Inventory Management System Project for Final Year Project
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At the end of their day, cooks and managers in the cafeteria industry spend a couple of hours counting inventory and placing orders for the following week. The Cafeteria Inventory Management System is designed to not only assist in this problem. But also automate many of the tedious tasks associated with it.

The system keeps track of current inventory levels for recipes at the ingredient level, predicts how much inventory is needed for the upcoming week, and generates order forms that can be automatically sent to vendors. After meeting with a cook for The Classic Cafeteria, an on-site commercial cafeteria management company, we were easily able to identify issues in the maintenance of resource prerequisite lists.

To keep track of their inventory levels, staff had to calculate a list of groceries utilized during a course of time, calculate, and analyze the requirements for the upcoming weeks, and place their next order to multiple vendors if needed. This process takes up a lot of time and human effort and is also inclined to human error.

It became our main goal to develop a system that can be used by both large corporations as well as small businesses. This meant the system had to deliver a well-organized and simple user interface that at the same time is capable of more exact changes and inputs. The system had to also be precise and reliable in terms of the database design.

Since all the data and data objects are stored in a database, it was authoritative that these requirements were met. Inventories contain most part of the current assets of any big company. Managing these inventories is always hectic work for the manager. For good production and customer satisfaction, we need a good Inventory Management system.

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Objectives and Success Criteria ofÂ Inventory Management System

The objective of the project is to deliver an efficient inventory management system whose main functionality apart from calculating the inventory include predicting the requirement for the next demand and if there is a â€œSpecial Occasionâ€ then accordingly the manager selects the particular occasion and extra requirements are added to the next issuing order to the vendors which needs to be approved by the manager.

The product also aims to keep track of the shelf life of resources. If any resource nears the end of its shelf life, it would acknowledge to the manager (admin) the details of the quantity that is near its expiration date.

The success criteria depend on:

- The accuracy in keeping the inventory levels.
- The accuracy in predicting the requirements of the next demand.
- The accuracy in relating recipes to their respective constituents.
- Ease of use when it comes to updating inventory levels and placing orders to vendors.

Purpose ofÂ Inventory Management System Project

The Inventory Management System is a real-time inventory database capable of connecting multiple stores.Â Â This can be used to track the inventory of a single store or to manage the delivery of stock between several branches of a larger franchise. However, the system merely records sales and restocking data and provides warning of low stock at any location through email at a specified interval.

The goal is to reduce the stress of tracking rather than to holder all store maintenance. Further features may consist of the ability to create reports of sales, but again the explanation is left to the management.Â In addition, since theft does occasionally occur, the system provides solutions for confirming the store inventory and for correcting stock quantities.

Production units use an inventory management system to reduce their transport costs. The system is used to track products and parts as they are transported from a seller to a storeroom, between storerooms, and finally to a retail location or directly to a customer.

The inventory management system is used for various purposes, including:

- Maintaining and recording the information between too much and too little inventory in the company.
- Keep track of inventories as it is transported between different locations.
- Recording product information in a warehouse or other location.
- Having a record of Picking, packing, and selling products from a warehouse.
- Reduction of product obsolescence and decay.
- Avoiding out-of-stock situations.

Existing System

There is a number of Inventory Management System available in the market. After doing my research, I have come to know that most of them are limited to few products. Some others are lacking in good UI. Marketing points are not much focused on increasing sales.

Customer management system and Inventory Management system canâ€™t be linked due to different organization which leads to compromising the client satisfaction level. Most of them are not using the cloud computing concept but we are trying to develop such a system that is for everyone rather than for only big companies or for a small organization.

Most of them are expensive to use and their maintenance is generally not cheap. Our system is Pay-as-per-Use.
E-R Diagram ofÂ Inventory Management System Project
Inventory Management System

Once the planning and analysis of the project are Done, the design phase begins. The goal of system design is to transform the information collected about the project into the blueprint structure which will serve as a base while constructing the system. It is an unwieldy process as most errors are introduced in this phase.

