Vaxina

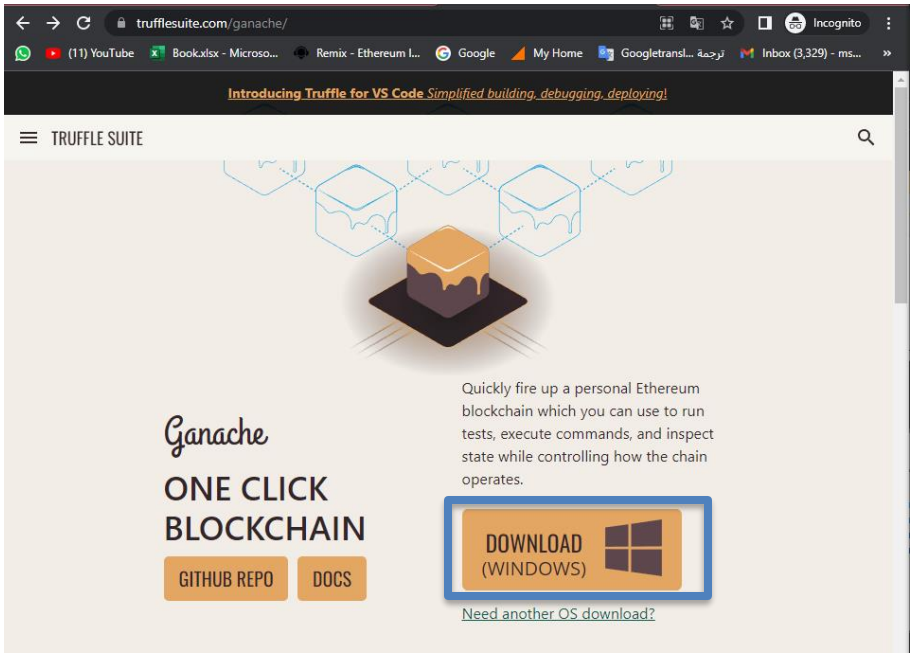
Vaxina Deployment

This section will provide the steps for installing and configuring all the necessary tool and softwares that are needed to run the Vaxina project.

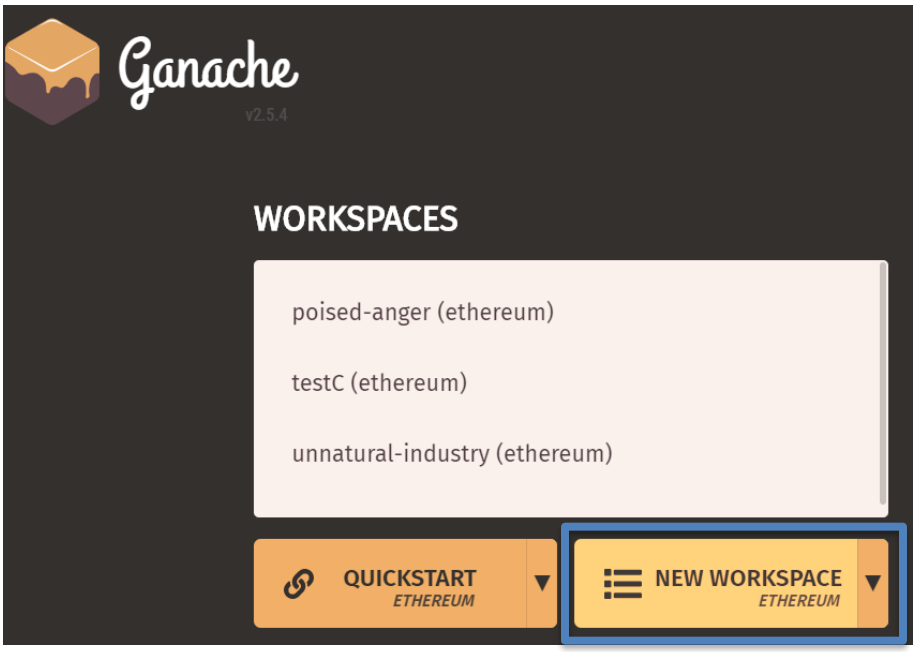
1. **Ganache**:

    a. Ganache is a personal blockchain for rapid Ethereum and Corda distributed application development. You can use Ganache across the entire development cycle; enabling you to develop, deploy, and test your DApps in a safe and deterministic environment [10]. Ganache comes with two flavors UI and CLI for this project we will use the GUI interface since it is easier to deal with and they both provides the same functionality.

