

INTRO TO BLOCKCHAIN & SMART CONTRACTS

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HACKDARTMOUTH

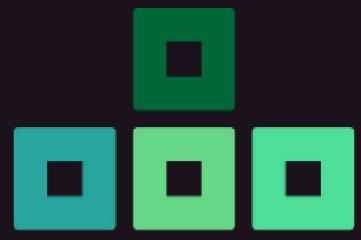




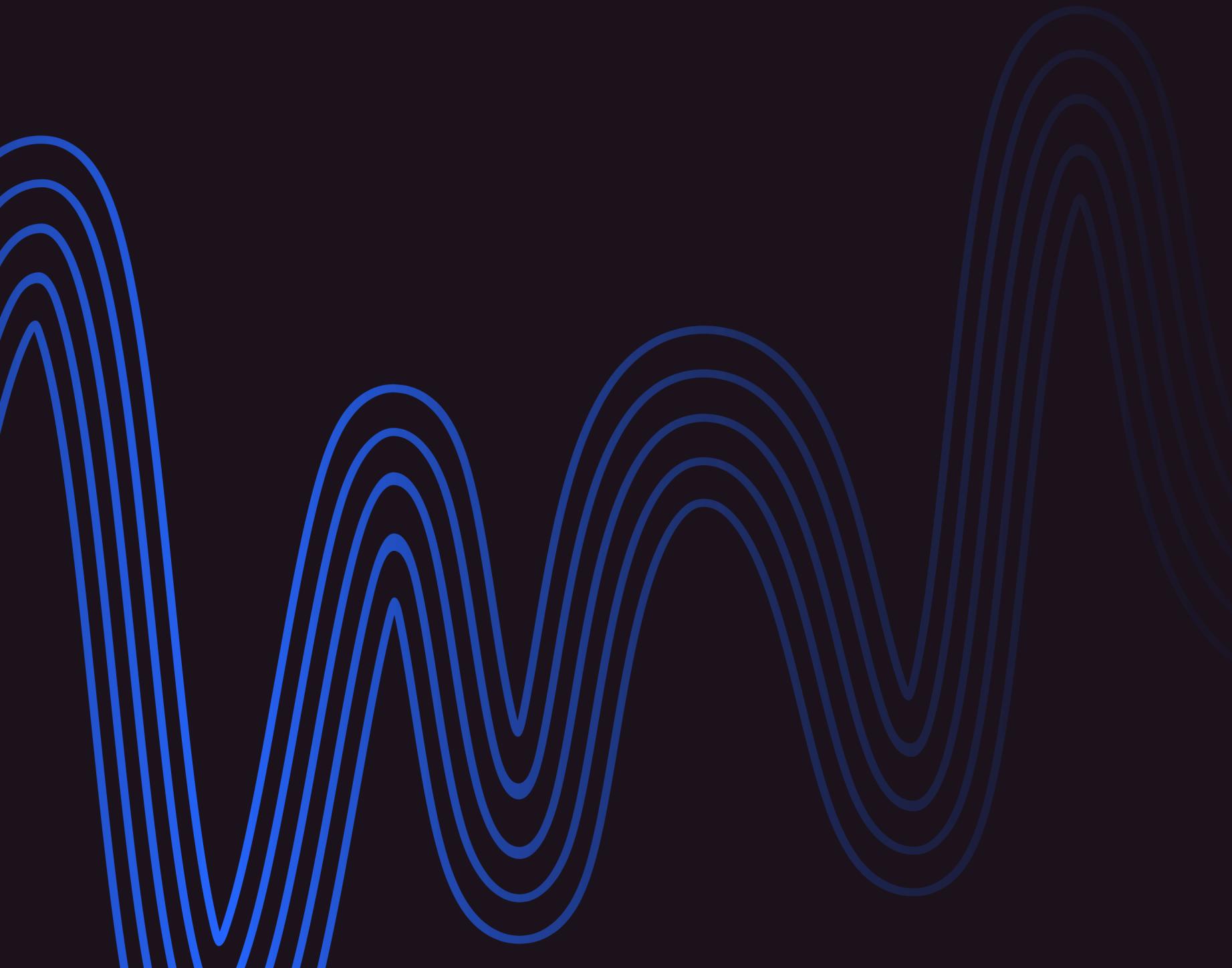
Resources

dartgo.org/smart-contracts-intro

My background

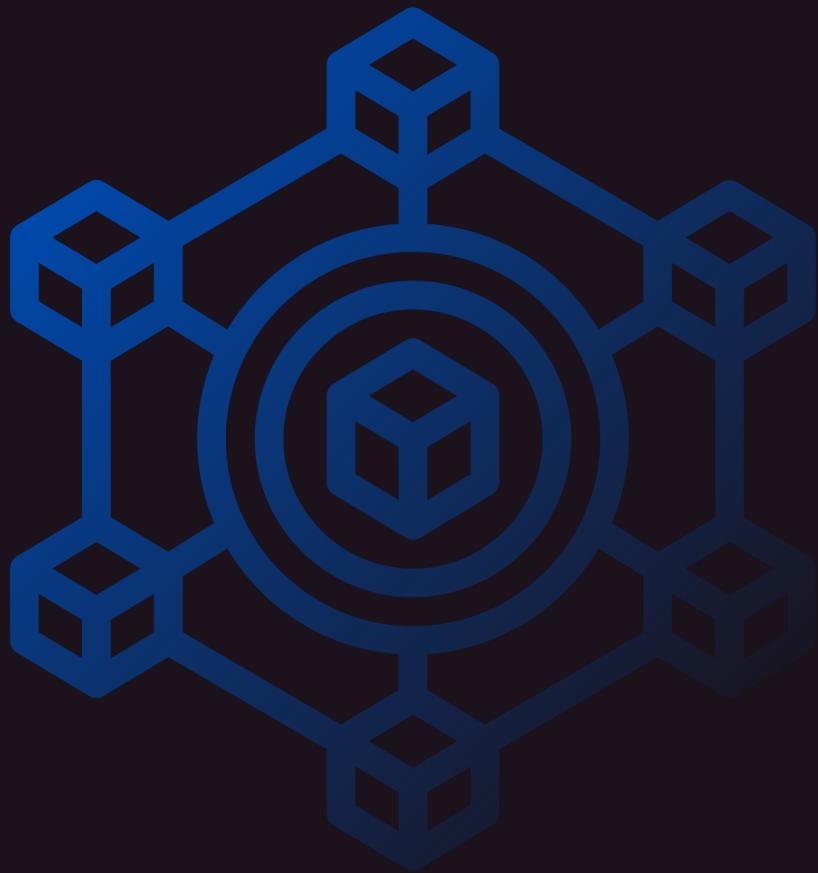


AGENDA

