Publication date : 05/17/2024

Course : Blockchain, developing a trust solution with Hyperledger Fabric

Practical course - 3d - 21h00 - Ref. BHF
Price : 2470 CHF E.T.

In this course, you will discover the concepts of trust distribution. You will implement a network of partners sharing the security of their exchanges through transactions engraved in the ledger of a private blockchain. You will develop smart-contracts that automate the execution of certain contracts.

Teaching objectives

At the end of the training, the participant will be able to:

- Understanding the concepts of blockchain technology
- Differentiating between private and public blockchains, with/without crypto-currency
- Know the different consensus algorithms
- Understanding and writing smart contracts in GO language
- Integrate blockchain technology into your own IS architecture

Intended audience

CIOs, software architects, developers, project managers, system and network administrators, CISOs, IS governance managers, engineers, consultants, technology watch officers.

Prerequisites

Good development experience, good knowledge of an object language (C++, C#, Java, JavaScript...), some basic knowledge of cryptology and virtual machines.

Practical details

Case study

In a global product marketing network, different partners register their transactions on a hyperledger blockchain.

Teaching methods

The case study unfolds step by step throughout the course.

Course schedule

PARTICIPANTS

CIOs, software architects, developers, project managers, system and network administrators, CISOs, IS governance managers, engineers, consultants, technology watch officers.

PREREQUISITES

Good development experience, good knowledge of an object language (C++, C#, Java, JavaScript...), some basic knowledge of cryptology and virtual machines.

TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.
Participants also complete a placement test before and after the course to measure the skills they've developed.

1 Definitions

- Key elements of a blockchain.
- Blockchain and secure storage.
- Decentralized management nodes, an unfalsifiable and verifiable history.
- IS elements affected.
- Fields of application.

Demonstration

Manipulate an existing blockchain in a cloud, create and view transactions in a ledger.

2 Reminders of cryptology, the historical blockchain

- Basic cryptology for blockchain.
- Different hashing algorithms.
- The historical blockchain: Bitcoin.
- Consensus by mining.
- Bitcoin in figures and pictures.

Hands-on work

Install and control tools for deploying a test environment in a virtual machine.

3 Blockchain architectures, APIs

- Service-oriented architectures.
- A trust service based on multiple blockchains.
- Document trust and certification APIs.

4 The Hyperledger blockchain

- Principles and terminology.
- Different types of node.
- Service architecture.
- Operator confidentiality.
- GO bases, the language of smart contracts.

Hands-on work

Construction of a blockchain and first GO tests.

5 Hyperledger Fabric with open hood

- Consensus algorithms based on lottery or voting.
- Abandon mining, PoW, PoS.
- The PBFT consensus.
- Inter-node communication protocol.
- Channel concept.

TEACHING AIDS AND TECHNICAL RESOURCES

• The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
• At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
• A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.

6 How a smart contract works

- Notion of chaincode, world-state, read-set, write-set.
- Deploying a chaincode.
- Recording a transaction: Invoke.
- Consultation: Query.

Hands-on work
Step-by-step execution of a smart contract.

7 On the road to BaaS, Blockchain as a Service

- The different development platforms.
- Creating your own blockchain in the cloud.
- Using BaaS services.

Demonstration
BaaS APIs and services.

8 Integration architectures for blockchain solutions

- DDD, ES, CQRS architectural trends...
- Reminders: microservices, dockerization.
- Building the various dockers in the test VM.
- Integrating blockchain into partners' information systems.

Hands-on work
Implement microservices in a node, deploy them in dockers.

Dates and locations

REMOTE CLASS
2026 : 18 May, 12 Oct., 14 Dec.