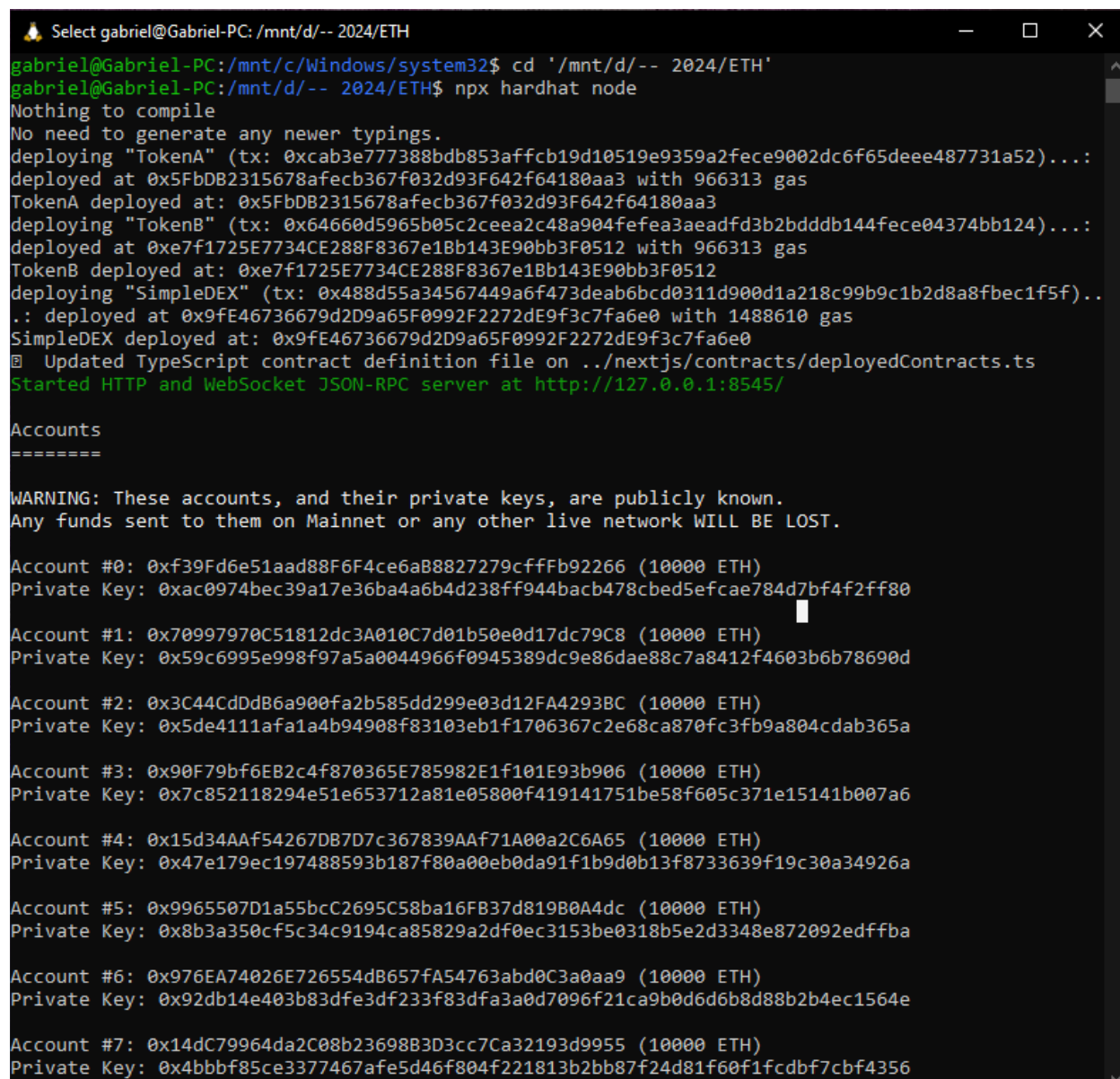**SimpleDEX. Manual de usuario**

Para este proyecto, se usó node y las siguientes dependencias:

```
npm install --save-dev @nomicfoundation/hardhat-toolbox@^5.0.0 --verbose
npm install --save-dev @types/node@^22.10.2 --verbose
npm install --save-dev hardhat-deploy@^0.14.0 --verbose
npm install --save-dev ts-node@^10.0.0 --verbose
npm install --save-dev typescript@^5.0.0 --verbose
npm install @openzeppelin/contracts@^5.1.0 --verbose
npm install dotenv@^16.4.7 --verbose
npm install ethers@^6.13.4 --verbose
```

