Blockchain Researcher Intern Assignment

Detecting Cross-Chain Transactions for a Given Address

Objective: Develop a Go-based backend solution that identifies cross-chain transactions associated with a specified address. The system should determine if any transactions from the given address involve cross-chain mechanisms and, if so, identify the target address where
the funds are received.

Tasks:

1. Selection of Blockchain and DEX

Blockchains: Bitcoin, Ethereum

DEX: Thorchain

Blockchain.com | Buy Bitcoin, Ethereum and more with trust API

2. Research and Analysis:

Investigate the mechanisms and protocols used for cross-chain transactions involving the Bitcoin and ethereum blockchain.

How Swapping Works

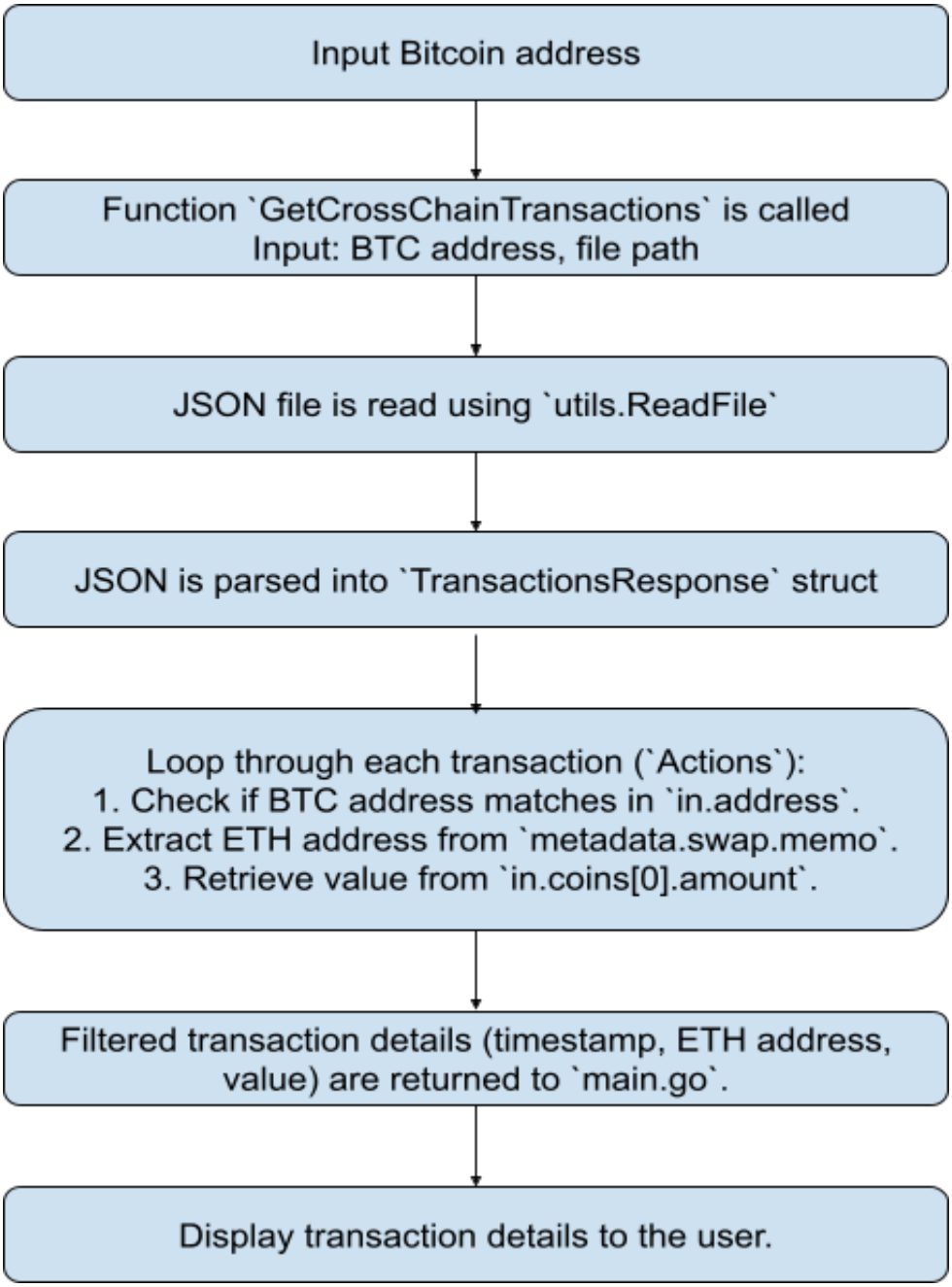
Swaps in THORChain use native assets. Example: When a swap from RUNE to BTC occurs, RUNE is sent into THORChain from the user and BTC is sent out from one of THORChain's vaults - Inbound gas is paid in RUNE, Outbound Fee is paid in BTC.
When Swapping from BTC to ETH, BTC is sent into THORChain from the user and ETH is sent out from one of THORChain's vaults. Internally, once the BTC is received, RUNE moves from the BTC pool to the ETH Pool - thus it is a double swap (BTC:RUNE, RUNE:ETH). Inbound gas is paid in BTC, Outbound Fee is paid in ETH. See Swappersfor more information.

