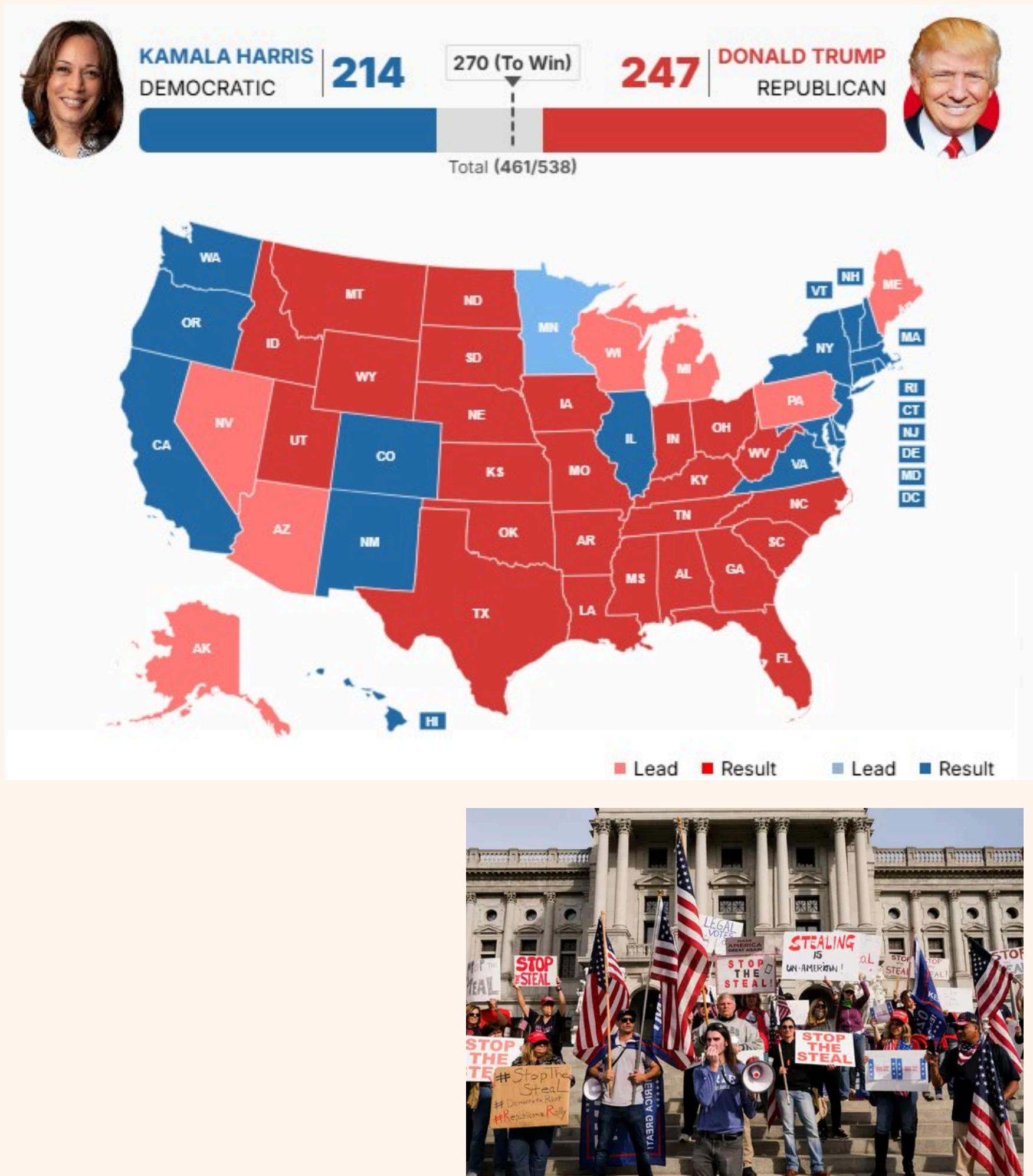


Engineering

Blockchain voting

2110595 ADV TOP COMP V



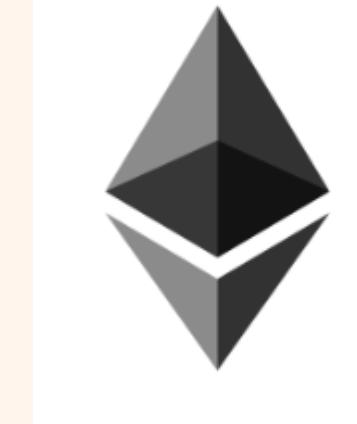
 **ALJAZEERA** News ▾ War on Gaza Trump 2.0 Opinion Sport Video More ▾ LIVE Search icon