Ir al directorio del proyecto, y ejecutar npx hardhat node (para testearlo de forma local)

```
Select gabriel@Gabriel-PC: /mnt/d/-- 2024/ETH                                    —    □    ×
gabriel@Gabriel-PC:/mnt/c/Windows/system32$ cd '/mnt/d/-- 2024/ETH'
gabriel@Gabriel-PC:/mnt/d/-- 2024/ETH$ npx hardhat node
Nothing to compile
No need to generate any newer typings.
deploying "TokenA" (tx: 0xcab3e777388bdb853affcb19d10519e9359a2fece9002dc6f65deee487731a52)...:
deployed at 0x5FbDB2315678afecb367f032d93F642f64180aa3 with 966313 gas
TokenA deployed at: 0x5FbDB2315678afecb367f032d93F642f64180aa3
deploying "TokenB" (tx: 0x64660d5965b05c2ceea2c48a904fefea3aeadfd3b2bdddb144fece04374bb124)...:
deployed at 0xe7f1725E7734CE288F8367e1Bb143E90bb3F0512 with 966313 gas
TokenB deployed at: 0xe7f1725E7734CE288F8367e1Bb143E90bb3F0512
deploying "SimpleDEX" (tx: 0x488d55a34567449a6f473deab6bcd0311d900d1a218c99b9c1b2d8a8fbec1f5f)..
.: deployed at 0x9fE46736679d2D9a65F0992F2272dE9f3c7fa6e0 with 1488610 gas
SimpleDEX deployed at: 0x9fE46736679d2D9a65F0992F2272dE9f3c7fa6e0
▣ Updated TypeScript contract definition file on ../nextjs/contracts/deployedContracts.ts
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: 0xf39Fd6e51aad88F6F4ce6aB8827279cffFb92266 (10000 ETH)
Private Key: 0xac0974bec39a17e36ba4a6b4d238ff944bacb478cbed5efcae784d7bf4f2ff80

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

Account #2: 0x3C44CdDdB6a900fa2b585dd299e03d12FA4293BC (10000 ETH)
Private Key: 0x5de4111afa1a4b94908f83103eb1f1706367c2e68ca870fc3fb9a804cdab365a

Account #3: 0x90F79bf6EB2c4f870365E785982E1f101E93b906 (10000 ETH)
Private Key: 0x7c852118294e51e653712a81e05800f419141751be58f605c371e15141b007a6

Account #4: 0x15d34AAf54267DB7D7c367839AAf71A00a2C6A65 (10000 ETH)
Private Key: 0x47e179ec197488593b187f80a00eb0da91f1b9d0b13f8733639f19c30a34926a

Account #5: 0x9965507D1a55bcC2695C58ba16FB37d819B0A4dc (10000 ETH)
Private Key: 0x8b3a350cf5c34c9194ca85829a2df0ec3153be0318b5e2d3348e872092edffba

Account #6: 0x976EA74026E726554dB657fA54763abd0C3a0aa9 (10000 ETH)
Private Key: 0x92db14e403b83dfe3df233f83dfa3a0d7096f21ca9b0d6d6b8d88b2b4ec1564e

Account #7: 0x14dC79964da2C08b23698B3D3cc7Ca32193d9955 (10000 ETH)
Private Key: 0x4bbbf85ce3377467afe5d46f804f221813b2bb87f24d81f60f1fcdbf7cbf4356
```

Account #14: 0xdF3e18d64BC6A983f673Ab319CCaE4f1a57C7097 (10000 ETH)
Private Key: 0xc526ee95bf44d8fc405a158bb884d9d1238d99f0612e9f33d006bb0789009aaa

Account #15: 0xcd3B766CCDd6AE721141F452C550Ca635964ce71 (10000 ETH)
Private Key: 0x8166f546bab6da521a8369cab06c5d2b9e46670292d85c875ee9ec20e84ffb61

