Amrita School of Engineering, Amritapuri Campus,
Amrita Vishwa Vidyapeetham
Department of Computer Science and Engineering

PROJECT ABSTRACT

Crypto Currency Mining Using Raspberry Pi

Course Code and title: 22AIE211 Introduction to Communication and IoT
Project Group Number: 9

Student Details:

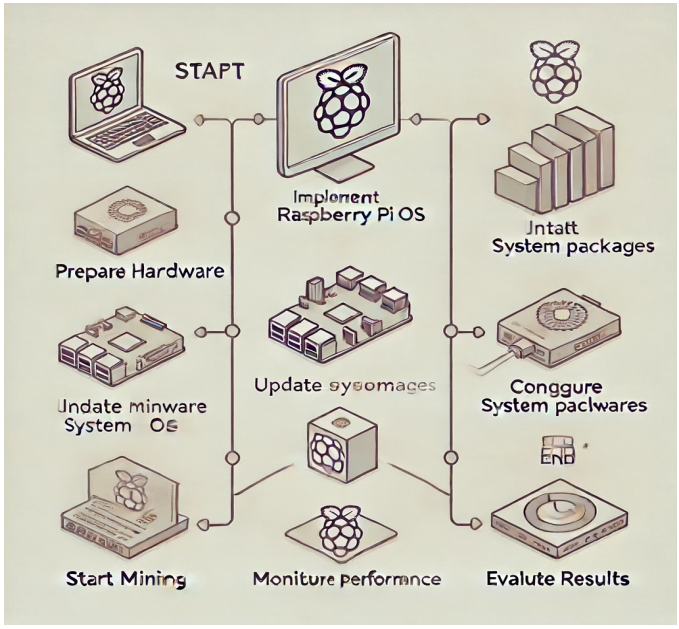
Student Name	Roll Number
Jayant Sasikumar	AM.EN.U4AIE22059
Vighnesh S R	AM.EN.U4AIE22056
A.Sree Tharun Raju	AM.EN.U4AIE22001
Nikhil Chandran	AM.EN.U4AIE22035

Abstarct:

Blockchain has been a leading and most booming tech in the present world. There was new job opportunity created called Mining. Cryptocurrency mining is the process of validating and adding the transaction data to the Blockchain Ledger. The person who does mining is called a Miner. He will be rewarded by some cryptocurrency for mining. But to be a miner we need lots of power supply and highly efficient mining machines and advanced softwares. So we are doing mining by cost effective and easy method with the help of Raspberry Pi 4.

The design of this device is made power compact and most efficient which helps in convoluted mining process. The cryptocurrency mining demanded the use of economical mining tools. Raspberry Pi provides an economical and energy efficient cryptocurrency tool.

The software used here for mining is XMRig which helps to mine the cryptocurrencies that submit proof of work. It works on the algorithm (RandomX PoW Algorithm) designed to be ASCI resistant which helps us during the solving of hashes.



Challenges involved:

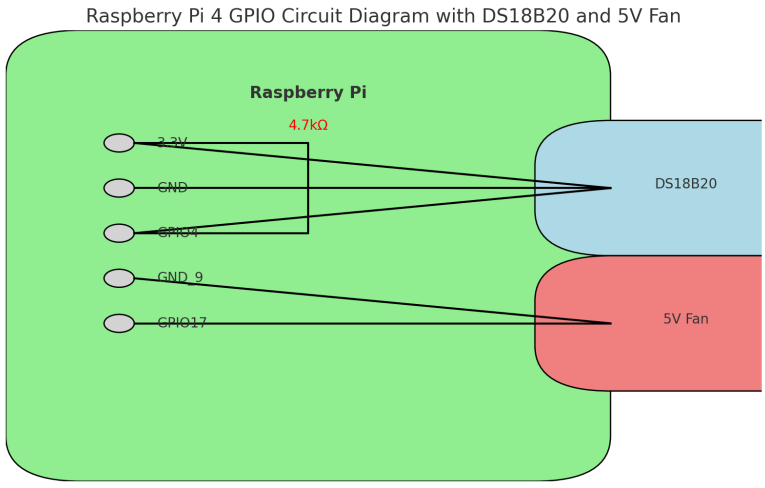
1.Heat Management.

2.Less Output if code is not implemented properly.

3.Power Consumption and internet supply.

The process of mining exerts more heat and temperatures which leads to damage and slow decay of our mining tool Raspberry Pi to tackle this problem there are 3 ways i.e, Heat sinks, Cooling system with fan or simply a temperature sensor with fan.

Circuit diagram for Fan:



The publication “Implementation of Bitcoin Mining using Raspberry Pi “ by C.G Raji, Vinish A, Ganesh Gopakumar, Shahil K explains how the bitcoin mining

can be done with the help of USB hash miners. The project we do here is the minimized version of that project since we don’t use many hash miners in our project.

Component list:

1.Raspberry Pi (4 model B)

2.Micro SD

3.Heat sinks and Cooling system

Optional for cooling system:

1.Temperature Sensor (DS18B20 or DHT22)

2.Small 5V Fan

3.Resistor (4.7kΩ for DS18B20)

Software Requirements:

1.Raspberry Pi OS

2.Mining Software (XMRig)

3.Python (for controlling the fan based on temperature)

4.GPIO Library (Rpi.GPIO)

References:

[1] Chan, Stephen, et al. "A statistical analysis of cryptocurrencies." Journal of Risk and Financial Management10.2 (2017): 12.

[2] Nakamoto, Satoshi. "Bitcoin: A peer-to-peer electronic cash system." (2008).

[3]”Implementasi Monero Mining Pada Raspberry Pi 4 Model B.“,M. D. Fadilah, H. Firdaus, M. D. Fadilah, M. Riyyan (2023)

[4] “Implementation of Bitcoin Mining using Raspberry Pi “ by C.G Raji, Vinish A, Ganesh Gopakumar, Shahil K(2019).