DUCKOUNTING

BY TEAM QUACK QUACK QUAD

Link to deployed site : duckounting.netlify.app/

Link to smart contract: goerli.etherscan.io

GitHub repo link: github.com/quack-quack-quads/duckounting

THE PROBLEM WE TRY TO SOLVE

Invoice management is a major part of accounting in businesses both big and small. But all the existing software in this field lack in one aspect – transparency.

We attempt to solve this problem by moving the entire process to the blockchain and the world of Web3. When invoices are generated and maintained on the chain, they become a part of a detailed ledger which makes this process transparent like never before.

We also try to provide Web3 solutions for other problems in the field of accounting such as irregular payments and lack of credibility when working with new business partners.

THE FEATURES WE OFFER

EASY-TO-USE INVOICE CREATION

Invoices can be created effortlessly while ensuring both the seller and the buyer have signed it.

- Seamless conversion from fiat money to ETH
- Auto generate invoice image for on-chain transactions

COMPREHENSIVE INVOICE HISTORY

Check your past transactions and status of ongoing transactions anytime.

- Search using keywords
- A multitude of filters

SEAMLESS PAYMENT GATEWAY

Complete your transactions on the chain smoothly on our integrated Ethereum payment gateway.

- Payments reflect on MetaMask balance within moments

RECURRING PAYMENTS SYSTEM

Handle payments over instalments at ease with our recurring payments feature.

NFTS AS INCENTIVES

Get dynamically generated NFTs with rarities proportional to the feedback given to you by your partners.

USER LOOKUP

Search for users by entering a Wallet address, PAN or ENS address.

TECH USED

FRONT-END

We used Reactjs as our primary frontend framework and a mixture of Bootstrap, MaterialUI and vanilla CSS for styling.

BLOCKCHAIN

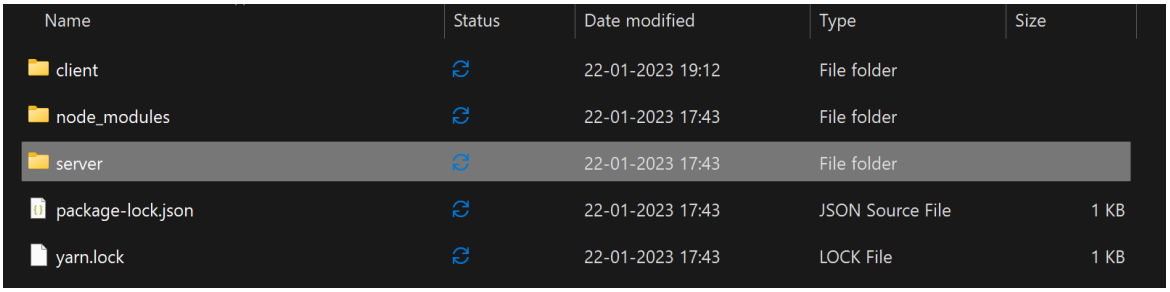
We have used Solidity to build our smart contracts and we are using IPFS as our database. We are using Mocha and Chai for unit testing. To integrate frontend with our smart contract we are using ReactMoralis and EtherJS.

HOW TO USE OUR APPLICATION

FOLLOW SECTIONS 1 & 2 IF YOU WOULD LIKE DEPLOY THE SERVER ON YOUR LOCAL PC

1. STARTING THE SERVER

- First, navigate to server folder



- Start a terminal in the server folder and install all the node modules by running yarn install.

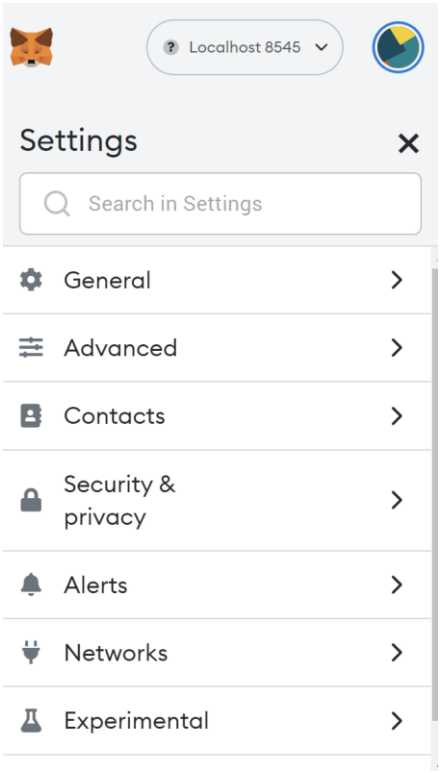
```
PS C:\Users\Sai Madhavan G\OneDrive - iiit-b\programming\duckounting\server> yarn install
yarn install v1.22.19
[1/4] Resolving packages...
[2/4] Fetching packages...
[#############################################################-----------------------------------------------------------] 573/1230
```