Account #16: 0x2546BcD3c84621e976D8185a91A922aE77ECEc30 (10000 ETH)
Private Key: 0xea6c44ac03bff858b476bba40716402b03e41b8e97e276d1baec7c37d42484a0

Account #17: 0xbDA5747bFD65F08deb54cb465eB87D40e51B197E (10000 ETH)
Private Key: 0x689af8efa8c651a91ad287602527f3af2fe9f6501a7ac4b061667b5a93e037fd

Account #18: 0xdD2FD4581271e230360230F9337D5c0430Bf44C0 (10000 ETH)
Private Key: 0xde9be858da4a475276426320d5e9262ecfc3ba460bfac56360bfa6c4c28b4ee0

Account #19: 0x8626f6940E2eb28930eFb4CeF49B2d1F2C9C1199 (10000 ETH)
Private Key: 0xdf57089febbacf7ba0bc227dafbffa9fc08a93fdc68e1e42411a14efcf23656e

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.

eth_chainId
    Contract deployment: TokenA
    Contract address: 0x5fbdb2315678afecb367f032d93f642f64180aa3
    Transaction: 0xcab3e777388bdb853affcb19d10519e9359a2fece9002dc6f65deee487731a52
    From: 0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
    Value: 0 ETH
    Gas used: 966313 of 966313
    Block #1:   0xf0e3a786da0502306047caefc2a6c47eb912e8c09d67cba31bc1eb00d0ab6c29
    Mined empty block #2 with base fee 772671033
    Contract deployment: TokenB
    Contract address: 0xe7f1725e7734ce288f8367e1bb143e90bb3f0512
    Transaction: 0x64660d5965b05c2ceea2c48a904fefea3aeadfd3b2bdddb144fece04374bb124
    From: 0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
    Value: 0 ETH
    Gas used: 966313 of 966313
    Block #3:   0x7dda2a1ad92b43949f4ec2407e8371faba9e900ef9cff15c922f3e454fd63d5c
    Mined empty block #4 with base fee 597020525
    Contract deployment: SimpleDEX
    Contract address: 0x9fe46736679d2d9a65f0992f2272de9f3c7fa6e0
    Transaction: 0x488d55a34567449a6f473deab6bcd0311d900d1a218c99b9c1b2d8a8fbec1f5f
    From: 0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
    Value: 0 ETH
    Gas used: 1488610 of 1488610

