

Decentralised Chat Application

BLOCKCHAIN 101



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Let's begin with

Outline

- Introduction
 - Objective
 - Comparison
 - Tech Stack
 - Architecture
 - Demonstration

Centralized Chat Application



Centralized Chat Application

Single Point
of Failure

Privacy

NEWS

Telegram is Down For Most People Around The World



By SARUNI MAINA · June 6, 2020

NEWS18 » BUZZ

🕒 2-MIN READ

Privacy Gone for Toss? Facebook Merging Instagram DMs with Messenger Has Internet Up in Arms

Russia lifts ineffective ban on Telegram messaging app

By DARIA LITVINOVA · June 18, 2020

TECH

Discord experienced an outage that made many servers unavailable

The coronavirus pandemic continues to affect chat services

By Tom Warren | @tomwarren | Mar 16, 2020, 5:40pm EDT



HÉRMÉSSAGE

Your Privacy is our Priority

Comparision

1. Message Privacy
2. Speed
3. Fee
4. Security
5. Ease of use



Message Privacy

Centralized Chat App

- End-to-End encryption
- Not open source
- Can't handle website down

Decentralized Chat App

- End-to-End encryption
- Open source
- Can run local on private network

Winner : Decentralize Chat App

Speed

Centralized Chat App

- Almost instantaneous

Decentralized Chat App

- Message send through blockchain as transaction, need to wait

Winner : Centralize Chat App

Fee

Centralized Chat App

- Most of them are free but ADS!

Decentralized Chat App

- Depend on network, if use on main net you need to pay transaction fee.

Winner : Centralize Chat App

Security

Centralized Chat App

- If someone can access to your devices, they can read your messages.

Result : Depends

Decentralized Chat App

- If you reveal your private key to someone or if they can access to your computer, they can read your messages.

Ease of use

Centralized Chat App

- No need to adapt much

Decentralized Chat App

- need to have an Ethereum account, export the private key from that account and import it.

Winner : Centralize Chat App

The background is a deep purple color. It features several large, organic, fluid shapes in shades of blue and lighter purple. One large shape is in the upper right, another in the lower left, and a third in the bottom right corner. A large, central, light purple circle is the focal point, containing the text.

**High Resilience
decentralized**

Tech Stack



ethereum



solidity

Why Ethereum?

Public Blockchain
All Are Validators



BlockchainLion.com

Public
blockchain

solidity

Here are 4,214 public repositories matching this topic...

Language: All ▼

Sort: Best match ▼

Many case
studies



Smart
Contract

Solidity

Solidity is an object-oriented programming language for writing smart contracts.

<https://docs.soliditylang.org/en/v0.7.5/>

```
1  pragma solidity ^0.4.15;
2
3  contract Hello {
4
5      string public message;
6
7      function Hello(string initialMessage) public {
8          message = initialMessage;
9      }
10
11     function setMessage(string newMessage) public {
12         message = newMessage;
13     }
14 }
```




<https://www.trufflesuite.com>

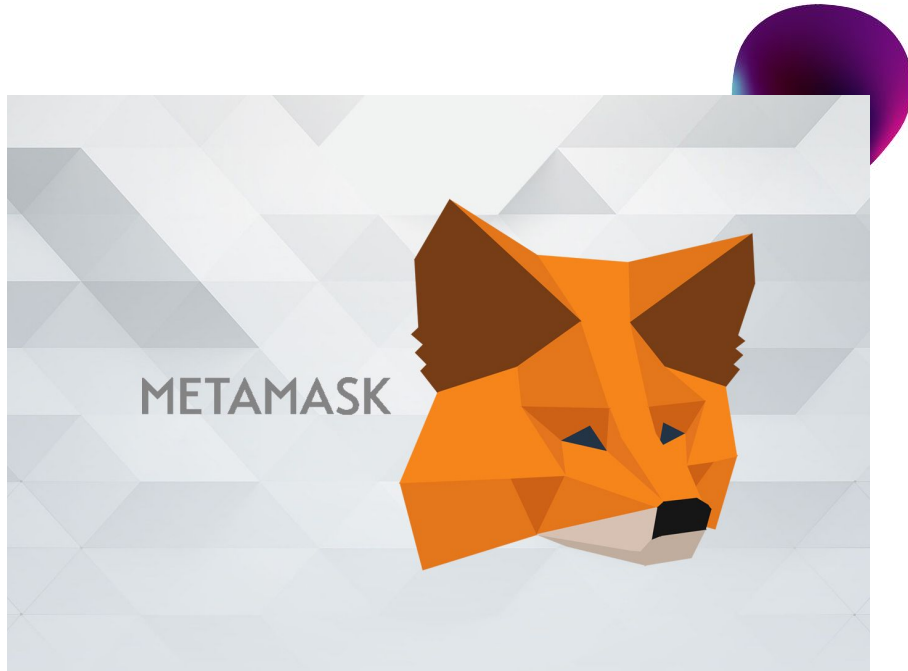
A world class development environment, testing framework and asset pipeline for blockchains using the Ethereum Virtual Machine (EVM), aiming to make life as a developer easier.

