

BLOC-4 - BLOCKCHAIN DEVELOPING ON ETHEREUM

Categoria: **Blockchain**

INFORMAZIONI SUL CORSO



Durata:
3 Giorni



Categoria:
Blockchain



Qualifica Istruttore:
Docente Senior (min.
5 anni)



Dedicato a:
Sviluppatore



Produttore:
PCSNET

OBIETTIVI

Al termine del corso i partecipanti saranno in grado di:

- Approfondire i benefici e svantaggi delle tecnologie Blockchain
- Scrivere e leggere Smart Contract sicuri utilizzando il linguaggio Solidity
- Comprendere il concetto di Gas e come viene calcolato il suo costo
- Comprendere come sono strutturate le transazioni
- Comprendere ed evitare bug costosi ed errori di programmazione
- Creare applicazioni che interagiscono con gli Smart Contract
- Web3.js
- Installare, configurare e usare il framework Truffle
- Scrivere test con il framework Truffle
- Comprendere il workflow di sviluppo e deployment
- Utilizzare e creare private network, test network and the public main network

PREREQUISITI

È necessario avere una conoscenza di base di JavaScript e HTML.

È consigliato avere una conoscenza di base di C ++ o Java, data types, git repositories.

CONTENUTI

Module 1 - Blockchain and Smart Contract Basics

- What is Blockchain and how does it work?
- Centralized vs. Decentralized vs. Distributed
- Blockchain vs. Databases
- Bitcoin vs Ethereum
- What are Smart Contracts?
- How are Smart Contracts used?

Module 2 - Smart Contract Programming Basics

- Advantages and Drawbacks of Smart Contracts
- High-Level Language vs. Low-Level

- Smart Contracts with Solidity
- Types of Variables in Solidity
- Function/Variable Visibility
- Smart Contract Constructors
- Setter- and Getter-Functions

Module 3 - Understanding Decentralized Information and Web3

- Blockchain Access structures and Architectures
- Blockchain Access vs. centralized RESTful API
- Understanding Web3.js API
- Understanding Transactions and Consensus
- Private Keys, Public Keys and Signatures
- Understanding privacy on public Blockchains
- Understanding the architecture of KeyStore's such as MetaMask or MIST

Module 4 - Basics of Ethereum and the EVM

- Ethereum Denominations
- Understanding EVM and the ABI Interface
- Calls vs. Transactions
- Concurrency and Events
- Use cases of Events
- LAB:
 - Install and Use Ganache
 - Work with Web3.js
 - Define Events
 - Listen and React to Events

Module 5 - Solidity Advanced: Modifiers, Mappings, Structs and Inheritance

- Understanding Functions, Mappings and Structs
- When to use Modifiers
- Libraries vs. Inheritance
- Understand and use Modifiers
- Add Mappings and Structs
- Use Inheritance to increase auditability

Module 6 - Understanding Deployment and Costs

- Understand Development and Deployment Cycles
- Understanding Solidity Compilation and Deployment
- Gas and Gas-Costs
- Upgradeability and Data Migration Techniques
- Understand the moving Parts: Compiler, Blockchain, API, KeyStore

Module 7 - Mining, Proof of Work vs. Proof of Authority

- What is Mining in PoW?
 - How blocks are generated
 - PoW vs. PoA (vs. PoS)
- Understanding Go-Ethereum or Ganache/TestRPC for local development
- Understanding Private Blockchains vs. Public Blockchains
- LAB:

- Installing and using Ganache
- Installing and using Go-Ethereum
- Connecting to Ganache/Go-Ethereum from Remix and Web3.js
- Interact with the Blockchain from HTML/JS

Module 8 - Working in Teams, Testing and Versioning

- Understanding what Truffle is
- How Manage Code for Teams
- Understanding Migrations
- Understanding Unit-Testing with Truffle
- LAB:
 - Download and Setup Truffle
 - Adapt the standard Truffle-Project
 - Write A Unit Test

INFO

Esame: CBDE - Certified Blockchain Developer Ethereum

Materiale didattico: Materiale didattico in formato digitale

Costo materiale didattico: incluso nel prezzo del corso a Calendario

Natura del corso: Operativo (previsti lab su PC)