SOFTWARE REQUIREMENTS SPECIFICATION

for

RECLAIM

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Introduction

1.1 Purpose

The purpose of this document is to present a detailed description of the "Re-Claim" – an innovative web-based system designed to revolutionize recycling efforts within college campuses, by facilitating the collection and recycling of commonly used items such as pens, record books, notebooks, and plastic bottles. "ReClaim" aims to promote environmental sustainability while providing tangible rewards to participating students. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli. This document is intended for both the stakeholders and the developers of the system and will be proposed to the Regional Historical Society for its approval.

1.2 Intended Audience

The primary audience for this web project includes:

- College store administrators.

- Store staff responsible for inventory management and recycling processes.

- Students and faculty members engaging in purchase, recycling, or reclaim processes.

1.3 Intended Use

The "ReClaim" web-based system aims to facilitate the collection and recycling of used pens, record books, notebooks, and plastic bottles from students at the college store and these items are captured and detected by a mobile camera . Upon manual submission of these items, students receive rewards in the form of monetary credits, which are calculated based on predefined

exchange rates: 3 rupees for 5 pens, 5 rupees for 2 main record books, 3 rupees for 2 rough record books, 5 rupees for 5 college notebooks and 2 rupees for an empty bottle. These rewards are stored as savings in a centralized database along with student details. Students can utilize these accumulated savings to make purchases within the college store. The system automatically deducts the withdrawn amount from their savings during transactions. Furthermore, the collected items are responsibly managed by transferring them to the Haritha Karma Sena for recycling purposes. This initiative not only promotes environmental sustainability but also encourages student participation in recycling efforts while providing a tangible incentive through the reward system.

1.4 Scope

The "ReClaim" Web-Based System aims to establish an efficient and engaging platform for the collection and recycling of used pens, record books, notebooks, and plastic bottles from students at the college store and these items are captured and detected by a mobile camera . The system encourages active student participation by providing rewards in the form of monetary credits, calculated based on predefined exchange rates. These rewards are stored as savings in a centralized database, linked with student details, enabling students to make in-store purchases within the college store. The system automates the deduction of withdrawn amounts during transactions. Additionally, collected items are responsibly managed by transferring them to Haritha Karma Sena for recycling, promoting environmental sustainability. The initiative not only addresses waste reduction but also fosters a positive campus culture by providing a tangible incentive for students to contribute to recycling efforts. The scope emphasizes user-friendly interfaces, potential educational components, stakeholder engagement, and future enhancements to continually improve the system's impact and effectiveness. Adherence to budget constraints and regulatory compliance is crucial for the successful development and maintenance of the system.

1.5 Definitions And Acronyms

- ReClaim: The name of the web-based system aimed at facilitating the collection and recycling of used pens, record books, notebooks, and plastic bottles from students at the college store.

- Main Record Books: Presumably refers to the primary record books used by students for academic purposes.

- Rough Record Books: Likely refers to supplementary or draft record books used by students for notes or rough work.

- Exchange Rates: Predefined rates used to calculate rewards in monetary credits for submitting different items. For example, 3 rupees for 5 pens, 5 rupees for 2 main record books, etc.

- Savings: The monetary credits earned by students through submitting items for recycling, stored in a centralized database along with student details.

- Object Detection: Utilizes object detection using deep learning to identify items for fair rewards, ensuring accuracy and verification through recognition algorithms.

- Haritha Karma Sena: The organization responsible for managing the recycling process of the collected.

- Environmental Sustainability: Refers to the initiative's goal of promoting ecological balance and reducing environmental impact through responsible waste management practices.

- Student Participation: Refers to the engagement of students in recycling efforts as part of the initiative.

- Reward System: The mechanism through which students receive incentives (monetary credits) for participating in the recycling program.

- Centralized Database: A single repository where student details and accumulated savings are stored for efficient management and retrieval.

- Transactions: Refers to the process of students utilizing their accumulated savings to make purchases within the college store, with the system automatically deducting the withdrawn amount from their savings.