Continuous Liquidity Pools

Swaps on THORChain are made possible by liquidity pools. These are pools of assets deposited by Liquidity providers, where each pool consists of 1 connected asset, for example Bitcoin, and THORChain's own asset, RUNE. They're called Continuous Liquidity Pools because RUNE, being in each pool, links all pools together in a single, continuous liquidity network.
When a user swaps 2 connected assets on THORChain, they swap between two pools:
Swap to RUNE in the first pool,
Move that RUNE into the second pool,
Swap to the desired asset in the second pool with the RUNE from (2)
The THORChain state machine handles this swap in one go, so the user never handles RUNE.

3. Design and Implementation:

Working Flow of Design



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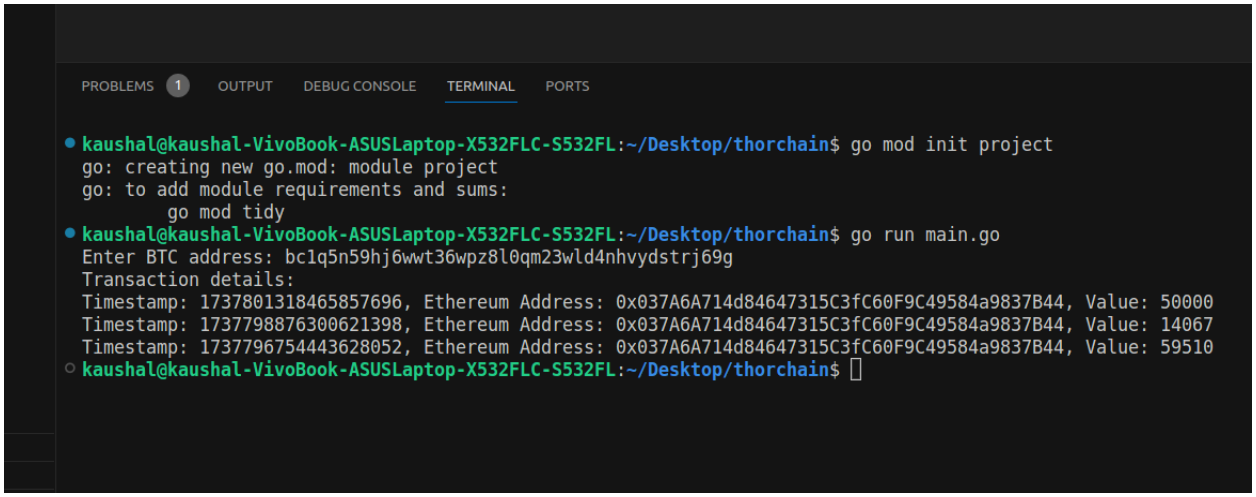
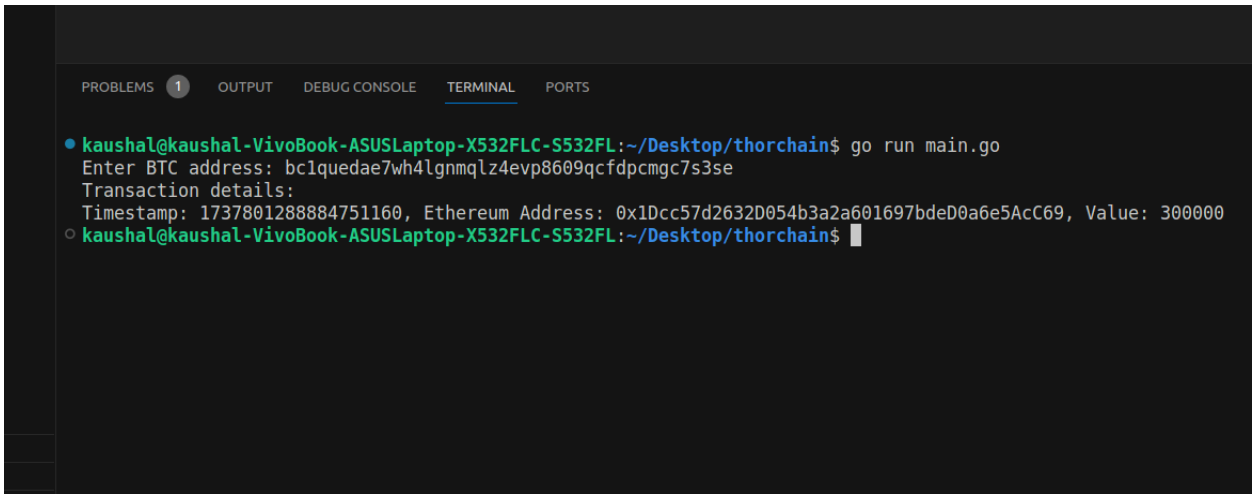
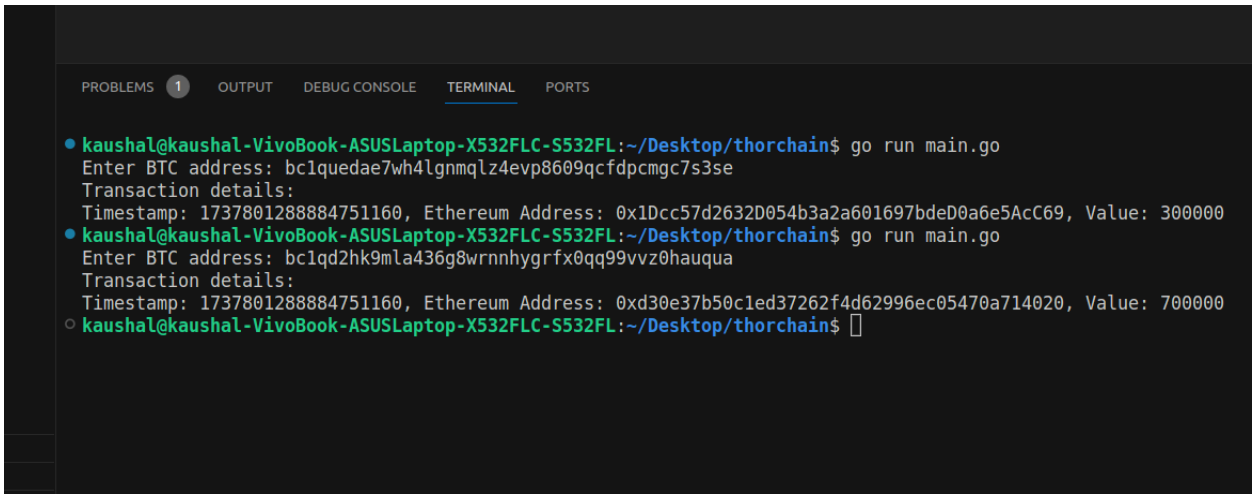
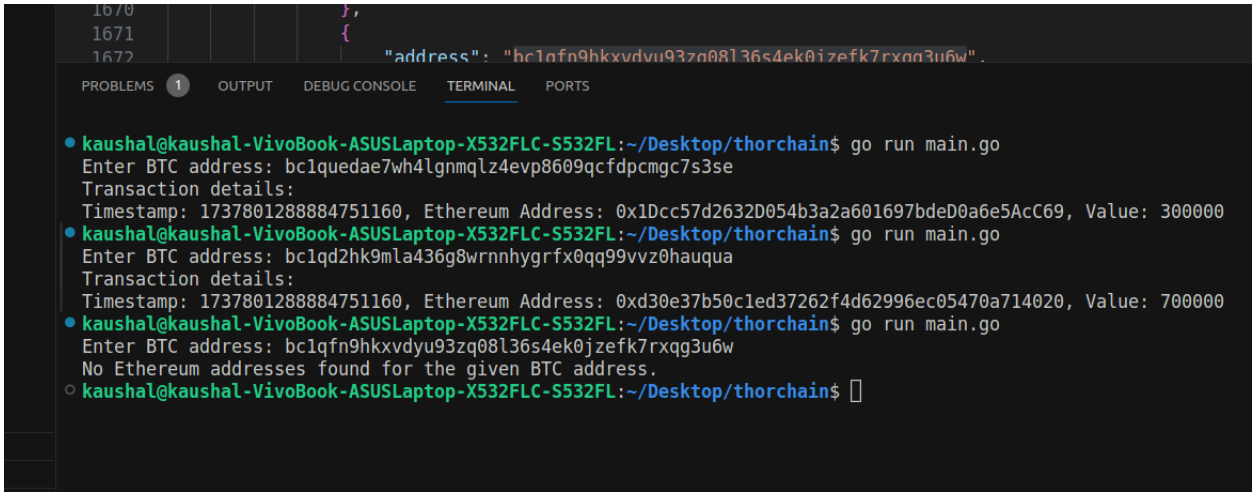
Output


PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
kaushal@kaushal-VivoBook-ASUSLaptop-X532FLC-S532FL:~/Desktop/thorchain$ go mod init project
go: creating new go.mod: module project
go: to add module requirements and sums:
go mod tidy
kaushal@kaushal-VivoBook-ASUSLaptop-X532FLC-S532FL:~/Desktop/thorchain$ go run main.go
Enter BTC address: bc1q5n59hj6wwt36wpz8l0qm23wld4nhvydstrj69g
Transaction details:
Timestamp: 1737801318465857696, Ethereum Address: 0x037A6A714d84647315C3fC60F9C49584a9837B44, Value: 50000
Timestamp: 1737798876300621398, Ethereum Address: 0x037A6A714d84647315C3fC60F9C49584a9837B44, Value: 14067
Timestamp: 1737796754443628052, Ethereum Address: 0x037A6A714d84647315C3fC60F9C49584a9837B44, Value: 59510
kaushal@kaushal-VivoBook-ASUSLaptop-X532FLC-S532FL:~/Desktop/thorchain$


PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
kaushal@kaushal-VivoBook-ASUSLaptop-X532FLC-S532FL:~/Desktop/thorchain$ go run main.go
Enter BTC address: bc1quedae7wh4lgnmqlz4evp8609qcfdpcmgc7s3se
Transaction details:
Timestamp: 1737801288884751160, Ethereum Address: 0x1Dcc57d2632D054b3a2a601697bdeD0a6e5AcC69, Value: 300000
kaushal@kaushal-VivoBook-ASUSLaptop-X532FLC-S532FL:~/Desktop/thorchain$


PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
kaushal@kaushal-VivoBook-ASUSLaptop-X532FLC-S532FL:~/Desktop/thorchain$ go run main.go
Enter BTC address: bc1quedae7wh4lgnmqlz4evp8609qcfdpcmgc7s3se
Transaction details:
Timestamp: 1737801288884751160, Ethereum Address: 0x1Dcc57d2632D054b3a2a601697bdeD0a6e5AcC69, Value: 300000
kaushal@kaushal-VivoBook-ASUSLaptop-X532FLC-S532FL:~/Desktop/thorchain$ go run main.go
Enter BTC address: bc1qd2hk9mla436g8wrnnhygrfx0qq99vvz0hauqua
Transaction details:
Timestamp: 1737801288884751160, Ethereum Address: 0xd30e37b50c1ed37262f4d62996ec05470a714020, Value: 700000
kaushal@kaushal-VivoBook-ASUSLaptop-X532FLC-S532FL:~/Desktop/thorchain$



References:

- https://docs.thorchain.org/understanding-thorchain#how-swapping-works
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- http://blockchain.com/
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