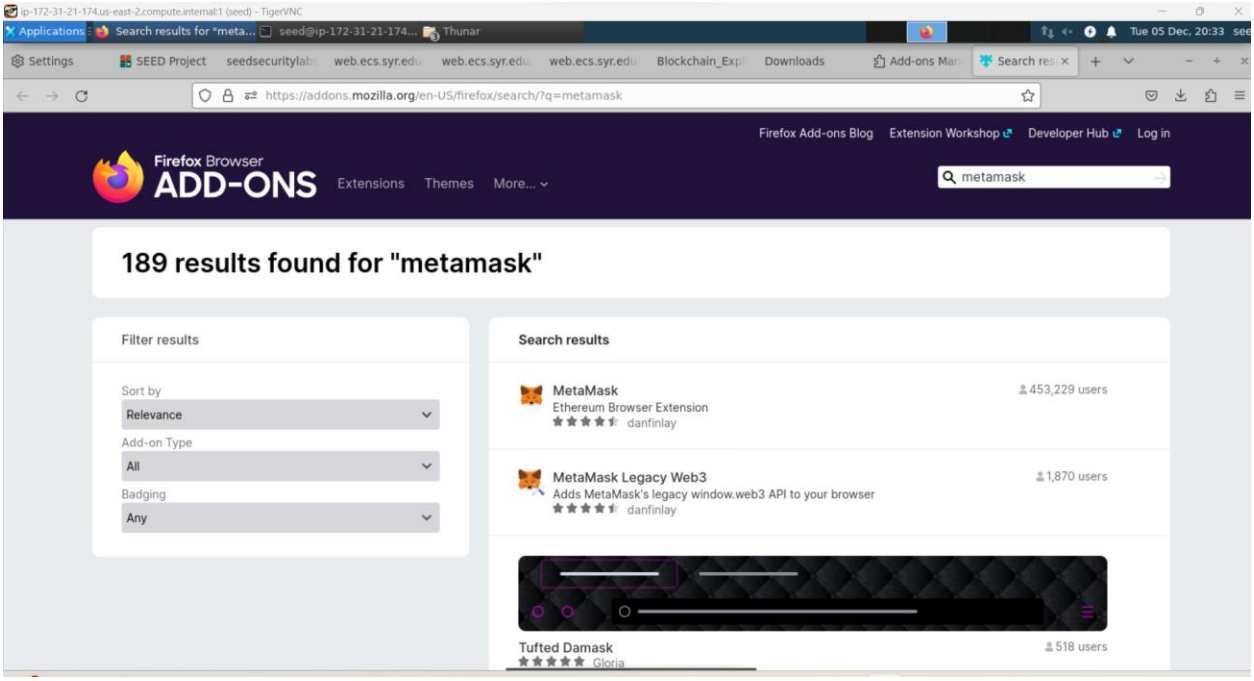
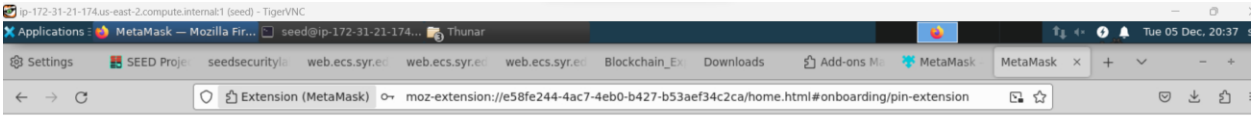
# Blockchain Exploration Lab

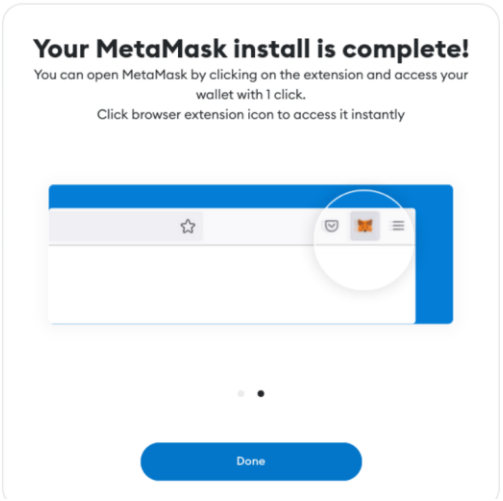
## Task 1: Setting Up MetaMask Wallet

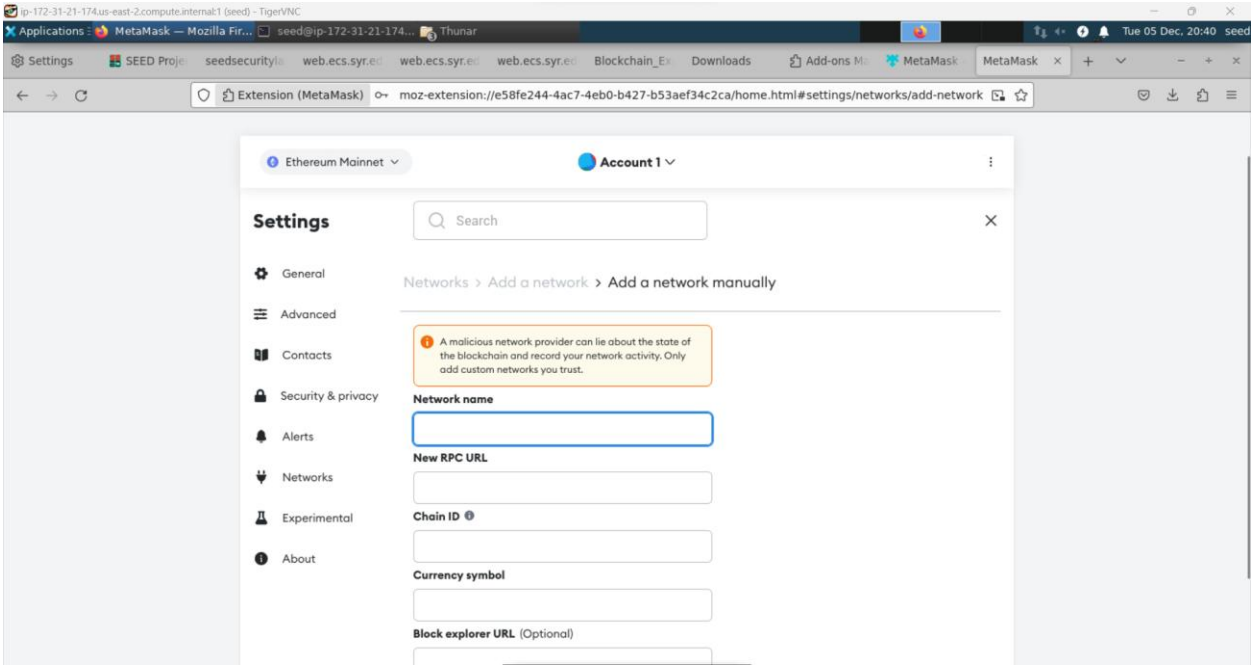
### Task 1.a. Installing the MetaMask extension

