

ReadMe

In order to easily run the project's code, a Virtual Machine was created. All used tools (Ganache, MetaMask) and dependencies have already been installed.

Prerequisites:

Disk space requirements

The **Virtual Machine** will be around **14GBs** after creation. The **OVA** file that builds the VM is around **7 GBs**.

Please ensure you have at least **21 GBs** of disk space available.

Download Virtual Box:

<https://www.virtualbox.org/wiki/Downloads>

The VM was developed and tested on Virtual Box 7. Older versions were not tested, please use version 7.

Download the VM:

To create the VM, you will need to download the 'VM FYP DC.ova' file from the following location:

https://bham-my.sharepoint.com/personal/dxc936_student_bham_ac_uk/_layouts/15/guestaccess.aspx?guestaccesstoken=H5dttWWSK0uteEiUhzCn75xWdM%2BFjPg9ZuNUVBilhaak%3D&docid=2_1c30333237d184769a555cab537bc7e92&rev=1&e=tWi5z2

Import the VM into Virtual Box:

- Download the 'VM FYP DC.ova' file;
- Open Virtual Box;
- Select File > Import Appliance
- Select the downloaded .ova file in the File Selector;
- Press 'Next';
- Ensure 'Import hard drives as VDI' is **selected** in Additional Options;
- Press 'Finish';

This should create the Virtual Machine with the name '**VM FYP DavidC**'.

Additionally, you can follow the **instructions** provided at this link:

<https://docs.oracle.com/en/virtualization/virtualbox/6.0/user/ovf.html>

Adjust the VM settings:

The VM settings might need to be adjusted in order to ensure it runs smoothly.

Suggested settings:

- at least 4GBs of RAM
- at least 2 CPUs
- screen resolution of 1680x1050
- run the Window in 'Scaled mode' and enlarge it.

These settings can be adjusted after preferences.

Credentials:

VM credentials:

Username: david

Password: password

MetaMask credentials:

Password: password

Recovery phrase:

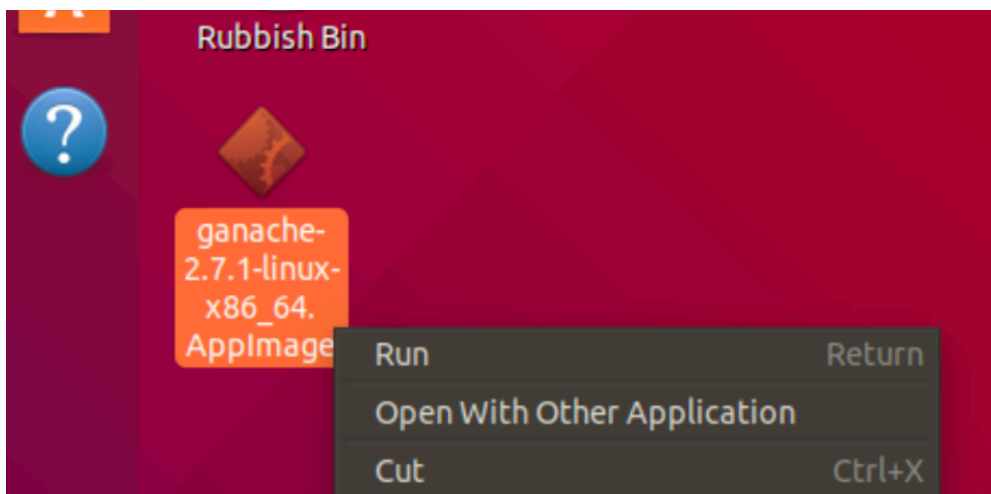
senior voice sting
tone donkey believe
like moon remind
used bike daughter

How to run the project:

The following steps need to be followed in the correct order to successfully run the project. The VM will also need to be connected to the internet (connection should be automatic if the host computer has internet access).

