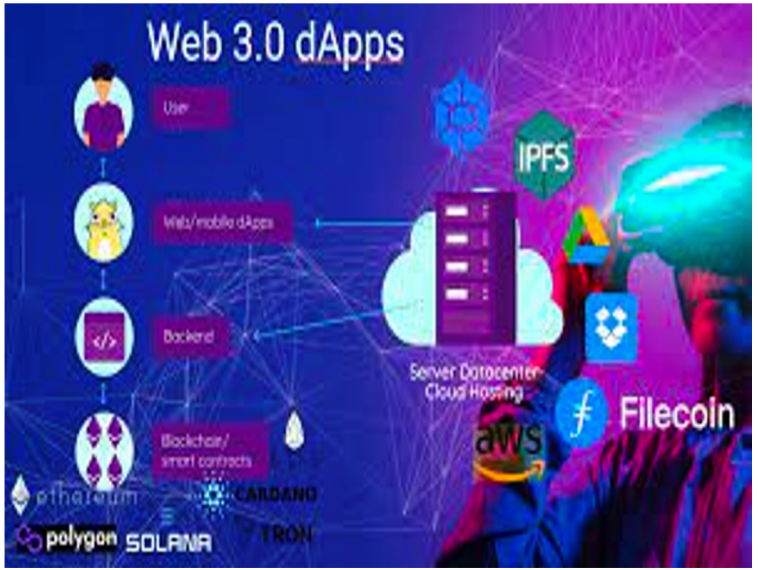
Refund by location smart contract

Web3 dApp

Outiline

- overview
- Workflow
- Implementation progress
- Conclusion and future work



Overview

Problem:

- Employers rely on the word of their employee that they were in the work location or used the facility agreed on with the company.
- The employee could have not been in the said location
  - costs were actually incurred.

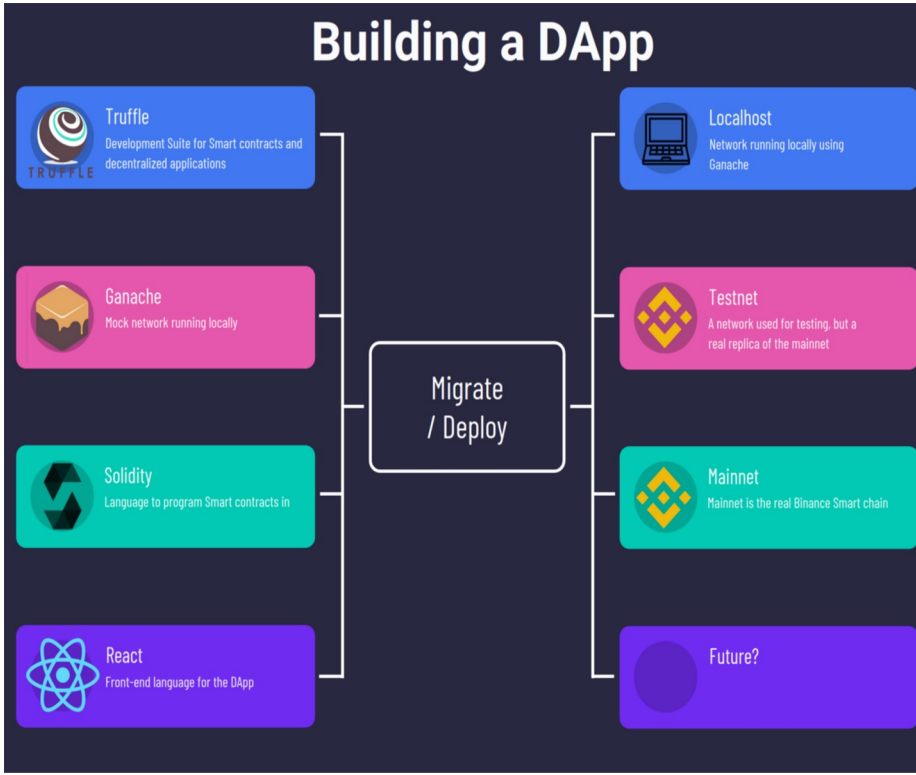
Solution:

- The refund by location smart contract
- Pay for being present in a certain geographic area for a certain duration.
- The employee's phone sends their GPS location to a smart contract at a certain interval.
- Based on the pre-agreed contract codified in an Ethereum smart contract, a cryptocurrency payment is executed when all the agreed conditions are met.