However, if the error gets unnoticed in a later process it may become difficult to track them down.

The following entity relationship diagram shows the graphical view of required components of the system:
Properties:
Admin:

Primarily, the user who will interact with the system will be the administrator of the institution assigned to take care of all data transactions and insertion or update. It will have to go through an authorization process of login and logout. It will have the ability to create storage records, add inventory details, item details, Orders, Shipment details and take care of the development and maintenance of the application.

Name: Name of Admin.
Admin ID: It will be a unique value that will act as the primary key and will be the same as the employee id in the company.
Email ID: For contacting purposes every user must enter their email id.
Address: Employee address is also an attribute that helps to get more about the employee.

Manager:

Second, the user who will interact with the system will be the Manager of the institution assigned to take care of management services. It will have to go through an authorization process of login and logout. It will have the ability to create storage records, add inventory details, item details, Orders, Shipment details and take care of notification, and can see reports and other business-related data.

Name: Name of Manager.
Emp ID: It will be a unique value that will act as the primary key.
Email ID: For contacting purposes every user must enter their email id.

Address: Employee address is also an attribute that helps to get more about the employee.

Storage:

Storage is used to store raw material and product that has been produced but not being order.

S-No: Serial number is assigned to every product or raw material to keep their records. It is the Primary key.
Bar-Code: To make the record update process faster. We have added a bar code system that would help to update the status of the product just after a scan using a bar code reader.
Name: Name of product or raw materials.

Inventory:

Inventory is basically having records of items and their quality.

It has following attributes:

Inventory ID: Inventory Id is the primary key to identify each record.
Item ID:Â We have already an Items table in our Database. Here Item ID is a foreign key to that table.
Quantity: Quantity describes the number of units available or the amount of product or material available.

Items:

Item is actual product we produce in our company.

It has following Attributes:

Item No: Item number is numeric data assign to every product. This is unique for every product. That means this Primary key.
Bar Code:Â Item No is converted into bar code and updated in the barcode field. This would increase the process of tracking and getting actual information.
Item-description:Â This attribute basically keeps the record of every information about the product.

Orders:

Whenever an order is received from the customer. It fetches the item from the item table and tags Order No. to it.

It has the following attributes:

Order No: This is the primary key to the Order table. It uniquely identifies every record of this table.
Barcode: Every order No is converting to bar code and tag to product and barcode is generated and pasted over product. This will help to track the product.

Date Required:Â This is attribute store the information of deadline of the product.

Date Completed:Â When a product is delivered to the client. The date should be updated and payment clearance should note.

Shipments:

When product is successfully ordered. Its time ship the product.

It contains following attributes:

Shipment No: This is the primary key for the Shipment table. It uniquely defines every shipment.

Address: Address is a mandatory field without this field data would not be saved in the database.

Shipment Date: When data is successfully shipped date of that day would update to our database.

UIÂ Design ofÂ Inventory Management System Project

UI plays a major role in the success of any software. Simple, user-friendly, and standard UI makes visitorsâ€™ experience great and which means the software is going to be successful. Sometimes very smooth and having very good database design software canâ€™t able to make their existence in the market because of its UI.

The Inventory Management System hassles out all the complications of the conventional method which is a combination of the interaction to humans. Each profile has its own UI which is customized by our experienced team to make them feel like they are special.

We have developed very simple, User-friendly UI with all standardization. Followings are the interfaces:

Login Page:Â Basically, for any software security is a major concern. So, we have developed a secure application. Without being authenticated no user is allowed to view any other interfaces. For the login page, we have a User ID, Password, Profile. After being authenticated user is authorized to perform certain work according to his/her profile.

Profile Page:Â Every user has his own profile. From here they can change their information like the correction in name, email id, address, etc.

Storage Page:Â On this page, users can add items to be stored using this page and barcode reader. After scanning barcode information stored in the barcode are fetch from the database and desired data are stored in a storage table.