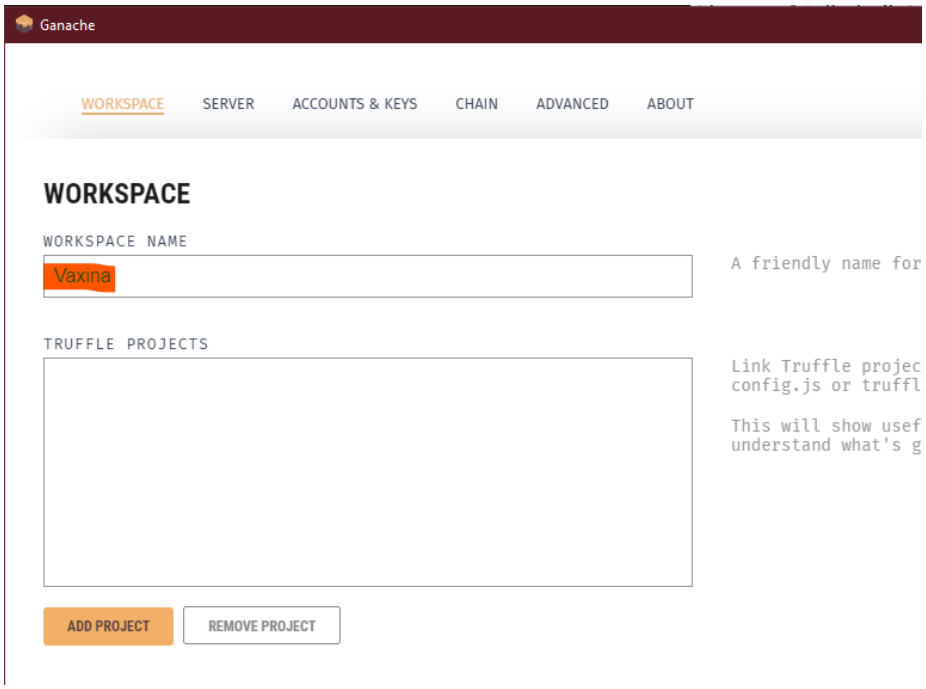
    b. Ganache supports different operating systems and you can download it through the official website. To download it just clink on the DOWNLOA button as shown below.



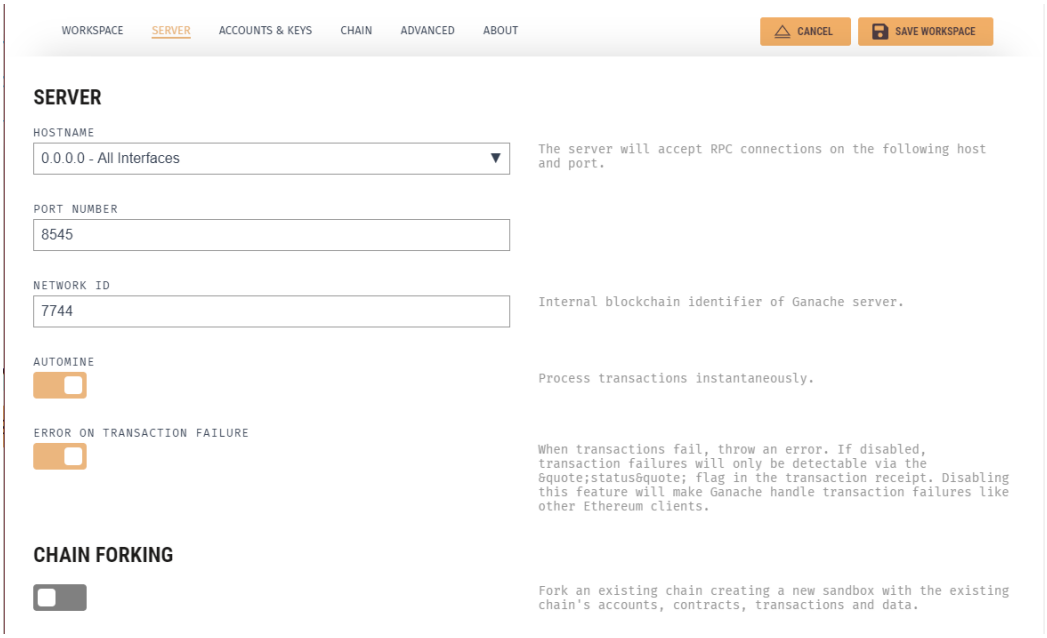
    c. After downloading Ganache, we need to create a new personal blockchain where our project will be developed. To do that click on new workspace as shown below:



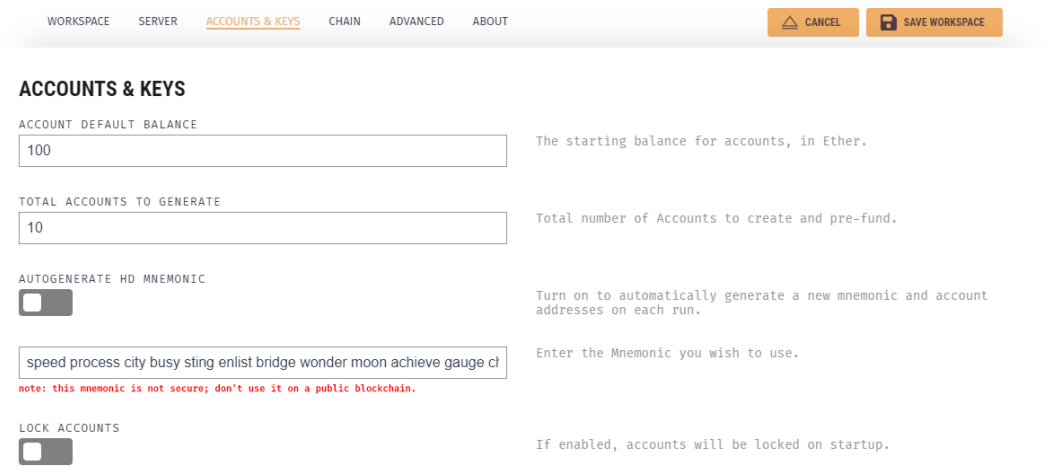
d. Then we will enter Vaxina for the WORKSPACE NAME:



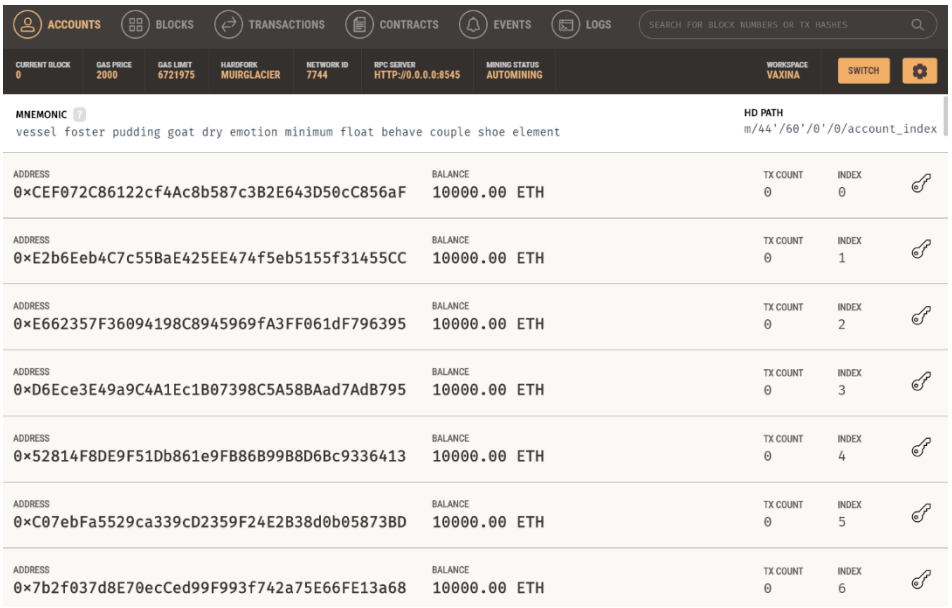
e. For The server Configuration, we will specify the hostname to be All the interfaces so anyone in the local network can join and access the blockchain.



f. For additional configurations, we can specify the number of the account and their balances. After doing that, now we can save the workspace and run the blockchain:

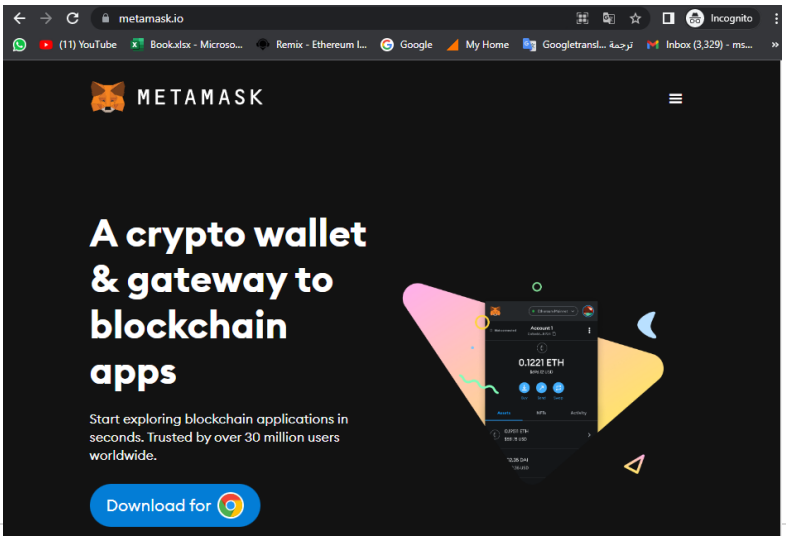


g. As we can see below, our blockchain now is ready and we can join the network using MetaMask wallet:

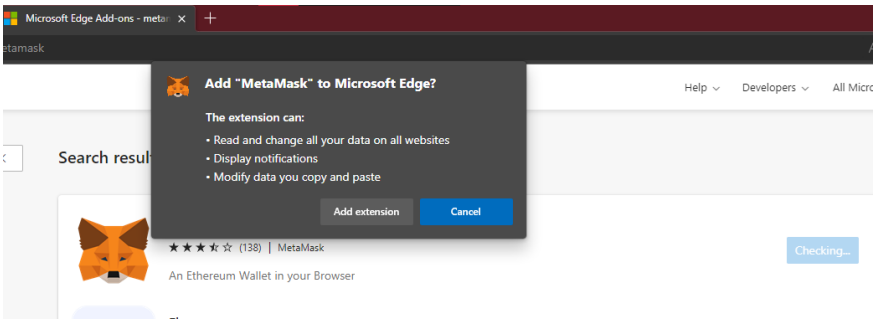


2. **MetaMask**:

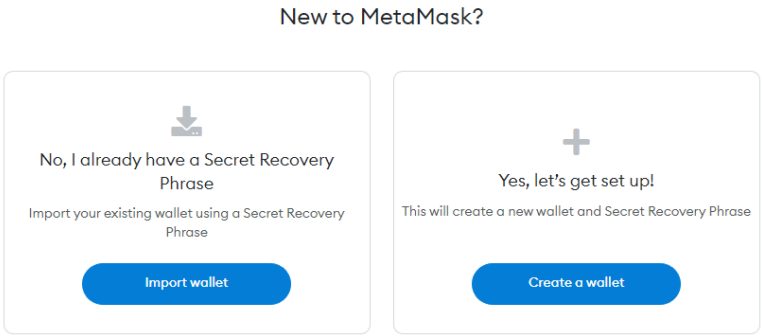
a. MetaMask is a software cryptocurrency wallet used to interact with the Ethereum blockchain. It allows users to access their Ethereum wallet through a browser extension or mobile app, which can then be used to interact with decentralized applications [11]. In our project, we used MetaMask to connect to the Ganache blockchain and access the smart contract. To install MetaMask, we need to install from the official website of MetaMask.



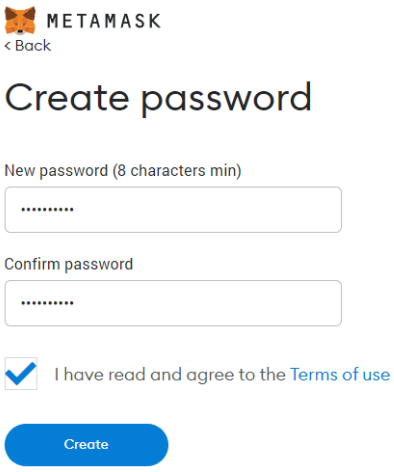
b. MetaMask is an extension that can be added to most of the known browsers. After downloading the MetaMask extension and added to google chrome or Microsoft edge. Now, we need to create a wallet that will contains the accounts which they will be used to access Vaxina project. MetaMask is a wallet not an account so we can have multiple account inside each wallet. As a new user, we will create a new wallet and by default it will contains a new Ethereum account.



c. After adding MetaMask extension, a new webpage will be opened that will give you the chose to either create a new wallet or import a wallet. We will create a new wallet.

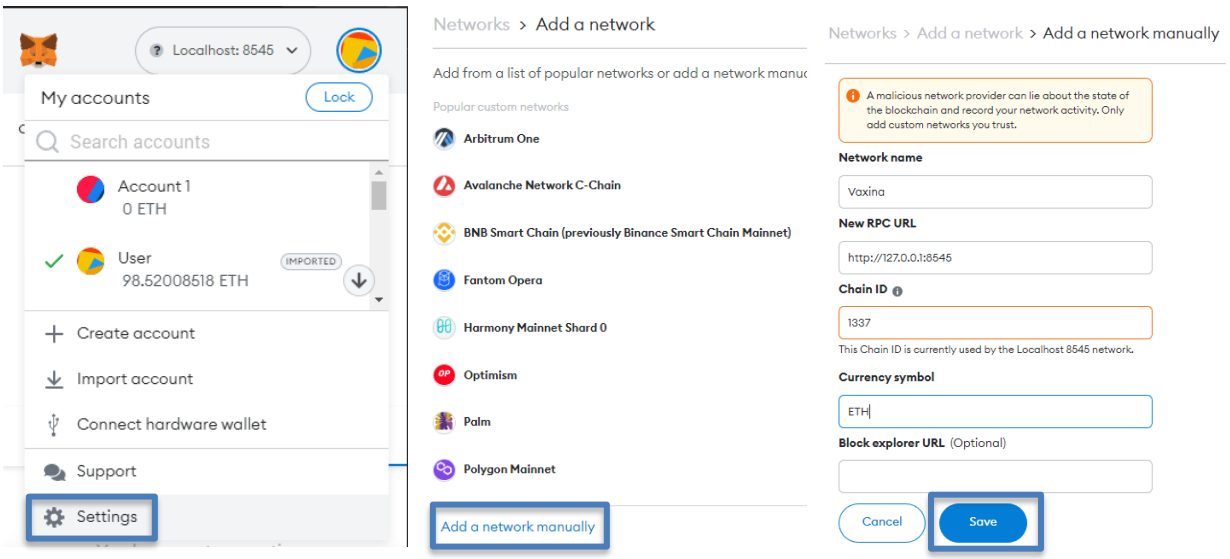


d. Then you need to enter the password for the new wallet that you are creating.