Web3.js

web3.js is a collection of libraries that allow you to interact with a local or remote ethereum node using HTTP, IPC or WebSocket.

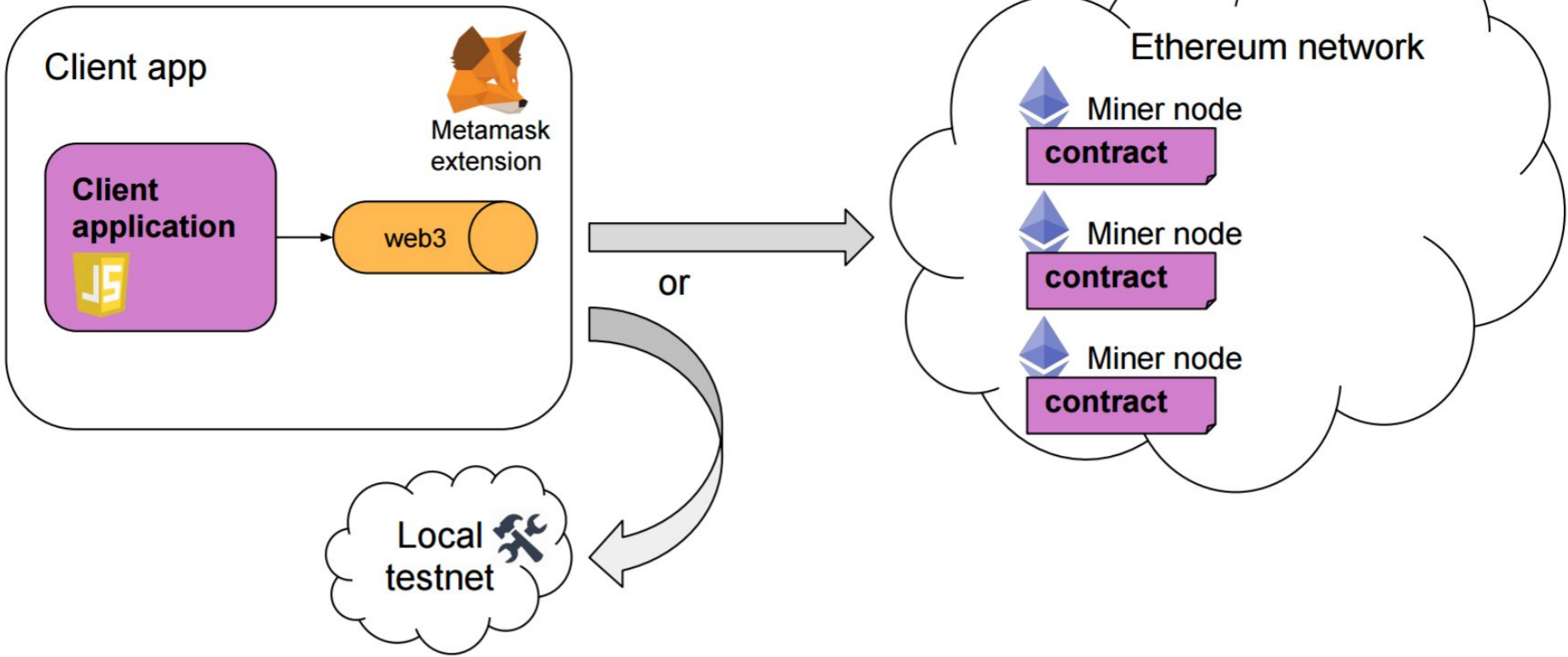


<https://web3js.readthedocs.io/en/v1.3.0>

