

Lab Exercises

Exercise 1.1:

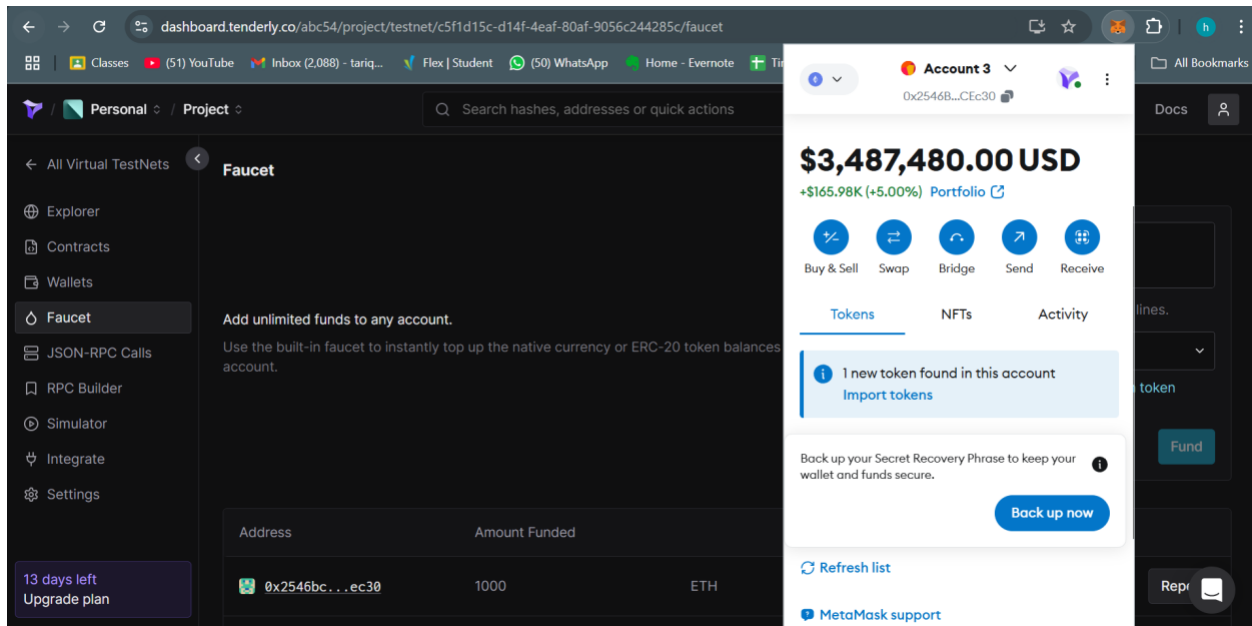
The change in block size from 1MB to 800KB would require a hard fork because:

- A hard fork happens when a change to the block chain protocol makes previously valid blocks or transactions invalid. For example, blocks that were valid under the old rule, up to 1MB in size, would be invalid under the new rule, max size of 800KB.
- The new protocol nodes would reject blocks larger than 800KB, while old protocol nodes would still accept blocks up to 1MB. This creates incompatibility between the two sets of nodes.
- To implement this change, all participants in the network (nodes and miners) have to agree on the new rule. If even a subset of the participants rejects the change, the blockchain splits into two separate chains: one follows the old rule (1MB) and the other the new rule (800KB).

Exercise 1.2:

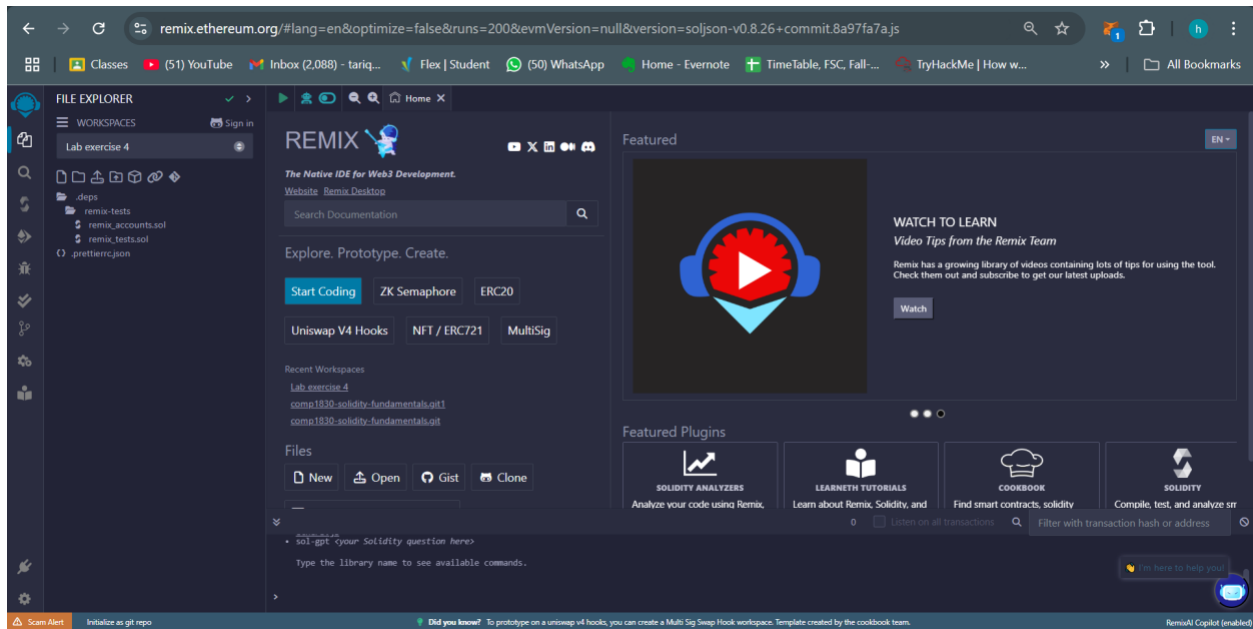
Reversing a transaction and all transactions after that will require a hard fork because a hard fork involves making changes to the already present block chain compatible. Moreover, Some participants disagree with the reversal, thus leading to a split network, where one chain will follow the updated history (known as a hard fork), while the other will continue along with the original history.