Project structure

Web3 DAPP:

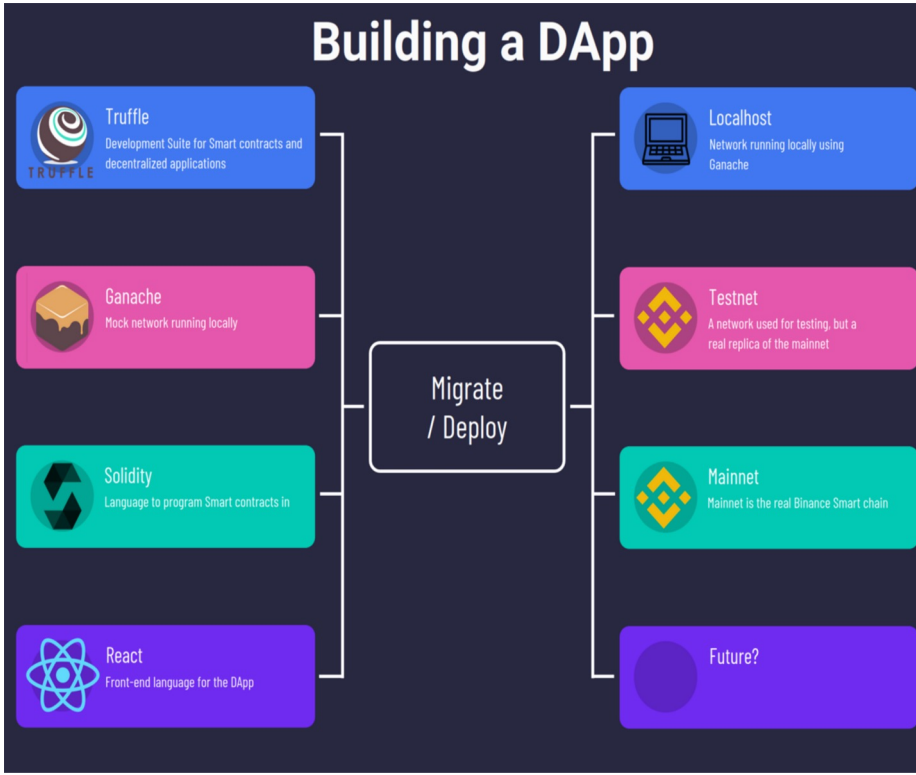
1. **Create a list of employees.**
2. **Define parameters for each employee: Public address, Geographic boundary, Budget, Release time for reimbursement.**
3. **Create a transaction with the above employee's data and initialize the transaction.**



Project structure cont'd

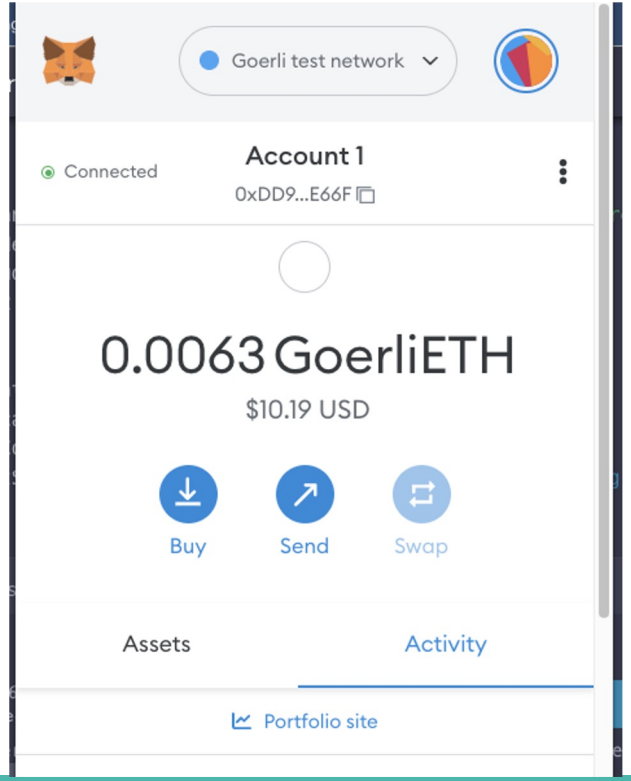
Mobile dAPP:

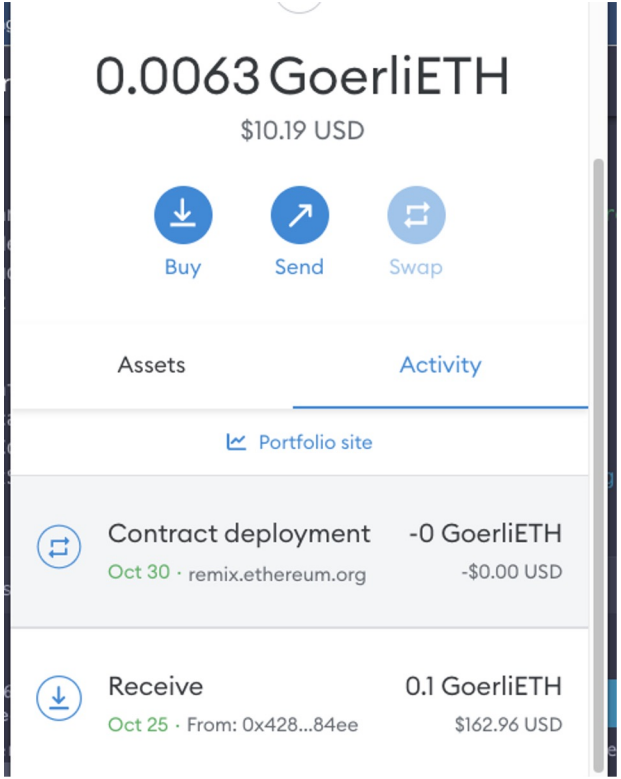
1. **Load location requirement from the smart contract.**
2. **Periodically read GPS information from the mobile sensors.**
3. **And send the GPS location to the smart contract at random time when the person confirms the send by pressing a button.**