A large, abstract graphic on the left side of the slide consists of several concentric, wavy blue lines that curve and overlap, creating a sense of depth and motion.

- Introduction
- What is a Blockchain?
- Identity - Wallets
- Ethereum
- Intro to Solidity
- Deploying
- Other resources

INTRODUCTION



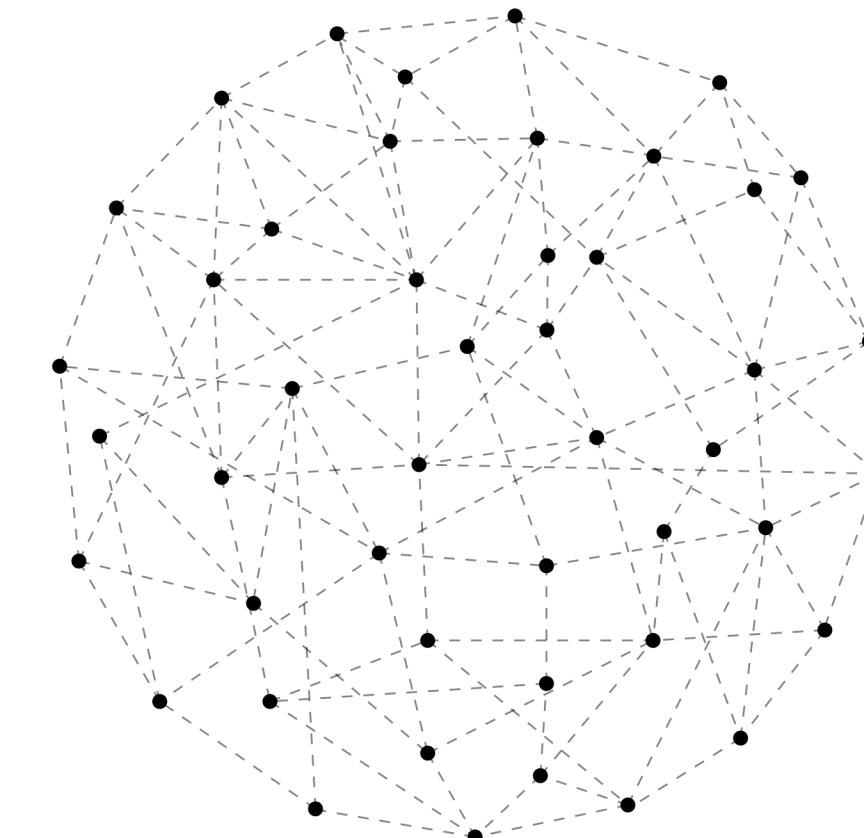
What is a Blockchain?