Exercise 2.1:

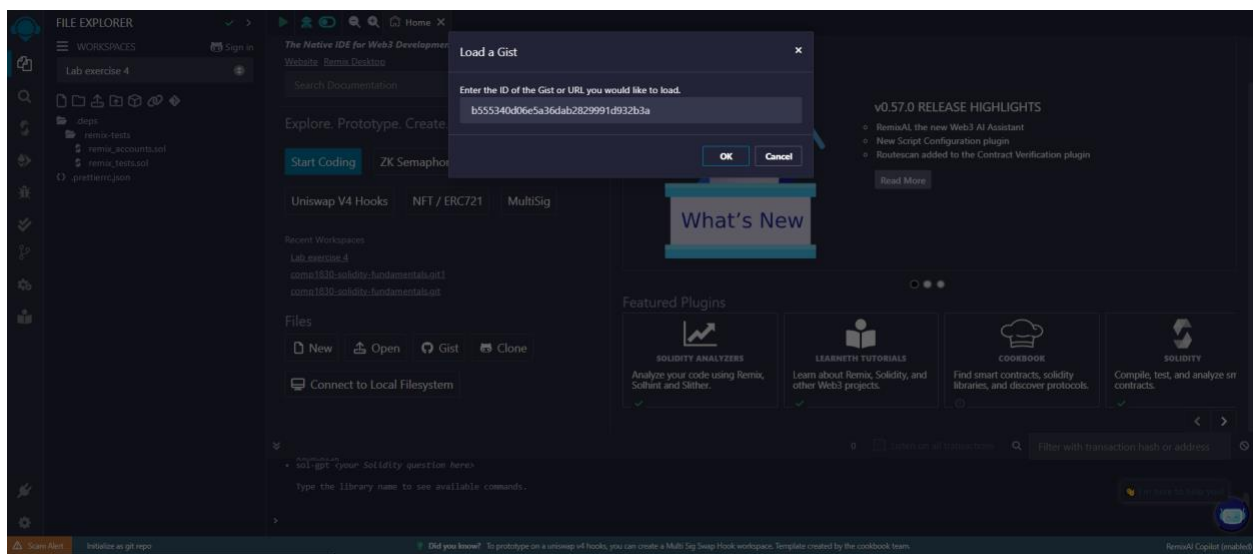


Exercise 3.1:

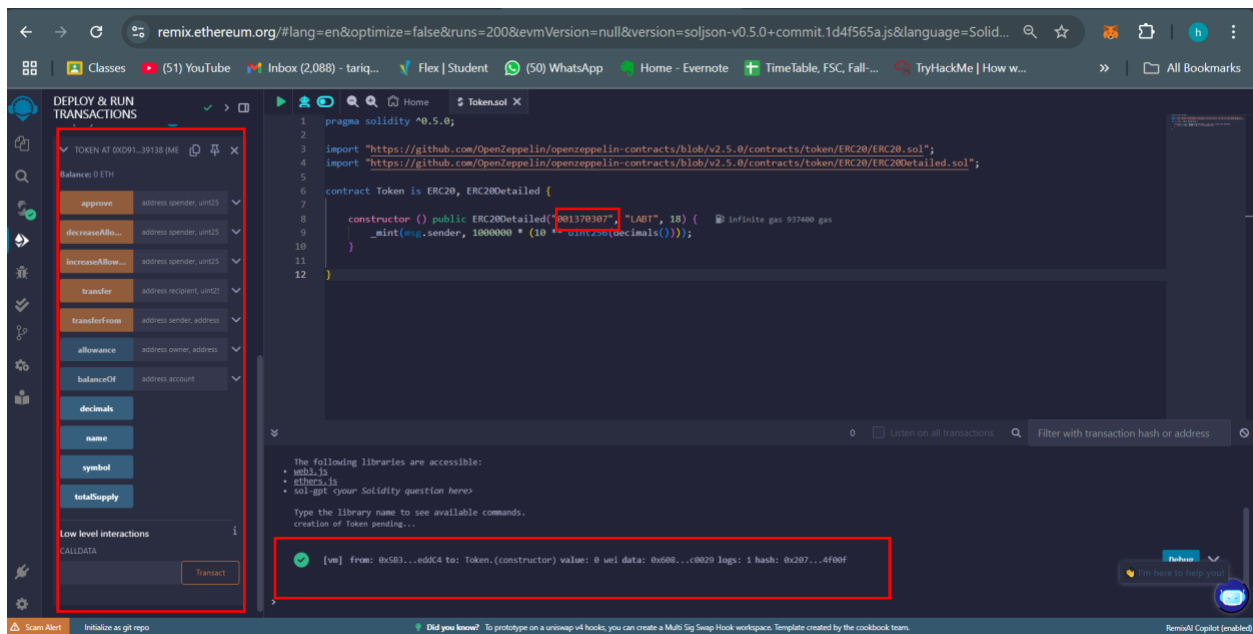
First, I created an open workspace.