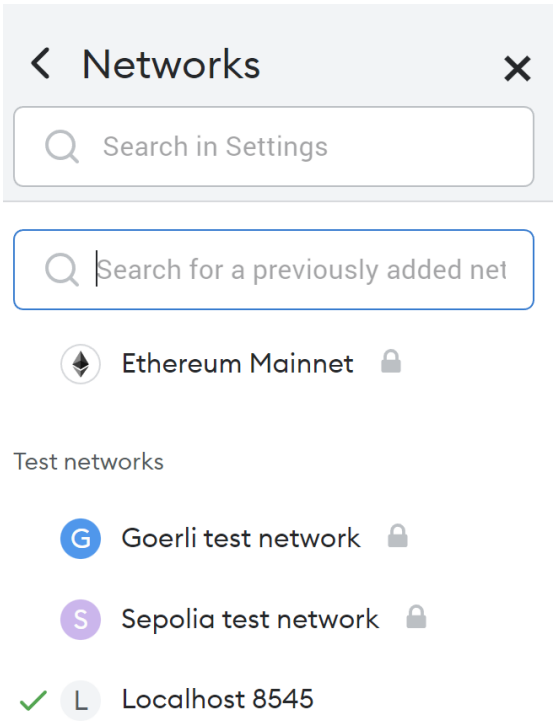
- Now, run the command yarn hardhat node to start the server,

```
PS C:\Users\Sai Madhavan G\OneDrive - iiit-b\programming\duckounting\server> yarn hardhat node
yarn run v1.22.19
$ "C:\Users\Sai Madhavan G\OneDrive - iiit-b\programming\duckounting\server\node_modules\.bin\hardhat" node
? Help us improve Hardhat with anonymous crash reports & basic usage data? (Y/n) · n
Downloading compiler 0.8.17
Compiled 16 Solidity files successfully
----------------------------------------------------------------
deploying "InvoicePlatform" (tx: 0x8142d205235aadb1ad2c4f86c9d7e9aaea7242482aedc95399ce19d26aa024f5)...: deployed at 0x5FbDB2315678
afecb367f032d93F642f64180aa3 with 5507238 gas
----------------------------------------------------------------
Minting NFT skipped on 31337
Inside update-frontend.js false
Started HTTP and WebSocket JSON-RPC server at http://127.0.0.1:8545/
```

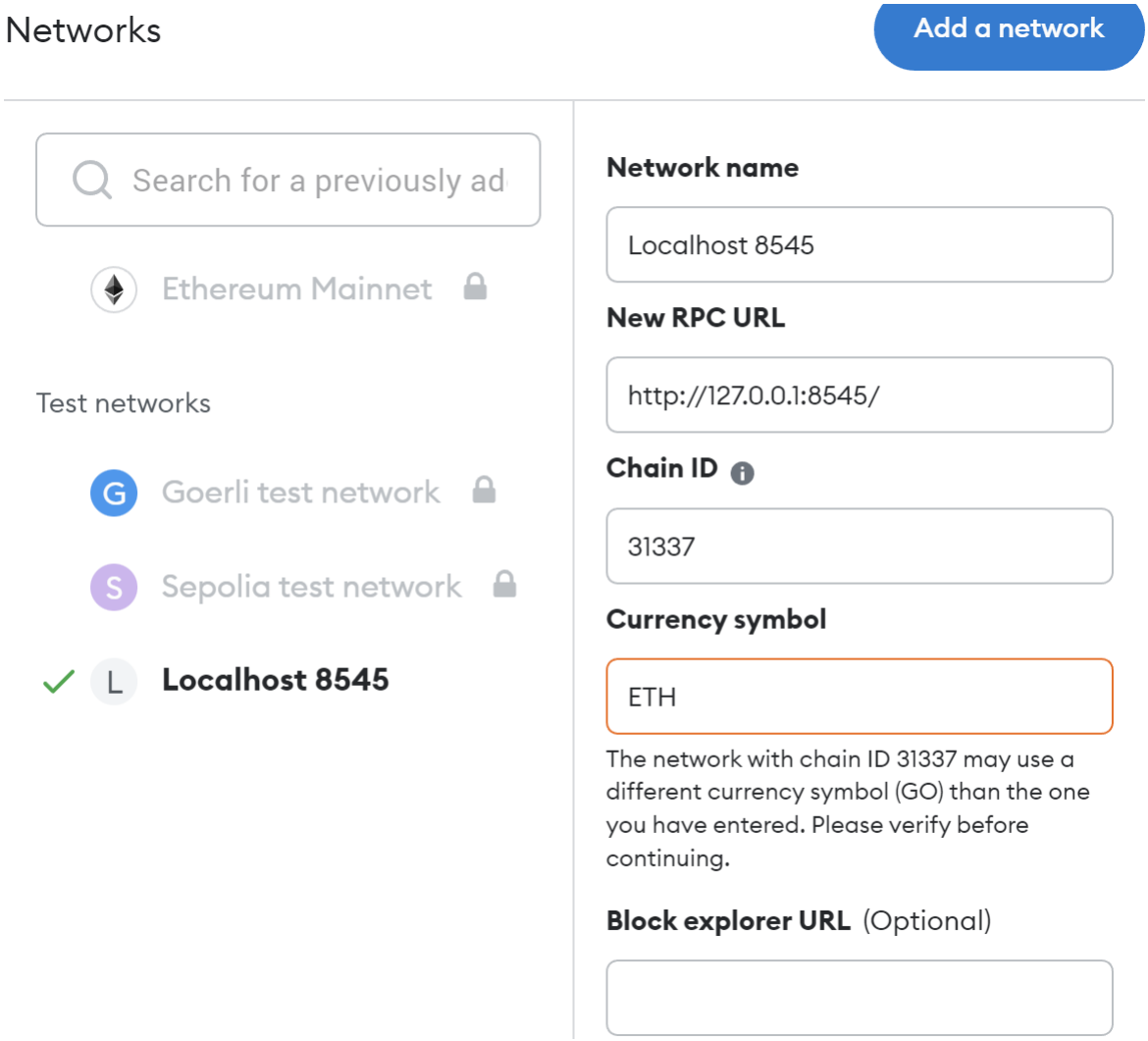
- Now import one of the accounts from the local blockchain server into your MetaMask wallet
  Now, copy the RPC URL. You can find it highlighted in green colour on the terminal like this.

```
Started HTTP and WebSocket JSON-RPC server at http://127.0.0.1:8545/
```

