

BLOCKCHAIN | Batch 1 - Day 3 (Part 1 & Part 2) Overview

- Smart Contract intro
- We will play with the Python Code for Mining and also understand our own python code for Blockchain Arch.
- Ethereum end to end theory
- Few resources we will see for ethereum
- Metamask setup

What platforms are there for Smart Contracts?

- Ethereum.
- RSK.
- EOS.
- TRON
- Stellar.

Ethereum:-

- Cryptocurrency
- Smart contracts
- 2015 it got formulated
- It is 2nd widely used Cryptocurrency after Bitcoins
- You can use SOLIDITY Programming Language for Deploying Smart Contracts here

Ethereum Vs Bitcoin:-

- Bitcoin signaled the emergence of a radically new form of digital money that operates outside the control of any government or corporation.
- With time, people began to realize that one of the underlying innovations of bitcoin, the blockchain, could be utilized for other purposes.
- Ethereum proposed to utilize blockchain technology not only for maintaining a decentralized payment network but also for storing computer code which can be used to power tamper-proof decentralized financial contracts and applications.
- Ethereum applications and contracts are powered by ether, the Ethereum network's currency.
- Ether was intended to complement rather than compete with bitcoin, but it has nonetheless emerged as a competitor on cryptocurrency exchanges.

In layman term, Let consider the Bitcoin to be like a calculator, then Ethereum was like Mobile phone.

What is Solidity Programming Language?

- Solidity is a programming language which is used for

- Creating smart contracts
- It is still the development phase
- Statically typed language
- Extension of the Solidity programs are - .sol
- We can build our own Solidity code in Remix IDE or Visual Studio code.
- <http://remix.ethereum.org/> - IDE for smart contract Development

Sample code in Solidity:-

```
pragma solidity >=0.4.16 <0.6.12; //headerfile

Contract tempcontract{
    int rollno;
}
function temp(int __rollno)public{
    rollno=__rollno;
}
function setdata(int __rollno)
{
    rollno=__rollno;
}
function readint() public view(int) //if we remove view from this then it you cannot see the
read button once deployed.
{
    return(rollno);
}
```

TRANSACTION THAT OCCURS BETWEEN ACCOUNTS:-

- Transactions are announced to the network and queued to be added to a block
- NOTE ON PRIVATE KEYS: Access to send from accounts is typically restricted based on a private key/password combo

ETHEREUM VIRTUAL MACHINE (EVM)

Ethereum Virtual Machine (EVM)

- ❖ A Turing Complete Virtual Machine accessible from anywhere in the world has a number of benefits for the automated-economy:
- ❖ The Ethereum Blockchain is:
 - ❖ A blockchain with a built-in programming language
 - ❖ A decentralized, massively replicated database where the current state of all accounts is stored
 - ❖ A consensus-based globally executed virtual machine

Source: Melanie Swan; <https://github.com/ethereum/wiki/wiki/Ethereum-Development-Tutorial>

What Is Gas (Ethereum)?

Gas refers to the fee, or pricing value, required to successfully conduct a transaction or execute a contract on the Ethereum blockchain platform. Priced in small fractions of the cryptocurrency ether, commonly referred to as *wei* or sometimes nanoeth, the gas is used to allocate resources of the ethereum virtual machine (EVM) so that decentralized applications such as smart contracts can self-execute in a secured fashion.

The exact price of the gas is determined by the network's miners, who can decline to process a transaction if the gas price does not meet their threshold.

MetaMask:

MetaMask is an Ethereum extension for your browser. It connects you to Ethereum applications (called dApps) easily and securely. MetaMask is also a digital wallet.

How to add metamask in Chrome extension?

- Step 1: Click here to go to the Chrome Webstore and add the MetaMask plugin.
- Step 2: Click “Add Extension” to confirm and MetaMask will be added.
- Step 3: Read the privacy notice and click ‘Accept’.

- Step 4: Scroll down the Terms of Use and click 'Accept' (the "Accept" button will only activate if you scroll the contract all the way down).
- Step 5: Create your password. Make sure it's secure!.