Project Catalyst Close-Out Report

Cardano Native Token DEX Price Indexer in Kotlin

Project ID: 1200061

31 Dec 2024

1. Overview

Name of project: Cardano Native Token DEX Price Indexer in Kotlin

Project Links:

- *IdeaScale Proposal:* https://cardano.ideascale.com/c/cardano/idea/122735
- *Github Repository:* https://github.com/Edgxtech/prise
- *Milestone Report - Final:* https://edgxtech.github.io/docs/Catalyst_Project_1200061_KotlinPriceIndexer_Report_Milestone3_signed.pdf
- *Close-Out Video:* YouTube: "*Project Catalyst* | *Fund 12* | *Close-Out Video* | *Kotlin Price Indexer*", https://youtu.be/l61mwZat6Io
- *Close-Out Report (this):* https://edgxtech.github.io/docs/Catalyst_Project_1200061_KotlinPriceIndexer_Report_Close-Out_signed.pdf

Project Number: 1200061

Project manager: Tim Edge

Date project started: August 2, 2024

Date project completed: Dec 30, 2024

2. Milestones

Essentially, we set milestones first representing the core indexer capability but with a reduced number of integrations. For the second milestone, integrations (namely DEX classifiers) were added plus the query interface capability. For the final milestone we remediated issues and validated the ability to install and operate the software.

Milestone 1 - Proof of Concept progress release, Sep 2024

Milestone Outputs	• Release of a system containing the foundational software architecture and providing the core requirement of generating and persisting price data • At least 1x (one) UTXO resolver external interface module • At least 1x (one) token metadata external interface module • At least 3x (three) DEX classifier(s)
Acceptance criteria	• 1.1 Can generate and persist latest price data from at least three (3) DEX's trading activity? • 1.2 Can generate and persist historical price candles data from at least three (3) DEX's trading activity?
Evidence of milestone completion	• Report section comparing a single DEX's latest prices for a sample of tokens (1.1) • Report section comparing a single DEX's historical price candles for a sample of tokens (1.2)
Method of Evidence Collection	• Software Testing (JUnit tests) covering DEX trading computations, price computations, historical candle computations and database interactions. Tests are included in the project software repository on Github under *indexer/src/test/kotlin*.

	• Manual Accuracy Comparisons of generated data compared to the popular Minswap DEX

Milestone 2 - Initial release, Nov 2024

Milestone Outputs	• Release of a system containing the foundational software architecture and providing the core requirements of generating and persisting price data and enabling query of data • At least 2x (two) UTXO resolver external interface modules • At least 1x (one) token metadata external interface module • At least 4x (four) DEX classifier(s)
Acceptance criteria	• 2.1 User can query latest price data? • 2.2 User can query historical price candles data?
Evidence of milestone completion	• Report section describing test serials and results for querying latest prices (2.1) • Report section describing test serials and results for querying historical prices (2.2)
Method of Evidence Collection	• Software Testing (JUnit tests) covering API request validation and output based on an example dataset. Tests are included in the project software repository on Github under webserver/*src/test/kotlin*. • Manual querying of an example synced dataset using an API testing tool (Postman and/or SwaggerUI)

Milestone 3 - Final Release, Dec 2024

Milestone Outputs	• Software capable of suitable performance for the intended operating environment • Final close-out report • Final closeout video
Acceptance criteria	• 3.1 User can install the software • 3.2 User can run the software • 3.3 User can maintain the software • Final closeout video is publicly available • Final closeout report is publicly available
Evidence of milestone completion	• Report section describing test serials and results for software installation (3.1) • Report section describing test serials and results for operating the software (3.2) • Report section describing test serials and results for maintaining the software (3.3) • Link to final closeout report • Link to final closeout video
Method of Evidence Collection	• Manual installation, running and monitoring of the software using a fresh Linux install

3. Key Achievements

- Good feedback on our milestone reporting in terms of clarity of evidence.
- All 3 milestones were met on-time as forecasted: *Milestone 1 in Sep 24*, *Milestone 2 in Nov 24*, *Milestone 3 in Dec 24.*
- The project was developed in the open with a public repository available from the project kick-off.
- Our team are part of the Cardano Malaysia community, and this successful project has allowed discussion and sharing of lessons about the process and expectations for such projects.

4. Key Learnings

- Unique approaches to programming of smart contracts by different DEX's, each use varied input and output data structures and some implement e.g. liquidity pool zap-in's which constitute swaps and price information.

5. Next Steps

- We are not currently planning to request further funding from catalyst for this project specifically.
- We are aiming to use this project as a demonstrator to run workshops for e.g. university blockchain clubs in Malaysia as an introduction to Cardano Data Engineering. This was originally targeted within this projects' timeframe however wasn't achieved.
- Have been working hard on some related systems; namely a Big Cardano / Cardano Data Engineering approach using a horizontally scalable Spark compute architecture, which is similar in spirit to Cardano in that it emphasises functional programming for distributed computation. Planning to drop a Medium article as an intro to this first, however it may be useful as a framework for handling *many sources to many sinks* supporting partner chains, layer 2's or any other sources.
- Also considering open sourcing portfolio data software which aggregates portfolio data such as Native Tokens and DeFi positions across wallets. Users would then have another codified source of determining 'how' their funds are accounted for on the blockchain, and since it can be operated of their own accord, would add to the inclusive accountability for users.

Final Thoughts/Comments

It was a privilege to have this opportunity to make a contribution to Cardano. Thanks to all who voted and supported this effort, we look forward to seeing the Cardano Financial Operating System grow.