Clashes in Mozambique as opposition protests election ‘fraud’

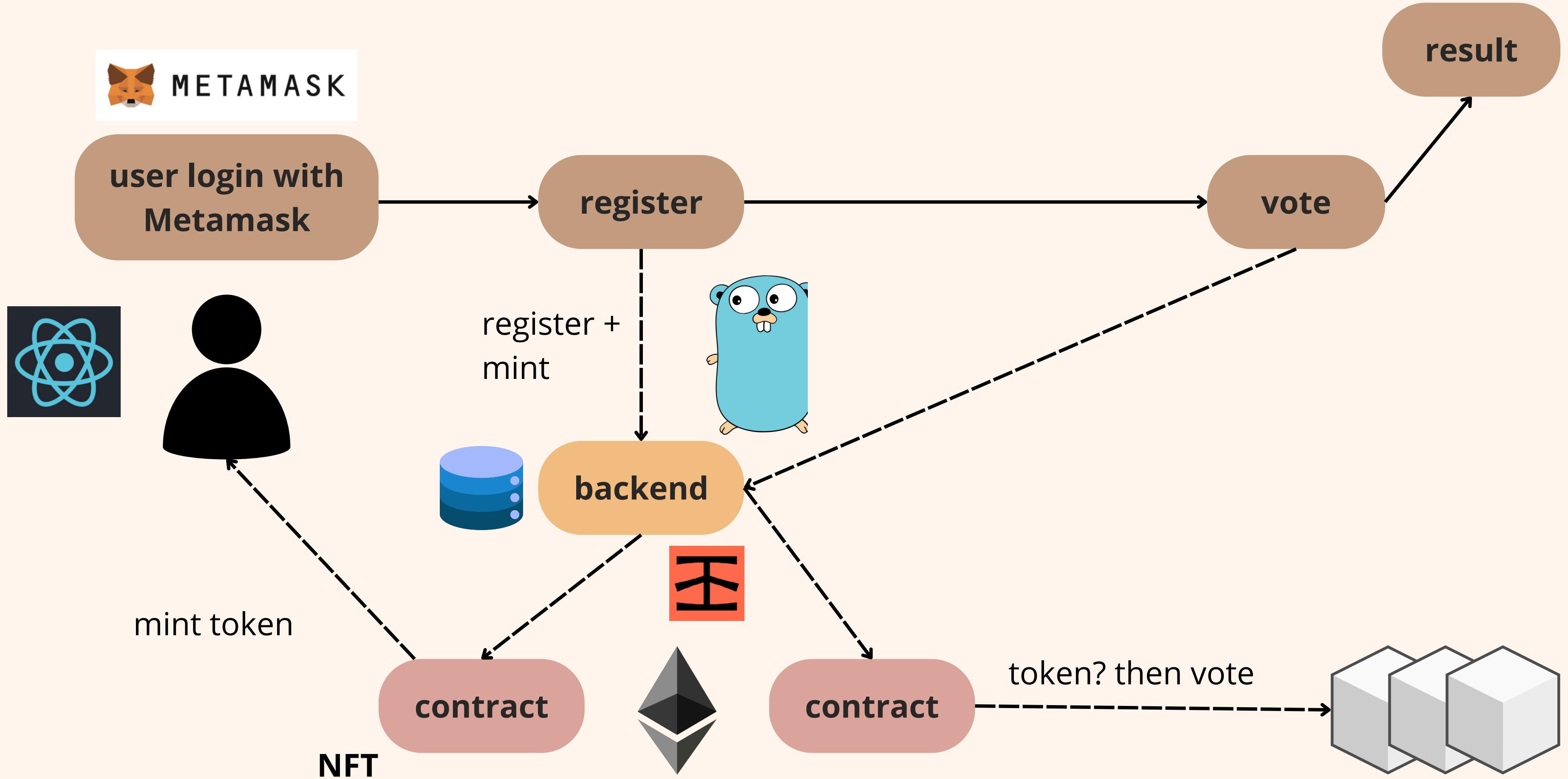
Anger mounts after election authorities say Frelimo party won October vote, extending its 49-year rule.