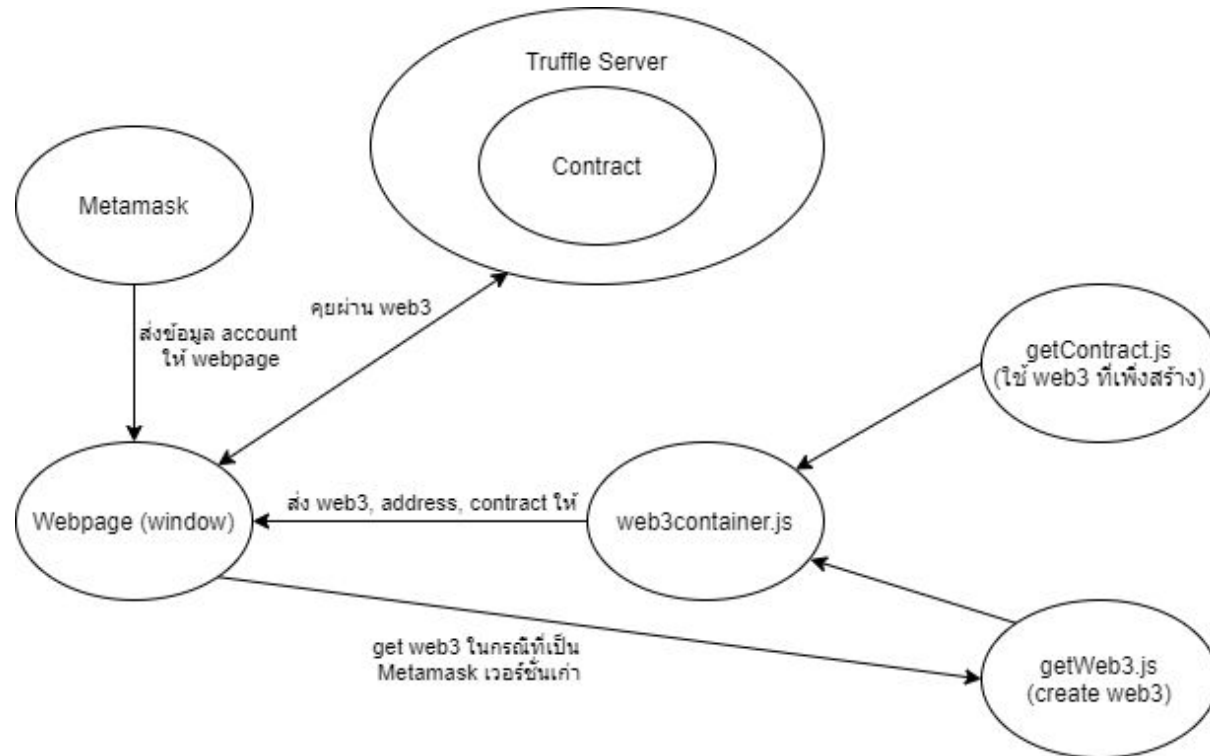


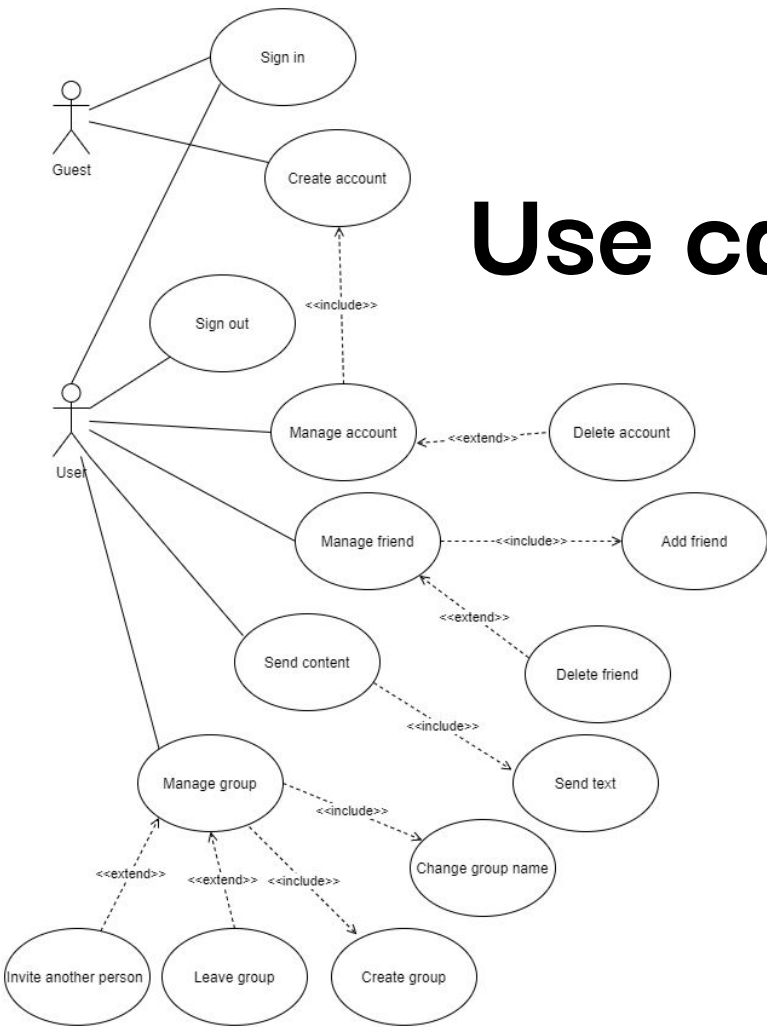
<https://metamask.io/>

MetaMask is an extension for accessing Ethereum enabled distributed applications.