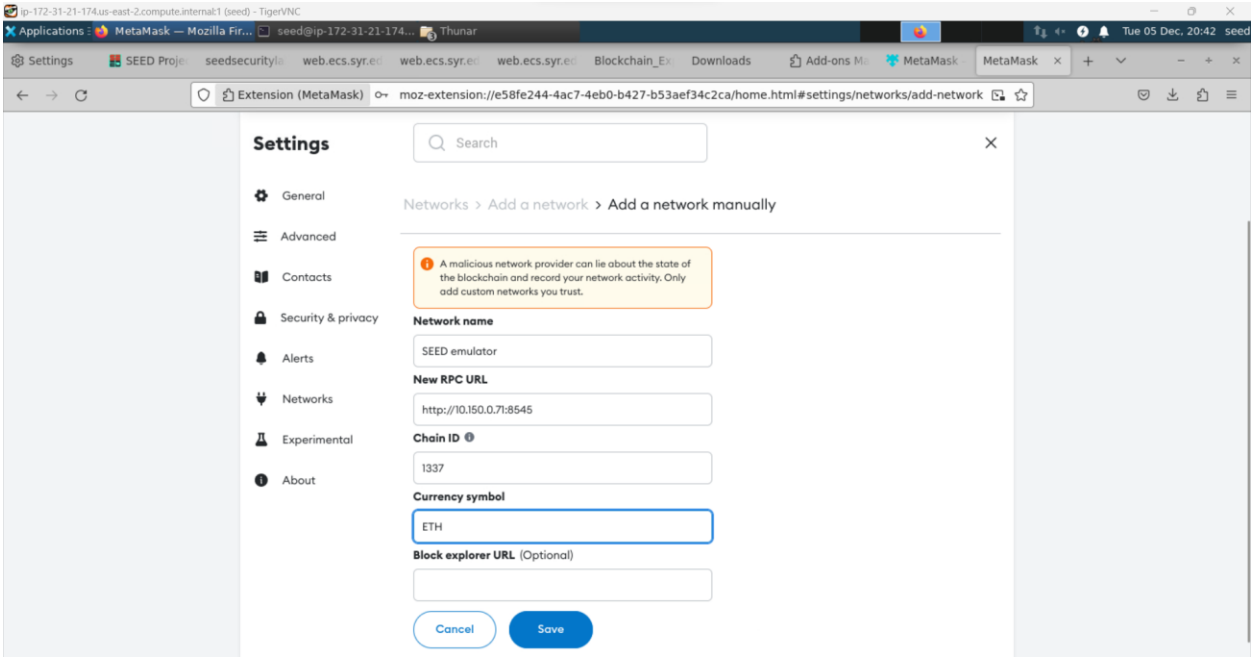


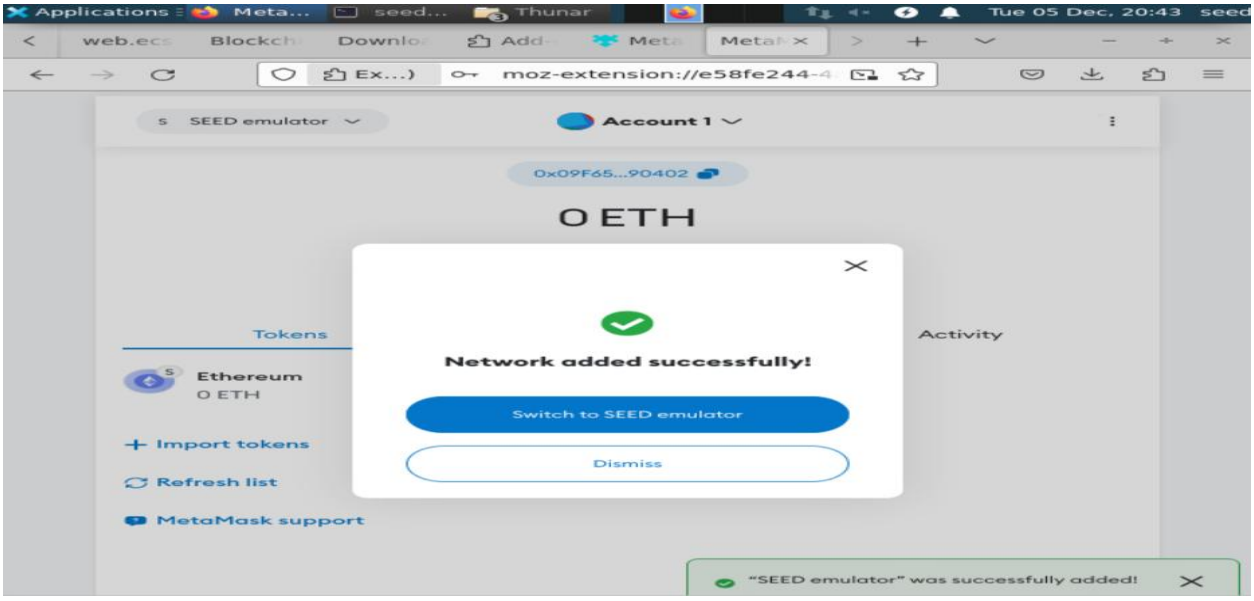

### Task 1.b. Connecting to the Blockchain.



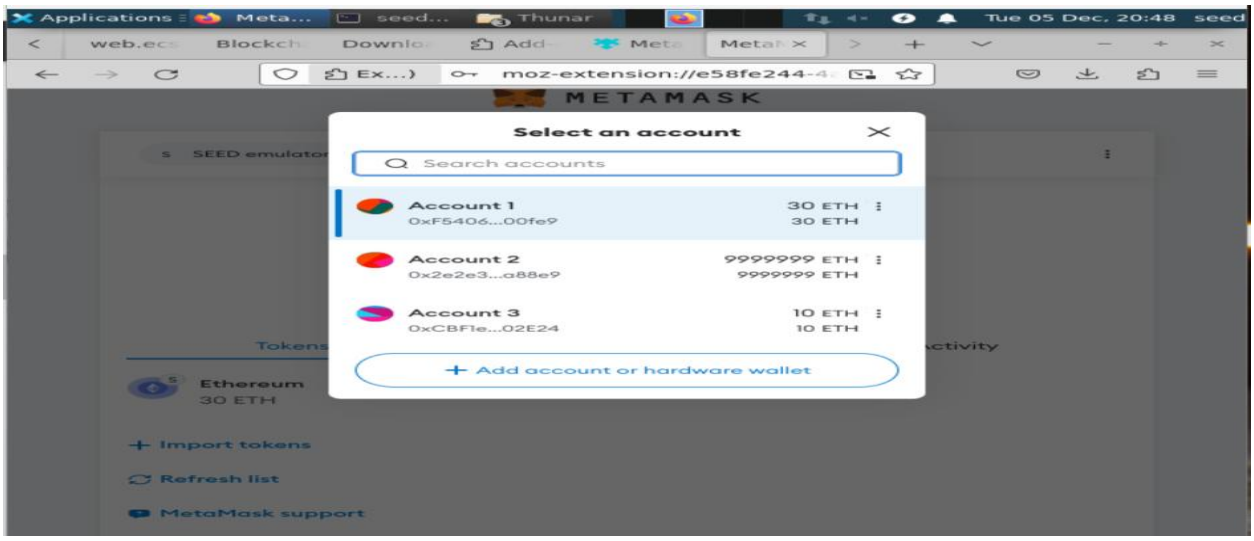

Ethereum Mainnet
Account 1
Settings
Search
General
Advanced
Contacts
Security & privacy
Alerts
Networks
Experimental
About
Networks > Add a network > Add a network manually
A malicious network provider can lie about the state of the blockchain and record your network activity. Only add custom networks you trust.
Network name
New RPC URL
Chain ID
Currency symbol
Block explorer URL (Optional)


Settings
Search
General
Advanced
Contacts
Security & privacy
Alerts
Networks
Experimental
About
Networks > Add a network > Add a network manually
A malicious network provider can lie about the state of the blockchain and record your network activity. Only add custom networks you trust.
Network name
SEED emulator
New RPC URL
http://10.150.0.71:8545
Chain ID
1337
Currency symbol
ETH
Block explorer URL (Optional)
Cancel
Save