Then I imported an id from gist.

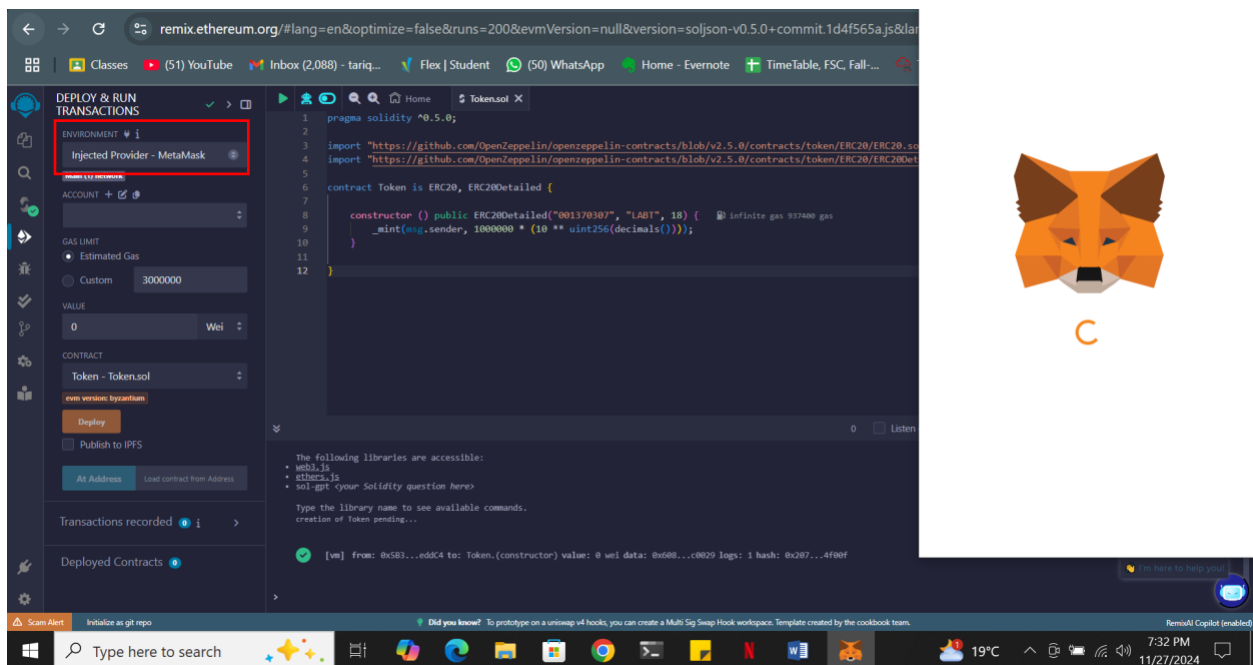


After entering my student id, I compiled and deployed my contract.

