pre-requisites:

Pre-Requisites:

1. node.js
2. npm (Node Package Manager)
3. Truffle Framework
4. Ganache personal Blockchain
5. light-server
6. metamask – Crypto Wallet

Step – 1: Install Truffle

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Truffle Framework is a popular framework used to develop applications on ethereum Blockchain.

usage:

npm install -g truffle

Note:

Make sure you have Node.JS and NPM on your machine.
If not, download them from the following link:

https://nodejs.org

Step – 2: Create Project

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Create a project using truffle and before that create a folder.

usage:

mkdir pet-shop – Create a Directory
cd pet-shop – Change the Directory
truffle unbox pet-shop – Unboxing the setup

Note:
You can create your own truffle boxes to get started easily.
In the Bootcamp, I'll quickly show you that.

https://trufflesuite.com

Step – 3: Explore Project

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Let’s explore what are unboxed in the previous step

contracts/:

contains the Solidity source files that are required

migrations/:

truffle uses a migration system to deploy smart contracts

test/:

contains some test files to check these smart contracts

truffle-config.js:

Truffle Configuration file

Note:

Don’t delete any files which are created

Step – 4: Create Solidity File

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Create a solidity file with name ‘Adoption.sol’ and start creating a smart contract for adoption in contracts directory.

usage:

```
cd contracts
sudo nano Adoption.sol
```

Note:

Create a contract with name Adoption before that check the solidity compiler version installed with truffle.

```
truffle version
```

Step – 5: Addopting a pet

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Create an array to store the address of adopters

usage:

```
address[16] public adopters;
```

Create a function with name adopt and argument as petId

```
function adopt (uint petId) public returns (uint)
{
  // store the address in adopters
}
```

Step – 6: View Adopters

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Create a function to retreive the adopters

usage:

```
function getAdopters() public view returns(address[16] memory)
{
        // return adopters
}
```

Step – 7: Compile and Migrate

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Compile the Smart Contract

usage:
truffle compile

Migrate the Smart Contract for deployment

usage:
cd migrations
ls
sudo nano 2_deploy_contract.js

Import the articraft (contract address and abi of the contract) so that deployment of smart contract would be successful

Step – 8: Look at Ganache

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Look at Ganache whether it is running or not. Identify the transactions and check blocks, and also identify on which ip address and port number the Ganache is running.

usage:

truffle migrate

Test the Smart Contract

usage:

cd test

ls

sudo nano TestAdoption.sol

Check the possibility in all aspects of the smart-contract

Step – 9: Test Solidity File

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Step – 1: Import all the modules to support in the test file

Step – 2: Identify the Contract Address

Step – 3: Declare a sample test pet id

Step – 4: Create a function to test adopt function of smart contract

Step – 5: Create a function to test getAdopters function

usage:
truffle test

Step – 10: Initiating the web3js

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Step – 1: Open src/js/app.js

Step – 2: Initiate the web3 current provider

Step – 3: Initiate the Contract

Step – 4: Write logic to mark pet adopted

Step – 5: Write logic to handle adopt function

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Questions??

Every engineer has a tendency to tinker on a problem, lets answer few of them.

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Session – 4: Deploy and Test the dApp

Configuring the lite-server & Deploy

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Lite-Server is used to run a web page connected with JavaScript file and runs on a default port number

usage:

sudo nano bs-config.json

sudo nano package.json

npm run dev

Now, your dapp is deployed on a local server and where you can make transactions through a front-end.

Thank You

Happy to host you today.