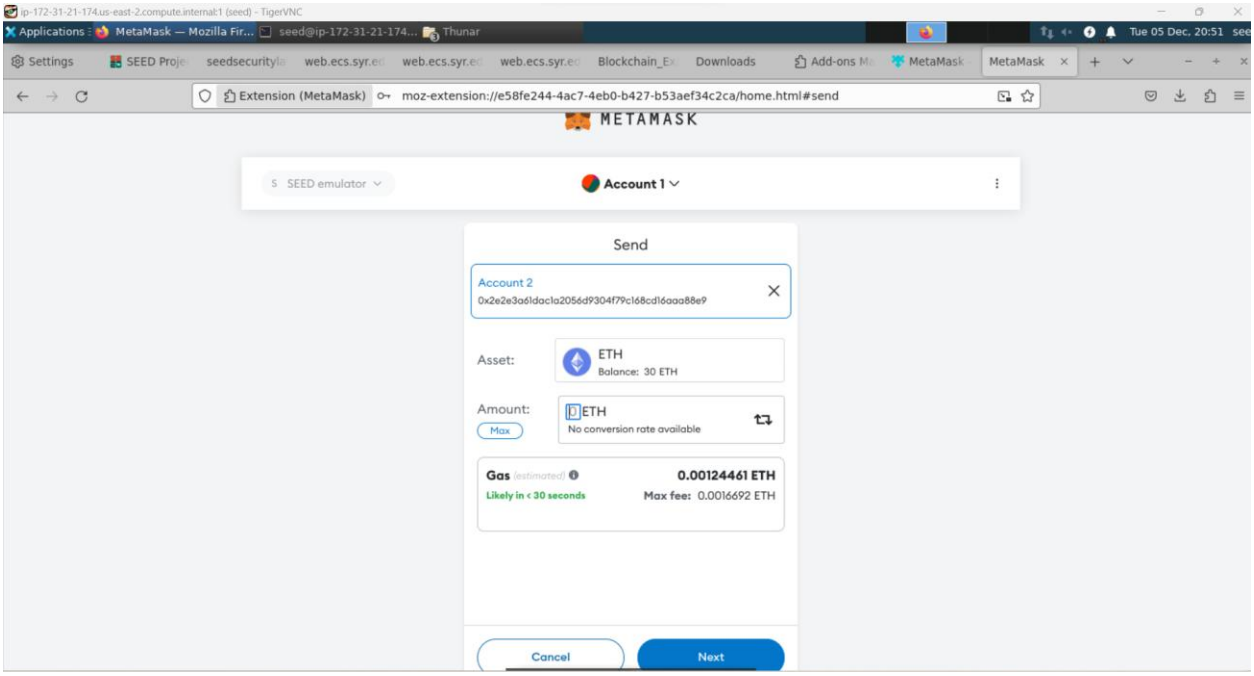


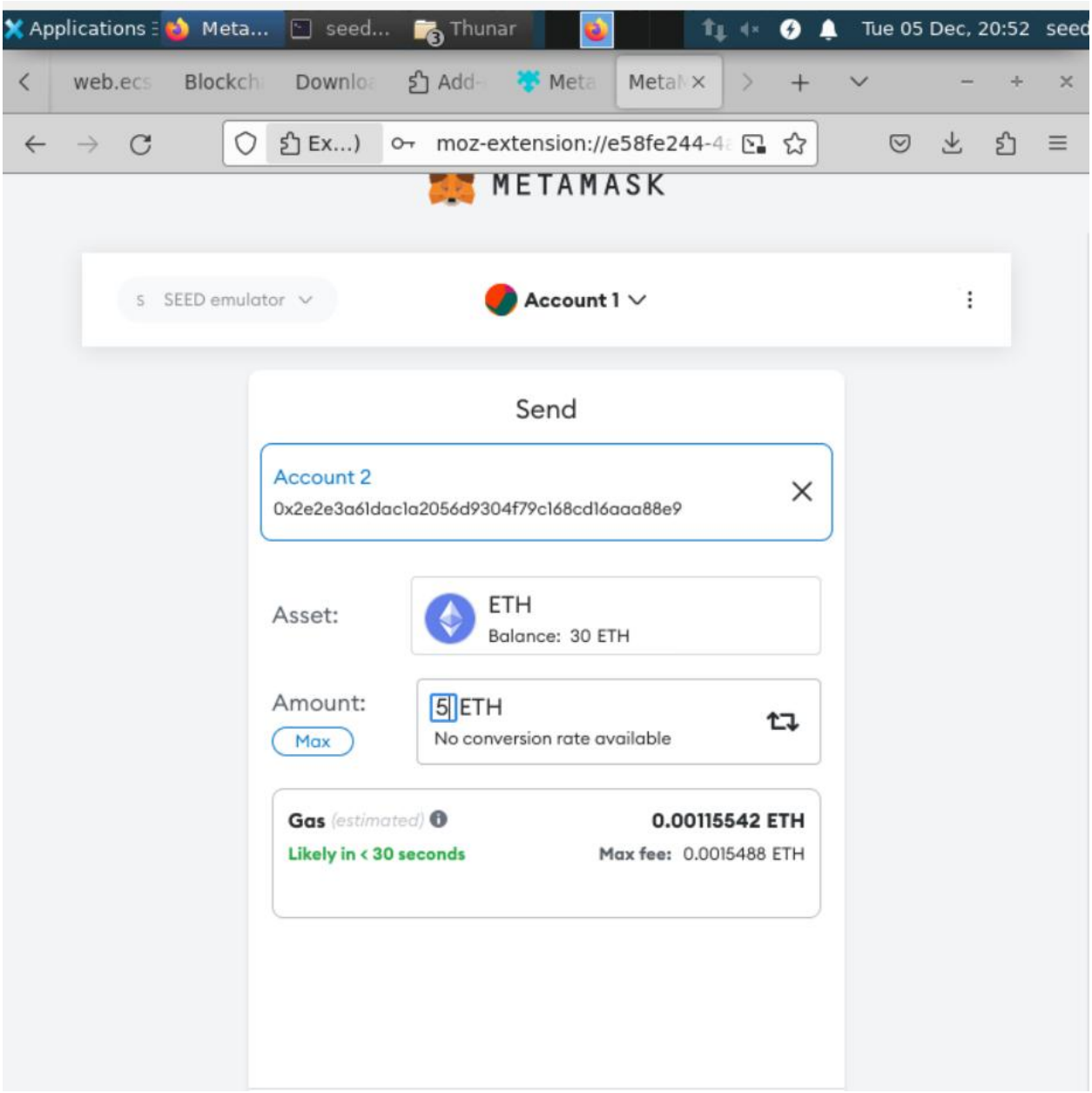

## Task 1.c Adding Accounts

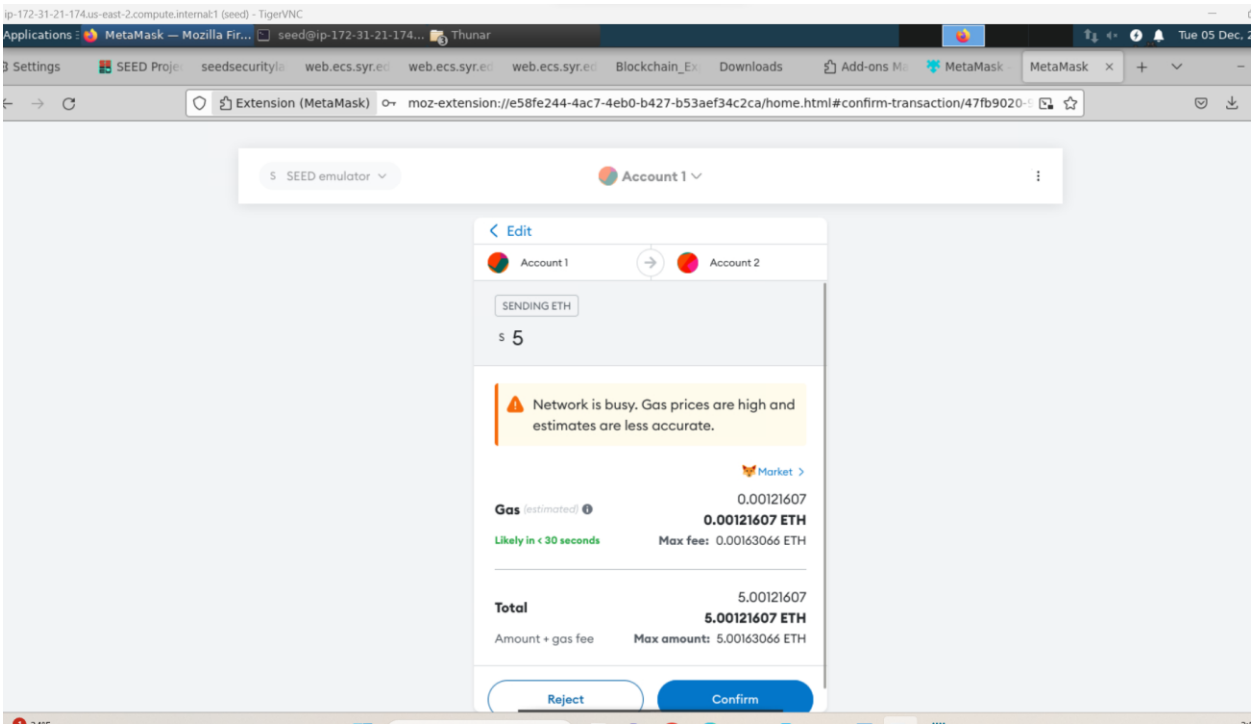
We changed the passords and entered the recovery phrase given in the manual

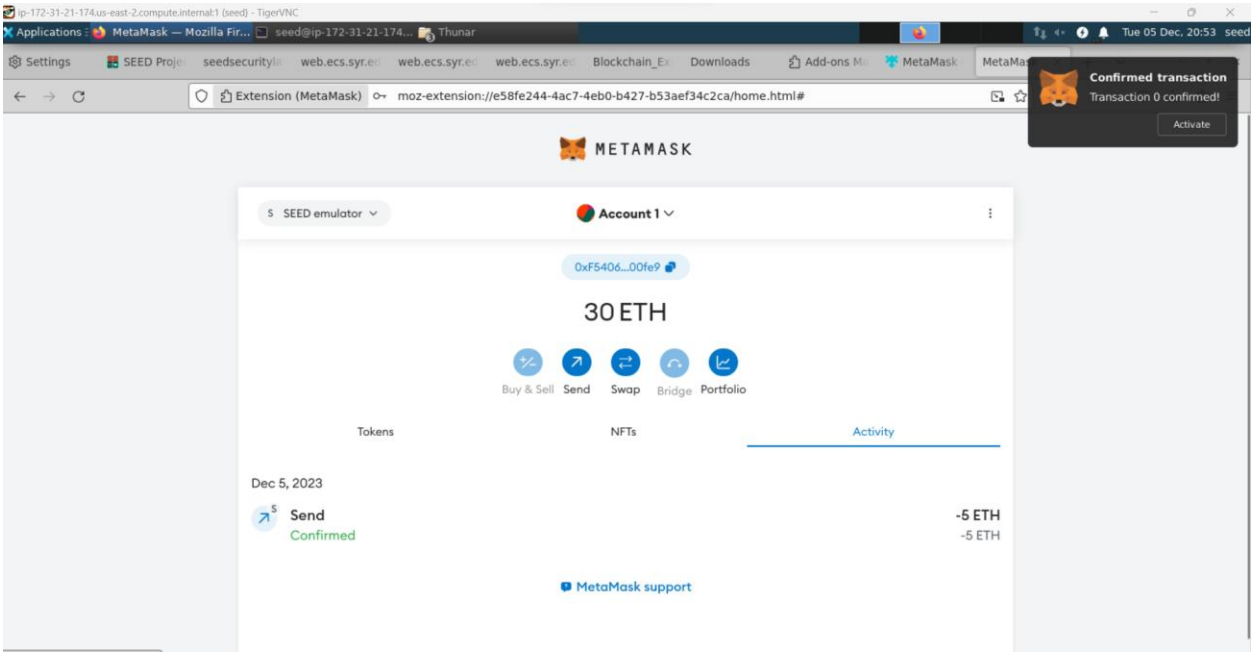


## Task 1.d Sending Transactions



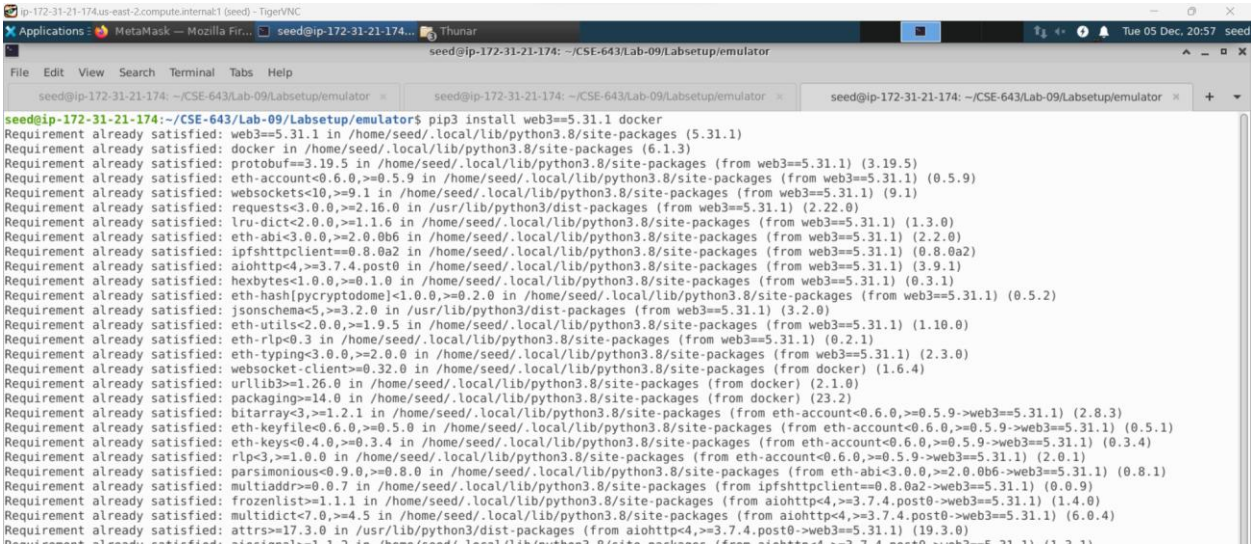

Applications
Meta...
seed...
Thunar
Tue 05 Dec, 20:52
moz-extension://e58fe244-4
METAMASK
SEED emulator
Account 1
Send
Account 2
0x2e2e3a61dac1a2056d9304f79c168cd16aaa88e9
Asset:
ETH
Balance: 30 ETH
Amount:
5 ETH
No conversion rate available
Max
Gas (estimated)
0.00115542 ETH
Likely in < 30 seconds
Max fee: 0.0015488 ETH


Extension (MetaMask)
moz-extension://e58fe244-4ac7-4eb0-b427-b53aef34c2ca/home.html#confirm-transaction/47fb9020
SEED emulator
Account 1
Edit
Account 1
Account 2
SENDING ETH
5
Network is busy. Gas prices are high and estimates are less accurate.
Market
Gas (estimated)
0.00121607
0.00121607 ETH
Likely in < 30 seconds
Max fee: 0.00163066 ETH
Total
5.00121607
5.00121607 ETH
Amount + gas fee
Max amount: 5.00163066 ETH
Reject
Confirm


Confirmed transaction
Transaction 0 confirmed!
Activate
METAMASK
SEED emulator
Account 1
0xF5406...00fe9
30 ETH
Buy & Sell
Send
Swap
Bridge
Portfolio
Tokens
NFTs
Activity
Dec 5, 2023
Send
Confirmed
-5 ETH
-5 ETH
MetaMask support

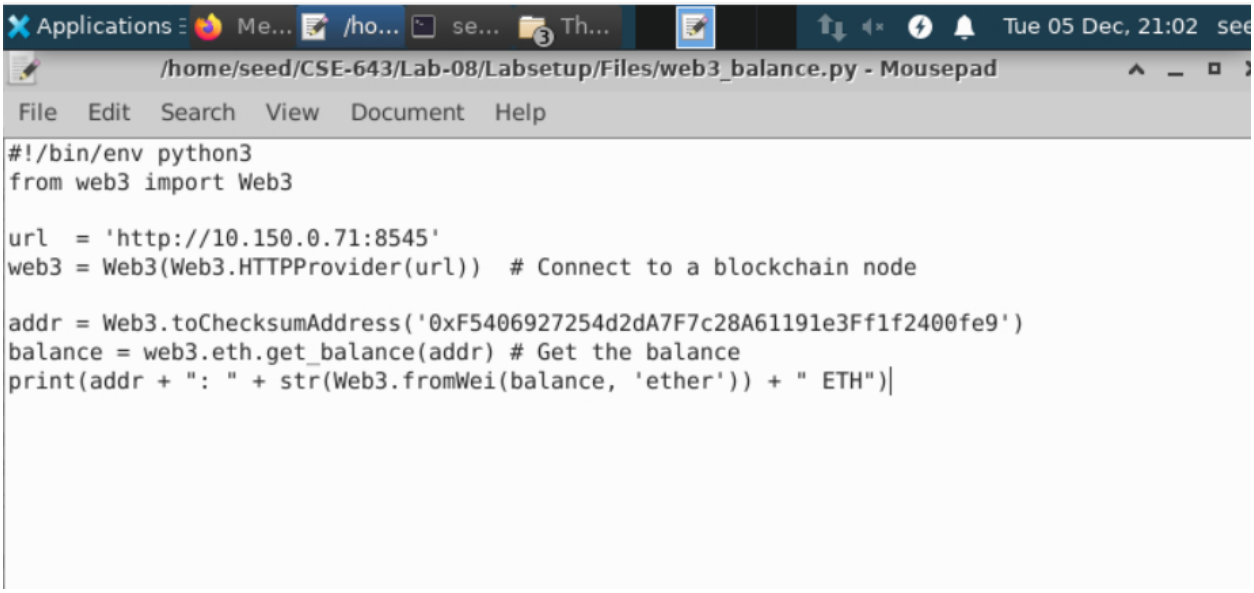
# Task 2. Interacting with Blockchain using Python