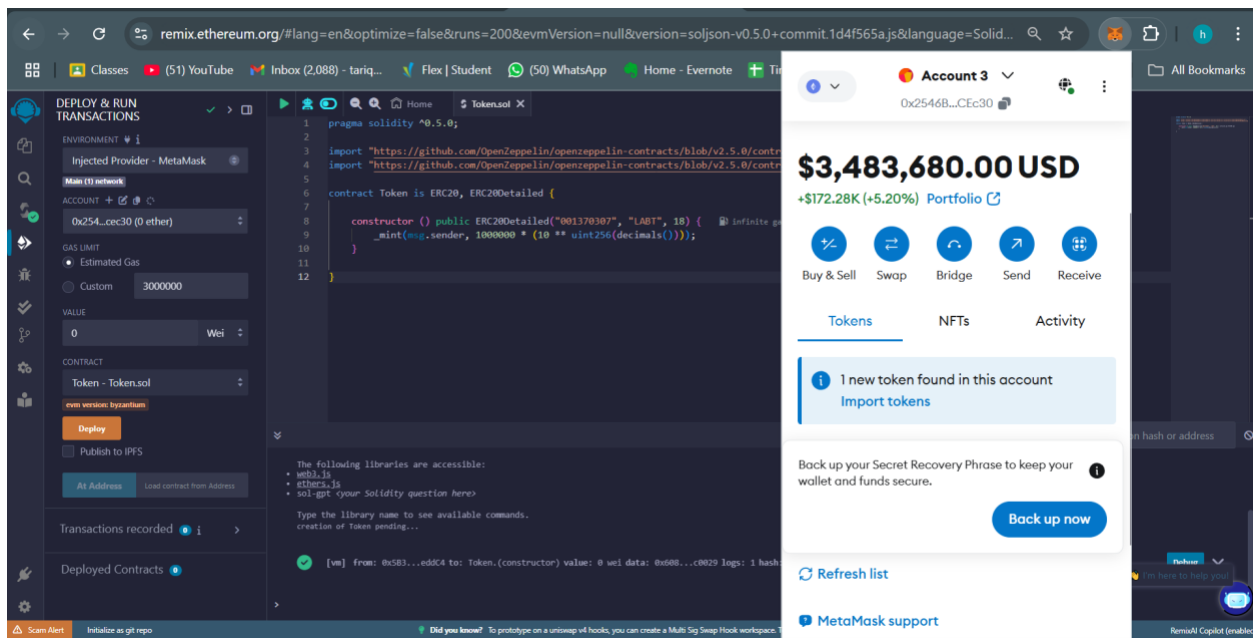


Exercise 3.2:

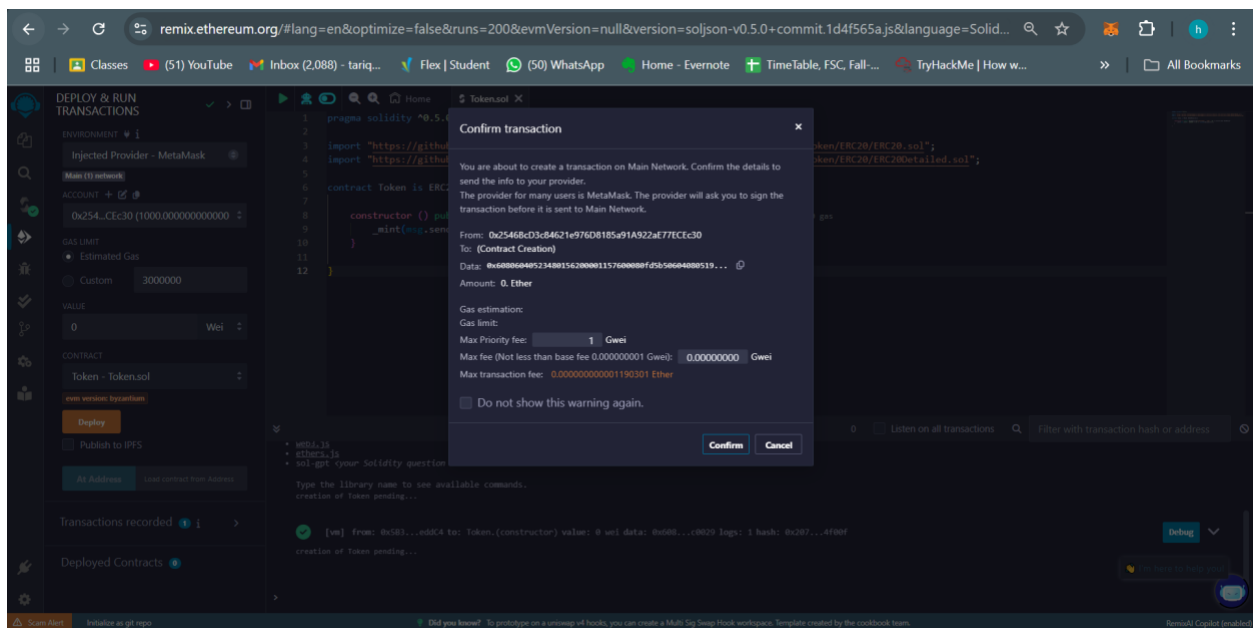
For connection with the metamask I used this button.



