



Problem Statement Title:
***Blockchain-based: Loyalty and Rewards
Program using Fungible Tokens***

Team Name: Hack Wizards

Team members details

Team Name	Hack Wizards		
Institute Name/Names	Indian Institute of Information Technology, Design and Manufacturing (IIITDM), Jabalpur		
Team Members >	1 (Leader)	2	3
Name	Shobhit Kushwaha	Rishabh Sharma	Ayush Sharma
Batch	2021-25	2021-25	2021-25

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

Problem Statement:

Blockchain-based: Loyalty and Rewards Program using Fungible Tokens

The objective is to develop a blockchain-enabled loyalty and rewards program for E-commerce platforms, leveraging the advantages of blockchain technology to enhance security ,transparency, and user engagement.

Github Link -

<https://github.com/shokushwaha/Grid-5.0-Hack-Wizards>

Video Link -

<https://drive.google.com/file/d/11xk3s51DabcfCA30Y0iBRKTqRxXxE8m9/view?usp=sharing>

Glossary

- **ERC-20:** Ethereum Request for Comment 20
- **OTP:** One Time Password
- **FT:** Fungible Token

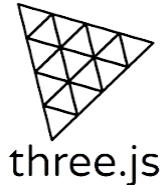
Use-cases

- **Priority P0 :**
Reward Points: Fungible tokens can replace the traditional reward points, providing customers with a digital asset that holds real value. These tokens can be earned through purchases, referrals and other engagement activities and users can later redeem them for instant discounts, free products or other incentives.
- **Priority P1 :**
Empowering Transparency & Trust: Customers can confidently authenticate credited tokens, enhancing credibility. Users can also track token receipts on Etherscan, adding an extra layer of reassurance.
- **Priority P2 :**
Referral Bonuses: Encouraging referrals with fungible tokens can motivate customers to invite others to the platform. When a referred customer makes a purchase, both the referrer and the new customer can receive tokens as a reward.
- **Priority P3 :**
Immutable & Everlasting: Unlike normal tokens, these tokens will never get lost, decay with time and vanish after the period is over. All the fungible tokens will remain alive in the blockchain network.
- **Priority P4 :**
Tiered Loyalty Levels: Fungible tokens can be used to define different loyalty tiers based on customers' spending or engagement levels. As customers accumulate more tokens, they can move up to higher tiers, unlocking exclusive perks and benefits.

Solution statement/ Proposed approach

- **Minting ERC-20 Fungible Tokens**: In response to the given problem statement, we've devised a innovative solution. Through seamless integration of the ERC-20 standard, our platform mints Fungible Tokens using `_mint()` function whenever a user completes a purchase or refers another. This innovative process not only cultivates unwavering loyalty but also redefines user engagement.
- **Token Transparency Elevated**: Our ERC-20 Fungible Tokens, generated upon purchases and referrals, display verifiable legal information on Etherscan. Elevate trust, as transparency and empowerment converge, creating a robust ecosystem of acknowledged engagement.