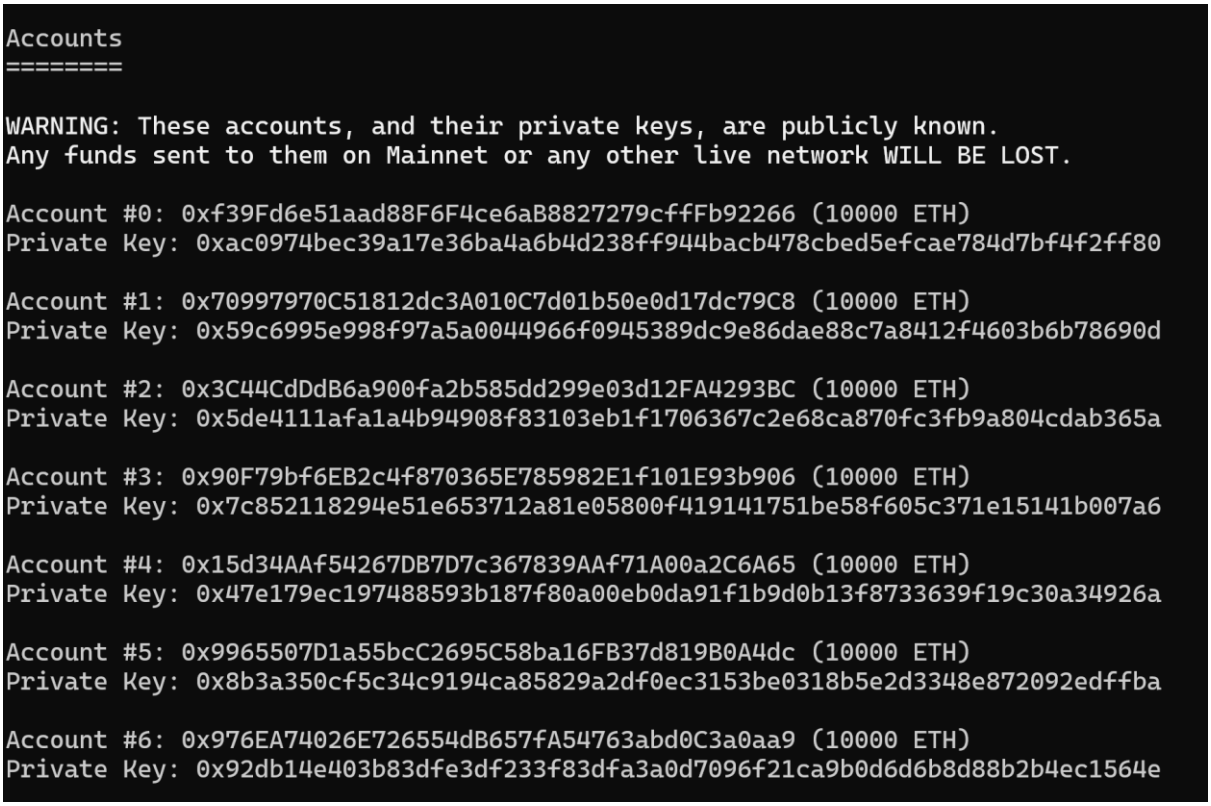




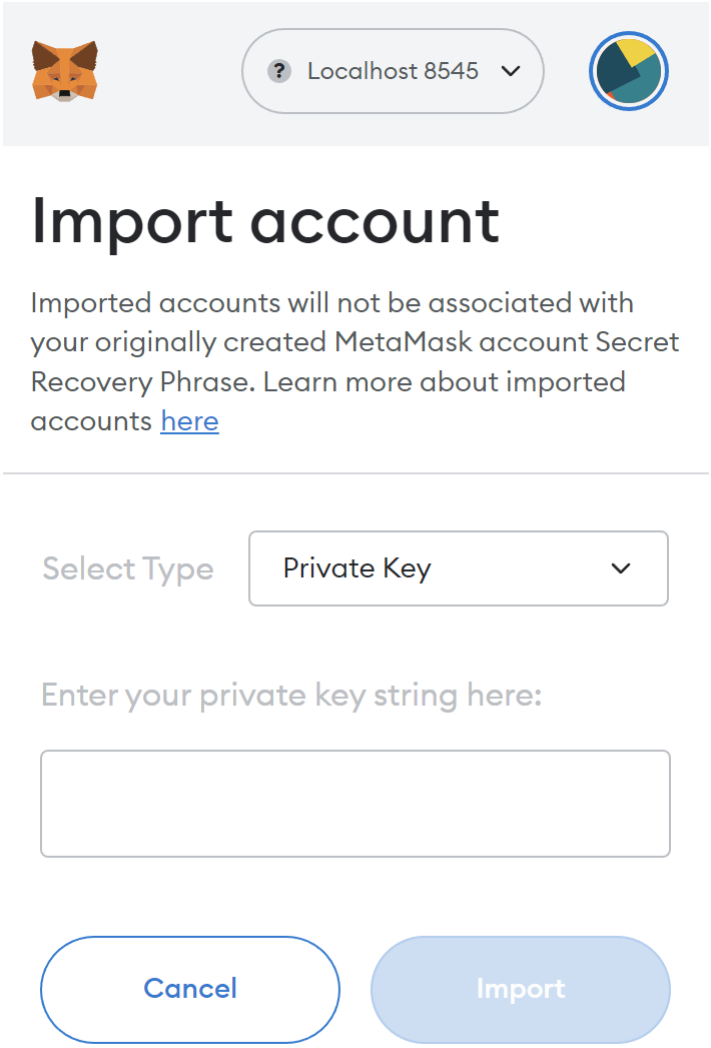
Now go to settings on your MetaMask wallet.
Now, click on Localhost 8545 in the Networks tab



