Crypto Pi Network

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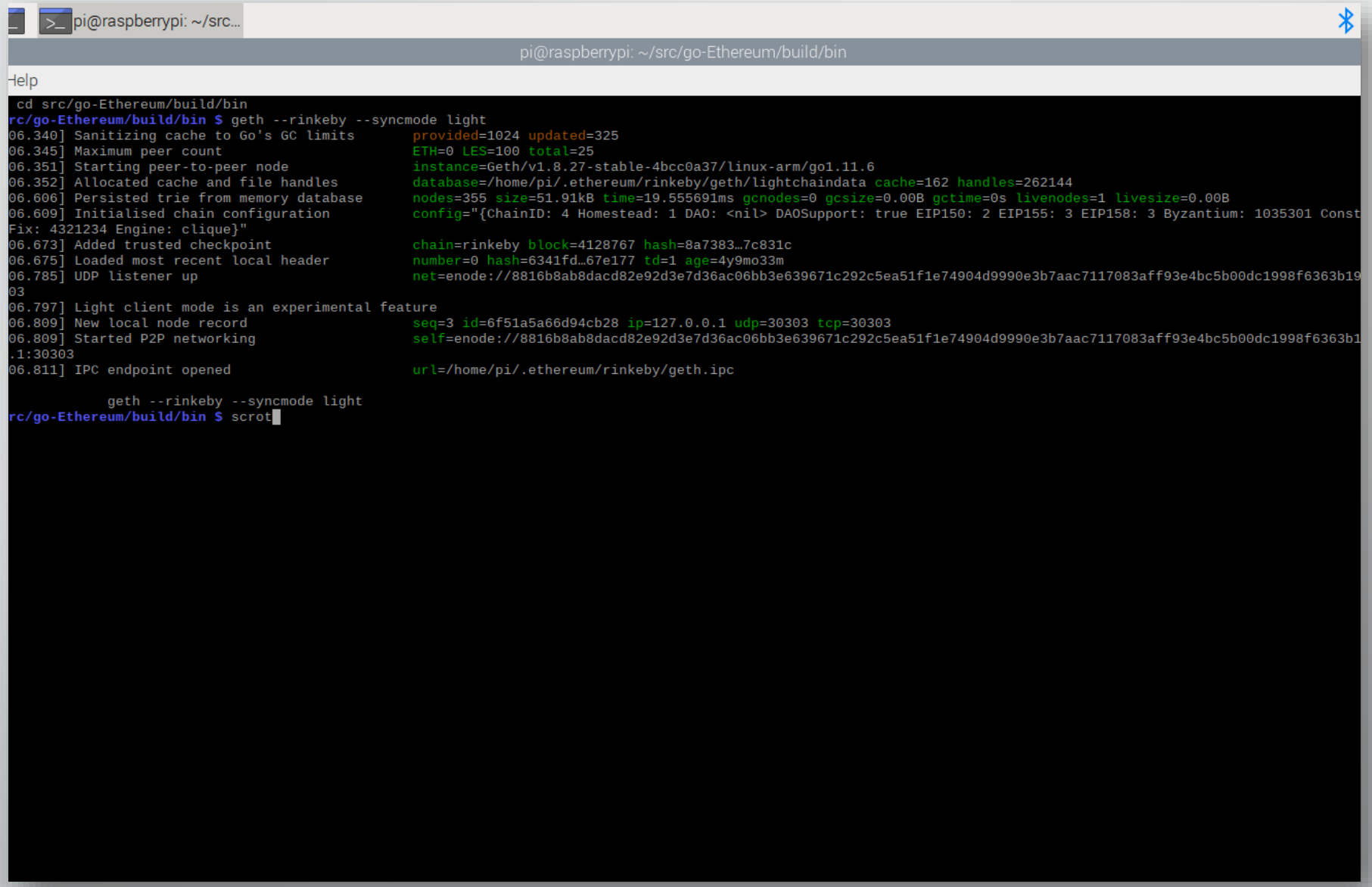
What is a blockchain?

- A blockchain in its simplest definition is a public digital ledger for storing data.
- Blockchains are primarily used for recording and displaying transactions sent from one person to another.
- One of the unique properties of blockchain is that it’s data is immutable and can’t be altered once its put on the blockchain.
- The idea behind this technology is that data is kept in blocks. Each block created is chained together and forms the blockchain.
- Blocks are connected to each other through a cryptographic sequence of characters which make the blockchain secure and unchangeable.
- Blockchain data is stored on nodes which make up the network. These nodes communicate with each other and verify blocks before deployment.

Ethereum Node

The Raspberry pi 3 B+ is implemented as an Ethereum light node running geth client software and is written in the go language. Full nodes require high performance embedded devices like the raspberry pi 4. Light nodes store the header chain and verifies the validity of each block and transaction. A command line interface is utilized to interact with transactions and account management.