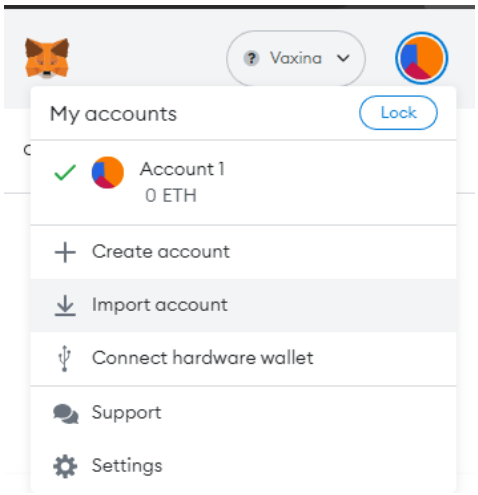


e. Then a new message will appear to notify you that you need to keep your secret key phrase in secure place, the purpose of the secret key phrase is to use when ever we want to import your wallet so instead of the normal password, you need to provide this phrase in order to import and access to your wallet.

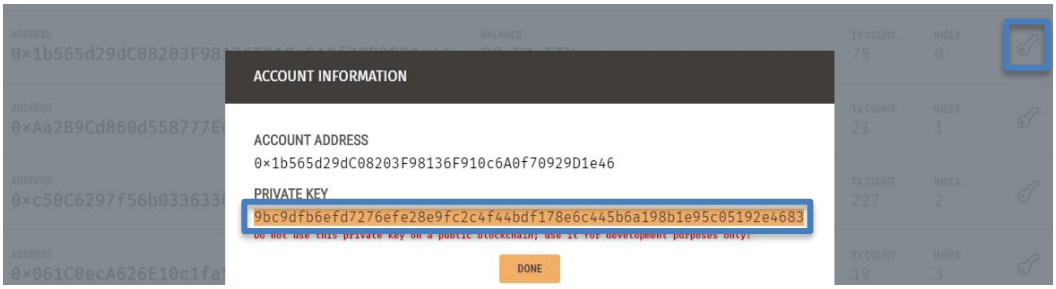
f. As we can see the process of creating new wallet is successed, and now the wallet is ready to be connected to our Vaxina blockchain. In order to connect the MetaMask to our blockchain, we need add a network to the wallet.



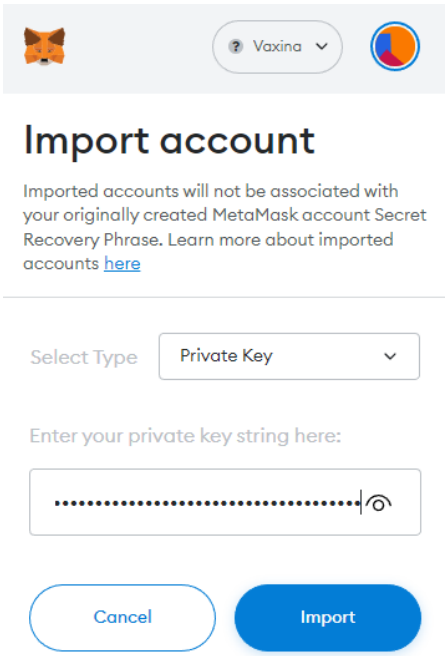
g. We can see that the new network is added to the wallet and now we can access the blockchain network. To test if we actually connected the wallet to the Vaxina blockchain we will import one of the default accounts from the blockchain:

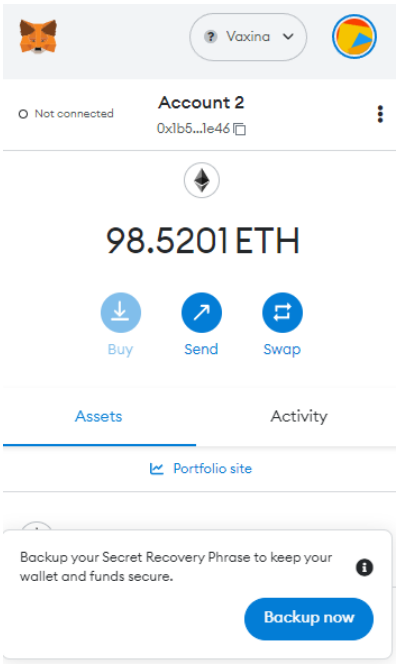


h. We will copy the private key of the account that we choose from the blockchain and paste it in MetaMask:



i. After entering the private key of the account, we can see that the account has been imported successfully and we can see the Ethereum balance of the account as it is in blockchain.

