

Create a new Solidity Language Server (SLS) using Solang Compiler

Title	Create a new Solidity Language Server (SLS) using Solang Compiler
Status	COMPLETED
Difficulty	HIGH

Description

Solidity is a language for Smart Contracts used by the Ethereum Solidity compiler. Solang is a new implementation of the Solidity compiler, which can target wasm on more blockchains. Solang is written in rust and uses a generated Solidity parser.

Modern IDEs provide syntax highlighting, symbol definition, errors, warnings etc. This is often done via the Language Server Protocol. There are no good implementations of a language server for Solidity, however using the parser and resolver of Solang, this can change.

The idea of this mentorship is to extend the Solang Compiler project so it can run as a language server, that implements the Language Server Protocol.

Additional Information

<https://en.wikipedia.org/wiki/Solidity>

https://en.wikipedia.org/wiki/Language_Server_Protocol
<https://microsoft.github.io/language-server-protocol/specifications/specification-current/>

<https://github.com/rust-lang/rls> (rust language server)

<https://github.com/hyperledger-labs/solang>

Learning Objectives

- First and foremost the mentee will learn how to be a positive collaborator and contributor in an active open source project.
- Learn how to work within the Hyperledger open source ecosystem and culture.
- Understand smart contracts and the language Solidity language
- Increase understanding of compiler technology and development tooling

Expected Outcome

- Extend Solang in the existing rust code base to include language server binary
- Implement Syntax Highlighting
- Hovers
- Diagnostics for errors and warnings
- test cases

Relation to Hyperledger

Hyperledger Burrow and Hyperledger Sawtooth can run smart contracts compiled using Solang. So, this tool will help users write smart contracts in Solidity for those project.

Education Level

The ideal mentee is a university student or a developer with one or two years of experience with a solid background in Computer Science, especially compiler technology.

Skills

The following skills are required:

- Working knowledge of rust
- Understanding of the parsing and resolving stages of a compiler

Schedule

Please check the [project plan](#) for this.

Future plans

This is just the start of a language server. Many more features are possible in the language server protocol, e.g. refactoring.

Preferred Hours and Length of Internship

This project can be done by a full-time or part-time mentee.

Mentor(s) Names and Contact Info

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Mentee Name and info

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Project Results

During the mentorship a language server was developed which used Solang compiler as its backend to process Solidity files.

The server is implemented in Rust using tower-lsp as a base framework to process client(editor)-server requests.

A vscode extension was also developed in TypeScript to use the server providing features:

1. Syntax highlighting and bracket completion.
2. Diagnostic info of compiler errors, warnings and hints.
3. Hovers for different types of variable, struct, enum, function definitions.

The code is present on github under hyperledger-labs at <https://github.com/hyperledger-labs/solang-vscode>.

Checkout the [readme](#) page to learn how to use it.

A visual demo video of the implementation is uploaded [here](#).

The [project plan](#) contains technicalities of how the client-server communication process takes place.

Final Report

Hyperledger Mentorship presentation slides([google slides link](#))



slspresentation.pdf

Lightening Talk Recording



Create a new So...ng Compiler.mp4