Implementation

1. **Funds loading: MetaMask**

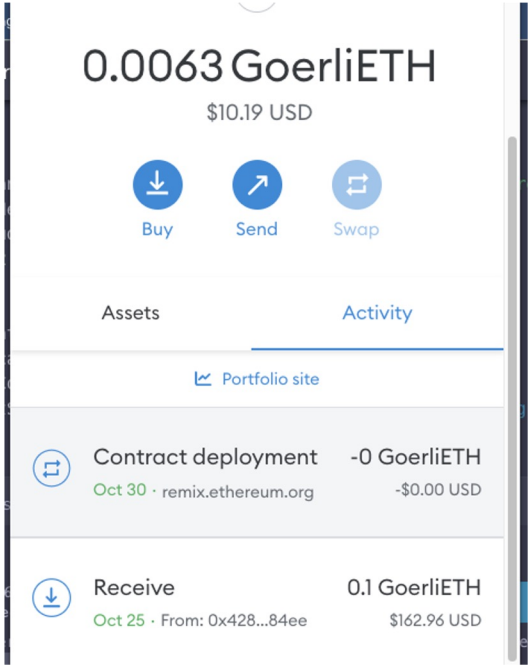


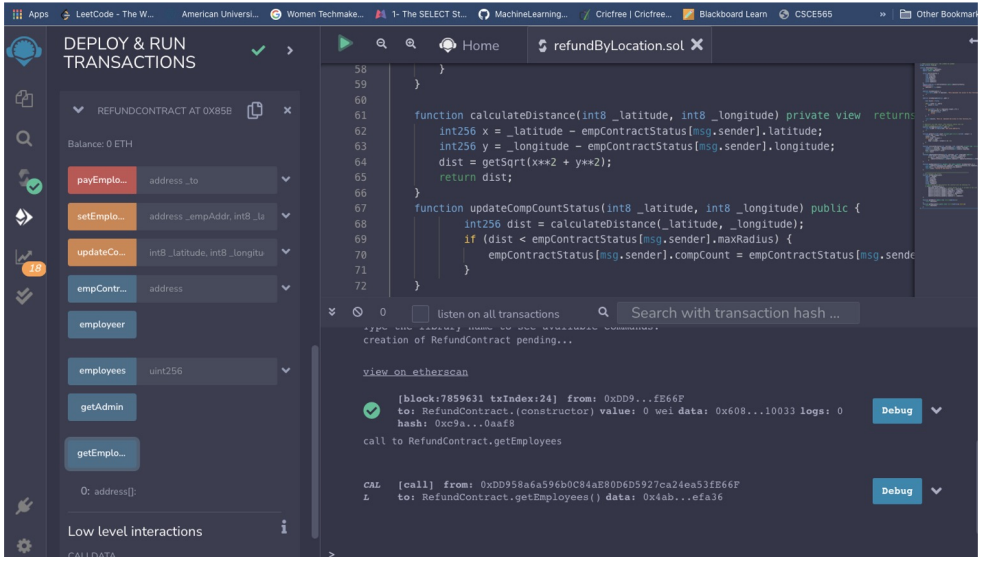


Back end smart contract

I wrote a refund location based smart contract using solidity language.

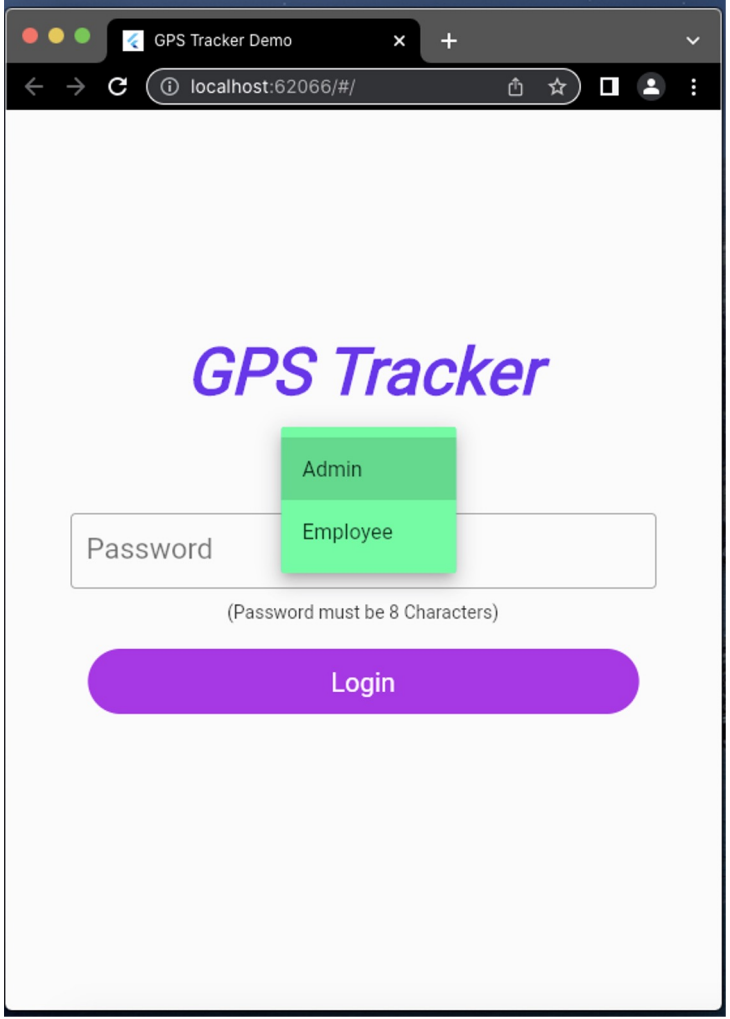
I used the online IDE, remix.ethereum.org where we can write smart contracts, compile it and then deploy it on the network.