Geth Cli Interface

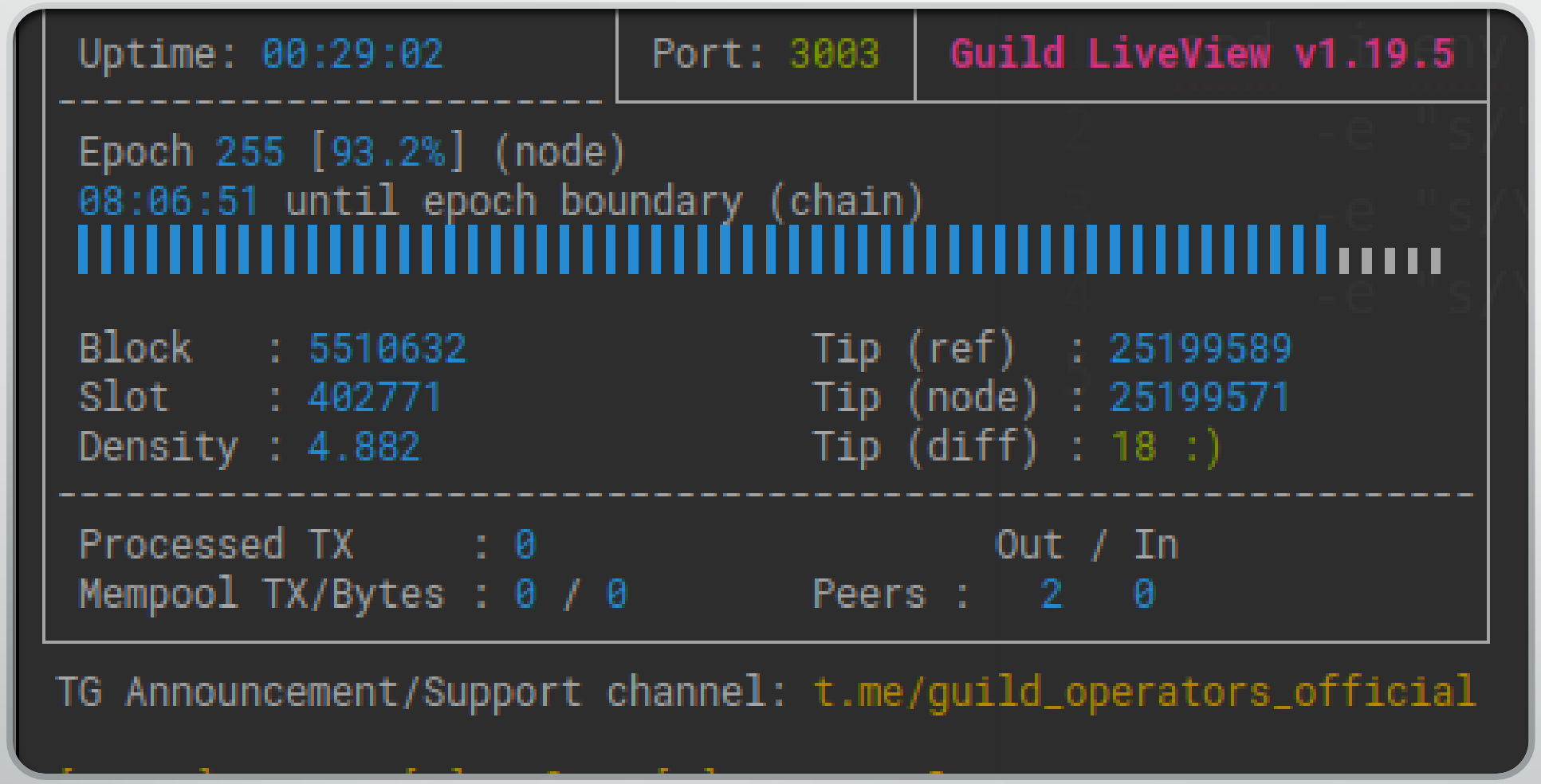


Cardano Node

The Raspberry Pi 4 runs a full node client of the cardano blockchain and extends proof of stake as its consensus protocol. Instead of mining blocks on the chain which involves validation, Forgers forge blocks and use their own crypto to finance it. Cardano is built on top of the ouroboros consensus protocol and specialises in peer-to-peer networks employing three types of nodes; core, edge and relay.

- The core node is a participant in the consensus mechanism and the creation of new blocks. The core node is surrounded by a group of relay nodes for security enhancement.
- The edge nodes dispense currency transactions and can only communicate to core nodes via relay nodes.
- The relay node’s purpose is to act as an interface between core nodes and the internet. They are the only node that can communicate with core nodes.

Relay Node Monitoring



Consensus Mechanisms

The two main consensus mechanisms that are used by crypto companies are proof of work and proof of stake.

Proof of work is a consensus protocol used by mining nodes to validate transactions and newly created blocks to the blockchain whereas Proof of stake compensates forgers based on their proportion of crypto they own.

Forgers stake their crypto in escrow for the chance of creating blocks on the chain.

The big difference between the two protocols is that proof of stake uses less power and it decreases the transaction fee required for computational work on the network. It is also more efficient and faster amongst the two.