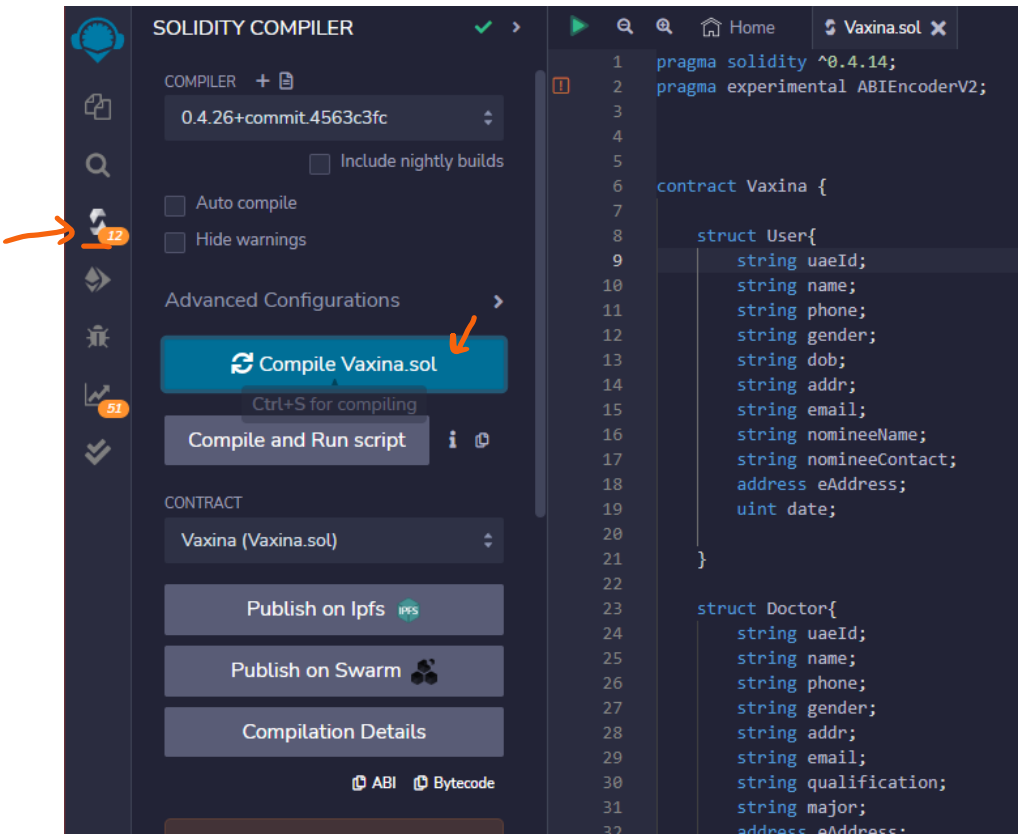




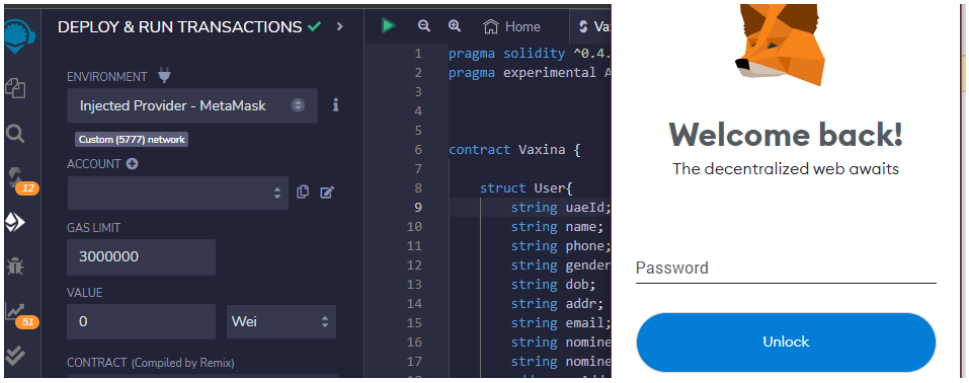
3. Remix IDE:

a. Remix IDE, is a no-setup tool with a GUI for developing smart contracts. Used by experts and beginners alike, Remix will get you going in double time. Remix plays well with other tools, and allows for a simple deployment process to the chain of your choice. Remix is famous for our visual debugger. Remix is the place everyone comes to learn Ethereum [12]. For this project, we used Remix to deploy Vaxina smart contract. To deploy the smart contract, we will use the online IDE since we have the MetaMask installed in google chrome.