2 Overall Description

The "ReClaim" project is a web-based system designed to streamline the collection and recycling of various items, including pens, record books, notebooks, and plastic bottles, from students at the college store and these items are captured and detected by a mobile camera. Upon submitting these items, students receive monetary credits based on predefined exchange rates. These credits are stored in a centralized database along with student details and can be used for purchases within the college store, with the system automatically deducting the withdrawn amount during transactions. Additionally, the collected items are responsibly managed through transfer to the Haritha Karma Sena for recycling. Overall, the project aims to promote environmental sustainability, encourage student participation in recycling efforts, and provide tangible incentives through the reward system.

2.1 User Needs

- Convenience: Students need a convenient way to recycle their used items such as pens, record books, notebooks, and plastic bottles.

- Incentives: Students are incentivized to participate in recycling efforts through the monetary credits they receive for submitting items.

- Financial Management: Students need a system to store and manage their earned monetary credits for future use within the college store.

- Environmental Awareness: The project aims to raise awareness about environmental sustainability among students by promoting recycling practices.

- Responsibility: Students expect the collected items to be responsibly managed and recycled, contributing to environmental conservation efforts.

- Transparency: Users, particularly students, may require transparency regarding how the system calculates rewards and manages their saved credits.

- Efficiency: The system should be efficient in handling transactions, deducting the appropriate amount of credits during purchases within the college store.

2.2 Assumption And Dependencies

- Student Participation: The success of the project relies on students actively participating in the recycling program by submitting their used items.

- Accuracy of Item Submissions: Image Processing, Identifies items for fair rewards, likely using recognition algorithms for accuracy and verification.

- Centralized Database Reliability: The centralized database storing student details and savings must be reliable and secure to prevent data loss or unauthorized access.

- System Integration: The project may depend on seamless integration with existing college store systems for transactions and inventory management.

- Recycling Partner Cooperation: The successful recycling of collected items depends on the cooperation and reliability of the Haritha Karma Sena or any other designated recycling partner.

- user Interface Usability: Assumption that the user interface of the web-based system is intuitive and user-friendly to encourage student engagement and participation.

- Sufficient Resources: The project assumes the availability of sufficient resources, including funding, personnel, and infrastructure, to support its implementation and operation.

- Regulatory Compliance: Compliance with relevant regulations and environmental standards for waste management and recycling is assumed to be met.

- Continuous Support and Maintenance: The project relies on ongoing support and maintenance to address any technical issues, updates, or improvements required for the system's functionality and effectiveness.

3 System Features And Requirements

3.1 Functional Requirements

- User Registration and Profile Management: Users (students) should be able to register themselves on the ReClaim system. Users should be able to update their profile information.

- Image Upload: Users should be able to upload images of items they want to submit.

- Object Detection: Implement object detection algorithms to detect items in the uploaded images. Techniques such as convolutional neural networks (CNNs) can be used for this purpose.

- Validation of Items: Once the items are detected in the images, validate them to ensure they meet the criteria for submission.

- Reward Calculation: The system should calculate rewards based on predefined exchange rates. Rewards should be calculated accurately and in real-time.

- Reward Redemption: Users should be able to redeem their accumulated savings for purchases within the college store.The system should automatically deduct the withdrawn amount from the user's savings during transactions.

- Item Recycling Management: The system should facilitate the transfer of collected items to the Haritha Karma Sena for recycling purposes. It should track the status of the transferred items.

3.3 External Interface Requirements:

- User Interface: The system should have a user-friendly web interface for easy interaction with users.

- Integration with College Store: The system should integrate with the college store's inventory and transaction system for reward redemption.

- Integration with Recycling Partner: The system should have a mechanism to communicate with the Haritha Karma Sena for the transfer of collected items.

System Features:

- User Authentication: Secure login mechanism for registered users.

- Image Processing: Identifies items for fair rewards, likely using recognition algorithms for accuracy and verification.

- Reward Calculation Engine: A module to calculate rewards based on the submitted items and exchange rates.

- Savings Management: A centralized database to store user details and accumulated savings.

- Transaction Management: Module to handle transactions during reward redemption.

3.2 Nonfunctional Requirements:

- Performance: The system should be able to handle a large number of simultaneous users without performance degradation.

- Security: Robust security measures should be implemented to protect user data and transactions.

- Scalability: The system should be scalable to accommodate future growth in user base and transaction volume.

- Reliability: The system should be highly reliable with minimal downtime.

- Usability: The user interface should be intuitive and easy to use, catering to users of varying technical proficiency.