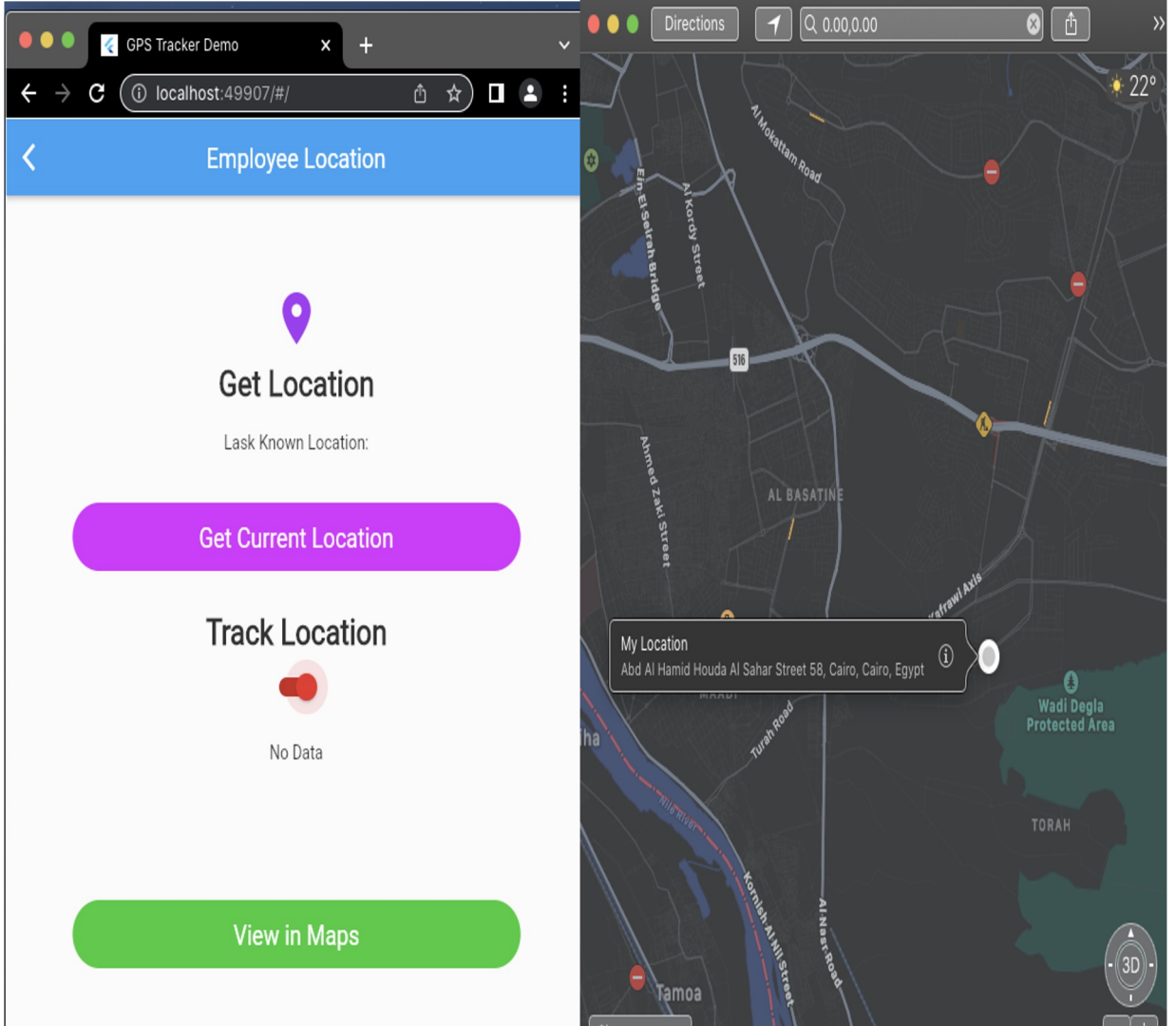


Mobile Front end dapp

1. I used flutter.
2. Before starting coding the flutter Dapp, I set up an API that will handle the Dapp's requests to interact with the smart contract.
    a. For this, I use Infura, an Ethereum API.
3. The dApp frontend interacts directly with blockchains via smart contracts.



Front end


GPS Tracker Demo
localhost:49907/#/
Employee Location
Get Location
Lask Known Location:
Get Current Location
Track Location
No Data
View in Maps
Directions
0.00,0.00
22°
Al Mokattam Road
Ein El Seiran Bridge
Al Kordy Street
516
Ahmed Zaki Street
AL BASATINE
My Location
Abd Al Hamid Houda Al Sahar Street 58, Cairo, Cairo, Egypt
Wadi Degla Protected Area
Turah Road
TORAH
Kornish Al Nil Street
Al Nasr Road
Tamoa
3D

Future work

The future work is to focus on finishing the mobile app and its connection to the back end.