Publication date : 01/16/2024

Course : Blockchain, developing on Tezos

Practical course - 4d - 28h00 - Ref. BKT
Price : 2960 CHF E.T.

The Tezos blockchain distinguishes itself from previous generations (Bitcoin, Ethereum) by three main features: governance enabling self-evaluation of the protocol, Liquid Proof Of Stake consensus and the development of smart contracts with the Michelson language authorizing formal verification.

Teaching objectives

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

- Understanding Tezos blockchain concepts
- Modeling and creating a smart contract in Ligo
- Setting up unit tests on a smart contract
- Deploying a smart contract with Michelson
- Interacting with a deployed smart contract
- Get to grips with simple smart contract models

Intended audience

Developers, architects, design engineers.

Prerequisites

Knowledge of the Linux environment (ssh, bash) and at least one programming language.

Practical details

Hands-on work

Deductive pedagogy based on exchanges, examples and demonstrations.

Course schedule

PARTICIPANTS

Developers, architects, design engineers.

PREREQUISITES

Knowledge of the Linux environment (ssh, bash) and at least one programming language.

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 The Tezos blockchain

- Introduction to blockchain and consensus.
- Architecture and challenges.
- Chain governance.
- Discussion formal verification.
- Use cases by segment (finance, energy, logistics, agri-food, etc.).
- Possible interfaces between blockchain and other technologies such as Big Data, the Internet of Things and AI.

2 Interaction with the Tezos blockchain

- Installation.
- Launch a node.
- Command line tool.
- Interaction via HTTP.

Hands-on work
Creation of a sandbox node and transactions.

3 Michelson and Ligolang languages

- Michelson: smart contract (parameters, storage, code).
- Michelson: language and commands, access point, typing.

Hands-on work
Run a simple example with Michelson.

4 The Ligolang language (Pascaligo)

- The basics of functional programming.
- Language.
- Storage, entrypoint, transaction.
- Transpilation tool.
- Anonymous function.
- Best practices.

Hands-on work
Simulation of a Ligo smart contract with manipulation of counter smart contract, voting smart contract.

5 Unit testing

- Call settings and storage.
- Exception handling.
- Setting up and using PyTezos.

Hands-on work
Handling with counter smart contract.

6 Deployment of smart contracts

- Preparation of parameters and storage.
- Accounts and faucet.
- Deployment simulation.
- Deployment/baking.

Hands-on work
First deployment.

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.

7 Invoking smart contracts

- Preparing invocation parameters.
- Execution.

Hands-on work
Invocation and access to storage.

8 Formal verification and smart contract model with Tezos

- Coq and Mi-Cho-Coq.
- Approach and modeling for formal verification.
- The SmartPy library.
- Interactions between smart contracts and [[polymorphism]".

Hands-on work
Voting example. Multisig and proxy.

Dates and locations

REMOTE CLASS
2026 : 17 Mar., 23 June, 6 Oct., 15 Dec.