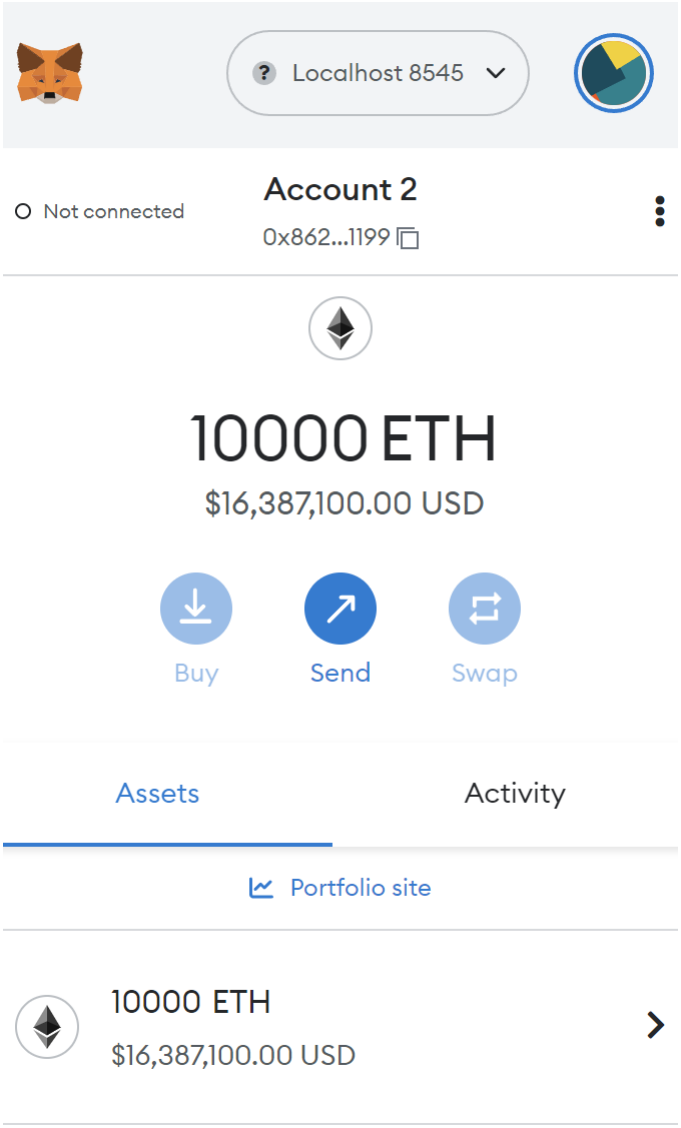
Now enter the RPC URL that you copied and enter chain ID as 31337 and click on save.



You should see some accounts displayed like this on your terminal. Copy one of the private keys and import it to your MetaMask wallet.



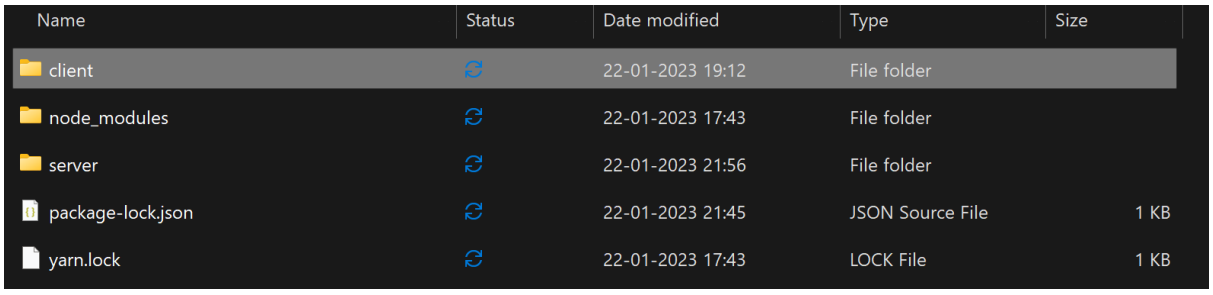
This is where you type in your private key on MetaMask.



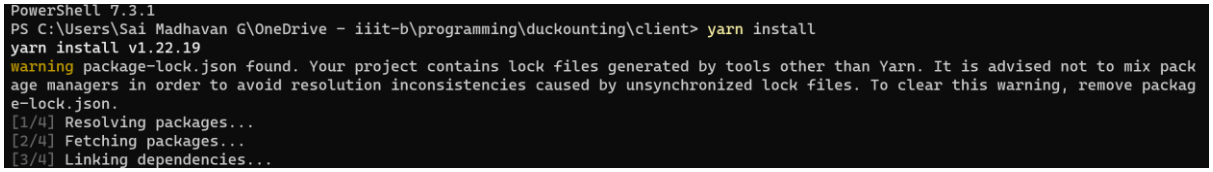
Now you should see 10000 ETH on your wallet.
The server is up and running with your MetaMask wallet connected to your local blockchain network.

2. STARTING THE CLIENT SERVER

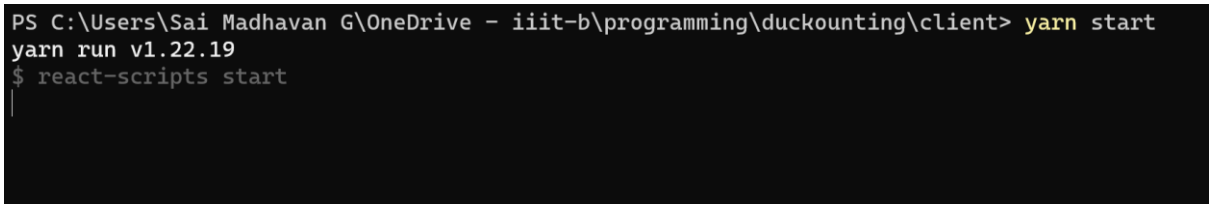
Now, go to the client folder



Install all the node modules by running npm install or yarn install.



