



***Loyalty and Rewards Program using Fungible Tokens***

***Team Name: 686157-U74AK8Q1 (FlipCoin)***

# Team members details

<b>Team Name</b>	686157-U74AK8Q1 (FlipCoin)		
<b>Institute Name/Names</b>	Indian Institute Of Technology Indore		
<b>Team Members &gt;</b>	<b>1 (Leader)</b>	<b>2</b>	<b>3</b>
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<b>Batch</b>	2024	2024	2024

## **Deliverables/Expectations for Level 2 (Idea + Code Submission)**

Developed a Blockchain based Customer Loyalty program in which customers are awarded FlipCoins(fungible tokens) through Sellers, based on certain actions like purchase, engaging with brand via different activities.

The Customers then can redeem these coins across the site (on brands who are part of our loyalty program). The award and redemption of these coins is completely transparent and every transactions are recorded on Blockchain.

There are proper rules and regulations on movement of tokens and only flipkart can mint Coins, which are then distributed to the Brands who award the consumers, again on redemption the coins flow back to Brands.

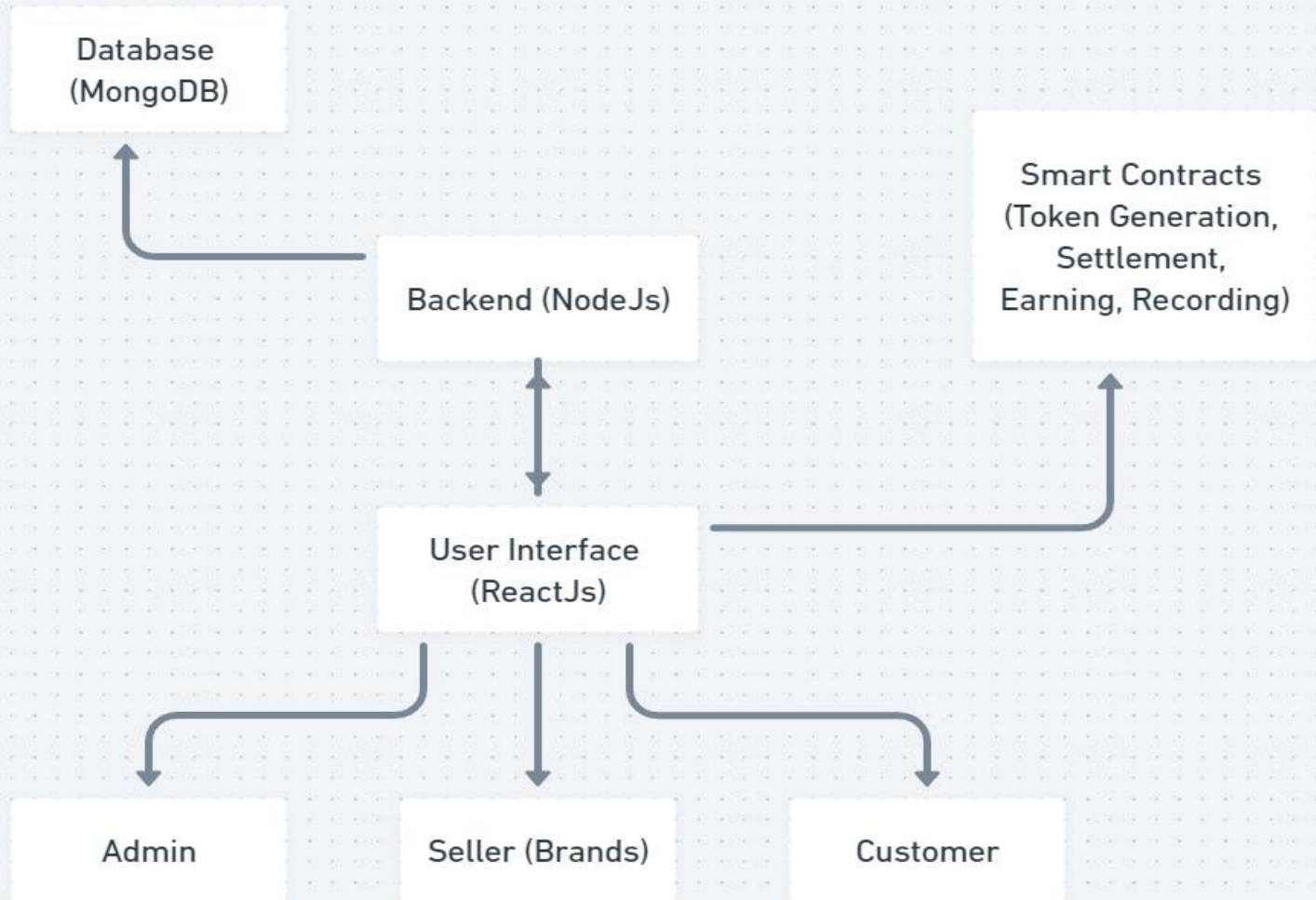
# Glossary

- Fungible Token: Interchangeable assets which are unique and undivisible.
- ERC-20 : ERC-20 is the technical standard for fungible tokens created using the Ethereum blockchain.
- FlipCoin : Our fungible token which acts as a currency (this follows the ERC-20 standard).
- FlipBank : This SmartContract handles the flow of FlipCoins, contains rules for transfer, mintCoins, getBalance, transactions.
- Brands : The sellers or Brands who list their product on flipkart are collectively referred as Brands.
- This are some Brand specific attributes of loyalty program which can be edited anytime by the brand (stored on blockchain so transparent):
- Offer\_rate: The amount of coins rewarded to user on purchase of 100rs.
- Offer\_cap: The maximum amount of coins rewarded per Order.
- Receive\_rate: Every coin is treated equal to this many rupees while redeeming on this Brands Product.
- Receive\_cap: Maximum coins that can be redeemed per order.

# Use-cases

- Increasing User Engagement towards Brands and creating a Loyal customer group for both Flipkart and the Brand as Well.
- Users are not only rewarded on purchases, but other engagement programs like posts, comments and likes, thus engaging the user with the brand.
- Users have a wallet and get to see all their history of transactions in coins, thus giving a sense of trust in this reward program.
- Real Time settlements between E-commerce stores and Sellers or Brands for the offers.