Para abrir el frontend, en VSCode, en el index.hmtl -> Open with Live Server.
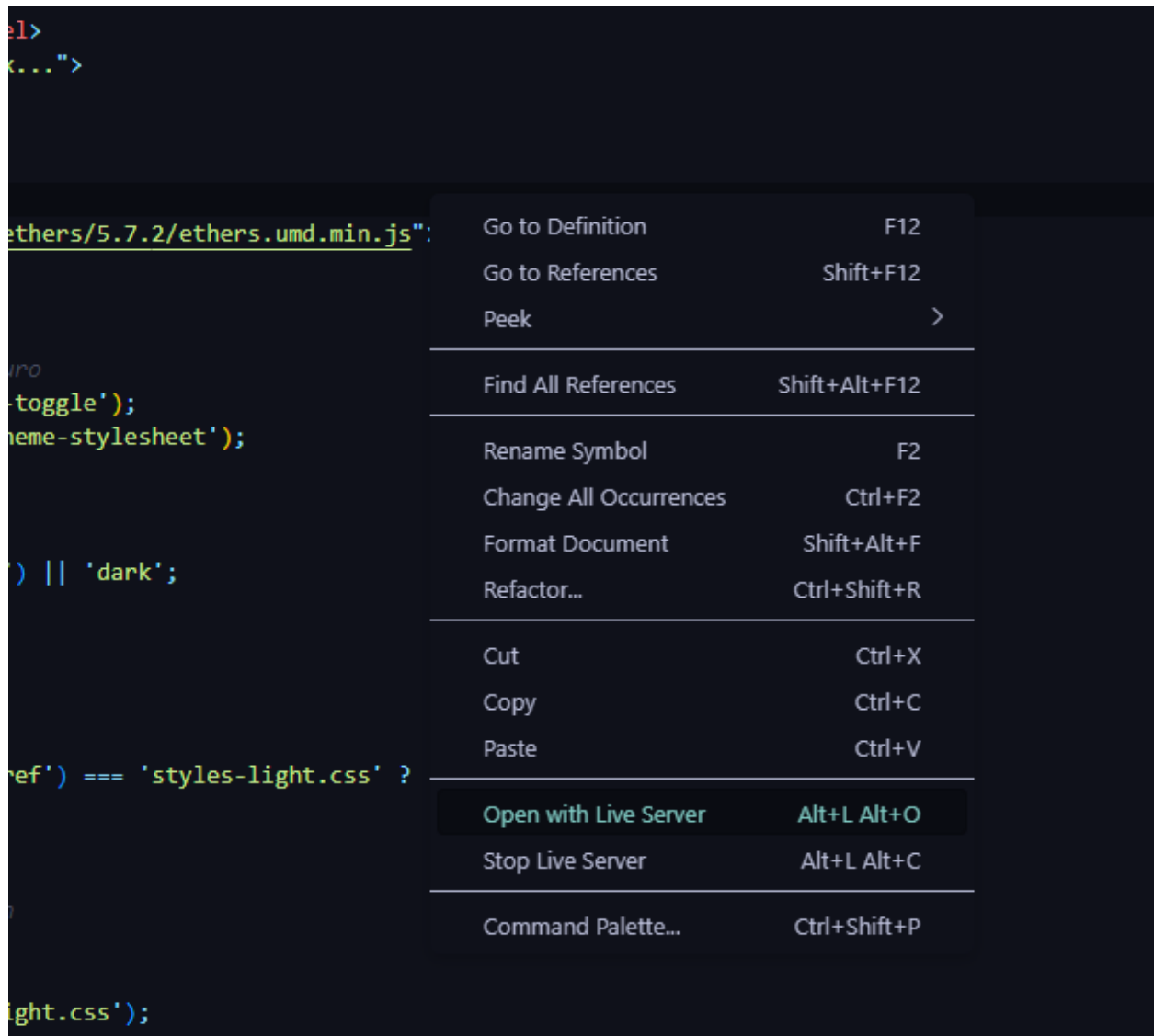
En el navegador, ir a http://localhost:5500/frontend/

SimpleDEX

Conectar Billetera

Desconectar Billetera

Billetera conectada: 0xf39Fd6e51aad88F6F4ce6aB8827279cffFb92266

Aprobar Tokens para DEX

Cantidad Token A a aprobar:

1000

Aprobar Token A

Aprobación exitosa: 1000 tokens.

Cantidad Token B a aprobar:

1000

Aprobar Token B

Aprobación exitosa: 1000 tokens.

```
Contract deployment: SimpleDEX
Contract address:      0x9fe46736679d2d9a65f0992f2272de9f3c7fa6e0
Transaction:           0x488d55a34567449a6f473deab6bcd0311d900d1a218c99b9c1b2d8a8fbec1f5f
From:                  0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
Value:                 0 ETH
Gas used:              1488610 of 1488610
Block #5:              0xfc563d0304a476a96b9c719871989acd365a98707a330df019218d5a6af9fbbf
Mined empty block #6 with base fee 463574169
eth_chainId (3)
eth_gasPrice
eth_getBlockByNumber
eth_chainId
eth_getTransactionCount
eth_chainId
eth_estimateGas
eth_chainId
eth_blockNumber
eth_chainId
eth_sendRawTransaction
Contract call:         TokenA#approve
Transaction:           0x9929952ad3d07adbfdbd329fd79ed1d34acc59821d4d9502c87495e2044cf262
From:                  0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
To:                    0x5fbdb2315678afecb367f032d93f642f64180aa3
Value:                 0 ETH
Gas used:              46964 of 46964
Block #7:              0xcd3dfed99d9236fee1d8206cf5041d20aa23cd3248d054640a5a67d089eaf864

eth_chainId
eth_getTransactionReceipt
eth_chainId
eth_gasPrice
eth_getBlockByNumber
eth_chainId
eth_getTransactionCount
eth_chainId
eth_estimateGas
eth_chainId
eth_sendRawTransaction
Contract call:         TokenB#approve
Transaction:           0x102819fb145765128ce80d7a760e088ff56549fd29376f73e47a97daa0d39eea
From:                  0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
To:                    0xe7f1725e7734ce288f8367e1bb143e90bb3f0512
Value:                 0 ETH
Gas used:              46964 of 46964
Block #8:              0xad05968cc67ef57dbf8db3b2045c5695f256028e24c761531dce92fea43146f7
```

Agregar Liquidez

Cantidad Token A:

100

Cantidad Token B:

200

Agregar Liquidez

Liquidez agregada exitosamente.