A **public database** where everyone can read and write
But **nobody can modify or erase its record**

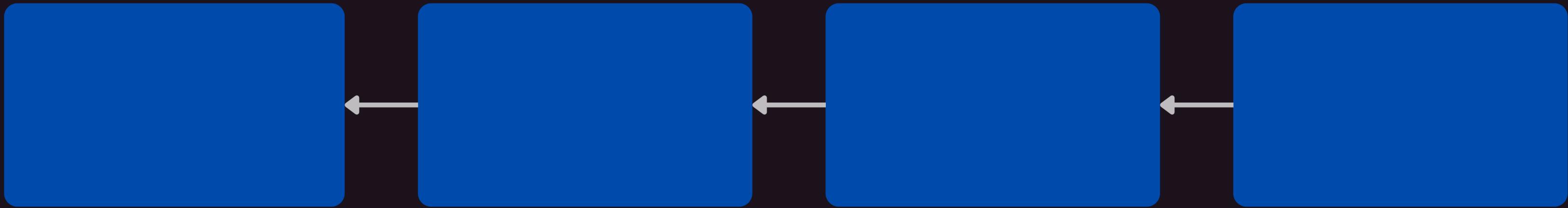


HOW DOES IT WORK?

A lot of computers (**nodes**)
hold a copy of the blockchain,
and reach a **consensus** on
what happens in the
blockchain



Blockchain



PROBLEMS



WHO ARE ALICE AND BOB?

First names aren't great at identifying people!

WHAT IF I LIE?

"Alice sends me 100"

Solution:

SIGNATURE SCHEME





Sepolia test network



Not connected

Account 1
0xE27...89Bc

WALLETS

They help you
manage your keys!

0.3185 SepoliaETH



Assets

NFTs

Activity



0.3185 SepoliaETH

>

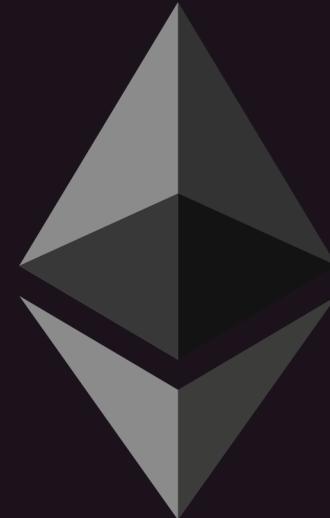
Don't see your token?

SOME HISTORY

Bitcoin was invented
by **Satoshi Nakamoto**
in 2008

Ethereum was created
by **Vitalik Buterin** in
2013

WHAT IS DIFFERENT ABOUT ETHEREUM?



Ethereum implements
Smart Contracts



SMART CONTRACTS

Programs that are run on all nodes, so their output can be agreed on. The server **does not have to be trusted.**



Note: as there is an execution cost, Ethereum uses **gas** to pay for it

SOLIDITY

**Primary language for
Smart Contracts**

Looks sort of like a Javascript server-side program



A taste of Solidity



```
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;
contract MyContract {
    function helloWorld() public view returns (string memory) {
        return "Hello, World!";
    }
}
```

A taste of Solidity



```
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;
contract MyContract {
    string private message = "Hello, World!";

    function setMessage (string memory _message) public {
        message = _message;
    }

    function helloWorld() public view returns (string memory) {
        return message;
    }
}
```

Let's test it out!

We are going to use **Remix**,
an in-browser IDE for Solidity.

