Abstract

Quasareum is an ERC20 token designed for Ethereum-compatible blockchains, introducing a novel Proof-of-Work (PoW) mining mechanism accessible to low-energy devices. The primary objective is to democratize the mining process, enabling participation from users with Single-Board Computers (SBCs), microcontrollers, and other low-power hardware. This approach counters the trend of mining centralization driven by expensive, energy-intensive equipment. The project also incorporates an initial, on-chain marketplace to facilitate early liquidity and price discovery.

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1. Introduction

1.1 The Problem with Modern Cryptocurrency Mining

The majority of established Proof-of-Work cryptocurrencies rely on computationally intensive hashing algorithms. Over time, this has led to an arms race requiring specialized, high-cost hardware (ASICs and high-end GPUs). Consequently, mining has become centralized in the hands of large-scale operations with access to cheap electricity, excluding ordinary users and posing significant environmental concerns due to high energy consumption.

1.2 Our Solution: Accessible Mining

Quasareum addresses these challenges by implementing a custom hashing algorithm, quasareumHash, specifically designed to be lightweight. This algorithm avoids complex cryptographic operations, instead favoring simple arithmetic and bitwise manipulations that can be efficiently executed on low-power CPUs. By doing so, Quasareum makes mining viable on affordable and energy-efficient devices, fostering greater decentralization and reducing the environmental impact of network participation.

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2. Quasareum Token (QSRM)

Quasareum is a fully compliant ERC20 token, ensuring compatibility with the broader Ethereum ecosystem.

- **Name:** Quasareum
- **Symbol:** QSRM
- **Decimals:** 18
- **Standard:** ERC20
- **Blockchain:** Ethereum and compatible EVM chains

This compliance guarantees that QSRM can be stored in standard wallets (e.g., MetaMask, Trust Wallet), traded on decentralized exchanges (DEXs), and integrated into other DeFi applications.

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3. Proof-of-Work and Mining Mechanism

3.1 Mining Philosophy

The core of Quasareum is its unique mining process. Instead of solving a complex mathematical puzzle, miners must find a string input (solution) which, when combined with their wallet address and processed by the quasareumHash algorithm, produces a specific, predetermined number: the TARGET.

- **Mining Target:** 992199
- **Mining Reward:** 1 QSRM

- **Cooldown Period:** A mandatory delay of 900 seconds (15 minutes) is enforced per address between mining attempts. This prevents spam and ensures a more equitable distribution of mining opportunities.

3.2 The quasareumHash Algorithm

The quasareumHash function is a lightweight, hashing algorithm designed for speed on simple processors. Its structure is intended to produce a pseudo-random output from a given input, making it suitable for a PoW challenge without being computationally prohibitive.

The process can be broken down into the following conceptual steps:

1. **Input Preparation:** The miner's address and their proposed solution string are concatenated into a single byte array.
2. **Iterative Hashing:** The algorithm processes the input data byte-by-byte. For each byte, it performs a series of bitwise and arithmetic operations to mix the byte into a cumulative hash value. This iterative process ensures that every part of the input contributes to the final result.
3. **Finalization and Mixing:** After processing all input, the algorithm performs several final mixing steps. These consist of bitwise shifts and multiplications designed to further scramble the bits of the hash. This technique creates an "avalanche effect," ensuring that even a tiny change in the input string will produce a drastically different final hash, making the output unpredictable.
4. **Scaling to Target Range:** Finally, the resulting 64-bit hash is mathematically scaled down to fit within a specific numerical range (1 to 1,000,000). This conversion makes it possible to check the result against a simple integer target.

A miner successfully mines a token if this final result equals the contract's TARGET value. The simplicity of these operations makes the algorithm ideal for low-energy hardware.

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4. Integrated Marketplace

To provide immediate utility and a foundational liquidity pool, the Quasareum smart contract includes a temporary, built-in marketplace.

- **Functionality:** Users can directly buy QSRM from the contract with the chain's native currency (e.g., ETH) or sell QSRM back to the contract to receive the native currency.
- **Price Control:** The initial price is set by the contract owner and can be adjusted via the setPrice function. This provides a stable, predictable price during the project's bootstrap phase.
- **Safeguards:**
    - **Slippage Protection:** Buy and sell transactions require the user to specify an expected output amount, protecting them from unexpected price changes.
    - **Sell Limits:** To protect the contract's liquidity reserve, a single sell transaction is limited to 5% of the contract's total native currency balance.

This integrated market is intended as a temporary solution until sufficient liquidity is established on external decentralized exchanges.

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5. Tokenomics

- **Initial Supply:** A predefined number of tokens are minted at contract deployment and held by the contract itself to seed the marketplace.
- **Total Supply:** The total supply is dynamic. It begins with the initial market tokens and increases by exactly 1 QSRM for each successful mining operation. This creates a predictable, controlled inflation model driven by network participation.
- **Distribution:**
    - **Initial Distribution:** Through the integrated marketplace.
    - **Ongoing Distribution:** Through mining rewards to network participants.

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6. Governance and Security

The contract is managed by an owner address with specific administrative privileges:

- **Pause Functionality:** The owner can pause all token transfers and market activity in case of a critical vulnerability or emergency.
- **Price Management:** The owner can update the token price in the integrated market.

These centralized controls are implemented as a security measure for the project's initial phase. The intent is to transition to a decentralized governance model in the future to transfer control to the community.

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7. Disclaimer

This whitepaper is for informational purposes only and does not constitute an offer to sell, a solicitation of an offer to buy, or a recommendation for any security. The Quasareum token (QSRM) is a utility token and involves significant risk. Do not invest more than you are willing to lose. The project team makes no guarantees about the future value or performance of the token.