Remover Liquidez

Cantidad Token A:

10

Cantidad Token B:

20

Remover Liquidez

Liquidez removida exitosamente.

Intercambiar Tokens

Cantidad Token A:

10

Intercambiar A por B

Cantidad Token B:

20

Intercambiar B por A

Intercambio B por A exitoso.

Consultar Precio

Dirección del token:

0x5FbDB2315678afecb367f032d93F642f64180aa3

Obtener Precio

Precio: 2.022222222222222222

```
eth_getTransactionCount
eth_chainId
eth_estimateGas
eth_chainId
eth_sendRawTransaction
  Contract call:      SimpleDEX#addLiquidity
  Transaction:        0xdeb7fe23e6515c3ed54d56171b28aab9608d834d1316428d9e873961902092c4
  From:               0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
  To:                 0x9fe46736679d2d9a65f0992f2272de9f3c7fa6e0
  Value:              0 ETH
  Gas used:           109922 of 109922
  Block #11:          0x5e2d374e38f6e4295dae19f960c581d9a867df2cb160c68c24352eb6aea98d61

eth_chainId
eth_getTransactionReceipt
eth_chainId
eth_gasPrice
eth_getBlockByNumber
eth_chainId
eth_getTransactionCount
eth_chainId
eth_estimateGas
eth_chainId
eth_blockNumber
eth_chainId
eth_sendRawTransaction
  Contract call:      SimpleDEX#removeLiquidity
  Transaction:        0x8d3c31b109fbf4df7844d83faaad1c41a07693308342793fc34c7e60abf9d771
  From:               0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
  To:                 0x9fe46736679d2d9a65f0992f2272de9f3c7fa6e0
  Value:              0 ETH
  Gas used:           67097 of 67097
  Block #12:          0x783fba00170247815eb620f74b598cded2b1d11c7a8c43bec65266437db25f21

eth_chainId
eth_getTransactionReceipt
eth_chainId
eth_gasPrice
eth_getBlockByNumber
eth_chainId
eth_getTransactionCount
eth_chainId
eth_estimateGas
eth_chainId
eth_sendRawTransaction
```

```
eth_chainId
eth_getTransactionReceipt
eth_chainId
eth_gasPrice
eth_getBlockByNumber
eth_chainId
eth_getTransactionCount
eth_chainId
eth_estimateGas
eth_chainId
eth_sendRawTransaction
   Contract call:        SimpleDEX#swapBforA
   Transaction:          0x27ac64b55398708ee22045aedb9fe5f4f2421eef6408344b8afe2632b0d4ad55
   From:                 0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
   To:                   0x9fe46736679d2d9a65f0992f2272de9f3c7fa6e0
   Value:                0 ETH
   Gas used:             71629 of 71629
   Block #16:            0x01a08236d7c46fac2d3e8f9bc7216642b9bcbc2a8c7bea50c3424bf59de2f8e2

eth_chainId
eth_getTransactionReceipt
eth_chainId
eth_call
   Contract call:        SimpleDEX#getPrice
   From:                 0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
   To:                   0x9fe46736679d2d9a65f0992f2272de9f3c7fa6e0
```

Modo oscuro :D

SimpleDEX

Modo Claro

Conectar Billetera

Desconectar Billetera

Billetera conectada: 0xf39Fd6e51aad88F6F4ce6aB8827279cffFb92266

Aprobar Tokens para DEX

Cantidad Token A a aprobar:

1000

Aprobar Token A

Aprobación exitosa: 1000 tokens.

Cantidad Token B a aprobar:

1000

Aprobar Token B

Aprobación exitosa: 1000 tokens.