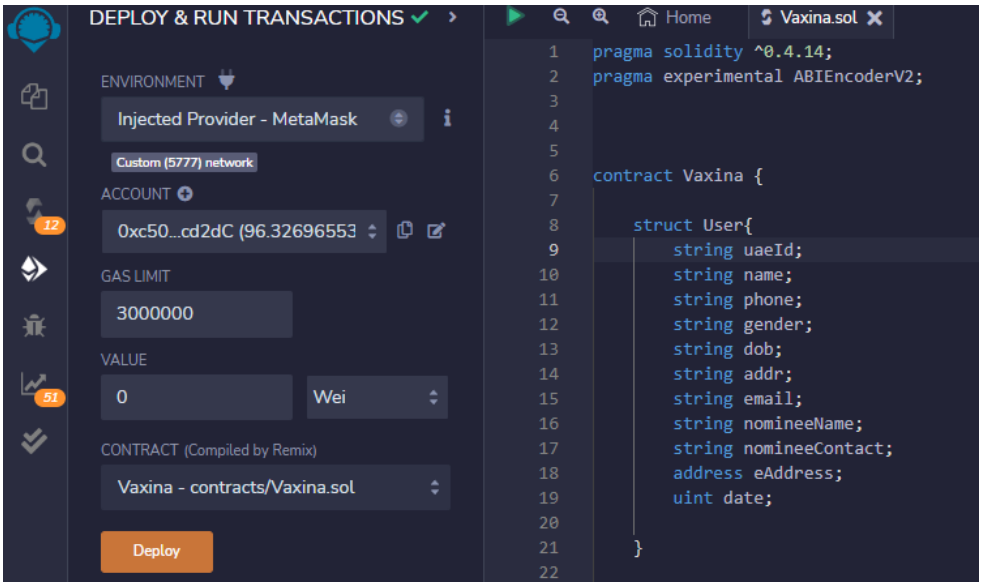
b. After finishing the smart contract, we can deploy it in the Vaxina blockchain by Remix compiler. To do that, we will first compile the smart contract to check if there is any error,



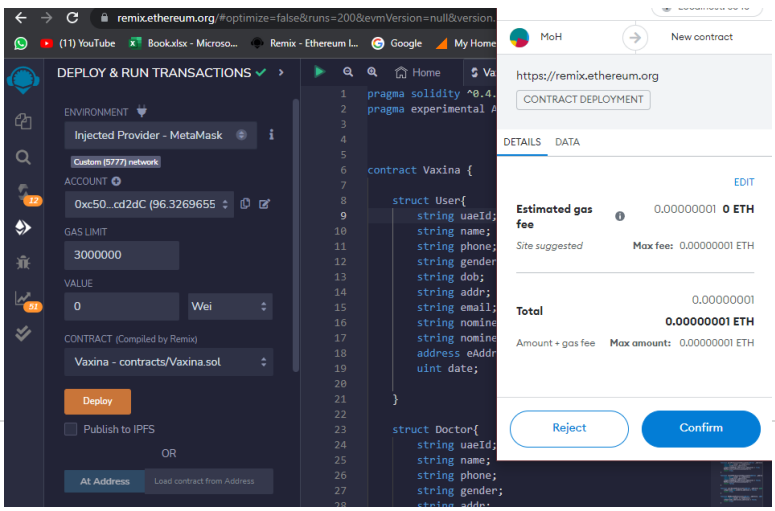
c. Then we will deploy it, but first we will change the environment to be "**Injected Provider – MetaMask**". To change the environment, the MetaMask will ask for the password of the wallet to verify the owner of the wallet.