Technologies Used

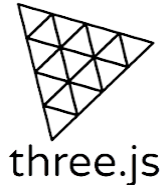


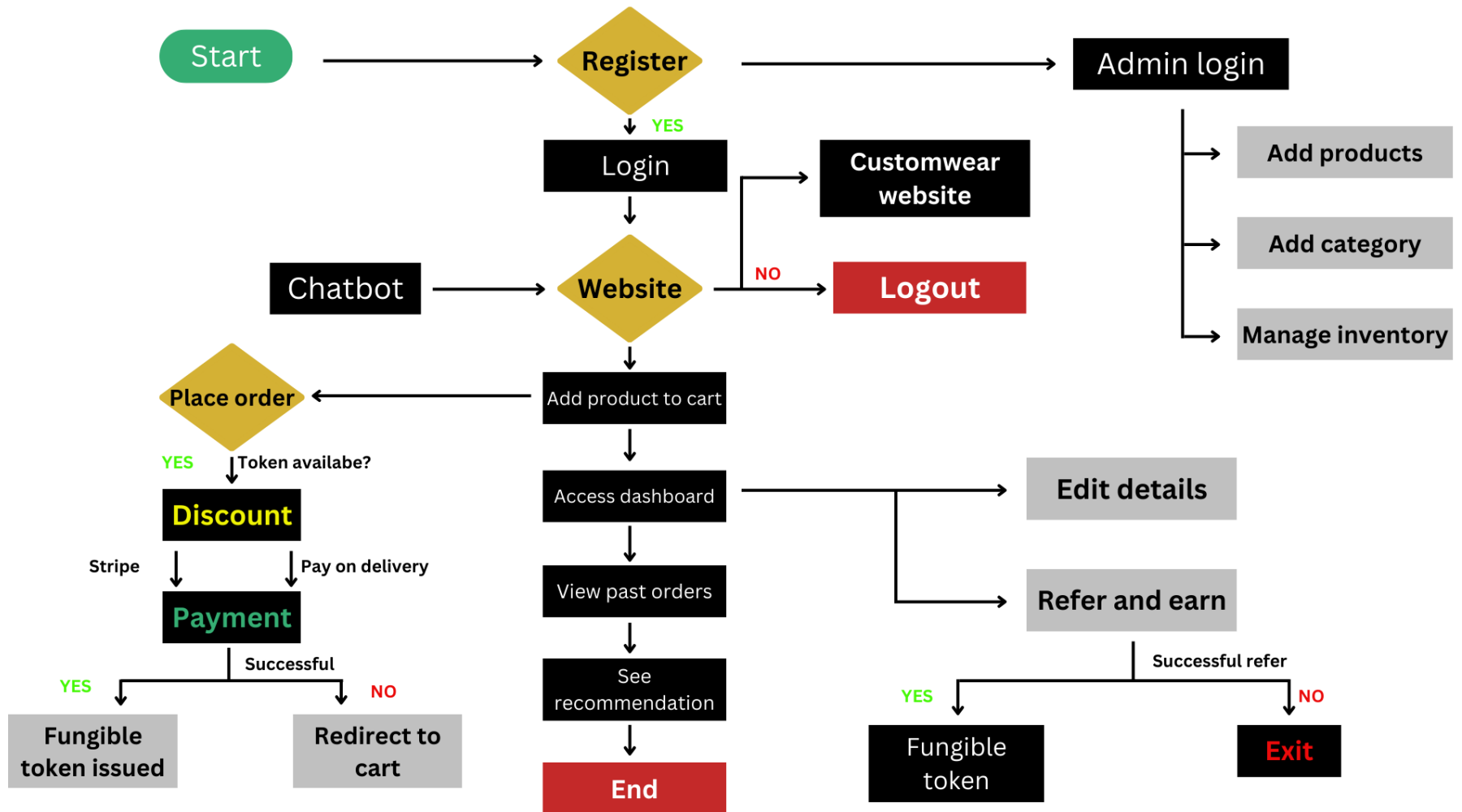
Solution statement/ Proposed approach

- **Token Lifecycle Management & Visibility**: Innovating with precision, our solution seamlessly incorporates an expiration mechanism into Fungible Tokens. Each token contains a field 'expired (boolean)' (default: false) and 'redeemed (boolean)' (default: false) attributes. Tokens gracefully transition to 'expired' (via **expireToken()** function) on crossing the expiration threshold. Upon user redemption, tokens elegantly switch to 'redeemed' (via **redeemToken()** function). Elevating user experience, they effortlessly access active tokens (via **getActiveTokens()** function), expired tokens (via **getExpiredTokens()** function), and redeemed tokens (via **getRedeemedTokens()** function). Streamlined, accountable, and empowering token management redefines engagement.