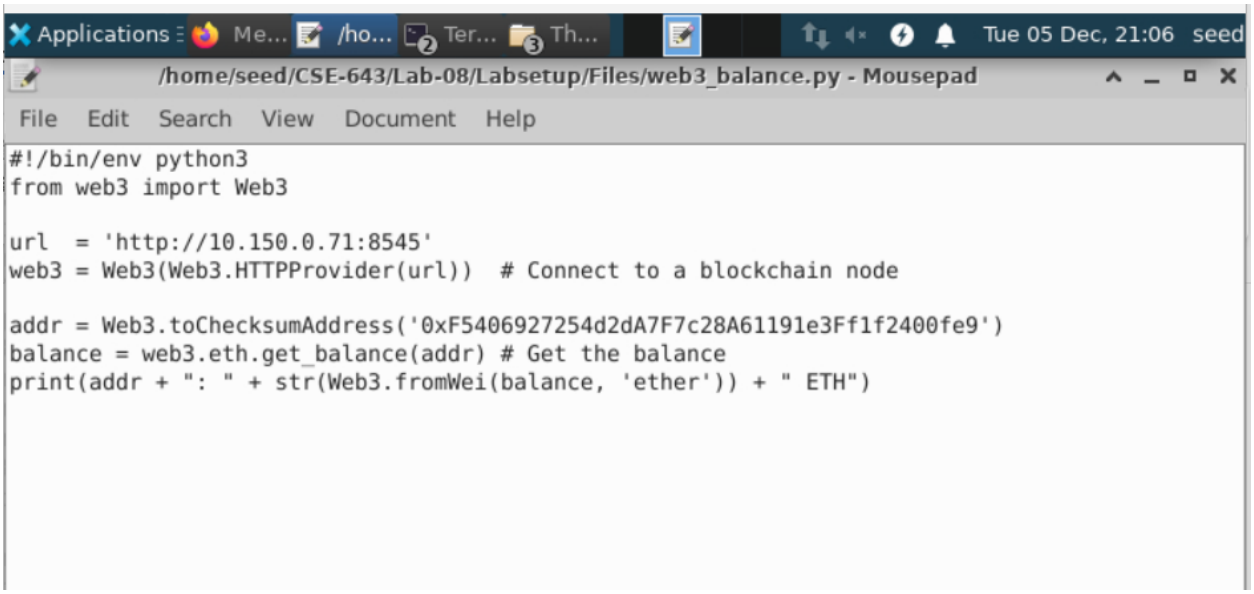
## Task 2.a Installing Python modules

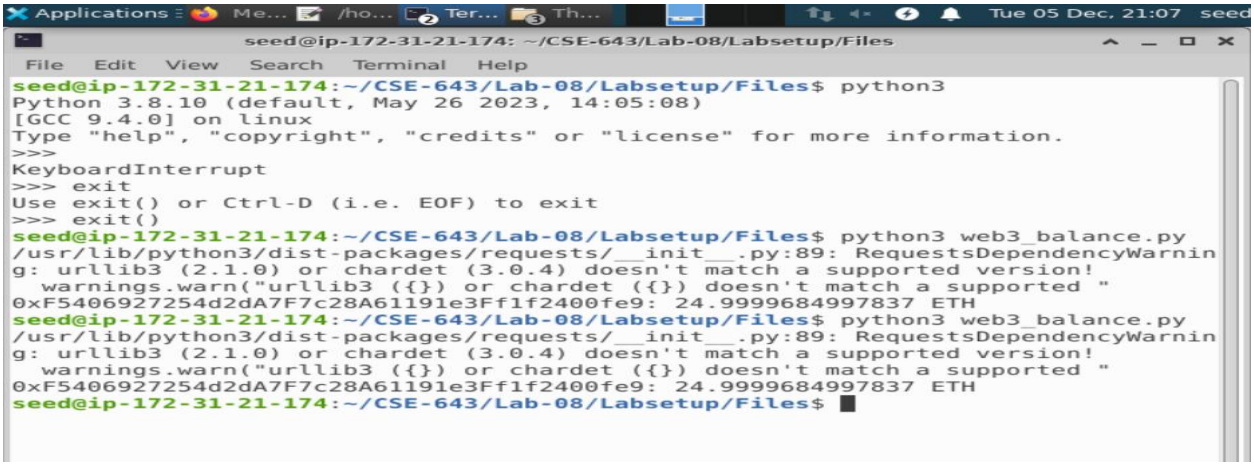


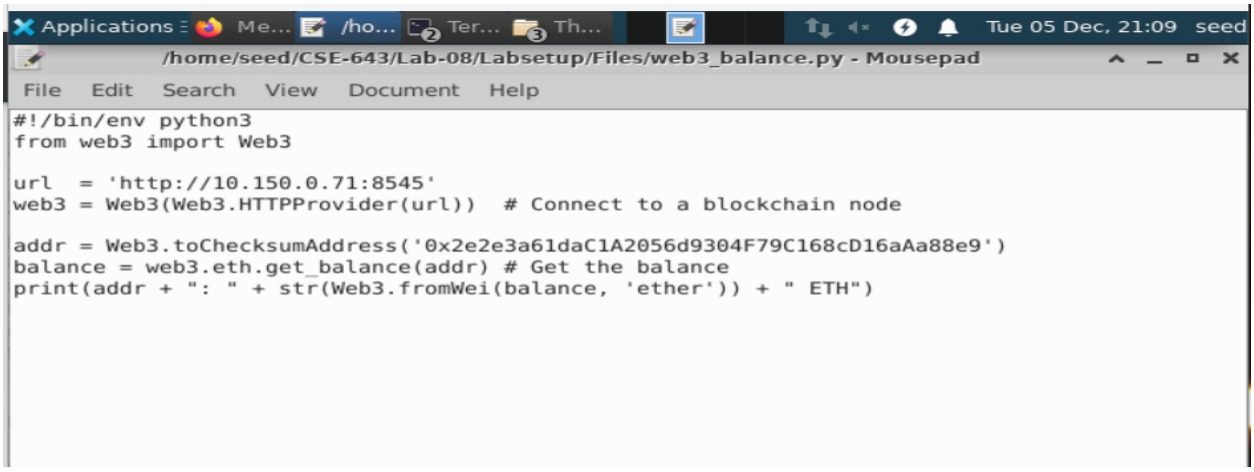

## Task 2.b: Checking Account Balance

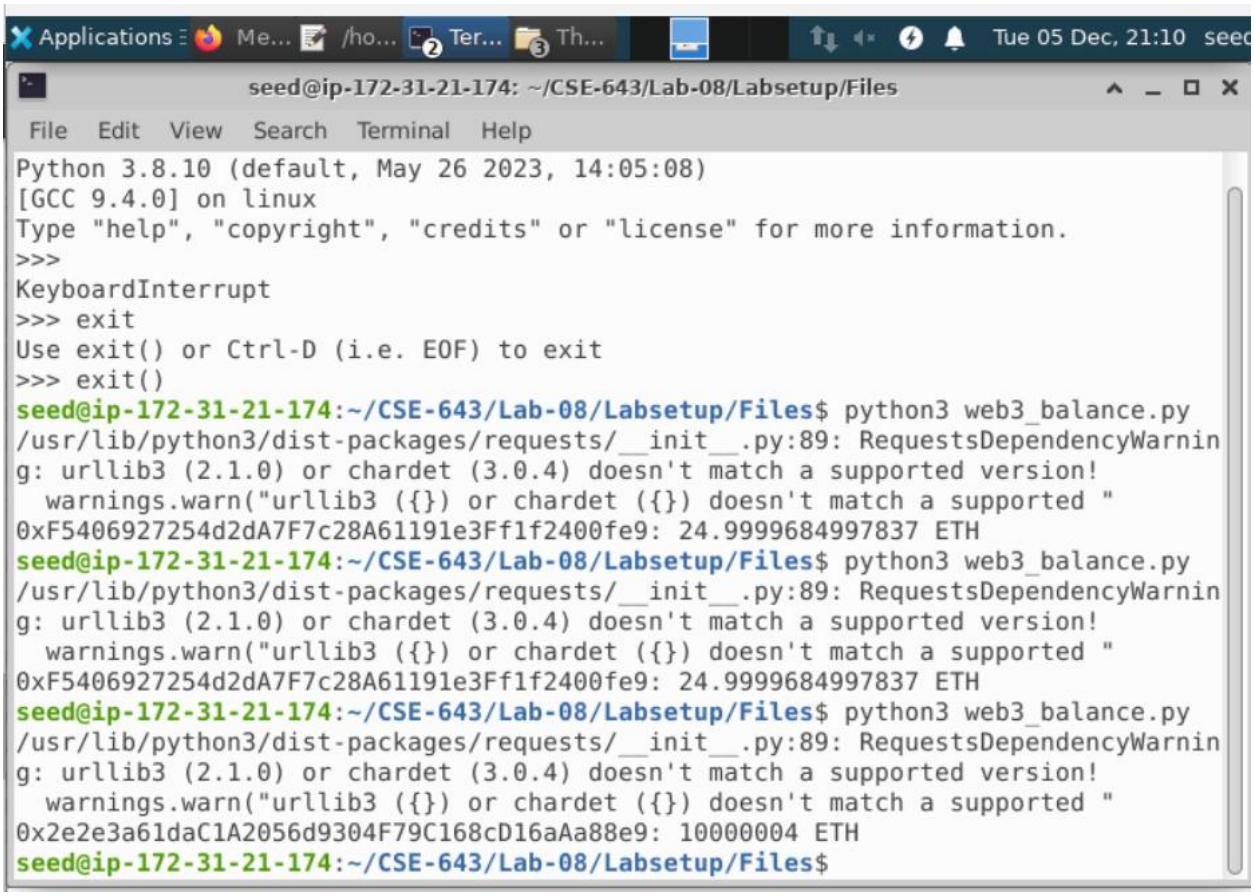
### web3balance.py

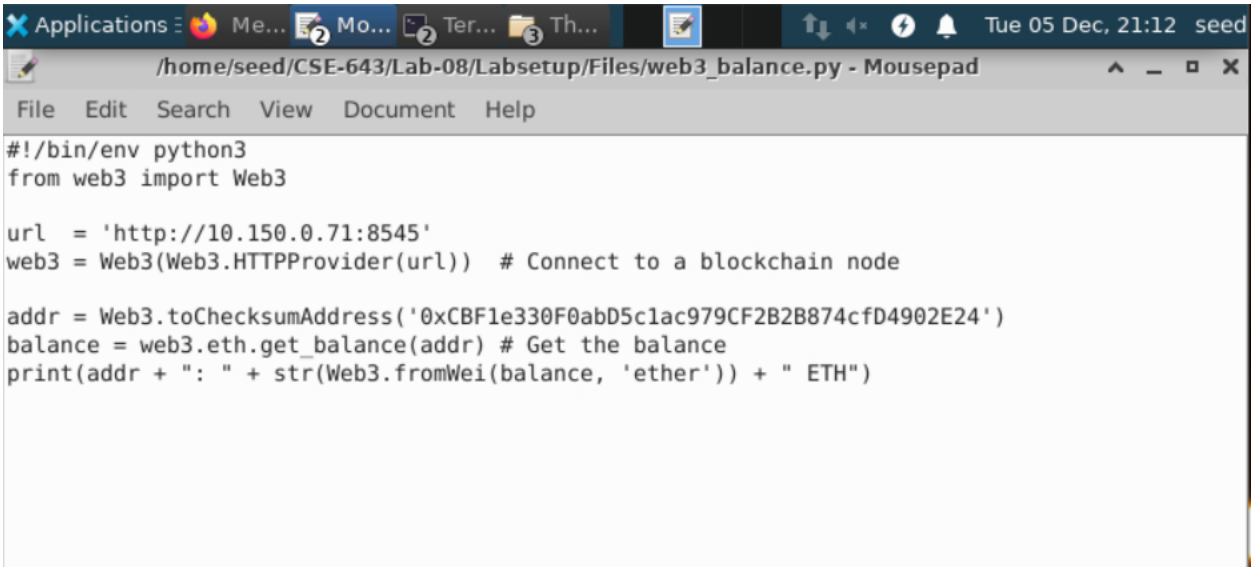


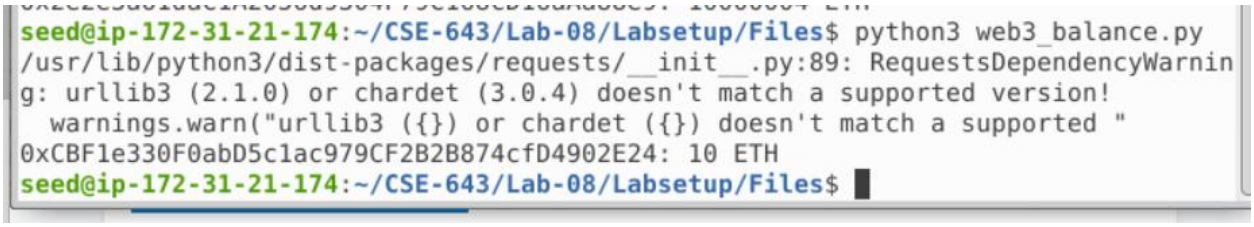

Applications
Me...
/ho...
Ter...
Th...
Tue 05 Dec, 21:06
seed
/home/seed/CSE-643/Lab-08/Labsetup/Files/web3_balance.py - Mousepad
File Edit Search View Document Help
#!/bin/env python3
from web3 import Web3
url = 'http://10.150.0.71:8545'
web3 = Web3(Web3.HTTPProvider(url)) # Connect to a blockchain node
addr = Web3.toChecksumAddress('0xF5406927254d2dA7F7c28A61191e3Ff1f2400fe9')
balance = web3.eth.get_balance(addr) # Get the balance
print(addr + ": " + str(Web3.fromWei(balance, 'ether')) + " ETH")


Applications
Me...
/ho...
Ter...
Th...
Tue 05 Dec, 21:07
seed@ip-172-31-21-174: ~/CSE-643/Lab-08/Labsetup/Files
File Edit View Search Terminal Help
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$ python3
Python 3.8.10 (default, May 26 2023, 14:05:08)
[GCC 9.4.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>>
KeyboardInterrupt
>>> exit
Use exit() or Ctrl-D (i.e. EOF) to exit
>>> exit()
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$ python3 web3_balance.py