Now type yarn start or npm start to start the client server.



Now, open the website by opening localhost:3000 on your browser.

3. OUR WEBSITE

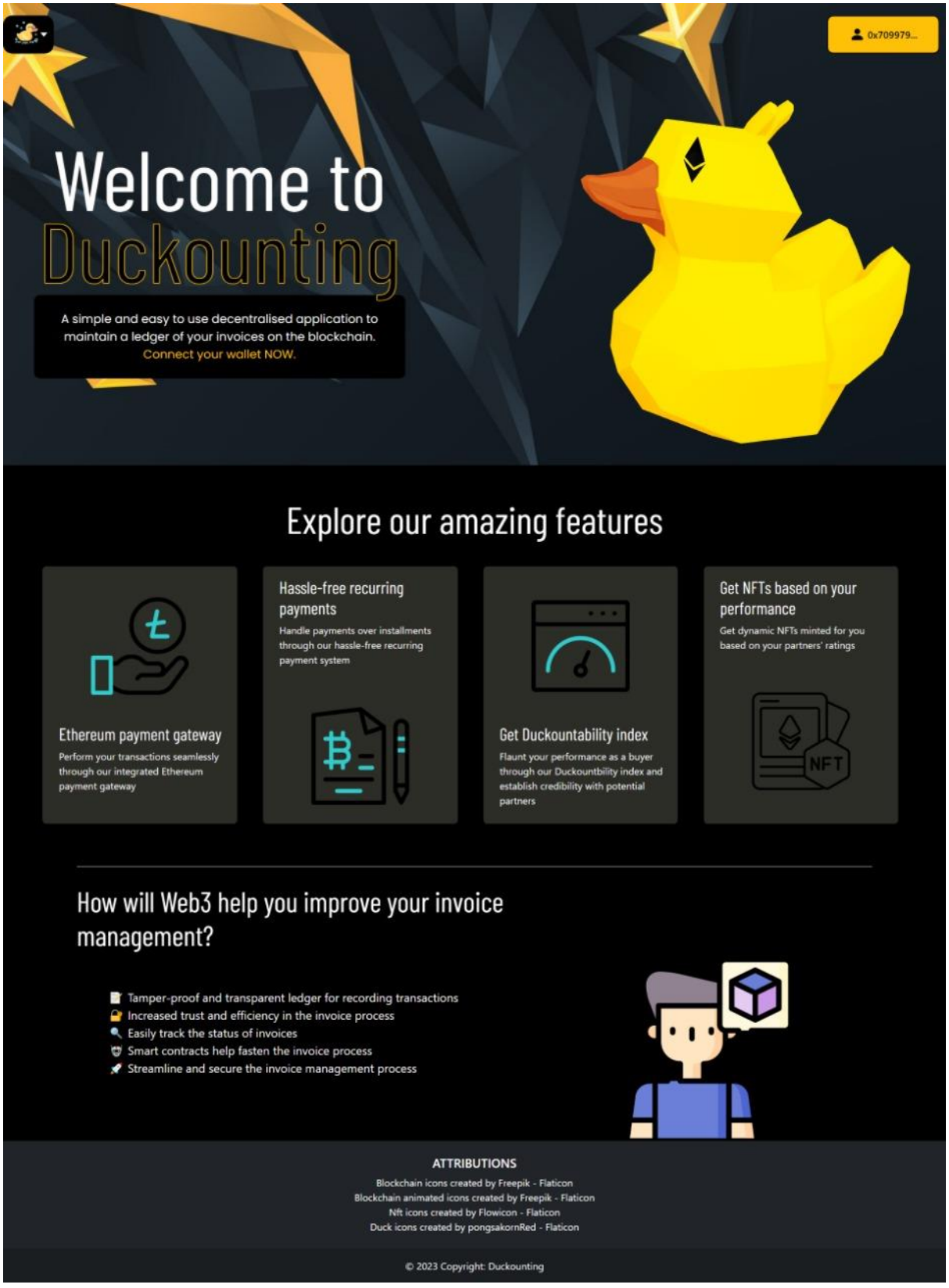
THE HOMEPAGE

On opening the URL, you will be greeted by our home page.

Our home page features a prominent hero section with a 3D interactive model of our website's mascot. We have sections dedicated to Web3 literacy where we inform our users how decentralisation of computing can help them maintain transparency in their transactions.

