AMBIENT-IT

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Sign up

Scilla training

3 days (21 hours)

Presentation

Scilla (Smart Contract Intermediate-Level Language) is a secure smart contract language designed for formal verification, used on the Zilliqa blockchain. It explicitly separates computational logic from state management to reduce vulnerabilities and improve application reliability.

Our Scilla training course will guide you from discovering the language to putting contracts and dApps into production. You'll learn about syntax, state management, good security practices, interaction with the Zilliqa blockchain and web integration to build robust, maintainable applications.

Through hands-on workshops, you'll deploy contracts on testnet, build reusable modules, set up gas tests and optimizations, and link your contracts to a JavaScript/TypeScript interface to create a complete production-ready dApp.

At the end of the course, you'll be able to write secure contracts, industrialize your development processes and fully exploit the Zilliqa ecosystem for your web use cases.

Like all our training courses, this one is based on the latest stable version v0.13.1 of Zilliqa/Scilla.

Objectives

- Understand the Scilla philosophy and Zilliqa architecture
- Write and deploy secure smart contracts
- Integrate Scilla into a web/DApp application
- Apply security and optimization best practices
- Industrialize production and maintenance

Target audience

- Blockchain developers
- Web developers
- Technical architects
- Project managers

Prerequisites

- Basic programming skills
- Notions of blockchain

Our Scilla training program

Introduction to Scilla and the Zilliqa blockchain

- Introduction to Scilla and its role in the Zilliqa ecosystem
- History and design philosophy
- Differences with Solidity and other smart contract languages
- Zilliqa architecture and link with Scilla
- Development environment and tools required
- Workshop: setting up a Scilla environment and compiling a first contract

Scilla language basics

- Syntax and structure of a Scilla contract
- Data types and variables
- Functions, parameters and returns
- Error and exception handling
- Limitations and best practices
- Workshop: writing a simple storage contract

State management and transitions

- Scilla's stateful model
- Defining and modifying state
- State transitions and conditions
- Data persistence on the blockchain
- Example: voting contract
- Workshop: implementing a voting system

Security in Scilla

- Formal verification and bug prevention
- Access and authorization management
- Best practices in secure coding
- Common vulnerabilities and countermeasures
- Audit and analysis tools
- Workshop: auditing and correcting a vulnerable contract

Interaction with the Zilliqa blockchain

- Deploying a contract on testnet/mainnet
- Using the Zilliqa CLI and SDKs
- Read/write on-chain
- Gas management and optimization
- Monitoring and logging
- Workshop: deploying and testing a contract on testnet

Complex contracts and modularity

- Structuring into reusable modules and functions
- Integration with other Scilla contracts
- Using libraries and templates
- Common design patterns
- Managing complexity and readability
- Workshop: creating a modular, multi-functional contract

Web and dApp integration

- Connecting a Scilla contract to a web application
- Using Zilliqa APIs
- Communication via JavaScript/TypeScript
- Integration with web frameworks
- Deploying a user interface
- Workshop: mini dApp interacting with a Scilla contract

Testing, debugging and optimization

- Writing unit tests for Scilla
- Test and simulation tools
- Debugging strategies
- Performance optimization
- Gas cost reduction
- Workshop: testing and optimizing an existing contract

Go-live and best practices

- Complete online process

- Contract monitoring and maintenance
- Updating and migration
- Documentation and communication
- Pre-production security checklist
- Workshop: putting a complete dApp into production

Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical training: 60% hands-on, 40% theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Certification

A certificate will be awarded to each trainee who has completed the entire course.