Las direcciones de los contratos son:

Localhost (con la address por defecto de hardhat)

Simple Dex Corregido: 0x9fE46736679d2D9a65F0992F2272dE9f3c7fa6e0
TKA: 0x5FbDB2315678afecb367f032d93F642f64180aa3
TKB: 0xe7f1725E7734CE288F8367e1Bb143E90bb3F0512

Scroll Sepolia

Simple Dex Corregido: 0x5a5d8ebcedee9cb88f2a00151e6c723a062c6e27
TKA: 0xe652b0f103561052cdd0B143c0171eCbb6b0e683
TKB: 0xbD997ab4c6B41f82ef996079940a73da5C32f520

Para Scroll Sepolia se debe editar el archivo .env con las claves correspondientes.

Para el fronted se debe modificar index.html para que haga referencia a script.js, en lugar de script-local.js.

Si se desea editar algo más del script, recomiendo crear script-test.js y redireccionar el html.

Funciona!

En la Metamask, se pueden ver las transacciones. Gustav es mi usuario.
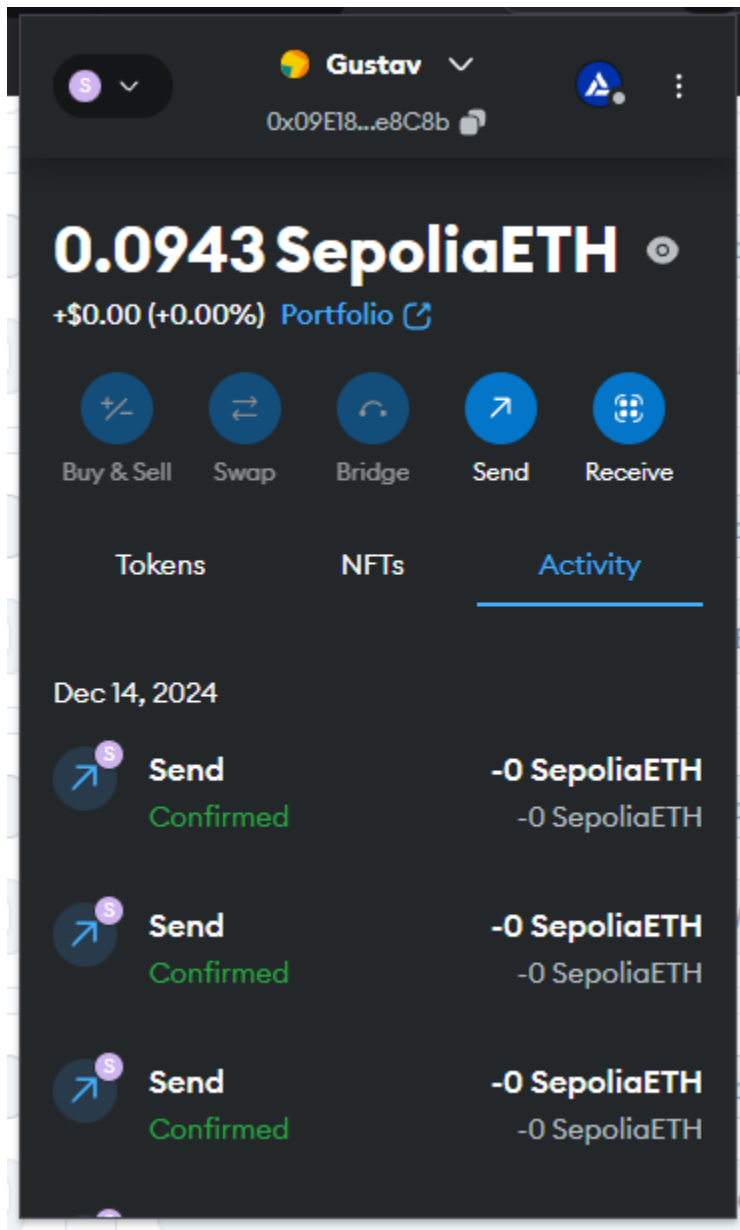
Cris si lees esto, fue terrible este TP. Costó bastante.

Eso del modo oscuro, modo claro lo arme en base a otro curso de cuando talento tech era codo a codo, si no, no llegaba ni ahí.

Implementé todas las correcciones del TP anterior. No usé Scaffold porque quería armar algo yo. Lo que hice fue basarme en como esta armado Scaffold, en parte porque con ignition nunca me funcionó el deploy de SimpleDEX en local. Si puede deployar los tokens con ignition. Así que terminé instalando typescypt para poder hacer algo similar.