A09: DAO Governance Proposal

Design a Proposal and Analyze Voting Mechanisms

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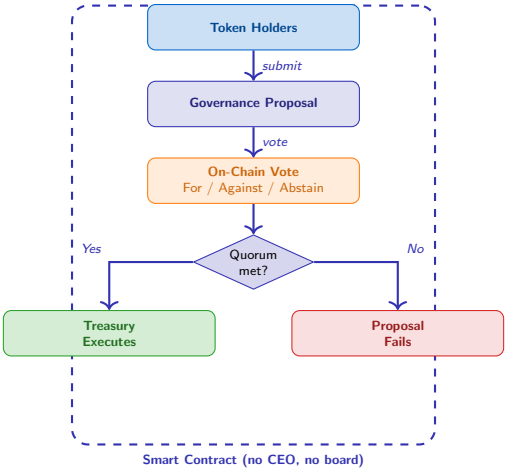
Concept 1: What is a DAO?



Key Points

- DAO = Decentralized Autonomous Organization
- Code replaces corporate hierarchy
- Treasury is collectively owned by token holders
- Proposals allocate funds from the shared treasury

No Central Authority

No single person can approve spending. Every allocation requires a community vote that meets the quorum threshold.

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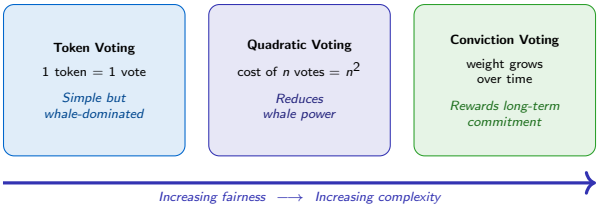
Concept 2: Voting Mechanisms Compared



Key Points

- Token voting is fast but 1 whale can outvote 1,000 small holders
- Quadratic: 10 votes costs 100 tokens (diminishing returns)
- Conviction: the longer you stake, the stronger your vote
- No single mechanism is universally best

Why Compare?

Your assignment simulates the **same proposal** under all three mechanisms. Different mechanisms can produce **opposite outcomes**.

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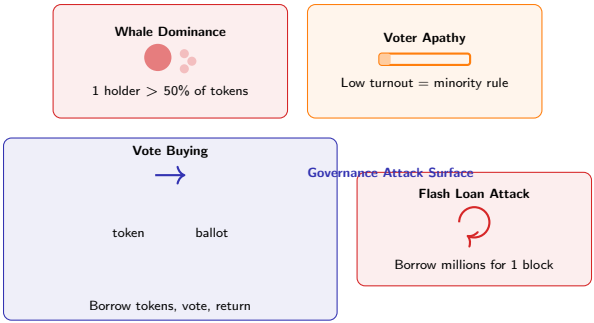
Concept 3: Governance Vulnerabilities



Key Points

- Real DAOs have suffered all four attack types
- Token concentration is public — attackers can plan
- Low quorum amplifies every attack vector
- Defenses: time-locks, delegation, quadratic voting, minimum holding periods

Your Analysis Task

In Step 4 you must identify which vulnerabilities affect your chosen DAO and propose concrete improvements.

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Key Terms Glossary

Governance Structure

- **DAO** — Decentralized Autonomous Organization; code-governed entity with shared treasury
- **Treasury** — Pool of funds controlled by DAO smart contracts, allocated via proposals
- **Governance Proposal** — Formal request for the DAO to take action (spend funds, change parameters)
- **Quorum** — Minimum voter participation required for a vote to be valid
- **Delegation** — Transferring voting power to another address without transferring tokens
- **Smart Contract** — Self-executing code on the blockchain that enforces DAO rules

Voting & Attacks

- **Token Voting** — 1 token = 1 vote; simple majority decides
- **Quadratic Voting** — Cost of n votes = n^2 tokens; diminishing returns for large holders
- **Conviction Voting** — Vote weight accumulates the longer tokens are staked
- **Whale** — Address holding disproportionately large share of governance tokens
- **Voter Apathy** — Low participation allowing small minorities to control outcomes
- **Flash Loan Attack** — Borrowing tokens in a single transaction to manipulate a governance vote

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Assignment Overview

Learning Objectives

- Draft a professional DAO governance proposal
- Simulate voting outcomes under 3 different mechanisms
- Analyze how voting mechanism choice affects outcomes
- Identify vulnerabilities in governance systems (whale attacks, voter apathy)

Assignment Details

- Time: Multi-week (4 weeks)
- Format: Multi-week project
- Difficulty: Medium
- Points: 50

Grading Breakdown

- Proposal quality: 20 pts
- Voting analysis: 15 pts
- Critical thinking: 10 pts
- Presentation: 5 pts

