

Program Setup and Launch guide

Background

This final year project is a group project. The current repository is finalized based on project **22CS016** only and may/does not reflect the final contribution for **22CS015**.

GitHub repository reference: https://github.com/hung0125/CS4514_FYP_Blockchain_ipfs

Prerequisites

- Setup OS should be Windows. The following guidelines were only tested on Windows.

Step 1 – repository settings (do once)

1. Install NPM (can be downloaded [here](#)).
 - Upon installation, make sure the command 'npm' is responsive.

```
C:\Users\peter>npm
npm WARN config global `--global`, `--local` are deprecated. Use `--location=global` instead.
npm <command>

Usage:

npm install          install all the dependencies in your project
npm install <foo>    add the <foo> dependency to your project
npm test             run this project's tests
npm run <foo>        run the script named <foo>
npm <command> -h     quick help on <command>
npm -l              display usage info for all commands
npm help <term>      search for help on <term> (in a browser)
npm help npm         more involved overview (in a browser)

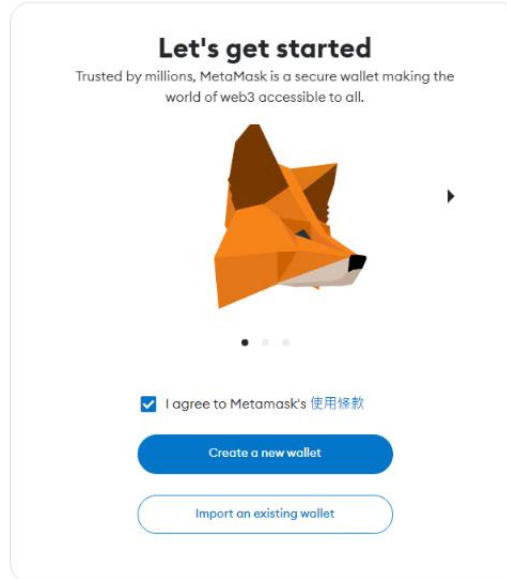
All commands:

access, adduser, audit, bin, bugs, cache, ci, completion,
config, dedupe, deprecate, diff, dist-tag, docs, doctor,
edit, exec, explain, explore, find-dupes, fund, get, help,
hook, init, install, install-ci-test, install-test, link,
ll, login, logout, ls, org, outdated, owner, pack, ping,
pkg, prefix, profile, prune, publish, rebuild, repo,
restart, root, run-script, search, set, set-script,
shrinkwrap, star, stars, start, stop, team, test, token,
uninstall, unpublish, unstar, update, version, view, whoami
```

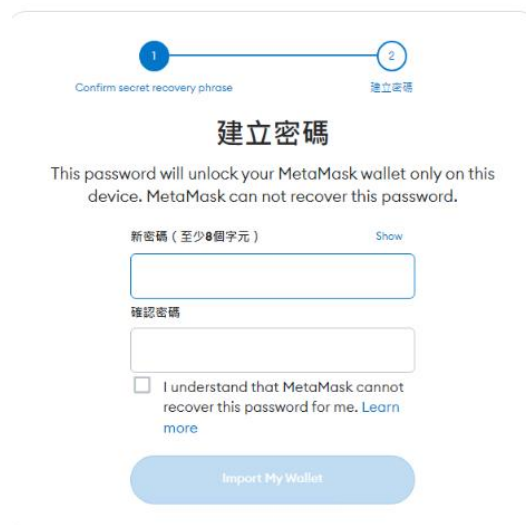
2. CD to **app** folder, issue command "npm i".
3. Repeat step 2 for **smart_contract** folder.

Step 2 – wallet settings (do once)

- Install MetaMask for Chrome (can be downloaded [here](#)).
- Upon installation, set up Blockchain wallet.
 - o A page like this should be automatically opened.