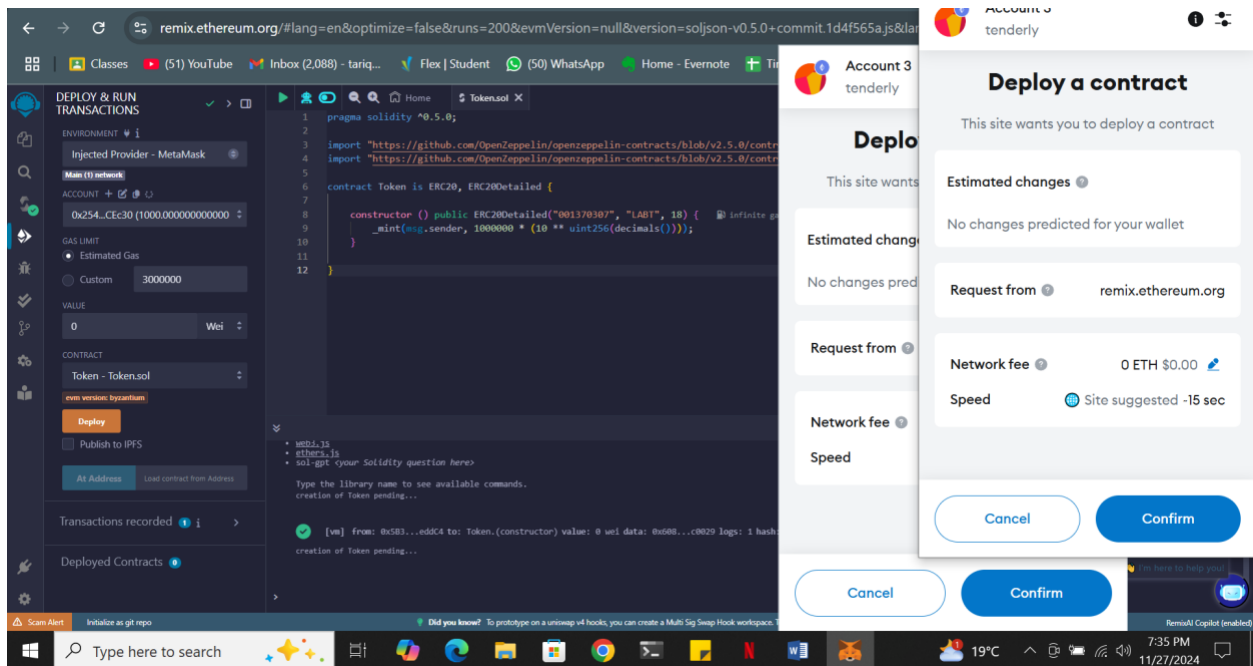
Then I connected with the meta mask.



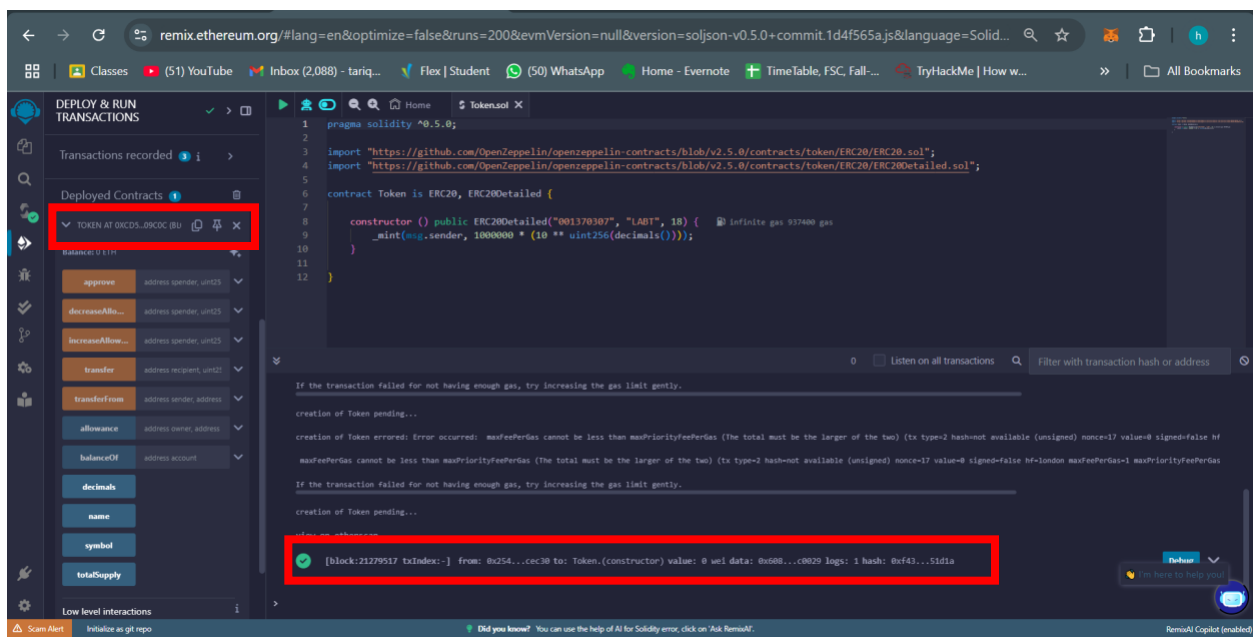
Then I deployed my contract with the meta mask.



Then I paid the fees.