Smart Contracts

A smart contract is a reliable self executing code-based program that requires a fee for initiation when operating on a blockchain. The contract is located and distributed across a decentralized blockchain network which makes it fully transparent and unchangeable.

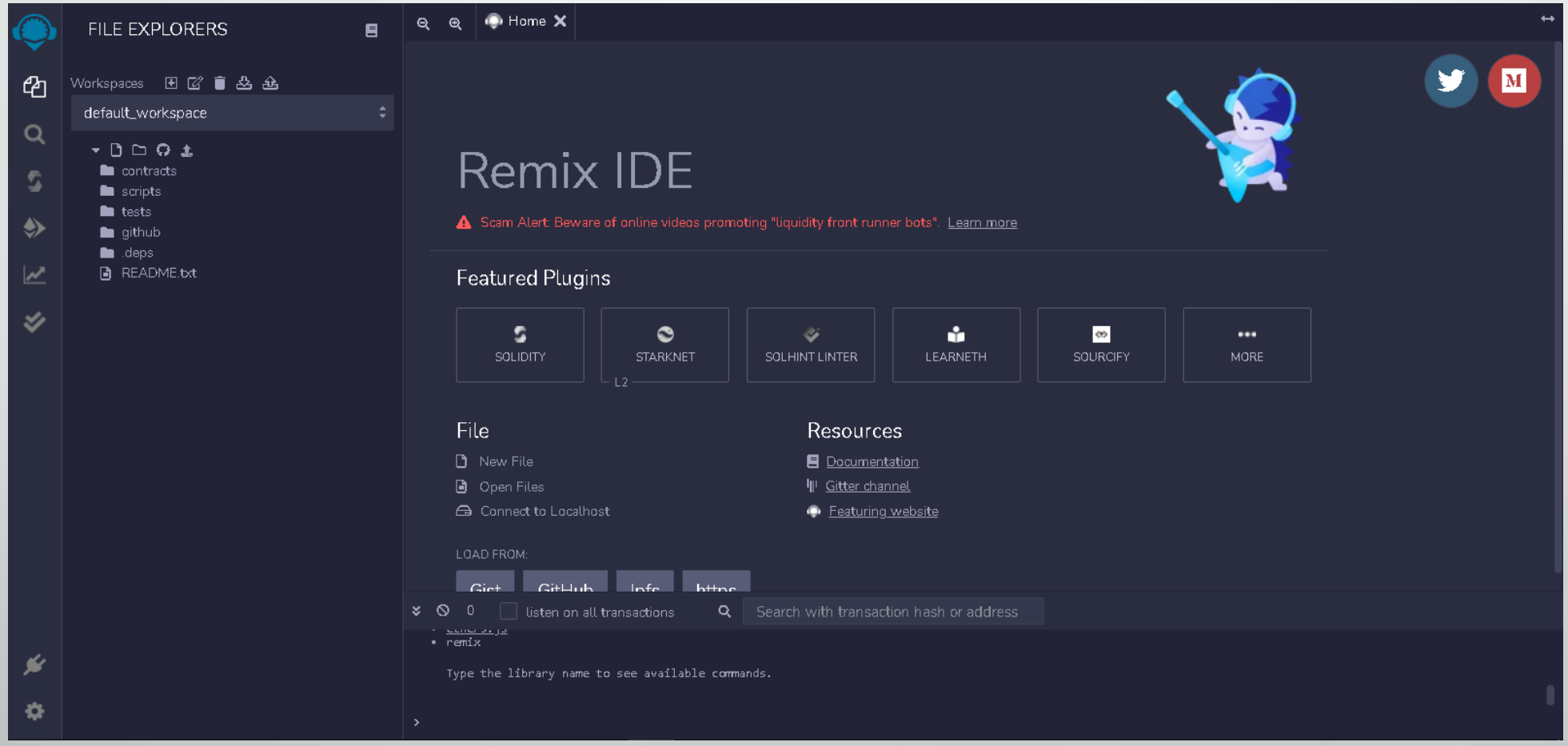
The contract is a digital agreement that verifies, tracks and executes transactions between numerous entities. When specific conditions are met in the contract, transactions execute automatically.

Smart contracts are immutable and cannot be altered once deployed on the blockchain. Ethereum uses a programming language called solidity to develop smart contract code. Plutus is the programming language native to cardano, which is written in Haskell and is turing complete.

Main Net Vs Test Net

- Mainnets are the final version of the blockchain available to the public and is the most secure and reliable form of the blockchain. Projects that use the mainnet are always considered more mature. This can convince users that the project has put a lot of effort and resources into the blockchain. This is because the mainnet went through a rigorous evaluation process before it was launched.
- Testnets are large public networks used for experimenting and developing blockchain applications like smart contracts or dapps(decentralized apps). Testnets use faucets that dispense free crypto to pay for computational effort on the network.

Remix IDE


FILE EXPLORERS
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scripts
tests
github
.deps
README.txt
Home
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Documentation
Gitter channel
Featuring website
LOAD FROM:
Gist
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Ipfs
https
listen on all transactions
Search with transaction hash or address
remix
Type the library name to see available commands.