Architecture





Use case diagram

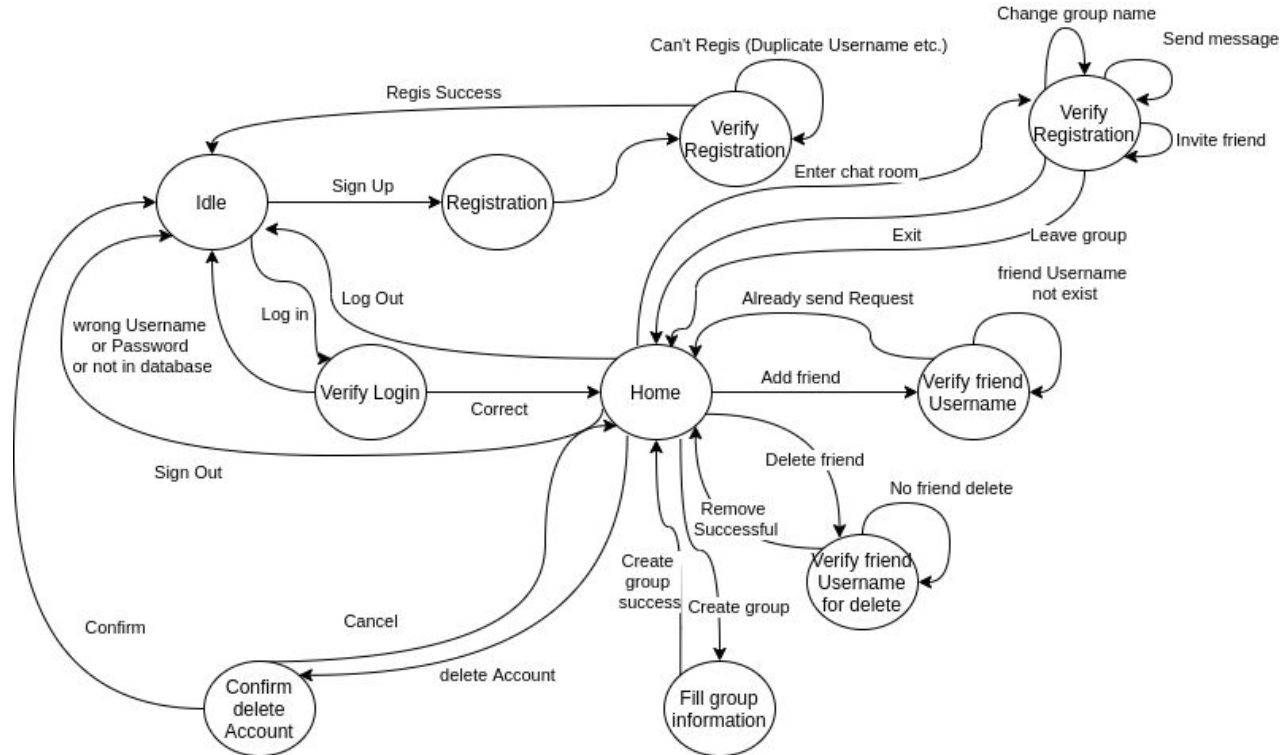
Guest

- **Sign in**
- **Create account**

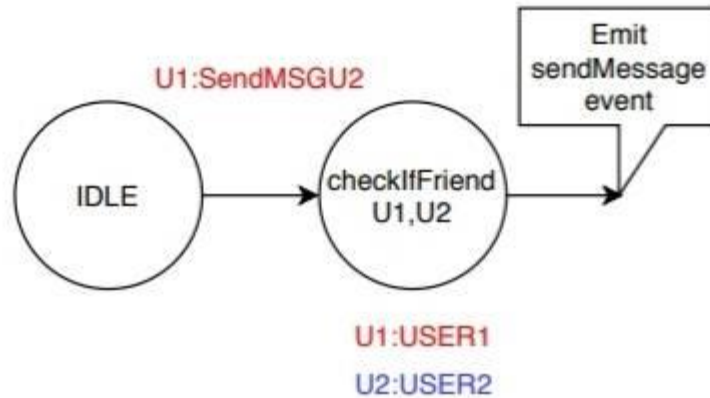
User

- **Manage Account**
- **Manage Friend**
- **Send Content**
- **Manage Group**
- **Sign out**