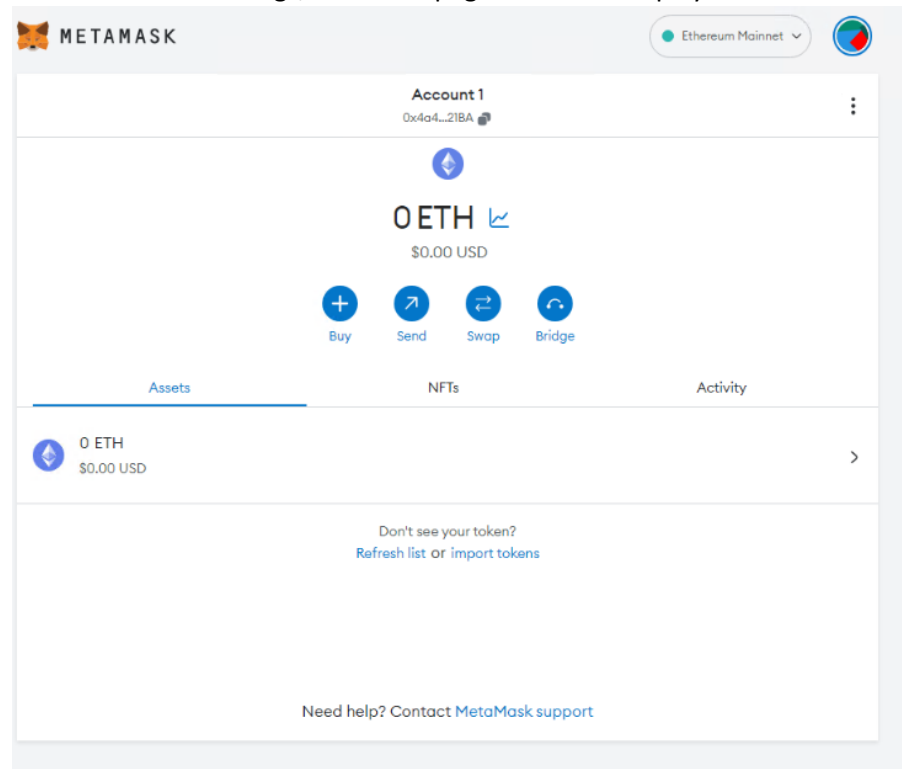


- o Agree the terms then click “Import an existing wallet”. You could also create your own wallet.
- o On the next page, click “I Agree”
- o Input the following secret recovery phrase:
 - *limit error book doll distance lecture traffic mad brick wire essence mean*
 - (Directly copy the whole sentence then paste to the first input box)
- o Click the confirm button.
- o The page should be shown as follows:

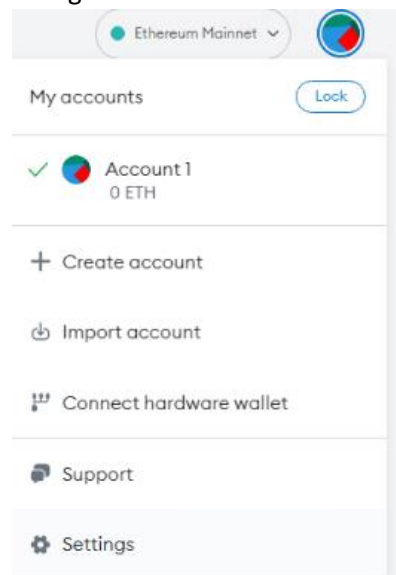
The image shows the MetaMask '建立密碼' (Create Password) screen. It has a progress bar at the top with two steps: '1 Confirm secret recovery phrase' and '2 建立密碼'. The title '建立密碼' is centered. Below it, a warning states: 'This password will unlock your MetaMask wallet only on this device. MetaMask can not recover this password.' There are two input fields: '新密碼 (至少8個字元)' (New Password) and '確認密碼' (Confirm Password). A checkbox is present with the text 'I understand that MetaMask cannot recover this password for me. Learn more'. At the bottom is a blue button labeled 'Import My Wallet'.

- o Set the new password to **Cityufyp2022**
 - **Not recommended to change any new passwords.**

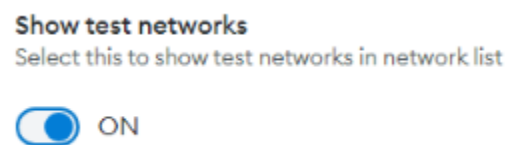
- Click the import button.
- After some confirmation dialogs, initialized page should be displayed as follows:



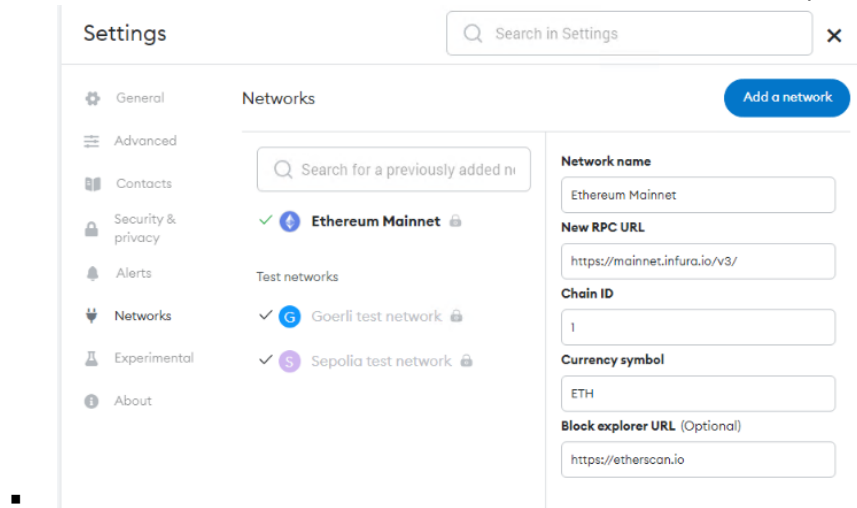
- Open “settings”.



- In the **Advanced** tab, turn on the following feature:



- In the **Networks** tab, click “Add a network” → “Add a network manually”.



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

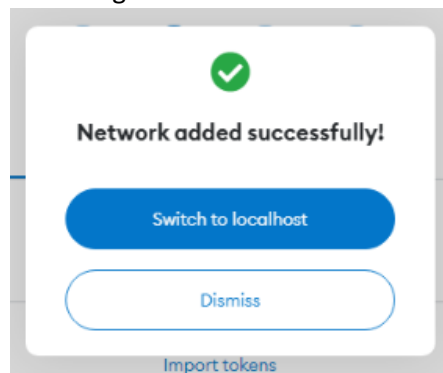
New RPC URL

Chain ID ⓘ

Currency symbol

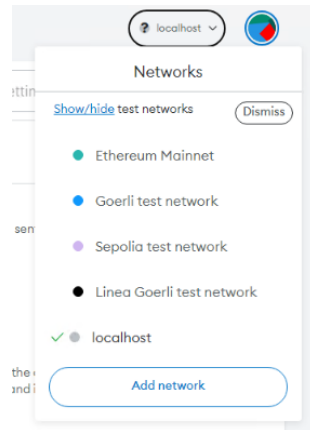
Block explorer URL (Optional)

- Input the network information as follows:
 - Network name: localhost
 - New RPC URL: <http://localhost:8545>
 - Chain ID: 31337
 - ETH
- Save the information.
- If there is a dialog box:

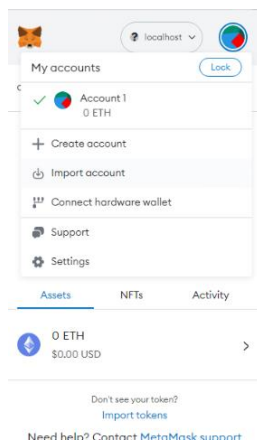


- Click “Switch to localhost”

- Else, switch to localhost host using the network tab on the top right corner.



- Import local accounts from **localnode.bat**.