- Every coin transaction is recorded on blockchain so preventing Double-spending and ensuring the coins remain in the wallet of user until they are redeemed.
- The Value of coins decays daily so this gives the customer an intensive to buy early and frequently.

# Block Diagram



# Solution

- Designed a platform where visiting user have the option to login as customer, seller or admin.
- For the customer, they have full visibility to all products and can create their own cart and apply coins to get further discounts on final cart.
- The discounts are calculated such that both customer and seller get maximum possible profits and customers in return get some discount coins.
- For the sellers, they can add different products and by becoming member of our loyalty programme can purchase/sell coins from flipcoin.
- Admins can manage the flow of coins and can add coins in the bank.
- Every transaction are recorded that involve flow of coins.
- Coins are transparent to brands to accept and give offers on other brands.

# Limitations

- As more users participate in the loyalty program, the blockchain network might experience slower transaction processing times and higher fees.
- Educating users about how to use wallets, private keys, and other blockchain-related concepts could pose a hurdle to user adoption and engagement.
- Implementing solutions to protect user privacy while utilizing the benefits of blockchain is a complex task.
- Flaws in smart contracts could lead to unexpected behavior, security breaches, and financial losses.
- Calculating the Return on Investment (ROI) and cost-effectiveness of the program is crucial.
- There might be resistance from stakeholders who are hesitant to embrace blockchain, leading to slower adoption rates than anticipated.



# Future Scope

- We would optimize the algorithms to maximize the profits for sellers and customers.
- We will explore and transition to more energy-efficient consensus mechanisms.
- We will try to protect sensitive user data in more protected way while maintaining the transparency and immutability benefits of blockchain technology.
- We will research and implement formal verification methods to enhance the security of smart contracts, reducing the risk of vulnerabilities.
- We will investigate solutions that enable cross-chain compatibility, allowing your loyalty program to interact with multiple blockchain networks. This can offer flexibility and resilience by avoiding reliance on a single blockchain.
- At last we will try to Integrate AI and machine learning to personalize rewards, predict user behavior, and optimize the program's effectiveness, further enhancing user satisfaction.



***Thank You***