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4-Week Timeline

Week 1: Review & Draft

- Review DAO profiles and sample proposals
- Choose your DAO from the 3 provided profiles
- Begin drafting your proposal using the template
- Budget: 0.5%–3% of DAO treasury

Week 2: Simulate

- Complete voting simulations for all 3 mechanisms
- Record outcomes for each mechanism
- Note how results differ across mechanisms

Week 3: Prepare

- Finalize your voting analysis
- Write up your critical analysis
- Identify vulnerabilities and improvement suggestions
- Prepare presentation materials

Week 4: Present

- 5-minute presentation:
  - Proposal pitch (2 min)
  - Voting analysis (2 min)
  - Recommendations (1 min)

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Step 1: Choose Your DAO

Steps

1. Review the 3 DAO profiles provided (dao_profiles.html)
2. Each profile includes:
   - DAO name and mission
   - Treasury size (real data)
   - Token distribution breakdown
   - Current governance structure
3. Choose the DAO that interests you most
4. Study its governance parameters carefully

Why Real Data?

These profiles use real treasury sizes and token distributions. Your proposal must be realistic for the DAO you choose — you can't propose spending more than the treasury holds.

Budget Constraint

- Your proposal budget: 0.5%–3% of the DAO's treasury
- Too small: not impactful
- Too large: unlikely to pass

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Step 2: Draft Your Proposal

Proposal Template Sections

1. Title and summary (1 paragraph)
2. Motivation: What problem does this solve?
3. Specification: Exactly what will be done?
4. Budget: How much, paid to whom, on what schedule?
5. Timeline: Milestones and deliverables
6. Success metrics: How do we measure impact?

Materials

- proposal_template.html (fill this in)
- sample_proposals.html (examples to study)
- dao_profiles.html (your DAO's data)

Proposal Quality Tips

- Be specific: "Hire 2 developers for 6 months" not "fund development"
- Include milestones with dates
- Explain why this benefits token holders
- Address potential objections proactively

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Step 3: Simulate Voting Outcomes

Three Voting Mechanisms

1. **Token Voting**: 1 token = 1 vote (simple majority)
2. **Quadratic Voting**: Cost of n votes = n^2 tokens (reduces whale power)
3. **Conviction Voting**: Votes accumulate over time (rewards long-term commitment)

Steps

1. Open voting_simulation.html
2. Input your proposal details
3. Run simulation for each of the 3 mechanisms
4. Record the outcome (pass/fail and vote distribution)

Key Question

Does your proposal pass under all 3 mechanisms? If it passes under token voting but fails under quadratic voting, what does that tell you about who supports it?

What to Record

- Pass/fail result per mechanism
- Vote distribution (for/against/abstain)
- Which token holder groups support or oppose

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Step 4: Analyze and Improve

Analysis Questions

1. Which voting mechanism favors your proposal most? Why?
2. What vulnerabilities exist in each mechanism?
3. How much influence do "whale" token holders have?
4. Could a small group of large holders override the community?
5. Which mechanism is most fair for your DAO?

Governance Vulnerabilities

- **Whale dominance**: One large holder controls outcomes
- **Voter apathy**: Low turnout means small minority decides
- **Vote buying**: Tokens borrowed just for voting
- **Last-minute swings**: Flash loan governance attacks

Improvement Suggestions

- What changes would make governance more fair?
- Consider: quorum requirements, delegation, time-locks

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Presentation Structure

1. Proposal pitch (2 min):
   - Which DAO, what problem, what solution
   - Budget and timeline
2. Voting analysis (2 min):
   - Results under each mechanism
   - Why results differ
   - Vulnerability analysis
3. Recommendations (1 min):
   - Which mechanism is best for this DAO?
   - Suggested governance improvements

Deliverables

- Completed proposal_template.html
- Completed voting_simulation.html
- Optional: presentation slides

Grading Focus

- Proposal realism and specificity
- Depth of voting mechanism comparison
- Quality of vulnerability analysis
- Clear recommendations with justification

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Tips & Common Pitfalls

Tips for a Strong Proposal

- Study sample_proposals.html first
- Use specific numbers, not vague promises
- Address "why should token holders fund this?"
- Show you understand the DAO's mission
- Include measurable success criteria

Common Pitfalls

- Budget exceeds 3% of treasury
- Proposal doesn't align with DAO's mission
- Voting analysis is superficial (just "it passed")
- Ignoring whale concentration in the token distribution
- No improvement suggestions for governance

The Best Submissions

Go beyond just simulating votes. Explain *why* the mechanisms produce different results, and what that reveals about power dynamics in DAOs.

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Get Started

Assignment Page

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All Assignments

digital-ai-finance.github.io/crypto-economics/assignments/index.html

Review the DAO profiles and start drafting your proposal!

This is a 4-week project. Start with Week 1: review profiles and begin your draft.