Cryptomon: Blockchain Based Game for Everyone

Cameron Haddad, Guy Darel, Leo Vinogradov, Sharnendu Mukherjee
Project Advisors: Professor Zhou Li (Cybersecurity)

October 2020

Background/Purpose

In 2008, the alias “Satoshi Nakamoto” released the cryptocurrency Bitcoin introducing a decentralized, trustless computational architecture know as blockchain. Each node comprising Bitcoin’s network has an identical copy of an immutable ledger or database of the transactions performed. No actor can change the content of this ledger and additional entries are made if consensus is achieved. This digital currency is secure across multitudes of devices, and has spurred the rise of other purpose-built blockchain networks [1].

Today’s videogames are filled with micro-transactions, gamers spend over $100 billion annually primarily on these in-game purchases. But these in-game purchases don’t lead to any ownership of in game items. Since for most games, data is hosted on company servers with full discretion given to the creators [3].

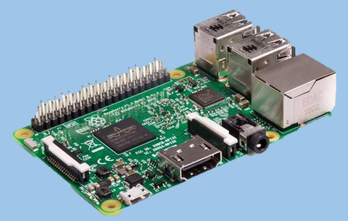
We are creating a game where the player owns his/her unique pet digital crypto-monster. Players can grow attached to their pet. Players can feed, groom, and play with their pet, then when they want another, they can trade, breed, buy, or sell!

Project Goal

The goal of Cryptomon is to provide a gaming architecture which grants unprecedented ownership and control over to the user of their the digital. This game is available on a friendly portable gaming device. Users can invest lots of effort in caring for their assets, Cryptomons, and trade with others while having assurance that tampering or hacking for gain and revocation of ownership is eliminated. It is blockchain-based game in the palm of your hands!

Progress

AntChain successfully developed core logic of smart contract and deployed it on a local blockchain for testing intended functionality. Created a custom Application Binary Interface file that corresponds with the contract for the UI to interface with the contract! For UI, Node JS will be the runtime environment that executes a script implementing commands the UI, written in Python, will call for running actions. The script is written in JS and uses Yargs and eosjs. The hardware schematics are complete and implemented.



Materials Needed

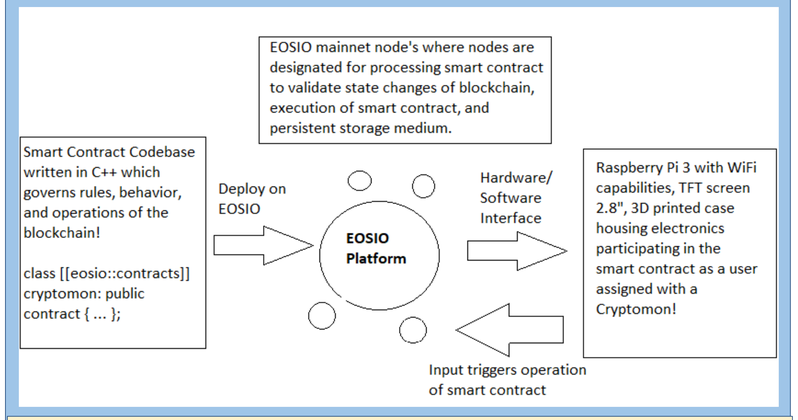
Raspberry Pi 3, TFT LCD monitor, Buttons, Plastic Casing, EOSIO toolchain, Node js

References

[1] Satoshi Nakamoto, “Bitcoin: A Peer-to-Peer Electronic Cash System,” 2008. [Online]. Available: https://bitcoin.org/bitcoin.pdf. [Accessed November 13, 2019].
[2] EOSIO, “EOS.IO Technical White Paper v2,” March 16, 2018. [Online]. Available: https://github.com/EOSIO/Documentation/blob/master/TechnicalWhitePaper.md#background. [Accessed November 13, 2019].
[3] WAX.io, “Inside the Virtual Item Economy: How True Ownership of In-Game Digital Items is the Future of the $100 Billion Video Game Industry,” December 7, 2018.

Software/Hardware Design

For the contract, multi-index table structures “players”, “cryptomons”, and “market” are defined. Functions (setters/getters) of these tables are necessary to manipulate or aggregate data relevant to user processes. Devised a transfer function to send currency for data or data for data where data is the Cryptomon. For GUI, it uses eosjs. For hardware, created circuit with buttons, Pi, and display monitor.



Future Goals

Looking ahead, the 3D printed shell that will house the hardware needs to be designed and printed. The smart-contract, will be deployed on a testnet to test smart-contract functionality in a production-grade environment. Further development of the UI is needed such as sprites for the Cryptomons and the in-game menus. Also, account management and setup upon boot is required.

UCI Samueli School of Engineering | Department of Electrical Engineering and Computer Science