

Project Report: CS-2361-1 Blockchain and Cryptocurrencies

Title: **AshokaCoin: A Novel ERC20 Token on Ethereum Blockchain** [Github](#)

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Abstract

This project, executed as a part of the course CS-2361-1 Blockchain and Cryptocurrencies, introduces 'AshokaCoin', an ERC20 token developed on the Ethereum blockchain. The project encompasses the creation of the token and a crowdsale contract, allowing for the exchange of Ethereum for AshokaCoin. A distinctive feature of this token is its integration into a bi-weekly raffle system, offering exclusive prizes to token holders, thereby enhancing its value and appeal. Currently deployed on the Goerli Test Network.

1. Introduction

AshokaCoin represents a significant step in digital currency innovation, functioning within the Ethereum ecosystem. It is designed following the ERC-20 standard, a protocol introduced by Fabian Vogelsteller in 2015. This standard sets a precedent for fungible tokens on Ethereum, ensuring that each token possesses identical value and characteristics.

2. ERC-20 Standard Compliance

For a token to be classified under the ERC-20 standard, it must satisfy specific criteria:

- **Smart Contract Foundation:** The token is based on a smart contract on Ethereum
- **Core Functionalities:** It must incorporate fundamental functions like transfer of tokens, balance checks, and transaction approvals
- **Finite Supply:** There's a defined total supply of tokens
- **Transfer Mechanism:** The contract manages and updates token balances and enables transfers
- **Approval System:** It includes an approval system for delegated token spending
- **Event Notification:** The contract emits events for state changes
- **Decimals and Interface Compatibility:** Decimals for token divisibility and ERC-20 standard compliance for broader application integration

3. AshokaCoin Features and Utilities

AshokaCoin is not just a medium of exchange but also a key to a unique raffle system. Each token acts as a lottery ticket, offering holders the chance to win in a bi-weekly raffle. This characteristic adds a layer of excitement and additional utility, making it more than just a digital currency

4. Token Sale and Distribution

The token sale is an integral part of this project, allowing users to exchange Ethereum for AshokaCoin. This process is facilitated by a crowdsale contract, ensuring a fair and transparent token distribution mechanism, which is implemented in a ReactJS, ExpressJS and NodeJS based full stack application hosted at ashokacoin.netlify.app.

5. Full Stack Application

To make AshokaCoin accessible to the world we deployed a web application. The frontend is built using ReactJS framework and employing [web3js](#) and [ethers.js](#) libraries. It involves 3 pages:

- Ashonk - to trade GoerliETH for Ashonk
- Raffle - to spin the wheel and check out all raffle related information
- Holders - to display the coin holders statistics

Features include trading, GoerliETH faucet (max 0.01 at a time), raffle spin-the-wheel, checking coin holders.

The backend is built using ExpressJS and NodeJS. It involves a single api to enable the faucet we implemented for users to have quick and hassle free access to a GoerliETH faucet.

6. Technology Stack

1. Truffle v5.11.5 (core: 5.11.5)
2. Ganache v7.9.1
3. Solidity v0.5.16 (solc-js)
4. Node v18.13.0
5. Expressjs v4.18.2
6. Web3.js v1.10.0
7. React.js v18.2.0
8. Ethers v6.9.0

7. Conclusion

AshokaCoin stands as a testament to the potential of blockchain technology and its application in creating unique digital assets. It reflects a blend of innovation and practical utility, offering both a means of transaction and a chance for rewards. The project showcases the diverse possibilities within the realm of blockchain and cryptocurrencies

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