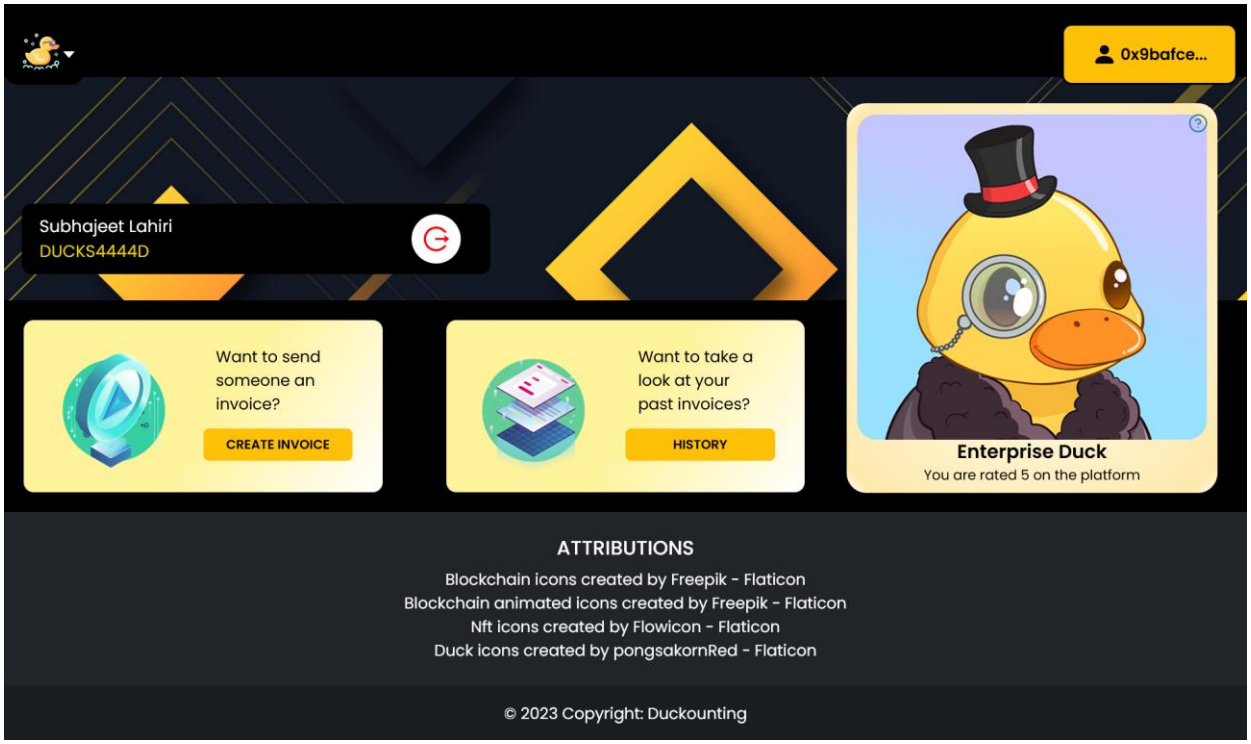
To login, click on the CONNECT WALLET button on the top right and enter your name and PAN number on the prompt. This will be followed by a prompt from MetaMask which you have to approve.

Now, you will see your wallet address on the top right and you will be redirected to the Duckboard.



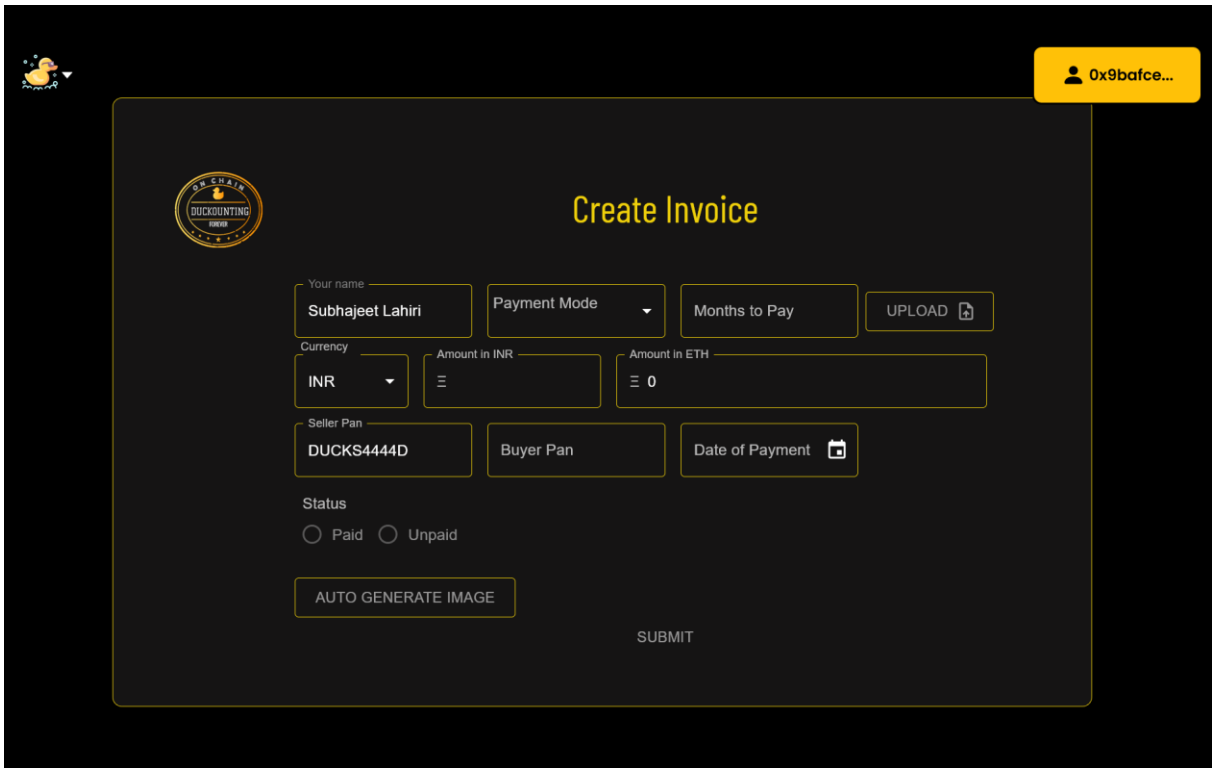
DUCKBOARD

This is the control section of the application. You view the details you logged in with and the NFT you earned for being an awesome user. You can directly jump into action by creating an invoice or by view your past invoices.