/usr/lib/python3/dist-packages/requests/__init__.py:89: RequestsDependencyWarnin
g: urllib3 (2.1.0) or chardet (3.0.4) doesn't match a supported version!
warnings.warn("urllib3 ({}) or chardet ({}) doesn't match a supported "
0xF5406927254d2dA7F7c28A61191e3Ff1f2400fe9: 24.9999684997837 ETH
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$ python3 web3_balance.py
/usr/lib/python3/dist-packages/requests/__init__.py:89: RequestsDependencyWarnin
g: urllib3 (2.1.0) or chardet (3.0.4) doesn't match a supported version!
warnings.warn("urllib3 ({}) or chardet ({}) doesn't match a supported "
0xF5406927254d2dA7F7c28A61191e3Ff1f2400fe9: 24.9999684997837 ETH
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$

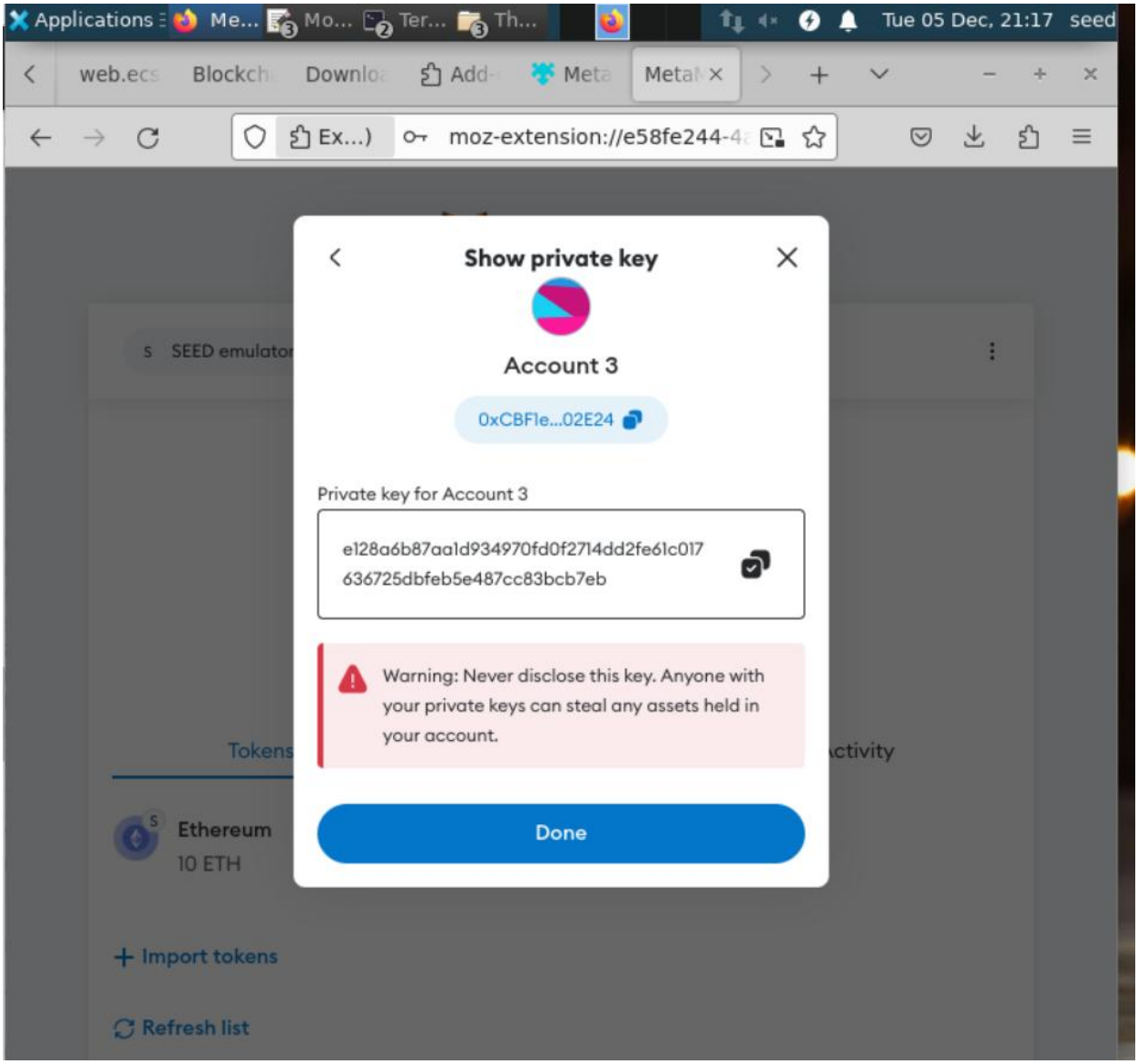

Applications
Me...
/ho...
Ter...
Th...
Tue 05 Dec, 21:09
seed
/home/seed/CSE-643/Lab-08/Labsetup/Files/web3_balance.py - Mousepad
File Edit Search View Document Help
#!/bin/env python3
from web3 import Web3
url = 'http://10.150.0.71:8545'
web3 = Web3(Web3.HTTPProvider(url)) # Connect to a blockchain node
addr = Web3.toChecksumAddress('0x2e2e3a61daC1A2056d9304F79C168cD16aAa88e9')
balance = web3.eth.get_balance(addr) # Get the balance
print(addr + ": " + str(Web3.fromWei(balance, 'ether')) + " ETH")