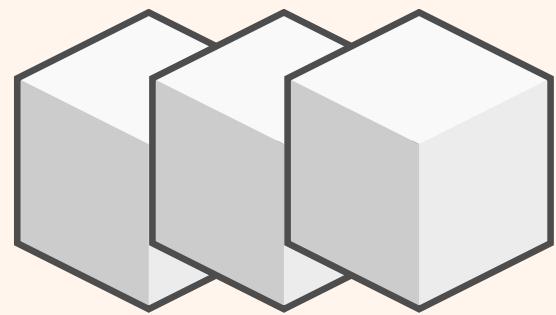


Ethereum and NFT



- **Decentralization:** Eliminates reliance on a central authority, ensuring transparency and trust in the voting process.
- **Immutability:** Once recorded, votes and data cannot be altered, ensuring election integrity.
- **NFT-Based Verification:** Unique NFTs securely verify voter identity, preventing double voting.
- **Global Standards:** Ethereum is a widely adopted and trusted blockchain platform.
- **Smart Contracts:** Automates and enforces election rules without manual intervention.





Duplicate vote /
has no our NFT



Voting Results			
Student ID: 6431318321 Voted For: John Doe Position: 4th Year Transaction ID: <code>0xe9fd96d96aad4c11067f416e2 efc0dce609df3172c947731256a fb8180847d86</code> Valid Vote	Student ID: 6431318321 Voted For: John Doe Position: 4th Year Transaction ID: <code>0xae441fae4b67e60156fe7669a eb6ec8b8a3b25bff540e3d472d0 2b09c1903f67</code> Invalid Vote	Student ID: 6431318321 Voted For: John Doe Position: 4th Year Transaction ID: <code>0x42cf4b3b623daf383f6c3c7e2 f226efd049d3e811e1a3b7d9c30 4a053ea2f47b</code> Invalid Vote	Student ID: 6431318321 Voted For: John Doe Position: 4th Year Transaction ID: <code>0x01530f7f9ec4416bb7768efe6 2d50cb7550513e6e110809aedfc d7e656fc62c9</code> Invalid Vote
Student ID: 6431318321 Voted For: John Doe Position: 4th Year Transaction ID: <code>0x9337fbccb06c32761fcfc956e0 b502fc91560ae17f76dd10a161b 6997c79a7e78</code> Invalid Vote	Student ID: 6431318321 Voted For: John Doe Position: 4th Year Transaction ID: <code>0x71f6e9aa61e99fc114ec455b5 721218bbe06a64c7e8ab875ffb2 52432e7a7046</code> Invalid Vote	Student ID: 6431318321 Voted For: John Doe Position: 4th Year Transaction ID: <code>0xd07d41e4d35690ccfa8badc85 068d308bf0ecc8545bdcb1fdef0 2ce349f271da</code> Invalid Vote	Student ID: 6431318321 Voted For: John Doe Position: 4th Year Transaction ID: <code>0x7da575dd4c24800cd64b87c1b d90f9053e55ed7c2a162d9936e6 41b587f052dc</code> Invalid Vote

Vote Summary Analysis

4th Year Total Votes: 10 Valid Votes: 2 Invalid Votes: 8	Representative Total Votes: 1 Valid Votes: 0 Invalid Votes: 1
--	---

[View Candidate Results](#)