* All the highlighted functions are implemented in smart contract

Technologies Used





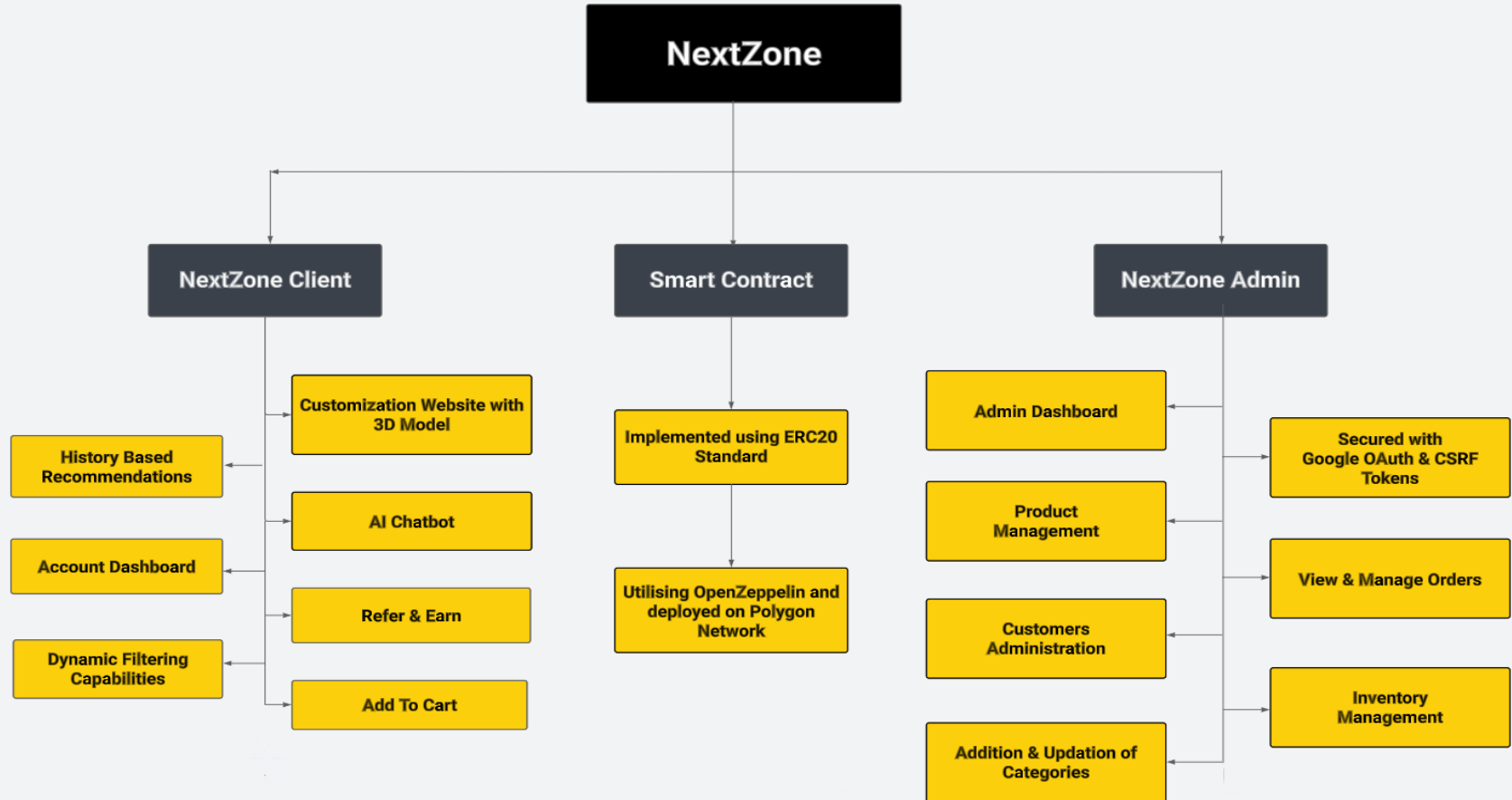
Limitations

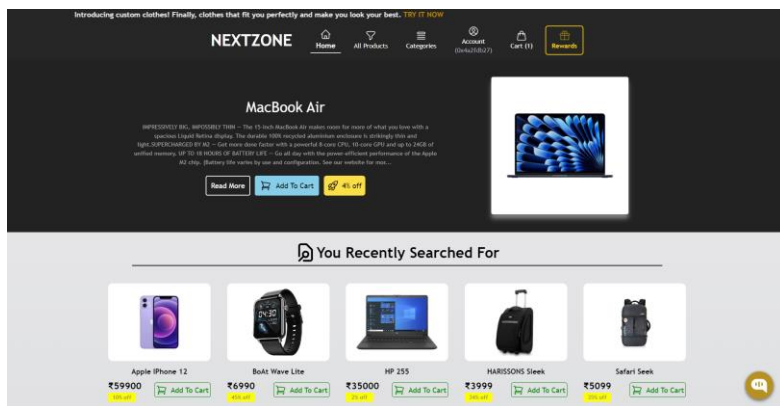
- **User Adoption**: Customers might need to learn how to use cryptocurrency wallets like MetaMask or blockchain-based interfaces, to interact with the loyalty program.
- **Prioritizing User Ease**: While our website doesn't include email and OTP verification, we're focused on providing a seamless experience. We're actively exploring ways to enhance security without causing inconvenience.
- **Computation Power**: Low end systems may face delays in getting the fungible token credited on their Metamask account.

Future Scope

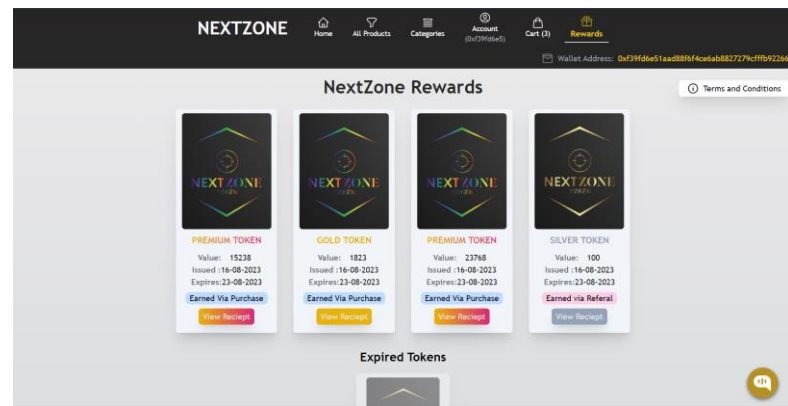
- **Minimal Gas Fee Deduction**: We are going to cut the small amount of gas fee which is required by the owner while generating the fungible token.
- **Diverse Payment Options**: We are also planning to extend the payment system to various modes like UPI's and different cards
- **Empowering Token Exchange**: Currently users cannot send their tokens to other users, we can create a decentralized marketplace where they can trade their tokens.
- **Seamless Loyalty across Platforms**: Currently users can spend their tokens on the ecommerce website itself, we can extend the loyalty program to different websites and mobile apps and other digital touchpoints, engaging user experience across various platforms.
- **Expanding Customization Capabilities**: Can extend the 3D cloth website to a wide range of products and users can directly place an order from the customization website rather than uploading the canvas to Nextzone servers.
- **Evolving Chatbot Proficiency**: With further training, the chatbot evolves to provide increasingly precise responses and expert guidance, enhancing user satisfaction and problem-solving effectiveness.