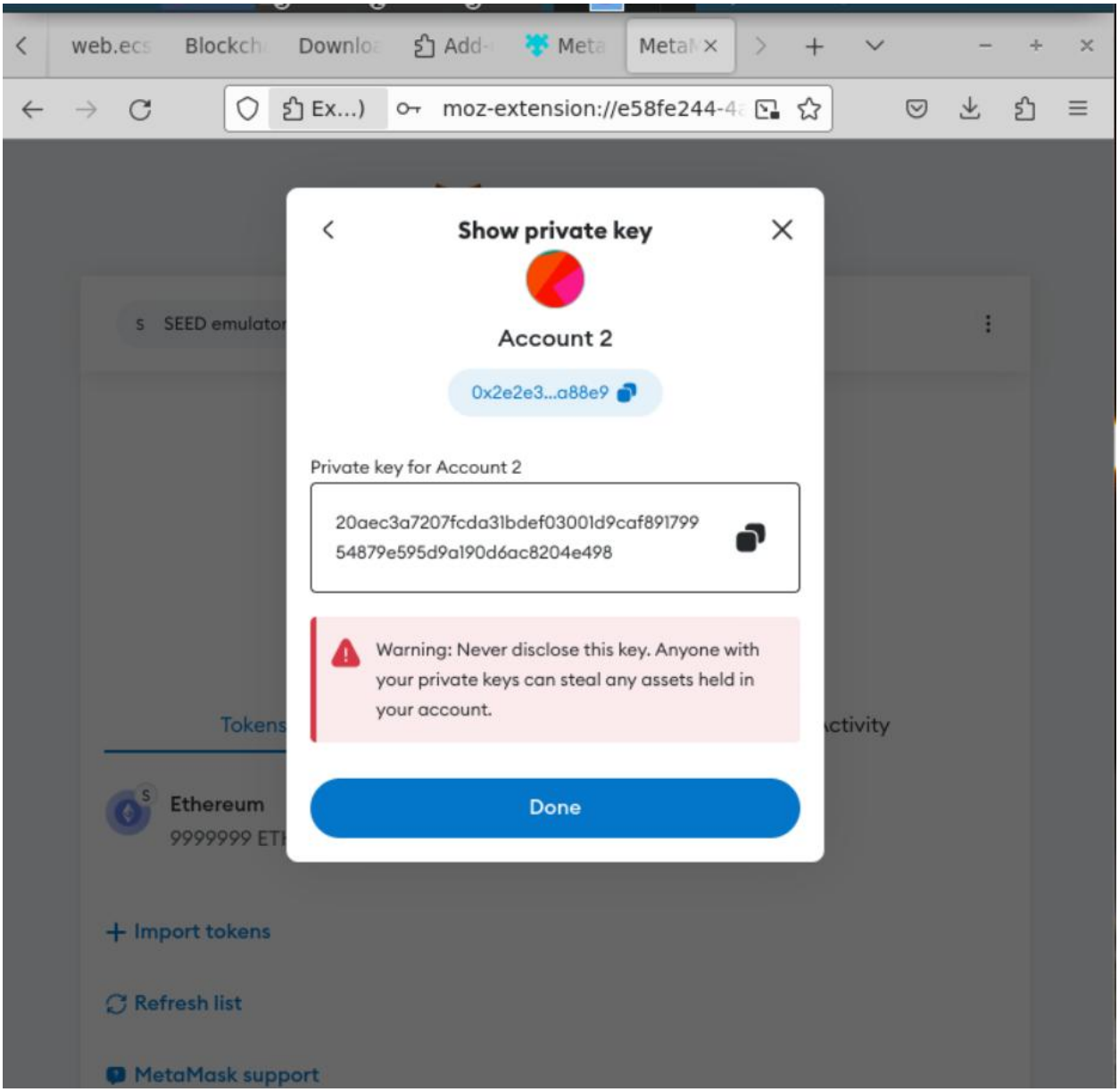

Applications
Tue 05 Dec, 21:10
seed@ip-172-31-21-174: ~/CSE-643/Lab-08/Labsetup/Files
File Edit View Search Terminal Help
Python 3.8.10 (default, May 26 2023, 14:05:08)
[GCC 9.4.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>>
KeyboardInterrupt
>>> exit
Use exit() or Ctrl-D (i.e. EOF) to exit
>>> exit()
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$ python3 web3_balance.py
/usr/lib/python3/dist-packages/requests/__init__.py:89: RequestsDependencyWarnin
g: urllib3 (2.1.0) or chardet (3.0.4) doesn't match a supported version!
warnings.warn("urllib3 ({}) or chardet ({}) doesn't match a supported "
0xF5406927254d2dA7F7c28A61191e3Ff1f2400fe9: 24.9999684997837 ETH
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$ python3 web3_balance.py
/usr/lib/python3/dist-packages/requests/__init__.py:89: RequestsDependencyWarnin
g: urllib3 (2.1.0) or chardet (3.0.4) doesn't match a supported version!
warnings.warn("urllib3 ({}) or chardet ({}) doesn't match a supported "
0xF5406927254d2dA7F7c28A61191e3Ff1f2400fe9: 24.9999684997837 ETH
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$ python3 web3_balance.py
/usr/lib/python3/dist-packages/requests/__init__.py:89: RequestsDependencyWarnin
g: urllib3 (2.1.0) or chardet (3.0.4) doesn't match a supported version!
warnings.warn("urllib3 ({}) or chardet ({}) doesn't match a supported "
0x2e2e3a61daC1A2056d9304F79C168cD16aAa88e9: 10000004 ETH
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$

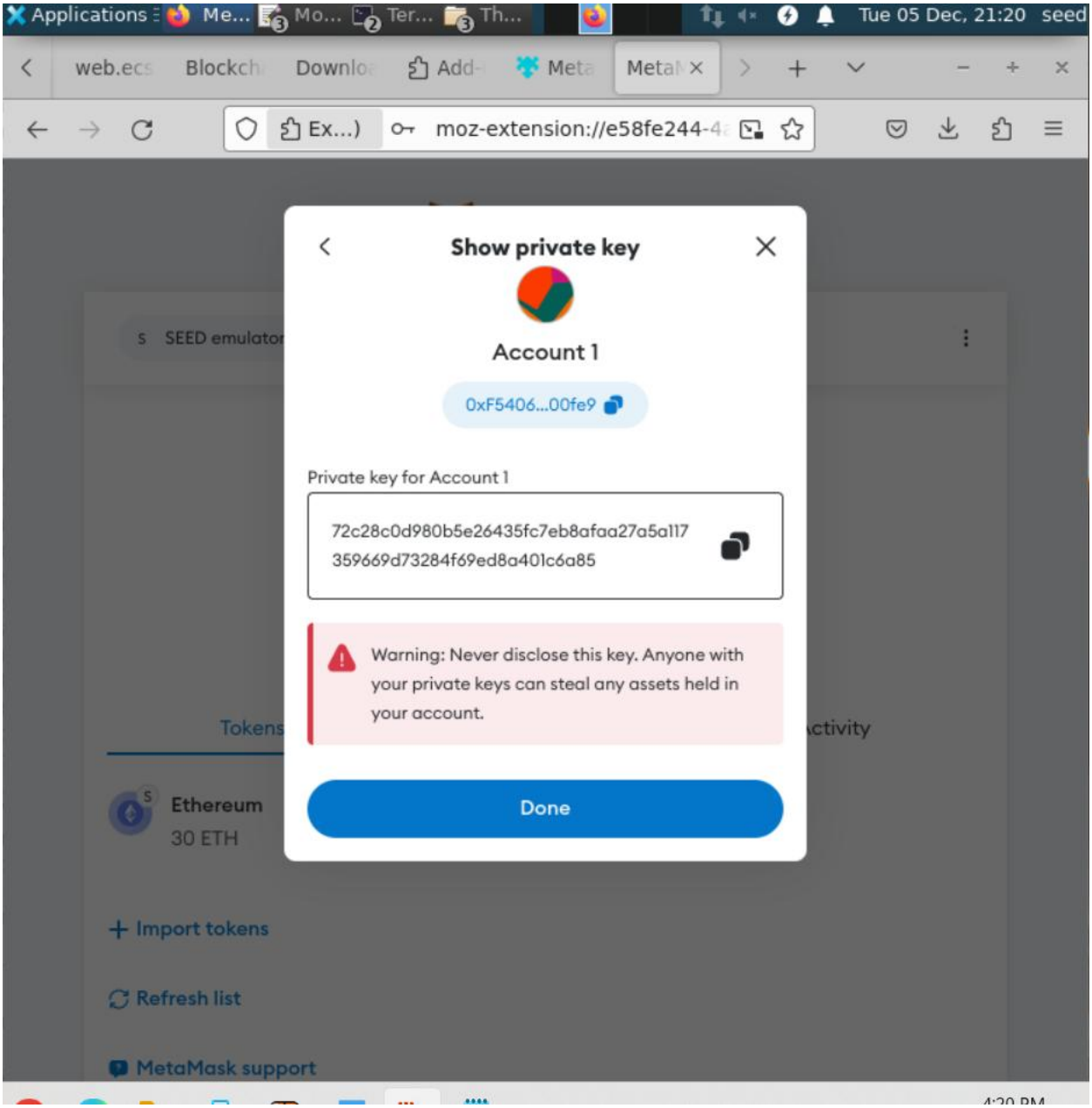

Applications
Tue 05 Dec, 21:12
/home/seed/CSE-643/Lab-08/Labsetup/Files/web3_balance.py - Mousepad
File Edit Search View Document Help
#!/bin/env python3
from web3 import Web3
url = 'http://10.150.0.71:8545'
web3 = Web3(Web3.HTTPProvider(url)) # Connect to a blockchain node
addr = Web3.toChecksumAddress('0xCBF1e330F0abD5c1ac979CF2B2B874cfD4902E24')
balance = web3.eth.get_balance(addr) # Get the balance
print(addr + ": " + str(Web3.fromWei(balance, 'ether')) + " ETH")