Inventory Page:Â The inventory page provides flexibility to change quality if any inventory gets damaged. Managing inventory is our main goal so this page is only visible to admin or manager profiles.

Items Page:Â The user can add new items using this page. While adding the items to the database user provides an item description. This description helps to understand the quality of the product, uses, manufacture date, expiry date, etc.

Order Page:Â Using the order page one can place an order and the database would add the item to the order list and the quantity has been decreasing from the Inventory table. Admin/Manager has the special privilege to edit order details if the customer requested to edit them. Order is attached to the shipment table which helps the user to get the address of the customer and make an order to dispatch.

Shipment page:Â Using this page user can update the address if it changes and track the shipped items. Tracking is required to increase the client experience more satisfactory. This page also helps the user to cancel any product if customers demand such things.

Workflow & Automation Logic:

Now a day, Automation is demand in any business. As per requirement of era, we come up with some solution.

Reordering of Inventory:

Inventory reaches a specific threshold; our Inventory Management System can be programmed to tell managers to reorder that product. This helps companies avoid running out of products or tying up too much capital in inventory. This is a very good feature and adds extra advantages to our system. Due to less involvement of human chances of error has been reduced exponentially.

Asset Tracking:

Inventory is a current asset for any company so tracking the asset is mandatory. When an item is in a warehouse, it can be tracked via its barcode or some other ways like serial number, lot number, or revision number. This will help the user and company to track his net worth very clearly. This makes the calculation of net profit and loss more quickly than previous.

Email notification:

Whenever customer books any order in our company an email alert has been sent to him/her as confirmation and tracking id and email notification of their order status send to them periodically.

Service Management:

Companies that are basically service-oriented rather than product-oriented can use an inventory management system to track the cost of the materials they use to deliver facilities, such as cleaning supplies. This way, they can attribute prices to their services that reflect the total cost of executing them.

Barcode:

Due to the use of the barcode process of tracking the product becomes easier. Barcodes are often the means whereby data on products and orders are entered into the inventory management system. A barcode reader is used to read barcodes and look up info on the products they represent. Radio-frequency identification (RFID) tags and wireless methods of product identification are also growing in fame.

Advantages of Inventory Management System Project

There are many advantages of the inventory management system. Thus, summarized below which can avoid the company from suffering from big economical losses and other problems that may occur during the everyday operations of the firm that can be observed as the materials being out of stock or machine failures and many other operations happenings on a day-to-day basis.

There Are Several Advantages of Using Inventory Management in A Business Setting Are:

Cost savings:Â In many cases companies inventory is one of the major investments along with its employees and locations. an inventory management system helps companies to cut expenses by minimizing the number of needless products and materials in storage. It also helps companies keep lost sales to a minimum by having enough stock to meet demand.

Increased efficiency:Â The inventory management system allows for many automated inventory tasks for example the system can automatically collect data, calculate costs. This also reduces cost-saving and time-saving and thus subsequently leading to an increase in business proficiency.

Warehouse organization:Â An inventory management system helps distributors, wholesalers, manufacturers, and retailers adjust their warehouses. If certain products are often sold together or are more popular than others, those products can be grouped together or placed near the delivery area to speed up the process of picking.

Updated data:Â Provides up-to-date and real-time data on inventory levels is and benefit of the inventory management system. Company executives can usually access the software through their mobile devices, laptops for checking current inventory numbers this automatic updating of inventory allows the business to make informed decisions.

Data security:Â By supplementary with the restricted user rights, company managers can allow many employees to contribute to inventory management. They can grant employees enough data access for tasks such as receiving products, making orders, transfer products, and perform other tasks without compromising company security. This can speed up the inventory management process and save managers time.

Insight into Trends:Â This helps to track the products which are in stock and from which suppliers do they come from and the length of the time they are deposited is made possible with inventory management system by analyzing this data the company can improve their inventory levels and maximize the use of storeroom space. Additionally, firms are more prepared for the demands and supplies of the market, especially during special situations such as a peak season on a particular month.