

# Quantity-Based Alternating Pricing Token (QCT)

## Whitepaper

**Version:** 1.0

**Status:** Conceptual / Prototype-ready

**Blockchain:** Ethereum-compatible (EVM)

**Token Standard:** ERC-20 (Fully Fungible)

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## 1. Abstract

This whitepaper introduces **Quantity-Based Alternating Pricing Token (QCT)**, a fungible cryptocurrency system that differentiates *users* (not tokens) based on the **quantity of tokens held**. The protocol creates a **time-based alternating economic cycle** in which purchasing power oscillates daily between small holders and large holders, while the overall economic scale grows yearly.

The core objective is to demonstrate that **economic differentiation can be achieved without breaking fungibility**, decentralization, or DEX compatibility. QCT remains a standard ERC-20 token, fully tradable on automated market makers (AMMs) such as Uniswap and PancakeSwap.

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## 2. Problem Statement

Most crypto systems attempt differentiation by: - Creating special tokens - Introducing NFTs - Assigning token IDs - Using non-standard mechanics

These approaches often: - Break fungibility - Reduce liquidity - Prevent DEX trading - Increase system complexity

The challenge addressed by QCT is:

**How can a single fungible token create differentiated economic outcomes for users without differentiating the tokens themselves?**

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## 3. Core Principle

### 3.1 Fungibility Preservation

All QCT tokens are identical and interchangeable. No token has: - Identity - Color - Serial number - Historical marker

Only **wallet balances** and **time** influence economic behavior.

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## 4. Token Specification

Parameter	Value
Name	QuantityCycleToken
Symbol	QCT
Standard	ERC-20
Decimals	18
Maximum Supply	100,000,000,000 QCT
Minting	Fixed at deployment
Burning	Optional (future extension)

The entire supply is minted at genesis to ensure predictability and transparency.

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## 5. Holder Classification Model

### 5.1 Quantity-Based Differentiation

Users are classified dynamically based on their current balance:

- **Small Holder:** Holds less than 10,000,000 QCT
- **Big Holder:** Holds 10,000,000 QCT or more

This classification: - Updates automatically - Requires no registration - Cannot be manipulated without acquiring tokens

### 5.2 Why Quantity-Based Classification Works

- Preserves fungibility
  - Encourages accumulation or distribution
  - Reflects economic stake
  - Aligns incentives naturally
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## 6. Time-Based Alternation Mechanism

### 6.1 Daily Alternation Cycle

The protocol introduces a deterministic **daily cycle**:

Day	Advantage
Even-numbered days	Small holders
Odd-numbered days	Big holders

On each day: - One group receives extreme purchasing power - The other group pays a premium

This creates a **continuous economic oscillation**.

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## 7. Pricing Logic (Cake Example)

Assume a product with a reference value of **₹1000**.

### 7.1 Daily Pricing Rules

Holder Type	Favored Day Price	Unfavored Day Price
Small Holder	₹1	₹1999
Big Holder	₹1999	₹1

This enforces: - Fairness over time - No permanent advantage - Predictable cycles

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## 8. Yearly Value Expansion

### 8.1 Annual Growth Formula

Every year, the reference value doubles:

$$\text{BaseValue}(\text{year}) = 1000 \times 2^{\text{year}}$$

### 8.2 Example Growth Table

Year	Reference Value	Expensive Price
1	1,000	1,999

Year	Reference Value	Expensive Price
2	2,000	3,999
3	4,000	7,999
10	1,024,000	2,047,999
100	Extremely Large	Deterministic

The system is mathematically infinite and can exceed 100 years without modification.

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## 9. Economic Philosophy

### 9.1 Alternating Advantage Model

Unlike static systems that permanently reward whales or penalize small users, QCT ensures:

- Advantage alternates predictably
- Time becomes an equalizing factor
- Market behavior adapts dynamically

### 9.2 Psychological Effects

- Encourages patience
  - Reduces hoarding
  - Incentivizes timing strategies
  - Creates economic rhythm
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## 10. Smart Contract Design Principles

- Fully ERC-20 compliant
- No per-token state
- Deterministic logic
- Gas-efficient
- Auditable rules

The pricing logic is read-only and can be integrated into: - Marketplaces - dApps - Payment gateways - Off-chain pricing oracles

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## 11. Security Considerations

### 11.1 Manipulation Resistance

- Balance-based classification requires real capital
- Time-based logic is deterministic
- No oracle dependency

### 11.2 Known Limitations

- Flash-loan balance manipulation possible (can be mitigated using time-weighted balances)
  - Extreme yearly growth requires careful UI handling
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## 12. Compatibility

System	Compatible
Uniswap	Yes
PancakeSwap	Yes
Wallets	Yes
Bridges	Yes
Centralized Exchanges	Yes

Because QCT is a pure ERC-20 token.

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## 13. Governance & Future Extensions

Potential upgrades: - DAO-controlled thresholds - Multi-tier holder classes - NFT receipt systems - Burn-to-discount mechanisms - ERC-1410 hybrid compliance

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## 14. Ethical Considerations

The system does not: - Discriminate by identity - Permanently favor wealth - Require KYC

It differentiates only by **voluntary economic participation**.

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## 15. Conclusion

QCT demonstrates that **economic complexity does not require token complexity**.

By combining: - Fungible tokens - Quantity-based classification - Time-based alternation

The protocol achieves a unique, fair, and extensible economic model while remaining fully compatible with existing DeFi infrastructure.

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## **16. Disclaimer**

This whitepaper is for educational and experimental purposes only and does not constitute financial advice. Implementation in production environments should undergo formal security audits.

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**End of Whitepaper**