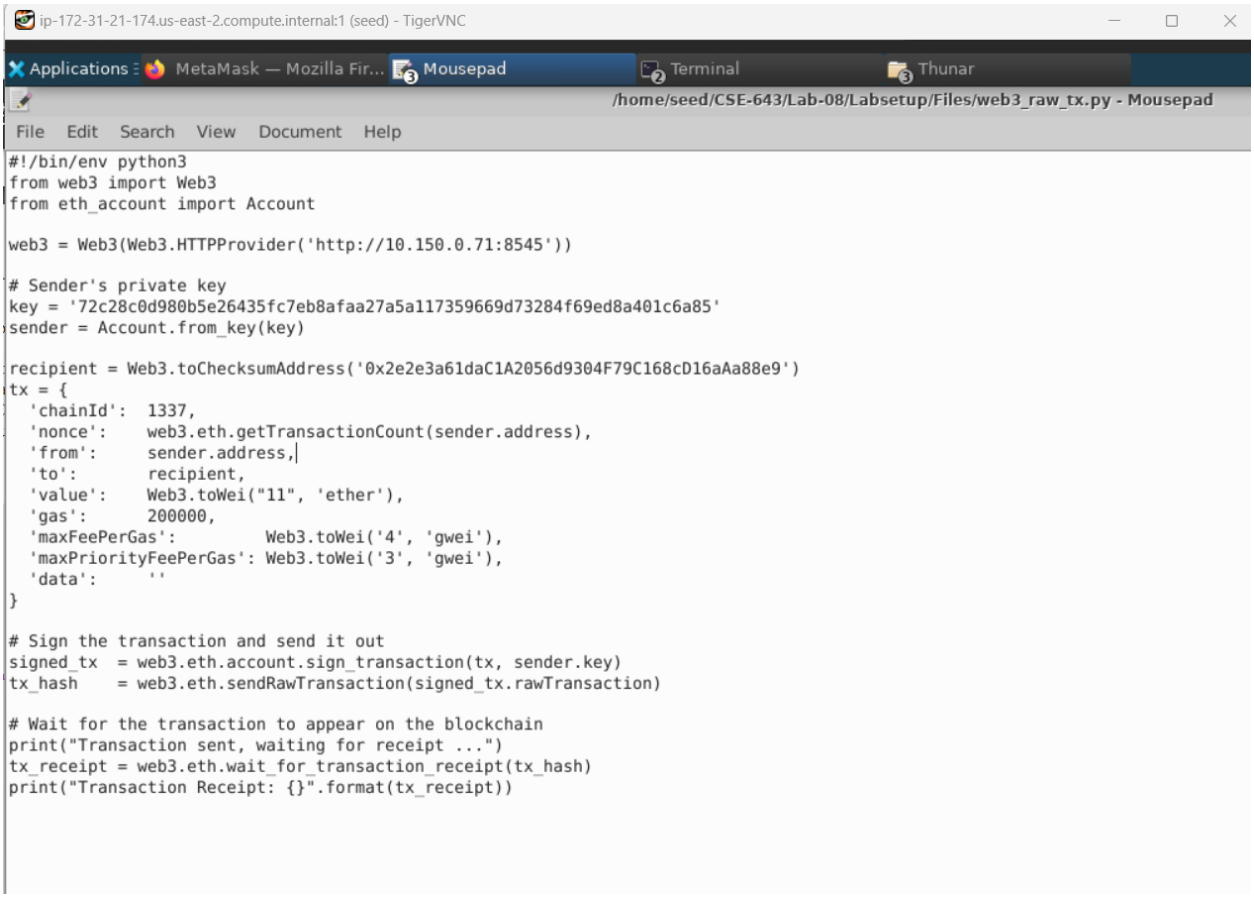

seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$ python3 web3_balance.py
/usr/lib/python3/dist-packages/requests/__init__.py:89: RequestsDependencyWarnin
g: urllib3 (2.1.0) or chardet (3.0.4) doesn't match a supported version!
warnings.warn("urllib3 ({}) or chardet ({}) doesn't match a supported "
0xCBF1e330F0abD5c1ac979CF2B2B874cfD4902E24: 10 ETH
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$

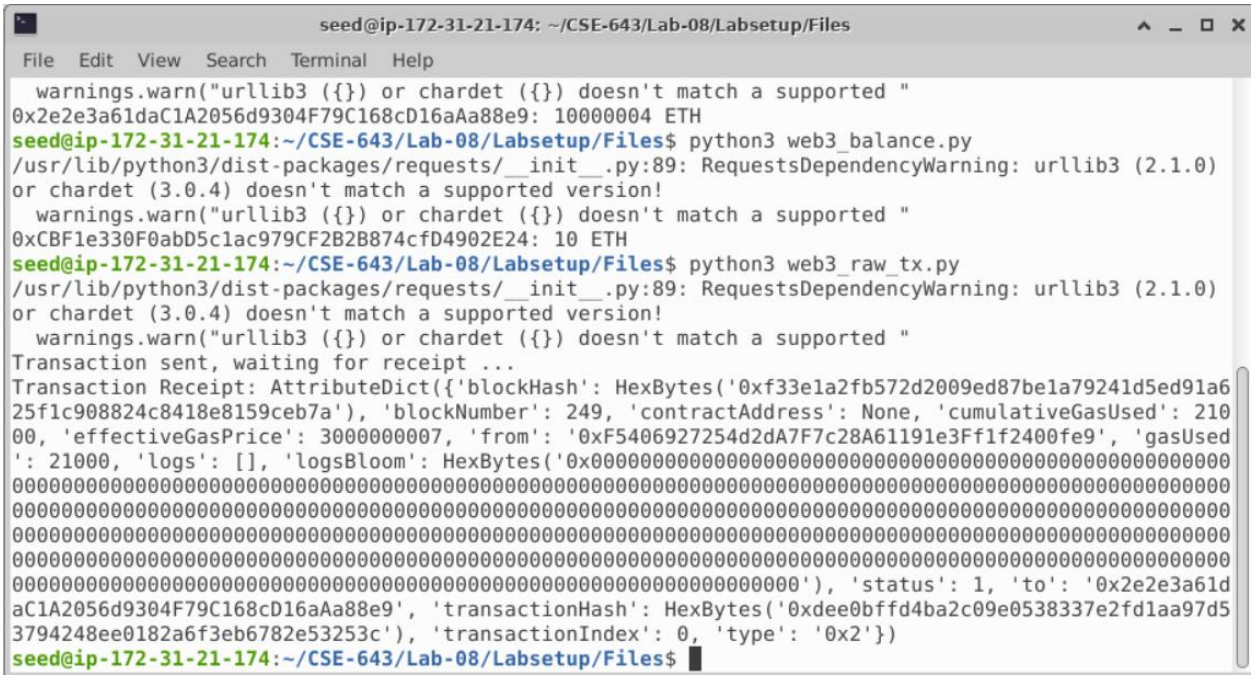
## Task 2 c Sending transactions.


Applications
Tue 05 Dec, 21:17
seed
moz-extension://e58fe244-4
Show private key
Account 3
0xCBF1e...02E24
Private key for Account 3
e128a6b87aa1d934970fd0f2714dd2fe61c017
636725dbfeb5e487cc83bcb7eb
Warning: Never disclose this key. Anyone with your private keys can steal any assets held in your account.
Done
Tokens
Ethereum
10 ETH
Import tokens
Refresh list

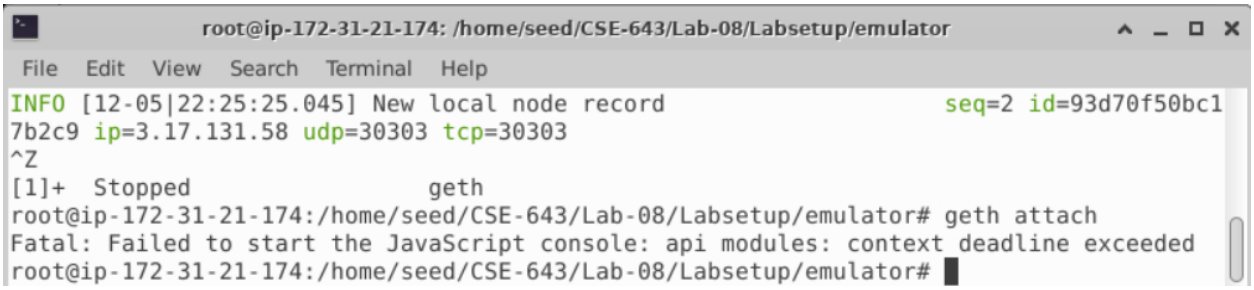

Show private key
Account 2
0x2e2e3...a88e9
Private key for Account 2
20aec3a7207fcda31bdef03001d9caf891799
54879e595d9a190d6ac8204e498
Warning: Never disclose this key. Anyone with your private keys can steal any assets held in your account.
Done
Tokens
Ethereum
Import tokens
Refresh list
MetaMask support

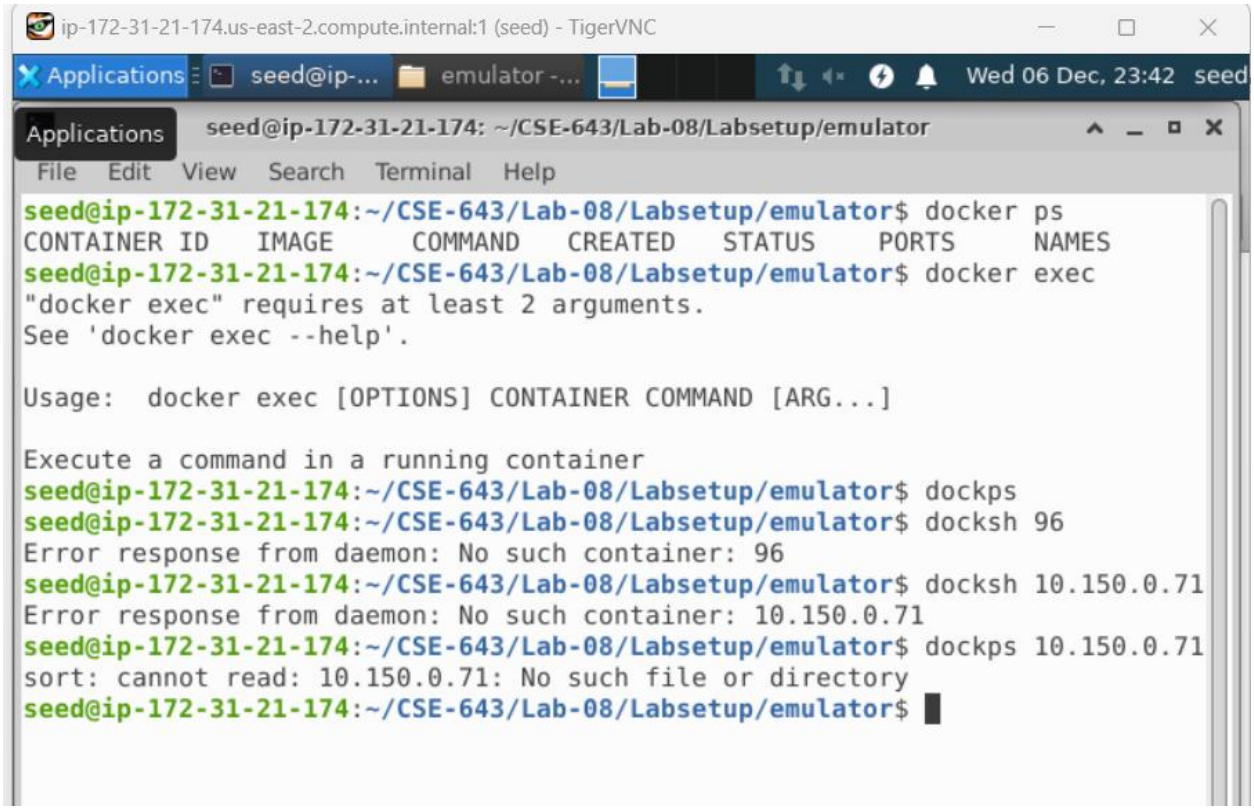

Applications
Tue 05 Dec, 21:20 seed
moz-extension://e58fe244-4
Show private key
Account 1
0xF5406...00fe9
Private key for Account 1
72c28c0d980b5e26435fc7eb8afaa27a5a117
359669d73284f69ed8a401c6a85
Warning: Never disclose this key. Anyone with your private keys can steal any assets held in your account.
Done
SEED emulator
Tokens
Ethereum
30 ETH
Import tokens
Refresh list
MetaMask support


ip-172-31-21-174.us-east-2.compute.internal:1 (seed) - TigerVNC
Applications
MetaMask — Mozilla Fir...
Mousepad
Terminal
Thunar
/home/seed/CSE-643/Lab-08/Labsetup/Files/web3_raw_tx.py - Mousepad
File Edit Search View Document Help
#!/bin/env python3
from web3 import Web3
from eth_account import Account
web3 = Web3(Web3.HTTPProvider('http://10.150.0.71:8545'))
# Sender's private key
key = '72c28c0d980b5e26435fc7eb8afaa27a5a117359669d73284f69ed8a401c6a85'
sender = Account.from_key(key)
recipient = Web3.toChecksumAddress('0x2e2e3a61daC1A2056d9304F79C168cD16aAa88e9')
tx = {
'chainId': 1337,
'nonce': web3.eth.getTransactionCount(sender.address),
'from': sender.address,
'to': recipient,
'value': Web3.toWei("11", 'ether'),
'gas': 200000,
'maxFeePerGas': Web3.toWei('4', 'gwei'),
'maxPriorityFeePerGas': Web3.toWei('3', 'gwei'),
'data': ''
}
# Sign the transaction and send it out
signed_tx = web3.eth.account.sign_transaction(tx, sender.key)
tx_hash = web3.eth.sendRawTransaction(signed_tx.rawTransaction)
# Wait for the transaction to appear on the blockchain
print("Transaction sent, waiting for receipt ...")
tx_receipt = web3.eth.wait_for_transaction_receipt(tx_hash)
print("Transaction Receipt: {}".format(tx_receipt))

