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A Survey on Smart Self Issuing System

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Abstract*—Issuing is a tedious task involve sorting, lending, returning, tagging, eyeing of every item. In addition, users encounter problems for finding, borrowing, localizing, renewing the borrowing, queuing, and so forth. To overcome these obstacles, this paper proposes a smart self product issuing system based on an RFID technology. Using low-cost passive tags in libraries, stores to reduces the cost of modernization significantly. As such, integrating RFID into product management system makes both the users and admin's task easy, smart, convenient, and practice.*

I. Introduction

It is found in every store that the searching of items is tedious task. Self-issuing system provides a fast and easy way to issue or return items during store opening hours. .By using our software as a technology the item can be issued after the user or customer enters the store. And if the store is closed for any particular time so at that time the person can reissue that item from anywhere. But if any other user wants to issue the same item then our software will send an SMS on the registered contact number of that borrower. The typical functions of the store management like fine calculation , user status will be provided with the additional functionality like the theft detection and the runtime machine generated SMS, etc.

Many of our current stores for example libraries use "bar code" and "magnetic" mode to manage items, and the librarian use a laser scanner affixed with a bar code on the item to scan the statistics of the item and update and input the information[5-8].By making the use of Radio Frequency Identification (RFID) system which is a new generation of Auto Identification and Data collection made easy through Smart Self Issuing System is presented in this paper. It helps to automate business processes and allows identification and management of large number of tagged objects like items, using radio waves.

II. Existing Systems Disadvantages

1.Manual product issue and check in / check out system.
2.Long queue for purchasing and issuing.
3.Separate staff required to manage issuing of products.
4.Barcode can only be used to scan one item at a time.
5.Barcode is not good option for security verification.
6.The consumer finds it difficult to locate the specific item.
7.No option to self-check in / check out and individual profile management.
8.No notification system if user delayed product re-issue or return.
9.The main idea is to "design and deploy an intelligent self-product issuing system" to improve productivity and reduce labor cost.
10.Providing self-product issue, re-issue and return mechanism.
11.Provide stock management including inventory monitoring, identification of missing or lost items, and locating items on shelves.
12.Eliminate time-consuming processes when checking items out of the items
13.Implement item security measures against possible thefts often occurred using RFID technology.
14.Easy profile tracking and notification management for product return or re-issue status.

III. System Overall Design

The system mainly uses the RFID technology to locate the items [13-15]. The hardware of the whole system is modularized, and the whole system is composed of the upper computer, the reader module, the antenna module and the electronic tag. The reader module comprises a controller module, a radio frequency

front end and a baseband processing module. Antenna system to complete the transmission and reception of radio frequency signals between tags. Electronic label is the carrier of the information of items.

Fig.Overall design of self issuing system

Store management system consists of various modules like acquisitions- ordering, receiving of items from the suppliers; cataloging-classifying and indexing materials (tagging); circulation – lending materials to patrons and receiving them back.

3.1 Tagging:

Tag is the most important link in any RFID system. It has the ability to store information relating to the specific item to which they are attached, rewrite again without any requirement for contact or line of sight. Data within a tag may provide identification for an item, proof of ownership, original storage location, loan status and history. RFID tags have been specifically designed to be affixed into store media, including items, CDs, DVDs and tapes. The role of the librarian is to classify the items into groups and paste the RFID tags on them. These paper-like tags help in tracking the items within the range of the reader.

3.2 Check in/out service:

The counter station is a staff assisted station on services such as loan, return, tagging, sorting and etc. The patron approaches the counter to borrow or return the item. First the patron is supposed to identify themselves using the tags provided to them. The staff at the counter then uses a reader to read the tags to make an entry in the central database. In case of item return, the staff collects the item and reads the tag. If the item is returned beyond the due date, fine is collected from the patron.

3.3 Self check in/out service:

The system basically consists of a computer interfaced with a RFID reader, plus special software for personal identification, item and other media handling and circulation[16]. After identifying the patron with a store ID card, a RFID card- containing the patron details and their ID, the patron is asked to choose the next action (check-out or check in of one or more items). After choosing check-out , the patron puts the item(s) in front of the RFID reader and the display will show the item title, author name and its ID number (other optional information can be shown if desired) which have been checked out .It displays the date before which the item is to be returned. Where as in check in, the patron hows the item(s) in front of the RFID reader and the same will be displayed as in check out. Besides, if there
are delays in the return of item(s), the fine amount will be displayed.

3.4 Shelf Management:

Shelf management includes locating and identifying items on the shelves as an easy task for librarians. It comprises basically of a scanner and a base station. The system is designed to cover three main requirements: Search for individual items requested, Inventory check of the whole store stock, Search for items which are miss-helved.

3.5 Item Drop:

The Item Drops can be located anywhere, within or outside the store. Possible remote locations outside the store include MRT/train stations, shopping centers, schools, etc. This offers unprecedented flexibility and convenience of returning store items at any time of the day, even when the store is closed. Patron has to place the item on the trays available for item drop. The reader reads the tags and acknowledges the patron of the successful return. The reader updates the backend system and allows loan cancellation.

3.6 Anti-theft Detection:

RFID EAS Gates is the anti-theft part of the Store RFID Management System using the same RFID tags embedded in the store items. Each lane is able to track items of about 1 meter and would trigger the alarm system when an unborrowed item is passed .

IV. Proposed Methodology

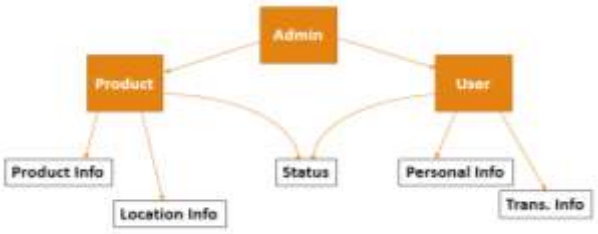

Fig.Proposed methodology

- **Issue**

Enter Product ID(i.e. RFID mentioned on the product).
In web app, assign Product ID with login if the user in not previously logged in.
Deactivate RFID (This will not give alert at RFID gate).
Product can go out.

- **Re-issue**

User select product to return from profile list.
If no request made by other user for product then product get re-issued. If any other user has made a request to access the same item then the user who has currently borrowed the item gets an SMS indicating that the other person needs that item.

- **Return**

User took the item in-side store RFID gate will note this entry.
If RFID assured product in-side store user can return the product by dropping at a particular place. The alarm will sound and lights on the gate will flash as patron passes through with the un-borrowed store material

- **Management**

This includes the management of the items and the customers as well as it includes the typical management tasks like fine calculation along with conveying that information to the user.

V. Conclusion

This paper proposed the integration of the passive RFID technology into a product management and issuing system.

The system mainly aims to reduce the workload on the staff of the store and it is a step of moving towards the automation. As due to this project the borrowing and issuing of items will be convenient for the borrower as well as the store.

This integration makes both the users and staff's task easy, smart, convenient, automated and practical. The system mainly aims to reduce the workload on the staff of the store and it is a step of moving towards the automation. As due to this project the borrowing and issuing of items will be convenient for the borrower as well as the store.

The proposed system enables the staff to handle sorting, lending, returning, tagging, eyeing of items in such an easy and convenient manner.

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