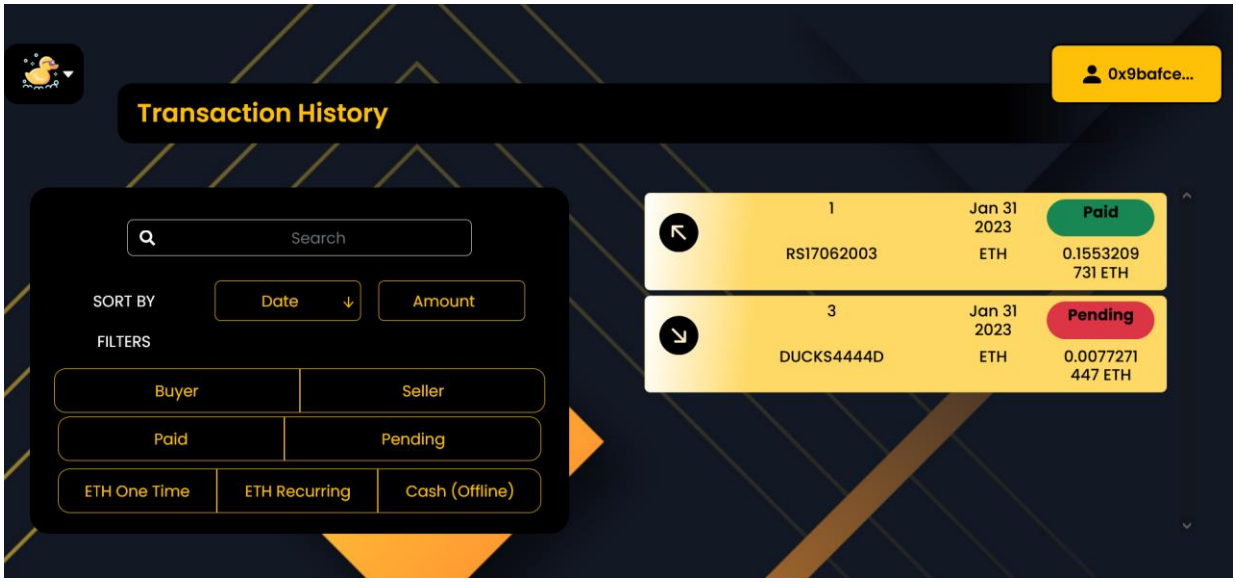
CREATE INVOICE

This is the tool you'll be using to create invoices and deploy them on the blockchain. Just key in the relevant details and you are good to go. The invoice amount can be entered in any denomination you feel like – the platform converts it to ETH. You can upload proof