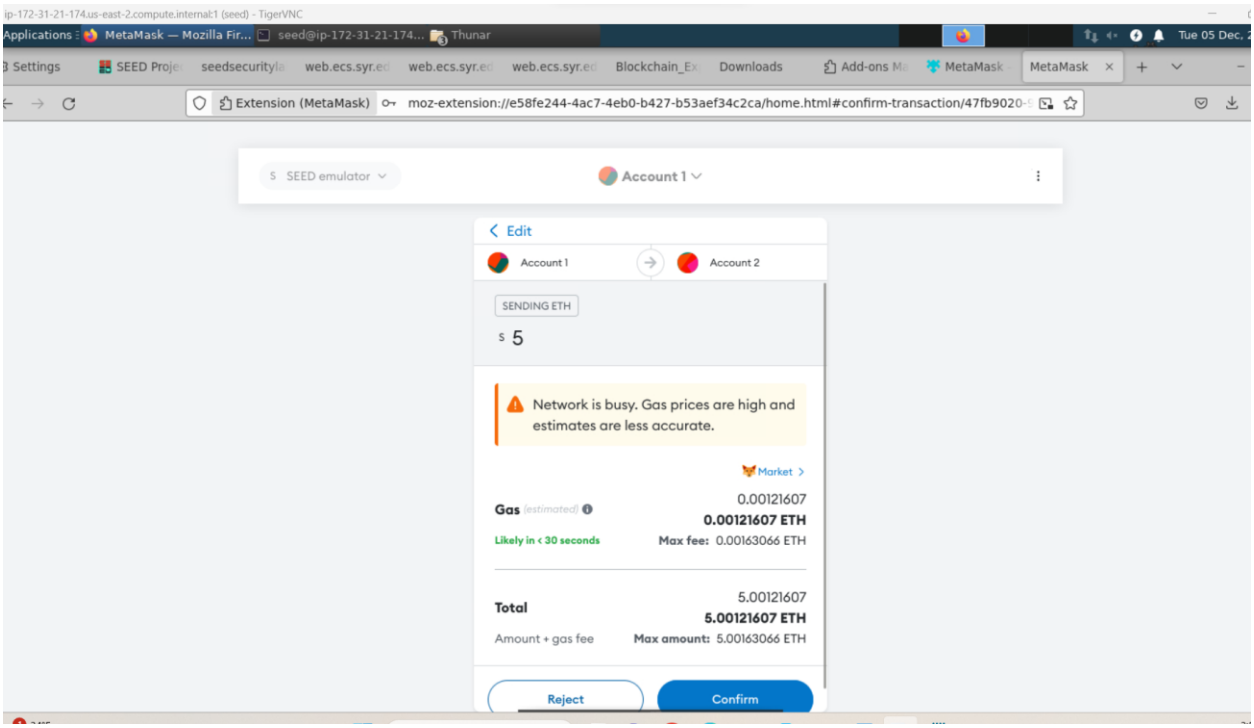

seed@ip-172-31-21-174: ~/CSE-643/Lab-08/Labsetup/Files
File Edit View Search Terminal Help
warnings.warn("urllib3 ({}) or chardet ({}) doesn't match a supported "
0x2e2e3a61daC1A2056d9304F79C168cD16aAa88e9: 10000004 ETH
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$ python3 web3_balance.py
/usr/lib/python3/dist-packages/requests/__init__.py:89: RequestsDependencyWarning: urllib3 (2.1.0)
or chardet (3.0.4) doesn't match a supported version!
warnings.warn("urllib3 ({}) or chardet ({}) doesn't match a supported "
0xCBF1e330F0abD5c1ac979CF2B2B874cfD4902E24: 10 ETH
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$ python3 web3_raw_tx.py
/usr/lib/python3/dist-packages/requests/__init__.py:89: RequestsDependencyWarning: urllib3 (2.1.0)
or chardet (3.0.4) doesn't match a supported version!
warnings.warn("urllib3 ({}) or chardet ({}) doesn't match a supported "
Transaction sent, waiting for receipt ...
Transaction Receipt: AttributeDict({'blockHash': HexBytes('0xf33e1a2fb572d2009ed87be1a79241d5ed91a6
25f1c908824c8418e8159ceb7a'), 'blockNumber': 249, 'contractAddress': None, 'cumulativeGasUsed': 210
00, 'effectiveGasPrice': 3000000007, 'from': '0xF5406927254d2dA7F7c28A61191e3Ff1f2400fe9', 'gasUsed
': 21000, 'logs': [], 'logsBloom': HexBytes('0x0000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000000000000000'), 'status': 1, 'to': '0x2e2e3a61d
aC1A2056d9304F79C168cD16aAa88e9', 'transactionHash': HexBytes('0xdee0bffd4ba2c09e0538337e2fd1aa97d5
3794248ee0182a6f3eb6782e53253c'), 'transactionIndex': 0, 'type': '0x2'})
seed@ip-172-31-21-174:~/CSE-643/Lab-08/Labsetup/Files$

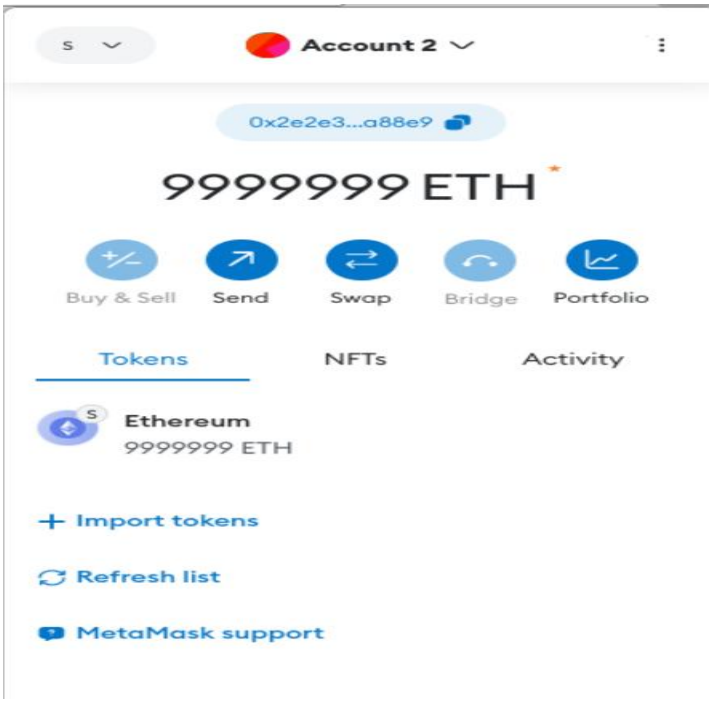
## Task 3: Interacting with Blockchain Using Geth

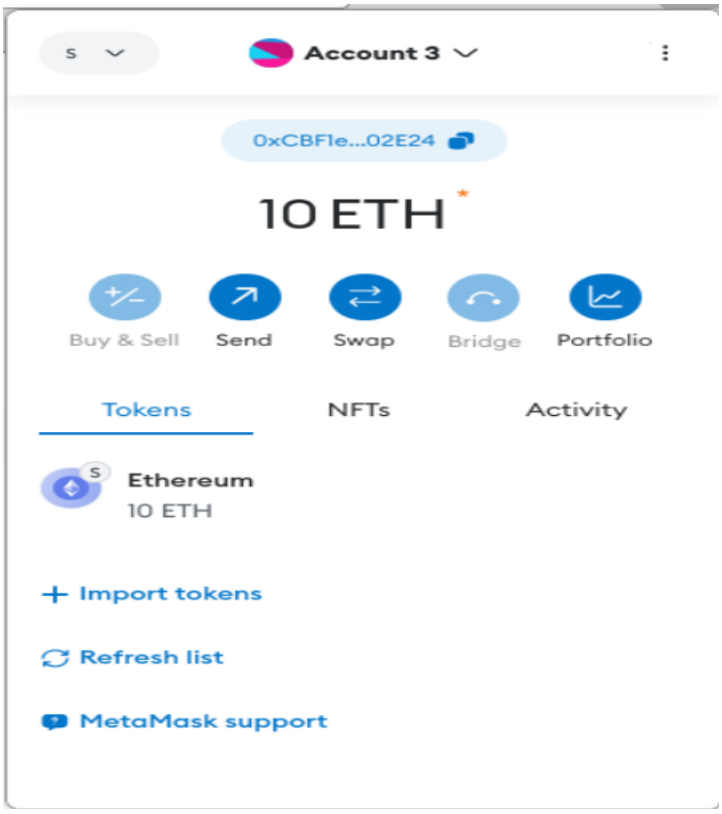



## Task 3a : Getting Balance


SEED emulator
Account 1
Edit
Account 1
Account 2
SENDING ETH
5
Network is busy. Gas prices are high and estimates are less accurate.
Market
Gas (estimated)
0.00121607
0.00121607 ETH
Likely in < 30 seconds
Max fee: 0.00163066 ETH
Total
5.00121607
5.00121607 ETH
Amount + gas fee
Max amount: 5.00163066 ETH
Reject
Confirm


Account 2
0x2e2e3...a88e9
9999999 ETH
Buy & Sell
Send
Swap
Bridge
Portfolio
Tokens
NFTs
Activity
Ethereum
9999999 ETH
Import tokens
Refresh list
MetaMask support


Account 3
0xCBF1e...02E24
10 ETH
Buy & Sell
Send
Swap
Bridge
Portfolio
Tokens
NFTs
Activity
Ethereum
10 ETH
Import tokens
Refresh list
MetaMask support