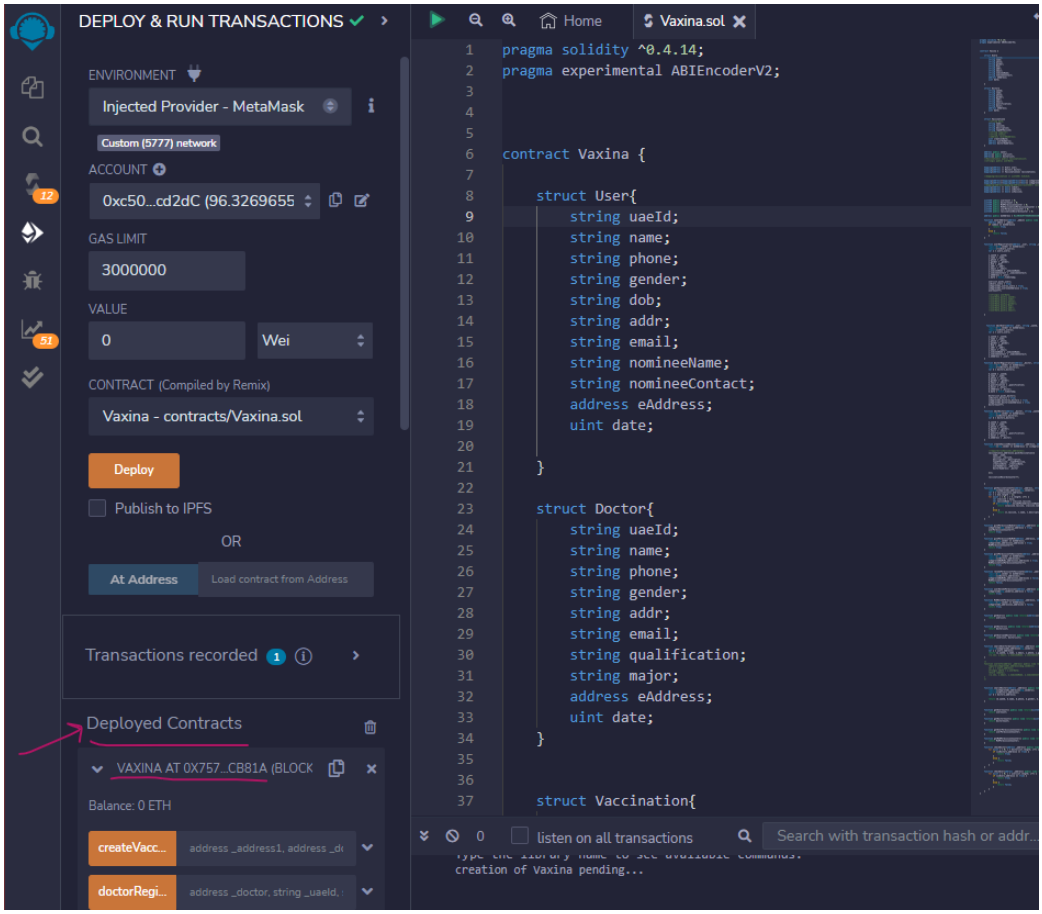


d. After we enter the password, the Environment will change to Injected Provider and the account of the wallet will be used for deploy the smart contract.



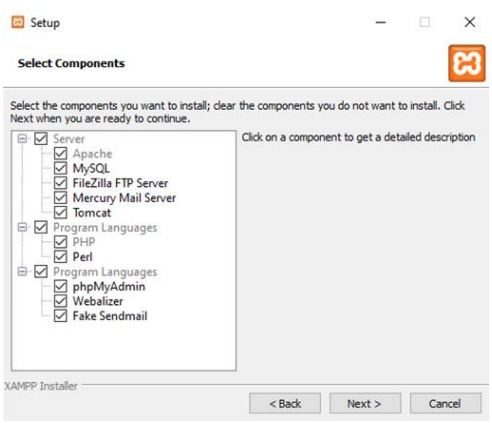
e. After deploying the smart contract, the address of the smart contract is shown below and we can use in the JavaScript file that we will use it for the backend.





4. XAMPP:

a. XAMPP is the most popular PHP development environment XAMPP is a completely free, easy to install Apache distribution containing MariaDB, PHP, and Perl [13]. For this project we used XAMPP to host the website of Vaxina and to store the registration data of the users in MySQL database. First, we will download and install XAMPP from the official page. Next, we will open the XAMPP and start installing it.



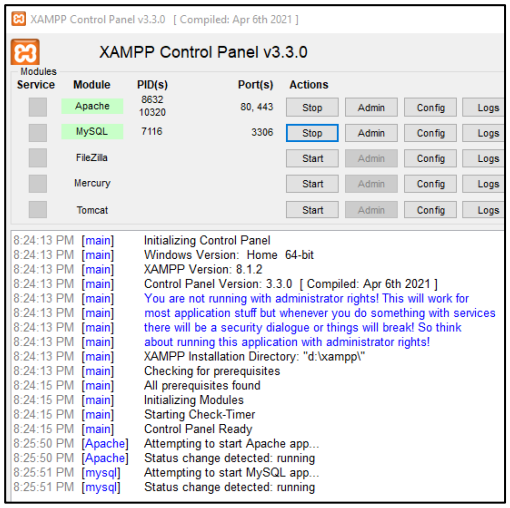
b. After we downloaded the XAMPP software, now we to configure the virtual hosting for the Apache server in XAMPP. In this project we will use two domains, one for the legitimate server and the DocumentRoot will be “projectServer” directory. We will configure the httpd-vhosts.conf file so we can host multiple domains. We will specify the following variable for each domain:

```
<VirtualHost *:80>
    ServerAdmin msm1050@rit.edu
    DocumentRoot "D:\xampp\htdocs\projectServer"
    ServerName project.server.com
    ServerAlias project.server.com
    <Directory "D:\xampp\htdocs\websec">
    </Directory>
    ErrorLog "logs\projectServer-error.log"
    CustomLog "logs\projectServer-access.log" common
</VirtualHost>
```

c. We need to configure “C:\Windows\System32\drivers\etc\hosts” file so we can map the domains to their IPs as following:

```
127.0.0.1 project.server.com
```

d. After we configured the Apache server, now we need start the two services Apache and MySQL.



e. Creating and configuring databases:
    i. db_contact: in this project we need only one database that will stored the registration data of the users. We will start with creating the db_contact database

    ii. Then we will specify the name of the table "tbl_contact" of the database and the number of the columns "3" ➔ "id" Make this as the primary key and incremental index, "idUAE", and "userAddressAccount".

f. The folder of the website will be in the following path "D:\xampp\htdocs\projectServer" so when you start the webserver the following folder will be hosted with the index.html webpage.