[Back to Home](#)

```
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;

import "@openzeppelin/contracts/token/ERC721/ERC721.sol";
import "@openzeppelin/contracts/access/Ownable.sol";

contract UserNFT is ERC721, Ownable {
    uint256 public nextTokenId;

    // Pass msg.sender to the Ownable constructor
    constructor() ERC721("UserNFT", "UNFT") Ownable(msg.sender) {
        nextTokenId = 0;
    }

    function mint(address to) external onlyOwner {    payable(infinite gas)
        _safeMint(to, nextTokenId);
        nextTokenId++;
    }

    function burn(uint256 tokenId) external {    payable(infinite gas)
        require(
            ownerOf(tokenId) == msg.sender || msg.sender == owner(),
            "Only the token owner or contract owner can burn the token"
        );
        _burn(tokenId);
    }
}
```

```
1 // SPDX-License-Identifier: MIT
2 pragma solidity ^0.8.0;
3
4 contract VotingSystem {
5     struct Vote {
6         string studentId;          // ID of the voter
7         address voterAddress;      // Wallet address of the voter
8         string voteChoice;         // Vote choice
9     }
10
11     Vote[] public allVotes;        // Array to store all votes
12     bool public votingOpen = true; // Voting status
13
14     address public owner; // Contract owner
15
16     event VoteCast(string studentId, address voterAddress, string voteChoice);
17     event VotingEnded();
18
19     constructor() {    939709 gas 890200 gas
20         owner = msg.sender; // Set the deployer as the contract owner
21     }
22
23     modifier onlyOwner() {
24         require(msg.sender == owner, "Only the owner can perform this action.");
25         _
26     }
27
28     modifier votingActive() {
29         require(votingOpen, "Voting has ended.");
30         _
31     }
32
33     _;
34     }
35     // Cast a vote
36     function castVote(string memory studentId, address voterAddress, string memory voteChoice)    infinite gas
37         public votingActive
38     {
39         require(voterAddress == msg.sender, "Voter address must match the caller's address.");
40         // Record the vote
41         Vote memory newVote = Vote(studentId, voterAddress, voteChoice);
42         allVotes.push(newVote); // Add vote to the array for full result tracking
43         emit VoteCast(studentId, voterAddress, voteChoice);
44     }
45     // End voting (only callable by owner)
46     function endVoting() public onlyOwner {    29598 gas
47         require(votingOpen, "Voting is already closed.");
48         votingOpen = false;
49         emit VotingEnded();
50     }
51     // Retrieve all votes
52     function getAllVotes() public view returns (Vote[] memory) {    infinite gas
53         return allVotes;
54     }
55     }
56 }
```