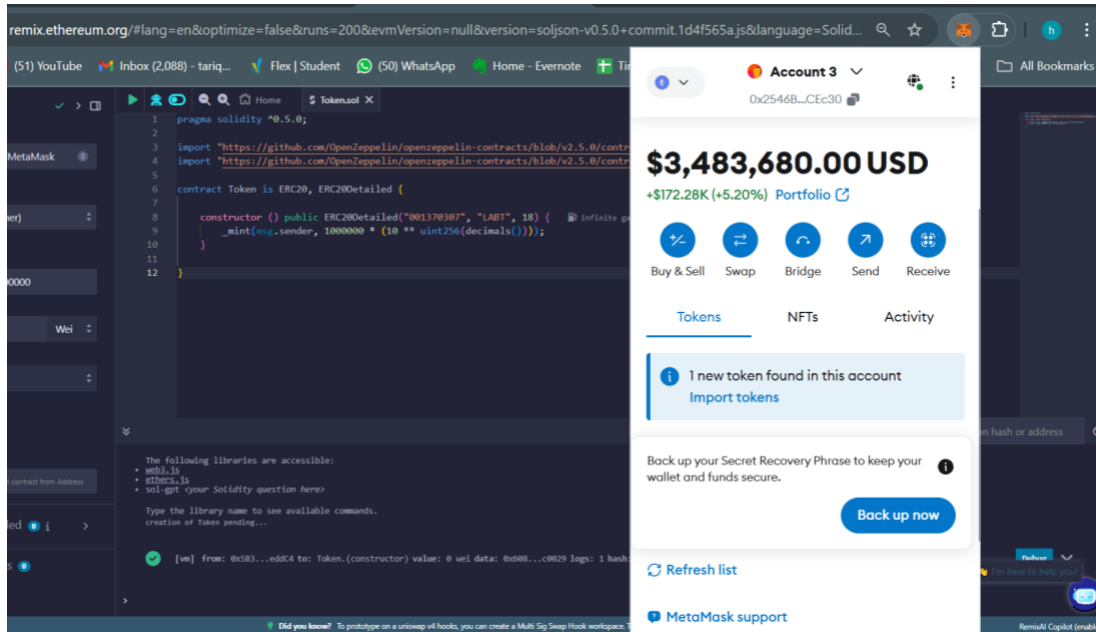


The token was generated.



Ten I imported the token I got from deploying the contract.

Exercise 4:



Exercise 6.3.1 :

Question 1: What is the price of Y in terms of X, if the trader buys 10 Y?

$$y_{\text{final}} = y_0 - 10 = 30 - 10 = 20$$

$$x_{\text{final}} * y_{\text{final}} = k$$

$$x_{\text{final}} * 20 = 300$$

$$x_{\text{final}} = 300/20 = 15$$

$$X = x_{\text{final}} - x_0 = 15 - 10 = 5$$

$$\text{Price} = X/Y = 5/10 = 0.5$$

Answer: The price is 0.5 X per Y.

Question 2: What would be the state of the liquidity pool after the trade?

From the above:

Final amount of X is 15

Final amount of Y is 20

Exercise 6.3.2:

Question 1: Price of Y in terms of X for 10 Y purchase

$$X_0 = 1,000,000$$

$$Y_0 = 3,000,000$$

$$k = 3,000,000,000,000$$

$$Y_{\text{final}} = 3,000,000 - 10 = 2,999,990$$

$$X_{\text{final}} = k/Y_{\text{final}} \approx 1,000,003.33$$

$$X_{\text{final}} - X_0 = 3.33$$

$$\text{Price} = X/Y = 3.33/10 = 0.333$$

Answer: 0.333 X per Y.

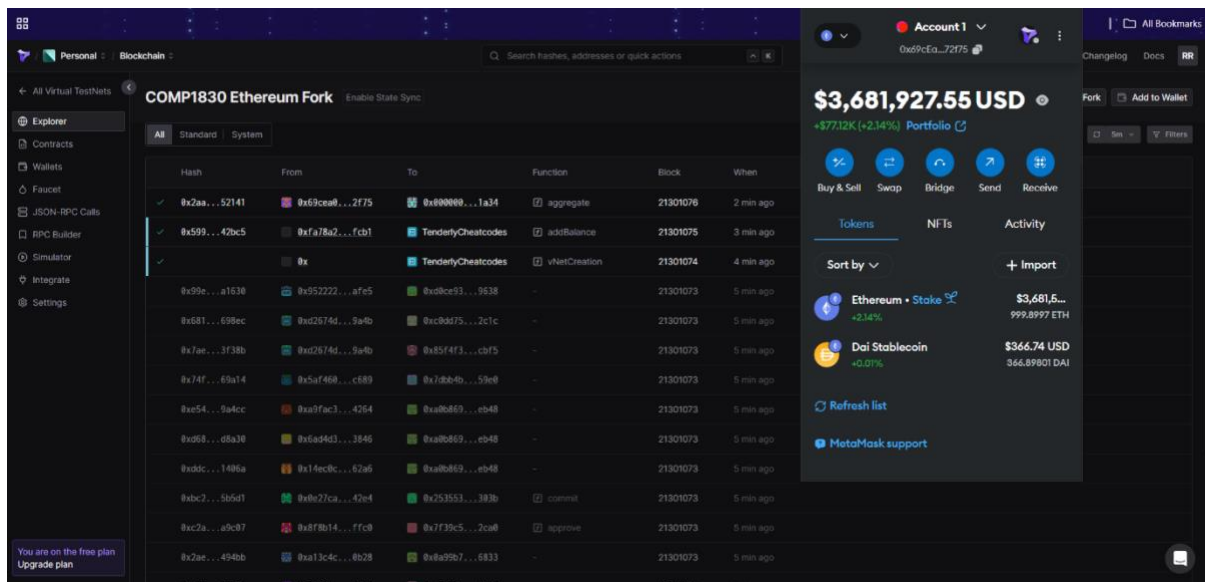
Question 2: Price of a Single Y (No Slippage)