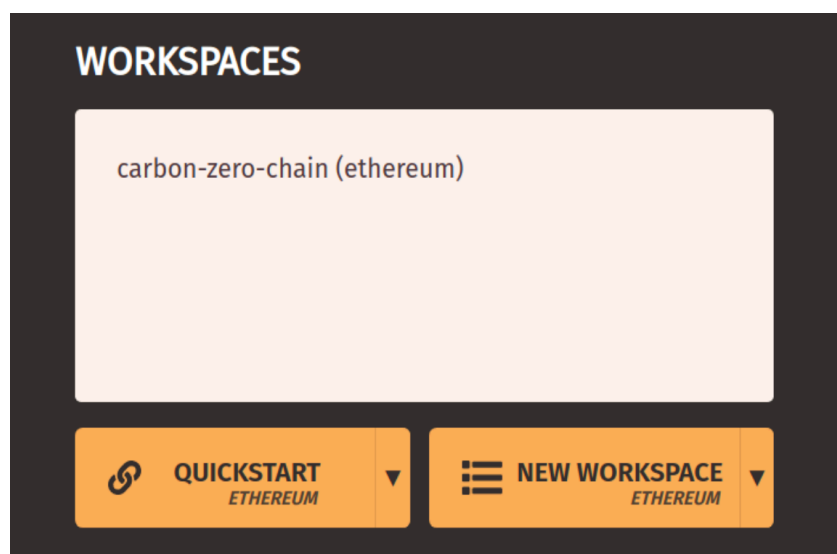
Step 1. Start the Ganache blockchain

- go to Desktop
- Right Click on 'ganache-2.7.1-linux...'
- select 'Run'



Once Ganache is open:

- select 'carbon-zero-chain' by pressing on it:



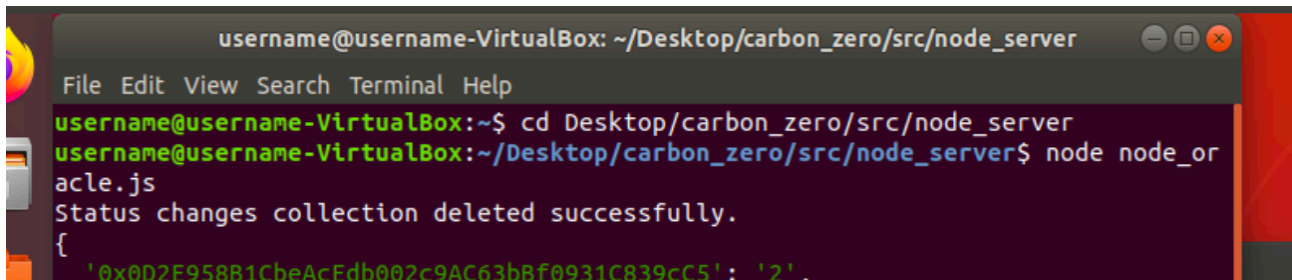
The Ganache Blockchain is now running and the window can be minimised.

Step 2. Start the Oracle Server

The next step is to go to the folder containing the Node server and to run it.

Instructions:

- open a new Terminal instance
- run: 'cd Desktop/carbon_zero/src/node_server/'
- run: 'node node_oracle.js'

A screenshot of a terminal window titled 'username@username-VirtualBox: ~/Desktop/carbon_zero/src/node_server'. The terminal shows the following commands and output:

```
username@username-VirtualBox:~$ cd Desktop/carbon_zero/src/node_server
username@username-VirtualBox:~/Desktop/carbon_zero/src/node_server$ node node_oracle.js
Status changes collection deleted successfully.
{
  '0x0D2F958B1CbeAcFdb002c9AC63bBf0931C839cC5': '2'
```

The server should now be running in the background. This Terminal instance should stay open for the duration of running the web app.

Step 3. Start the Web App

Instructions:

- open a new Terminal instance
- run: 'cd Desktop/carbon_zero'
- run: 'npm start'

The web app should now be opened in a Mozilla Firefox window. It can also be accessed at: **localhost:3000**

How to use the Web App:

You will need to log in with the **MetaMask** Firefox extension when you first open the app.