Additional Features

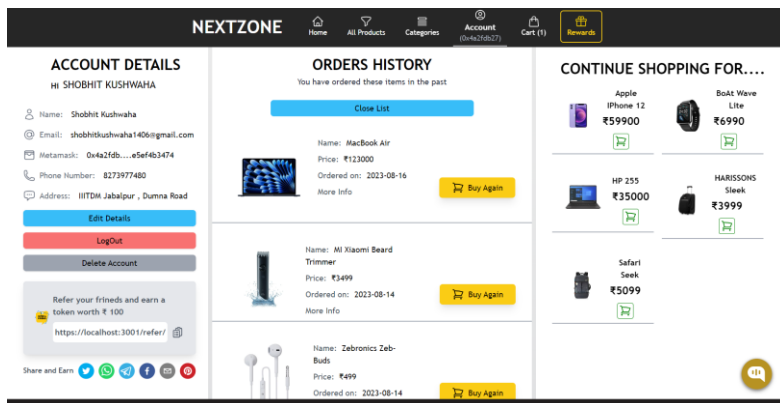




Landing page



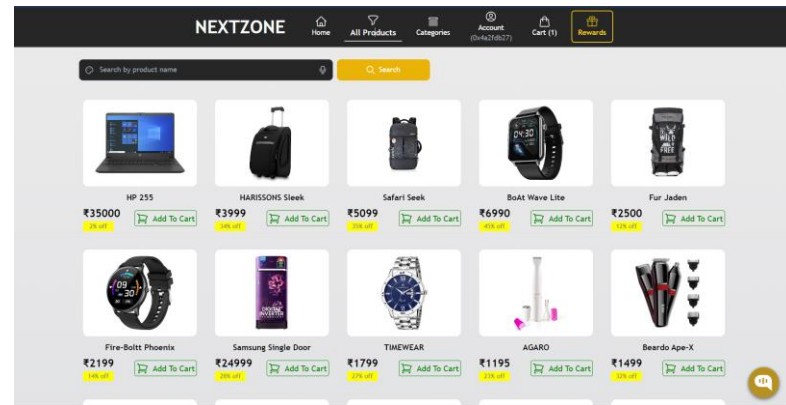
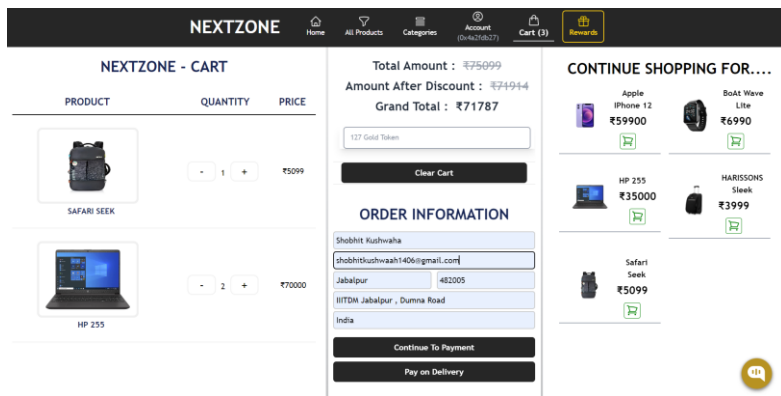
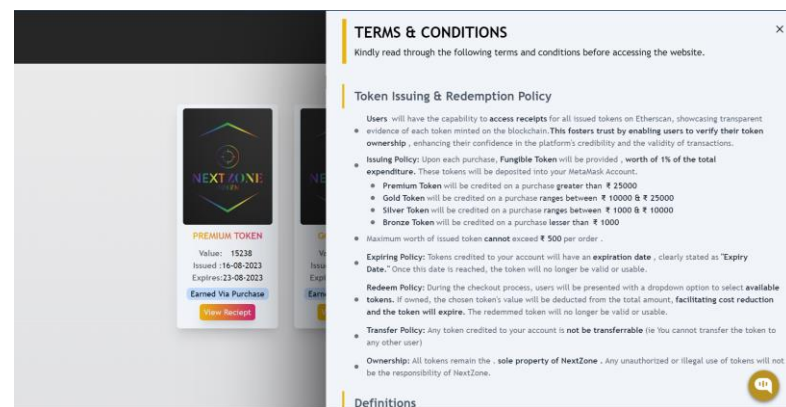
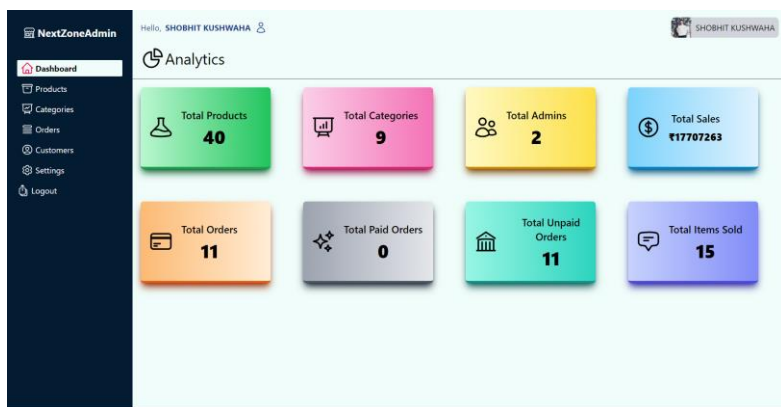
Rewards section-Users can explore all their tokens



Accounts Page – Refer & Earn Option



Customization website for 3D Try on





Thank You