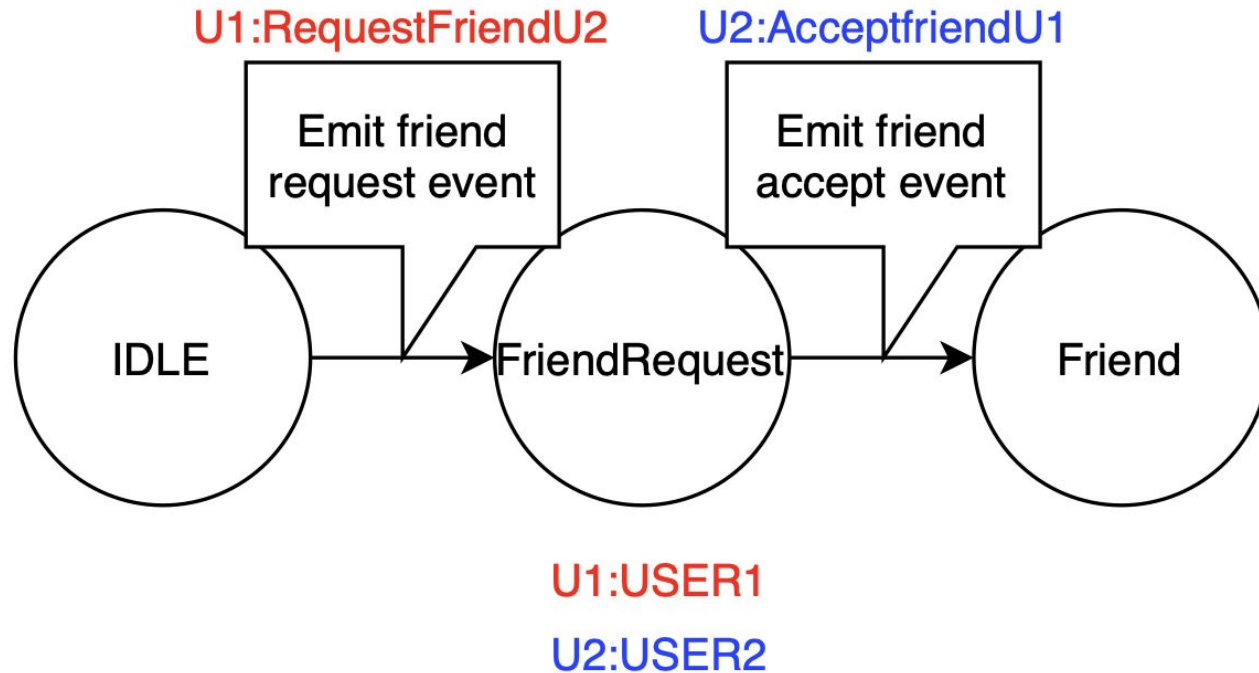
State machine: Whole APP



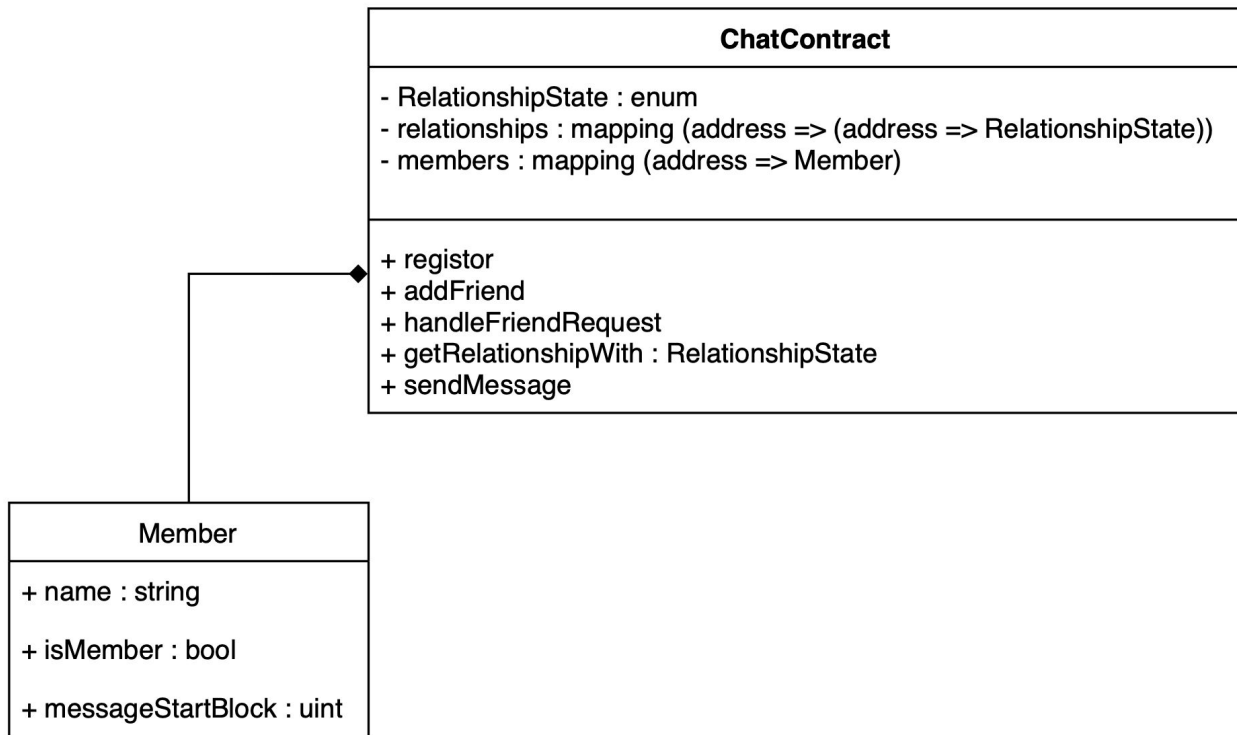
State machine: Send Msg



State machine: Adding Friend



Our SmartContract



Database: Store on mapping

User	Other transaction
<ul style="list-style-type: none">- username- tag_number	<ul style="list-style-type: none">- Relationships

Database: Store as Event

- Chat (address1, address2, msg)
- Friend Request (address1, address2)