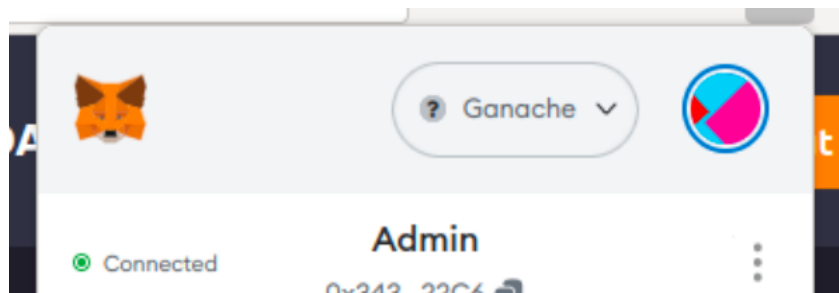
If the MetaMask extension is not automatically triggered when the app first opens and Log in is pressed, please reload the app in the browser.

Log in with MetaMask

-you will need to input the following account password into the MetaMask window: **password**.

-if MetaMask crashes and outputs a message to change network, please press 'X' inside the wallet window and re-enter the password. This is a MetaMask error.

-ensure that MetaMask is connected to the **Ganache** blockchain:

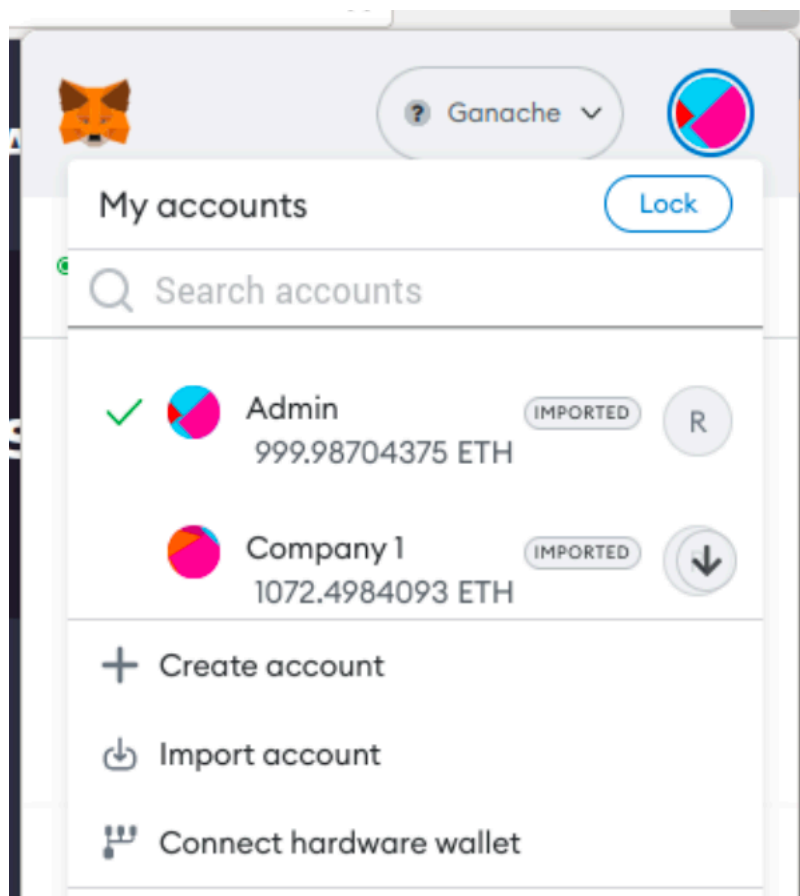


How to switch between MetaMask User accounts

Multiple Blockchain addresses have been added to the Wallet, to showcase the functionality of different users.

To open the MetaMask wallet, press on the MetaMask browser extension.

You can switch between users (eg Admin or Company 1) inside the MetaMask wallet window, by pressing the coloured icon at the top right:



Select the account you want to switch to. All accounts are connected to the web app, except for the one called 'Do not use'.

Switch between accounts to see how different users can interact with the app (Admin, authorised and unauthorised users).