- Right click the account profile → “Import account”
- Open the “localnode.bat”, following information should be displayed:

```

C:\Users\FYP\Desktop\FYP\smart_contract>npm run hardhat node
Started HTTP and WebSocket JSON-RPC server at http://127.0.0.1:8545/

Accounts
*****

WARNING: These accounts, and their private keys, are publicly known.
Any funds sent to them on Mainnet or any other live network WILL BE LOST.

Account #0: 0xf39Fd6e51aad88F6F6466aB8827279cFf9b2266 (10000 ETH)
Private Key: 0xac0974bec39a17e36ba4a6b4d238ff944bacb478cbed5efcae784d7bf4f2ff80

Account #1: 0x70997970C51812dc3A010C7d01b50e0d17dc79C8 (10000 ETH)
Private Key: 0x59c6995e998f97a5a0044966f0945389dc9e86dae88c7a8412f4603b6b78690d

Account #2: 0x3C44CdDdB6a900fa2b585dd2999E03d12FA4293BC (10000 ETH)
Private Key: 0x5de4111afa1a4b94908f83103eb1f1706367c2e68ca870fc3fb9a804cdab365a

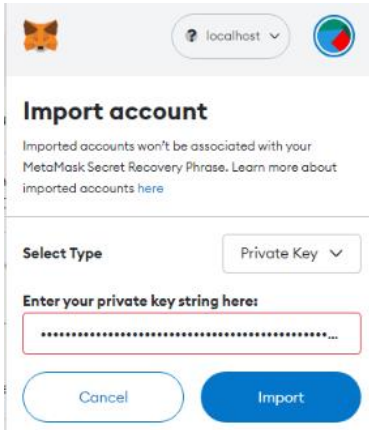
Account #3: 0x90F79b666F6E2c4f870365E785902E1f101E93b906 (10000 ETH)
Private Key: 0x7c852118294e51e653712a81e0500f419141751be58f605c371e15141b007a6

Account #4: 0x15d34AAf54267D87D7c367839Aaf71A00a2C6A65 (10000 ETH)
Private Key: 0x47e179ec197488593b187f80a00eb0da91f1b9d0b13f8733639f19c30a34926a

Account #5: 0x9965507D1a55bC2695C58ba16F837d81980A4dc (10000 ETH)
Private Key: 0x8b3a350cf53c34c9194ca85829a2df0ec3153be03185e2d3348e872092edffba

Account #6: 0x976EA74026E726554d8657FA54763abd0C3a0aa9 (10000 ETH)
Private Key: 0x92db14e483b83df3e3df233f83dfa3a0d7096f21ca9b0d6d6b888b2b4ec1564e
  
```

- Import any private key to the MetaMask window:



Import account

Imported accounts won't be associated with your MetaMask Secret Recovery Phrase. Learn more about imported accounts [here](#)

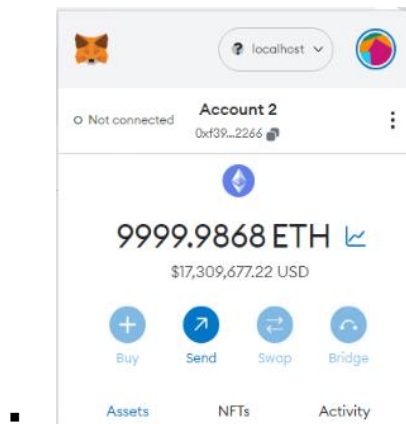
Select Type Private Key

Enter your private key string here:

.....

Cancel Import

- New account should be set as follows:



Step 3 (do once)

- Install IPFS desktop (can be downloaded [here](#), named “IPFS-Desktop-Setup-{version}.exe”).
- After launching the program, go the “Settings” tab then configure the following Json file as follows:

The screenshot displays the IPFS Desktop application interface. On the left is a dark sidebar with icons and labels for STATUS, FILES, EXPLORE, PEERS, and SETTINGS (which is highlighted). At the bottom of the sidebar, it shows 'Revision 04eb7b3', 'See the code', and 'Report a bug'. The main area on the right is titled 'IPFS CONFIG' and contains a text box with the following text: 'The IPFS config file is a JSON document. It is read on startup, and any changes, then restart the IPFS daemon to apply the information.' Below this text is a code editor showing a JSON configuration file. A red box highlights the 'API' section of the config, and a red arrow points from the 'SETTINGS' tab in the sidebar to this section. The JSON config is as follows:

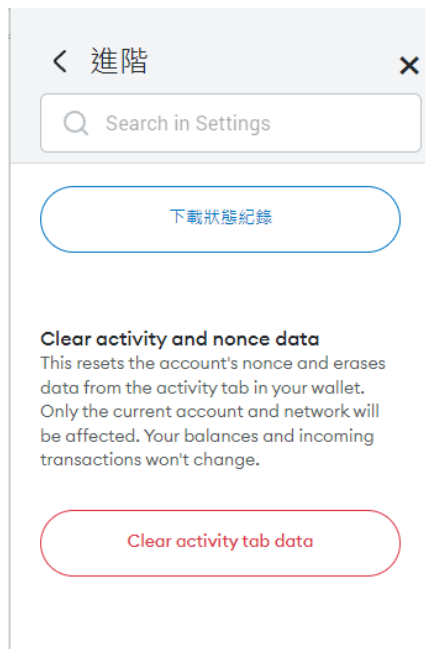
```
1 - {
2 -   "API": {
3 -     "HTTPHeaders": {
4 -       "Access-Control-Allow-Origin": [
5 -         "*"
6 -       ]
7 -     },
8 -   },
9 -   "Addresses": {
10 -    "API": "/ip4/127.0.0.1/tcp/5001",
11 -    "Announce": [],
12 -    "AppendAnnounce": [],
13 -    "Gateway": "/ip4/127.0.0.1/tcp/8080",
14 -    "NoAnnounce": [],
15 -    "Swarm": [
16 -      "/ip4/0.0.0.0/tcp/4001",
17 -      "/ip6:::tcp/4001",
18 -      "/ip4/0.0.0.0/udp/4001/quic",
19 -      "/ip6:::udp/4001/quic"
20 -    ]
21 -   },
22 -   "AutoNAT": {},
23 -   "Bootstrap": [
24 -     "/dnsaddr/bootstrap.libp2p.io/p2p/QmQCU2EcMqA...
25 -     "/dnsaddr/bootstrap.libp2p.io/p2p/QmbLHAnMoJPW...
26 -     "/dnsaddr/bootstrap.libp2p.io/p2p/QmcZf59bWwK3...
27 -     "/ip4/104.131.131.82/tcp/4001/p2p/QmaCpDMGUV2B...
28 -     "/ip4/104.131.131.82/udp/4001/quic/p2p/QmaCpDM...
29 -     "/dnsaddr/bootstrap.libp2p.io/p2p/QmNnodOu7bf...
30 -   ],
31 -   "DNS": {
32 -     "Resolvers": {}
33 -   },
34 -   "Datastore": {
35 -     "BloomFilterSize": 0,
36 -     "GCPeriod": "1h",
37 -     "HashOnRead": false,
38 -     "Spec": {
39 -       "mounts": [
40 -         {
41 -           "child": {
42 -             "path": "blocks",
43 -             "type": "leveldb",
44 -             "value": {}
45 -           }
46 -         }
47 -       ]
48 -     }
49 -   }
50 - }
```

Step 4 (do every time launch)

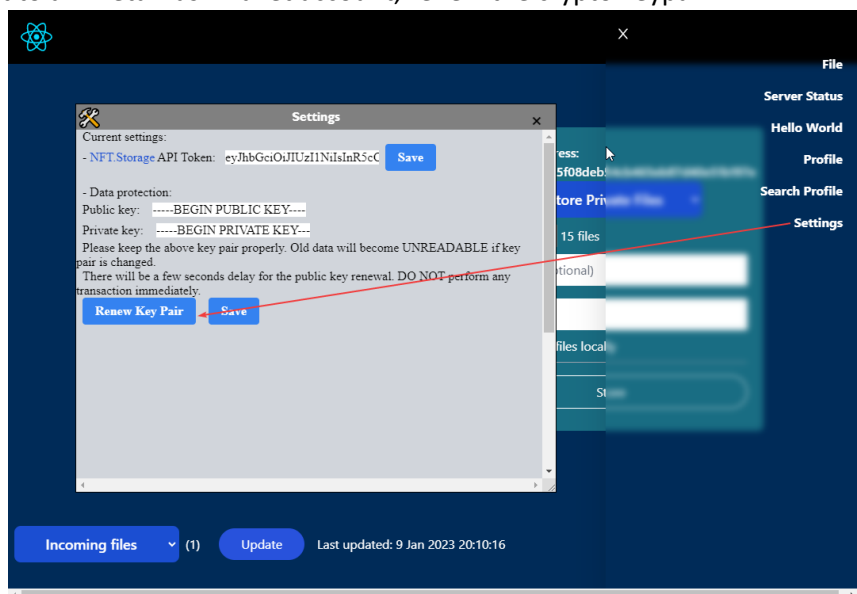
- *App folder*: click **run.bat**.
- *Smart_contract folder*: click **localnode.bat** first. When the account list is shown, click **deploy.bat**.
- Start IPFS desktop.

Step 5 (do every time launch)

- Go to localhost:5173
- For each imported MetaMask account: profile icon → Settings → Advanced → Clear activity tab data



- Connect to an MetaMask wallet account, renew the crypto keypair.



- At this time, the system should be working.