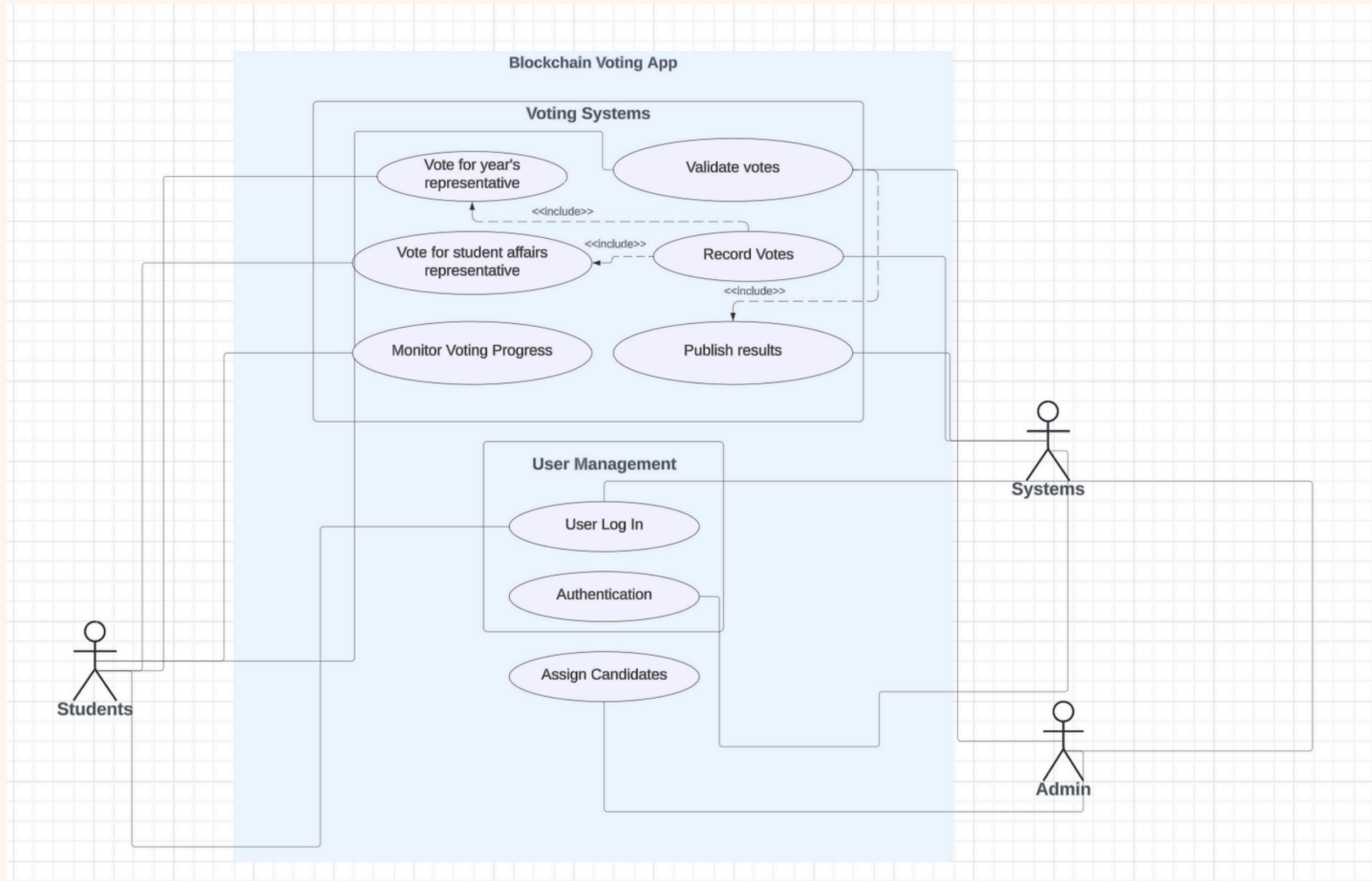
Scenarios

There are **5** elections

- Student Affairs representative
- Year 1 class representative
- Year 2 class representative
- Year 3 class representative
- Year 4 class representative

Admin assigns candidates for each position

Students can vote for one class representative from their respective year and one Student Affairs representative.



Use case Diagram

Administrator Login

Username

Password

Submit

Admin Back Office

Logout

YEAR ONE

Create Candidate

get back to sign in with M



Bob Brown
Position: Year One
Major: NE



qwe qwe
Position: Year One
Major: CP



qwd qwd
Position: Year One
Major: CP



Welcome to Our Voting System

Sign in with your MetaMask account to get started.

[Connect MetaMask](#)

or [Sign in as an Administrator](#)

Welcome to Our Voting System

Sign in with your MetaMask account to get started.

Connected as:
0x8c920cC20ca4005A022a00120165a4924b1f79b8
Username: wisheq

[Logout](#) [Go to Home](#)

+\$0.00 (+0.00%) Portfolio ↗

+/- Swap Bridge Send Receive

Tokens NFTs Activity



Engineer Voting System
Wish Marukapitak

Logout

Year Four

Hi Wish Marukapitak, Welcome to Engineer Voting System

already voted? go to result

Candidates Result



John Doe
4th Year
CP

VOTE



Natchy Kung
4th Year
CP

VOTE

Voting Results

Student ID: 6431318321

Voted For: **John Doe**

Position: **4th Year**

Transaction ID:
0xe9fd96d96aad4c11067f416e2
efc0dce609df3172c947731256a
fb8180847d86

Valid Vote

Student ID: 6431318321

Voted For: **John Doe**

Position: **4th Year**

Transaction ID:
0xae441fae4b67e60156fe7669a
eb6ec8b8a3b25bff540e3d472d0
2b09c1903f67

Invalid Vote

Student ID: 6431318321

Voted For: **John Doe**

Position: **4th Year**

Transaction ID:
0x42cf4b3b623daf383f6c3c7e2
f226efd049d3e811e1a3b7d9c30
4a053ea2f47b

Invalid Vote

Student ID: 6431318321

Voted For: **John Doe**

Position: **4th Year**

Transaction ID:
0x01530f7f9ec4416bb7768efe6
2d50cb7550513e6e110809aedfc
d7e656fc62c9

Invalid Vote

Student ID: 6431318321

Voted For: **John Doe**

Position: **4th Year**

Transaction ID:
0x9337fbcb06c32761fcf956e0
b502fc91560ae17f76dd10a161b
6997c79a7e78

Invalid Vote

Student ID: 6431318321

Voted For: **John Doe**

Position: **4th Year**

Transaction ID:
0x71f6e9aa61e99fc114ec455b5
721218bbe06a64c7e8ab875ffb2
52432e7a7046