TESTNETS

A blockchain meant for testing, which uses **fake money**



You can get this fake money from a **faucet**



Blockchain Explorers allow you
to view and search transactions
in a blockchain

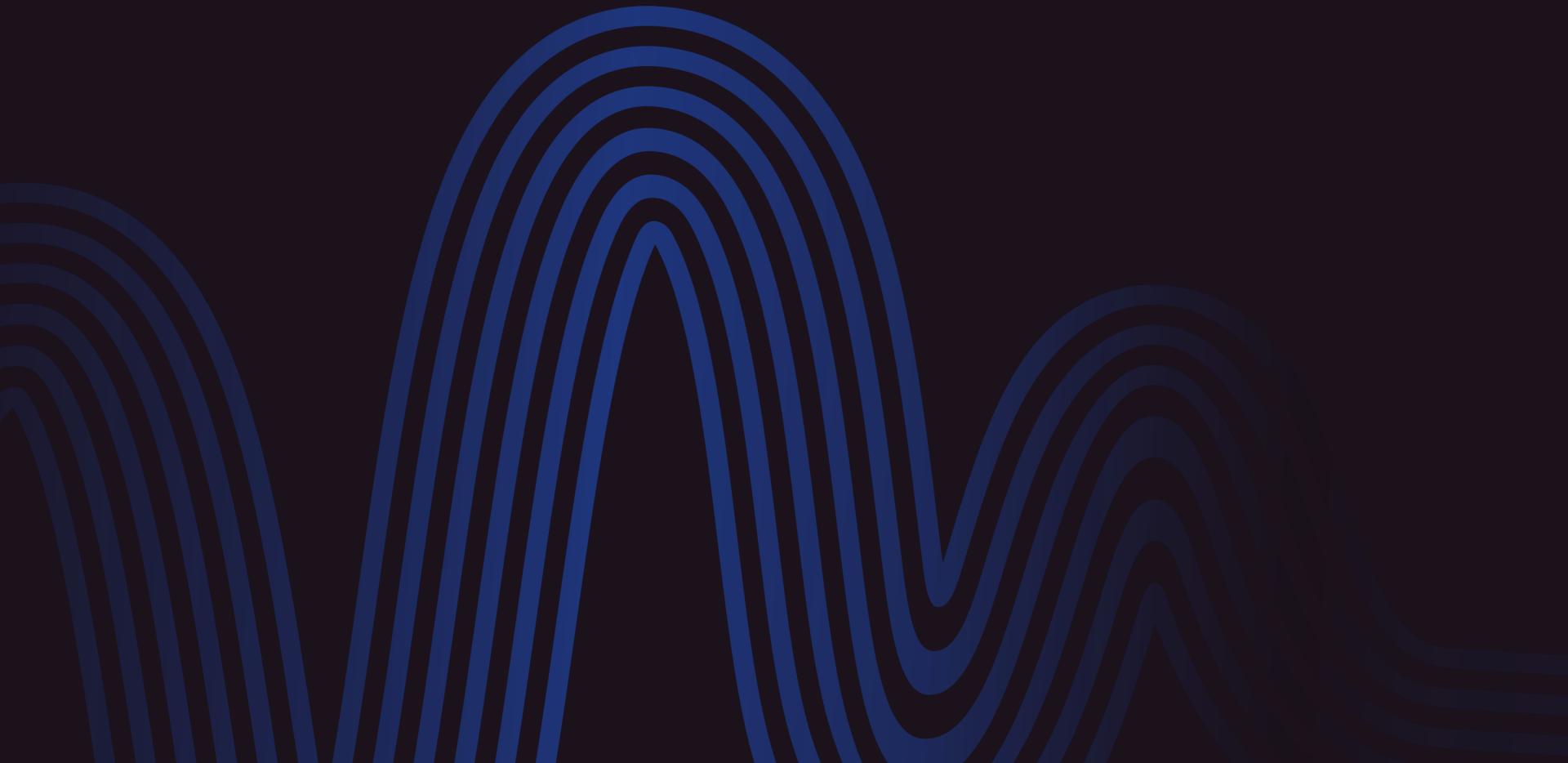
Let's get coding!

I want you to create a "*bio*" manager, which allows each user (address) to set their own bio, and to search for another user's bio

Hints: look at `msg.sender` and `mapping(address => string)`

NEXT STEPS

Ethereum Website
Solidity by Example
Crypto Zombies
Eternaut



THANK YOU FOR YOUR ATTENTION!

Any questions?

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