$$\text{Price} = X_0/Y_0$$

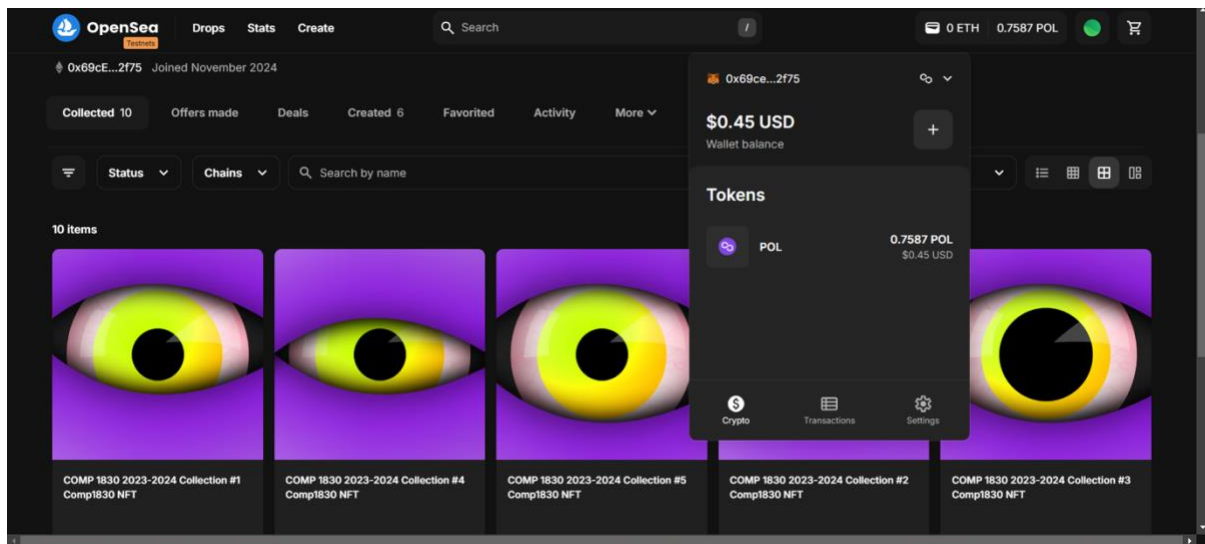
$$\text{Price} = 1,000,000/3,000,000 = 0.333$$

Answer: 0.333 X per Y.

Exercise 6.3.3:



Exercise 6.4.1:



NFT- 0x69cEa09Da7fCd9b3965cFF621DAd63AD7c572f75

Exercise 7.1.1:

ETH Price: \$3,683.49 (+2.73%) Gas: 13,205 Gwei

Search by Address / Txn Hash / Block / Token / Domain Name

4. security

3. getAmountIn

4. getAmountOut

5. getAmountIn

6. getAmountOut

amountIn (uint256)

1000000000000000000

path (address[])

0xc02aaaa39b223fe8d0a0e5c4f27ead9083c759cc2, 0xdac179958d2ee523a2206206994597c13d831ec7

Query

4. amounts uint256[]

[getAmountOut(uint256,address[]) method Response]

amounts uint256[] : 1000000000000000000, 3665659364

7. quote

A contract address hosts a smart contract, which is a set of code stored on the blockchain that runs when predetermined conditions are met. Learn more about addresses in our [Knowledge Base](#).

Exercise 7.3.1:

A) What is the value of Alice's assets after withdrawal?

Final Answer:

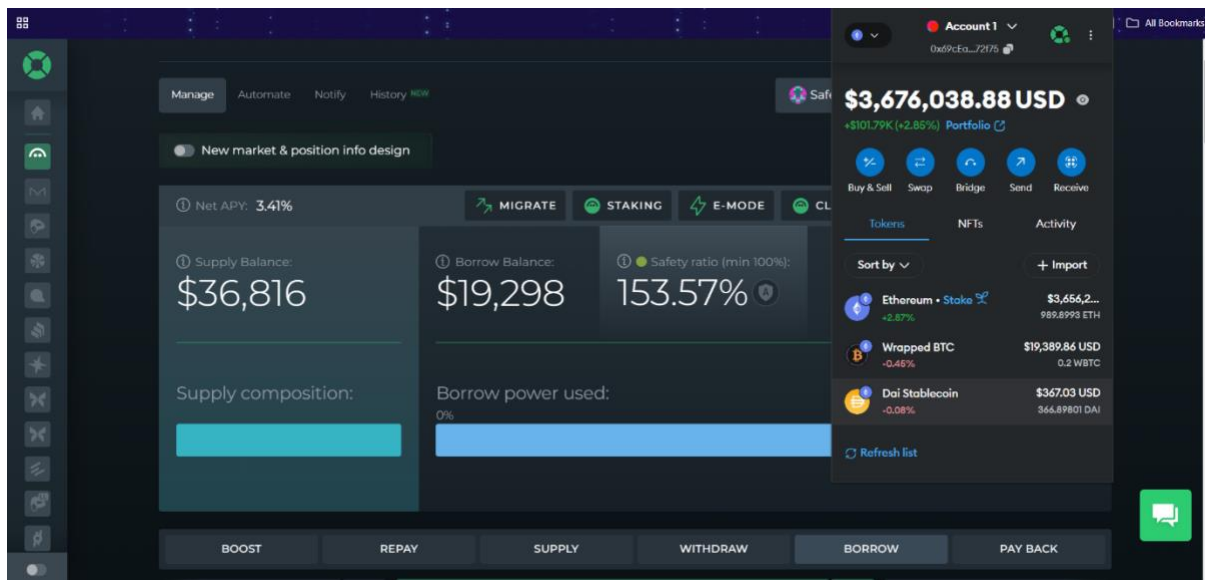
The total value of Alice's assets after withdrawal is **400 DAI**.

B) What is the value (USD) of the impermanent loss that Alice incurred?

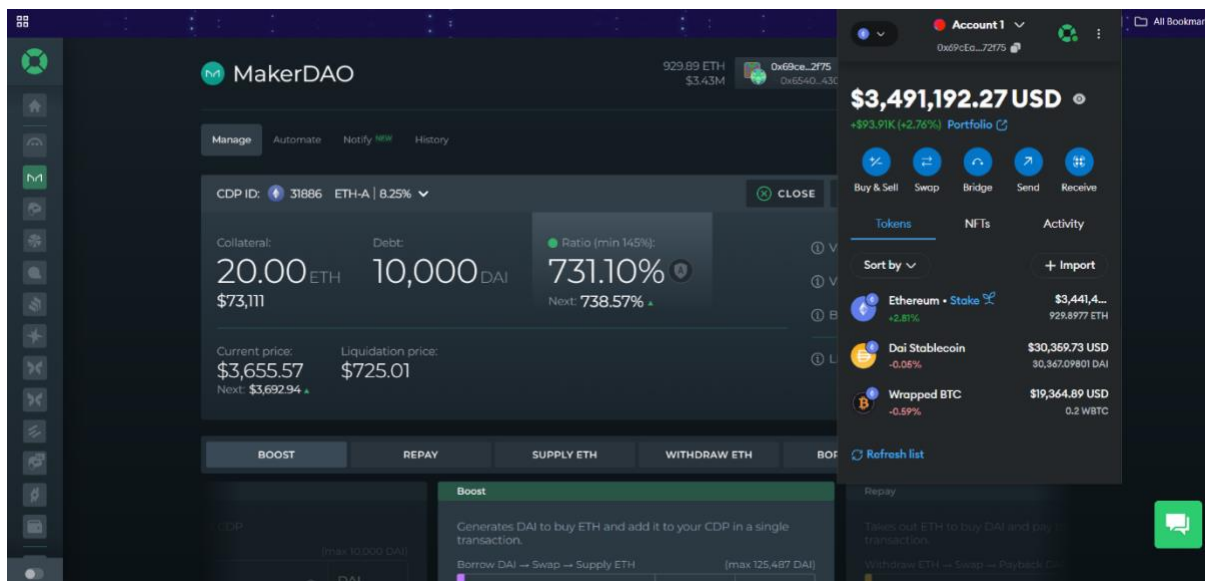
Final Answer:

The value of the impermanent loss is **100 USD (equivalent to 100 DAI)**.

Exercise 7.4.1:



Exercise 8.1.2:



Exercise 8.2.1:

Question 1 What mechanism did Terra's UST use to maintain its peg to the US dollar?

- B. An algorithmic process involving another cryptocurrency, LUNA.

Question 2 How did the mechanism to stabilize UST's value work under normal conditions?

- C. By allowing UST to be exchanged for LUNA at a stable rate.

Question 3 What was a primary factor that led to the collapse of UST's peg to the dollar?

- B. Loss of market confidence and a subsequent sell-off.

Question 4 What is the term used to describe the negative feedback loop that accelerated the collapse of UST and LUNA's value?

- C. Death spiral.

Question 5 Which of the following is a key difference between UST and other stablecoins like USDT (Tether)? .

- B. UST's value is maintained algorithmically and is dependent on another cryptocurrency's value.