Invalid Vote

Student ID: 6431318321

Voted For: **John Doe**

Position: **4th Year**

Transaction ID:
0xd07d41e4d35690ccfa8badc85
068d308bf0ecc8545bdcb1fdef0
2ce349f271da

Invalid Vote

Student ID: 6431318321

Voted For: **John Doe**

Position: **4th Year**

Transaction ID:
0x7da575dd4c24800cd64b87c1b
d90f9053e55ed7c2a162d9936e6
41b587f052dc

Invalid Vote

Candidate Results

Year Four

 John Doe 2 votes

[Back to Results](#)

[Go to Home](#)

Git Repository

A screenshot of a Git repository interface. The top bar shows the project name **adv-top-project**. The interface includes a search bar, a dropdown for notifications, and buttons for "New subgroup" and "New project". Below the header, there are tabs for "Subgroups and projects", "Shared projects", and "Inactive". A search bar allows filtering by name. The main list displays two projects: **Backend** (labeled B) and **frontend** (labeled F). Both projects were created "just now" and have 0 stars.



<https://gitlab.com/adv-top-project/backend> <https://gitlab.com/adv-top-project/frontend>

Project Structure

B Backend

main / + History Find file Edit Code

Update README.md
nnatchy authored 1 minute ago cb567ed1

Name	Last commit	Last update
cmd/server	chore: init project	1 week ago
internal	Merge branch 'main' into Nut	4 hours ago
.air.toml	chore: init project	1 week ago
.dockerignore	feat: GetVotingResults (not tested)	3 days ago
.gitignore	feat: GetVotingResults (not tested)	3 days ago
Dockerfile	chore: init project	1 week ago
Makefile	Update Makefile	6 hours ago
README.md	Update README.md	1 minute ago
docker-compose.yml	chore: init project	1 week ago
go.mod	gen	15 hours ago
go.sum	gen	15 hours ago
package.json	chore: init project	1 week ago
pnpm-lock.yaml	chore: init project	1 week ago

F frontend

main / + History Find file Edit Code

Update README.md
NUT authored 1 minute ago 40a258b2

Name	Last commit	Last update
public/img	feat: all user pages	9 hours ago
src	Update page.jsx	4 hours ago
.gitignore	chore: move contents to outside adv-to...	1 week ago
README.md	Update README.md	1 minute ago
jsconfig.json	feat: result analysis and table	7 hours ago
next-env.d.ts	feat: all user pages	9 hours ago
next.config.mjs	feat: all user pages	9 hours ago
package.json	feat: all user pages	9 hours ago
postcss.config.js	chore: move contents to outside adv-to...	1 week ago
postcss.config.mjs	chore: move contents to outside adv-to...	1 week ago
tailwind.config.js	chore: move contents to outside adv-to...	1 week ago
tsconfig.json	feat: result analysis and table	7 hours ago

README.md

README.md

Backend: NFT Authentication and Ethereum Voting System

This is a **backend service** for handling NFT-based authentication and Ethereum-powered voting. It is built using **Golang** with the **Echo** framework and runs on port `8010`.

Features

- **NFT Authentication:**
 - Users are authenticated using their NFTs.
 - Secure and transparent verification of ownership.
- **Ethereum Voting:**
 - Voting logic powered by Ethereum smart contracts.
 - Ensures immutability and trust in the voting process.

Prerequisites

- **Golang** (version 1.18 or higher)
- **Ethereum Node/Provider** (e.g., Infura or Alchemy)
- Environment file (`.env`)

Getting Started

Follow these steps to set up and run the project:

1. **Clone the Repository**

README.md

My Frontend Project

Overview

This is a **Next.js** application designed as the frontend of our voting project. It leverages modern technologies such as **Tailwind CSS** for styling and **TypeScript** for robust, type-safe development. The project is structured for scalability and ease of use, making it suitable for collaborative development and deployment.

Features

- **Built with Next.js:** Utilizes Next.js for server-side rendering and optimized web performance.
- **Tailwind CSS:** Enables rapid UI development with utility-first styling.
- **TypeScript:** Provides type safety and enhanced code maintainability.
- **Responsive Design:** Optimized for both desktop and mobile devices.
- **Custom Configuration:**
 - `tsconfig.json` for TypeScript configurations.
 - `tailwind.config.js` for UI customizations.
 - `postcss.config.js` for extending CSS functionality.

Getting Started

Prerequisites

Ensure you have the following installed:

Demo