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Blockchain Engineer Course

- ❖ **Module-1 Introduction to Blockchain**
  - ➢ What is Blockchain
  - ➢ How Blockchain works and why it's so secure
  - ➢ What is Smart Contract
  - ➢ What is the perpouse of smart contract or Why Web3

- ❖ **Module-2 Smart contract Development**
  - ➢ Introduction to Remix IDE
  - ➢ Introduction to Solidity
  - ➢ Hello World
  - ➢ Value Types
  - ➢ Introduction to Functions
  - ➢ What is Gas Fee
  - ➢ State Variables
  - ➢ Local Variables
  - ➢ Global variables
  - ➢ View and Pure Functions
  - ➢ Counter (application)
  - ➢ Default Values
  - ➢ Constants
  - ➢ If Else
  - ➢ For and While
  - ➢ Error
  - ➢ Function Modifier
  - ➢ Constructor
  - ➢ Ownable (application)
  - ➢ Function Returns
  - ➢ Array
  - ➢ Mapping
  - ➢ Iterable Mapping
  - ➢ Struct
  - ➢ Enum
  - ➢ Storage, memory and calldata
  - ➢ Simple storage (application)
  - ➢ Todo List (application)
  - ➢ Event
  - ➢ Inheritance
  - ➢ Multiple Inheritance
  - ➢ Calling Parent Constructor
  - ➢ Calling Parent Functions
  - ➢ Visibility

- ➢ Immutable
- ➢ Payable
- ➢ Fallback
- ➢ Send Eth
- ➢ Ether wallet (application)
- ➢ Call other Contracts
- ➢ New Keyword
- ➢ Library
- ➢ Keccak256 Hash Function
- ➢ Deleting Contract
- ➢ Gas Optimization
- ➢ Piggy bank (application)
- ➢ Erc20 Tokens and Openzeppelin (application)
- ➢ Dutch Auction (application)
- ➢ English Auction (application)
- ➢ Crowd Funding (application)
- ➢ Smart Lottery (application)

❖ **Module-3 Ethereum Networks and Metamask**
- ➢ Architecture of Decentralized Application
- ➢ What is Ethereum Mainnet
- ➢ What are Ethereum Testnet
- ➢ Metamask
- ➢ Connect remix with metamask
- ➢ What are Faucets
- ➢ Deploy smart contract with metamask
- ➢ What is Etherscan

❖ **Module-4 Integration of Smart Contracts with Frontend**
- ➢ Libraries to interact with smart contracts
- ➢ Framework to create Dapp
- ➢ Introduction to Hardhat
- ➢ Create Wave-Me Dapp
- ➢ Create Crowd Funding Dapp
- ➢ Create NFT (ERC-721) Dapp
- ➢ Introduction to Polygon
- ➢ Create Onchain metadata NFT Dapp
- ➢ Create Smart Lottery Dapp
- ➢ Introduction to Chainlink
- ➢ Create VRF Contract
- ➢ Create chainlink Keeper Contract
- ➢ Create PriceFeed Contract
- ➢ Update Smart Lottery with chainlink

❖ **Module-5 Security and Testing**
- ➢ Smart contract Attacks and Hacks
- ➢ Smart Contract Testing

➢ Smart Contract Security

❖ **Conclusion**