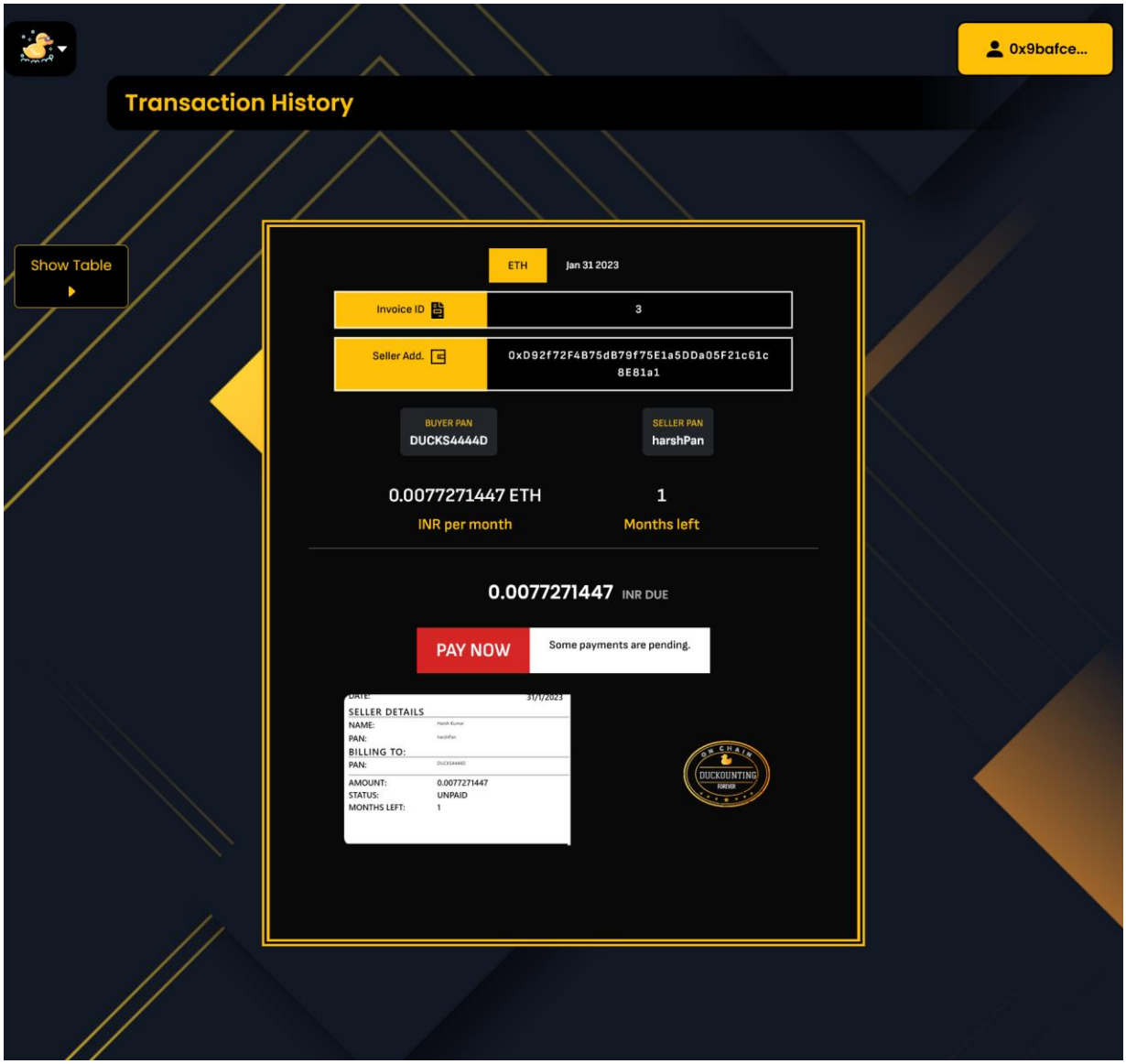
TRANSACTION HISTORY

This is where you'll find your past transactions. You can sort them, filter them and search using keywords.



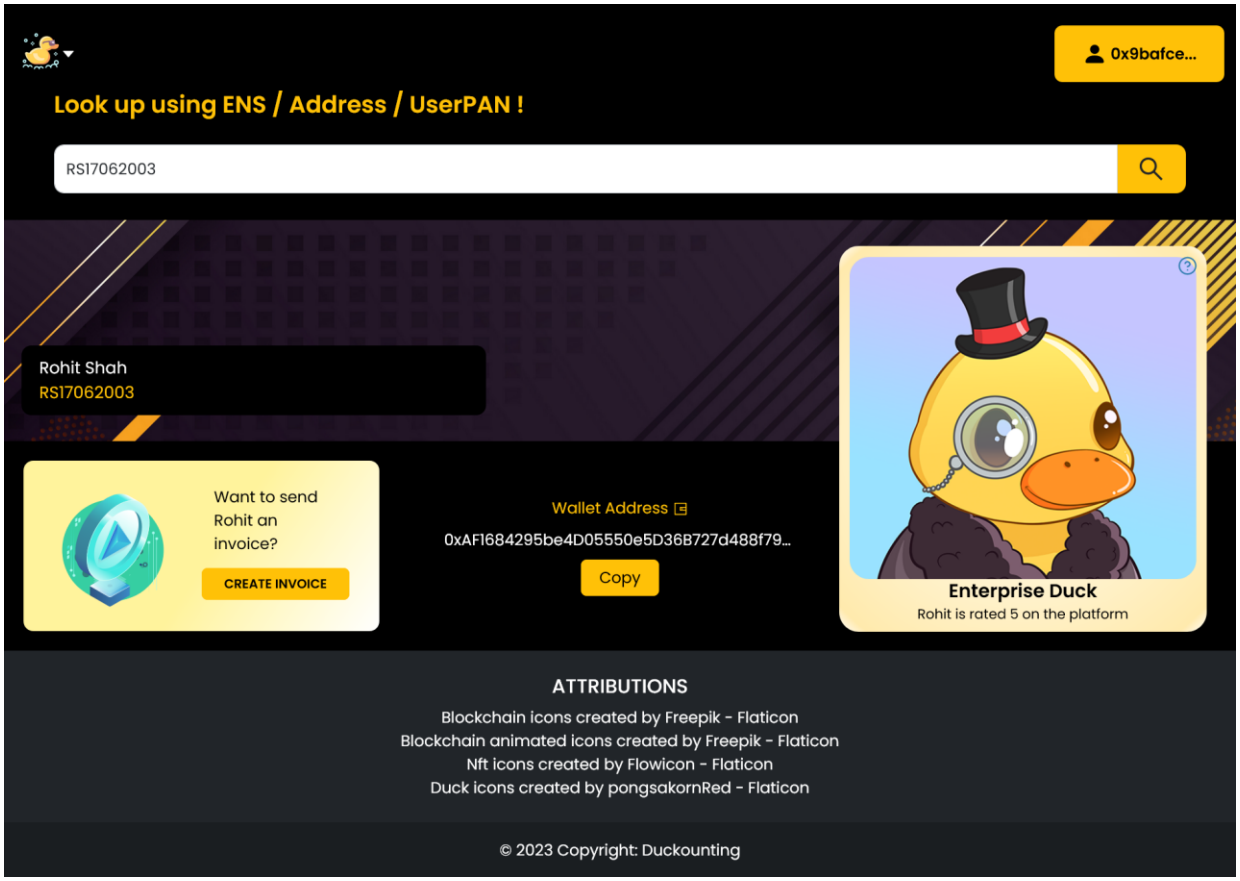
INVOICE DISPLAY

You can find all pertinent details here, with the additional option of settling the payment. You can also look up the other party with a single click.



USER LOOKUP

Supports lookup using Wallet Address, PAN and ENS Address.



CHALLENGES WE RAN INTO

- We spent the first few days brainstorming while putting ourselves in the shoes of someone who dealt with accounting in a firm. It gave us a new perspective and helped us develop a platform that would have all the features such a person would require.
- One of the biggest challenges was building the dynamic NFTs.
- Initially we encountered very high gas prices for even simple transactions but that turned out to be a tiny bug.
- At a certain point in time, the size that our contract had ballooned up to threatened to limit the features we could put in our application but we figured out how to reduce its size.

FUTURE SCOPE

We will provide a utility tool for tax calculation as a part of invoice generation which would make tax-filing convenient.

An added functionality would be to require the buyer's consent before putting the contract on the blockchain.

We can also allow users to save invoice drafts on the platform.

Networking features can be added to the platform so that users can conclude entire transactions here itself.