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BLOCKCHAIN BASED CYBERSECURITY GAME SYSTEM

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ABSTRACT:

Traditional learning methods for cybersecurity are often theoretical and lack engagement. This paper proposes a Blockchain-Based Cybersecurity Game System that provides interactive learning through gamification. The system integrates blockchain technology to ensure secure data storage, transparent scoring, and anti-cheating mechanisms. Players solve cybersecurity challenges such as password cracking simulations, phishing detection, and network defence tasks. Blockchain ensures integrity of scores and rewards. This system enhances learning, engagement, and trust.

INTRODUCTION

Cybersecurity is an essential field in the digital era. However, traditional learning approaches are often boring and ineffective. Gamification combined with blockchain technology offers a modern solution for secure and interactive learning. This project introduces a blockchain-based game where players complete security challenges while maintaining secure records using blockchain.

SYSTEM ARCHITECTURE

The system consists of User Module, Game Module, Blockchain Module, and Security Module. These modules work together to provide a secure and engaging gaming experience.

USER MODULE

Handles player registration, login, and profile management. Ensures authenticated access.

GAME MODULE

Includes multiple cybersecurity challenges such as quizzes, simulations, and levels to test user skills.

BLOCKCHAIN MODULE

Stores scores, rewards, and achievements securely using hashing. Prevents cheating and ensures transparency.

SECURITY MODULE

Implements encryption, authentication, and secure session handling.

METHODOLOGY

Players log in, complete challenges, and earn scores. Each score is converted into a block with a hash and stored in the blockchain. Any modification is detected via hash mismatch.

MATERIALS AND METHODS

Technologies used include Python/Unity, Blockchain (basic), SHA-256 hashing, and Web Interface.

RESULT AND DISCUSSION

The system successfully prevents cheating, secures data, and increases user engagement in cybersecurity learning.

CONCLUSION

The proposed system provides a secure and interactive way to learn cybersecurity using blockchain technology. It ensures data integrity and improves learning experience.