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Inventory Management System Django Application

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Abstract- Inventory management system refers to a system that keeps track of inventory stockpiles. It may be utilized to create a fresh purchase order, which functions as a request for the goods or supplies. Inventory management systems allow purchase orders to be modified, maintained, authorized, and removed. This method is very time-saving and necessary for an organization or corporation to manage its inventory effectively. This project is a server-side application that can be accessed by several users and operates locally. It utilizes CRUD functions, ACID characteristics, Just-in-Time, and ABC analysis. It is also a type of administrative software program that is included in the enterprise-level resource planning systems category.

Keywords- ACID, CRUD, ABC analysis, Just-in-time.

1. INTRODUCTION

An inventory management system is a methodological and organized approach to inventory control for businesses. It assists companies in precisely identifying what they own, where it is, when additional is needed. By employing this technique, companies may steer clear of spending money on unnecessary items and running out of products that buyers desire. It's similar to having a shrewd assistant who makes sure everything is in order and the company operates profitably.

A vital software used by many different types of businesses, institutions, and organizations is the inventory management system. Purchase orders are tracked, and inventory is kept up to date. People can no longer keep up with the large amounts of inventory comming in and going out due to the exponential increase in demand for goods and services brought on by expanded access to resources.

2. LITERATURE REVIEW

Purchase orders or inventory records are the main topics of discussion in the majority of research publications on inventory management systems. Seldom do people really connect the two. The foundational document for this project was a cross-platform application that runs on any device like laptop, desktop, tab or phone. It was mainly concerned with inventory control and producing the numerous kinds of reports that are needed.
A similar methodology, utilizing the the PHP language and the MySQL DB for back-end operations, was employed in other articles. HTML, CSS, JavaScript, and JQuery were used for front-end work.

One study concentrated on lowering stock levels through the use of inventory management systems. This is accomplished by utilizing reports of inventory and analyzing them; instead of adding all the goods and building a surplus, just the finished or depleted ones are replenished. This project makes advantage of this very effective technique.

Stocks will be added to the existing inventory based on the periodic report that the system creates. For the purpose of maintaining high standards of correctness in the inventory records, systems for inventory management also pinpoint the causes of resource waste.

We have chosen to include some of the principal characteristics and commonalities found in various study publications on this subject into our own work. The modules that comprise these are the inventory module, the order of purchase , and login page.

3. EXISTING SYSTEM

The management of inventory was done by hand for a very long period. There are issues with this approach. The first and most significant is the possibility of human error. A small computation error or data entry error could result in excess inventory or a shortage of supply. The laboriously time-consuming manual data input process and the incredibly high possibility of human error are further disadvantages.

4. PROPOSED SYSTEM

Our proposed inventory management system aims to streamline inventory processes and ensure optimal stock levels. It will feature easy updated stock levels, detailed reporting for sales analysis, and a user-friendly interface requiring minimal training. Additionally, it will be scalable and customizable to meet our business needs, ultimately reducing manual errors and improving inventory management efficiency. The suggested idea has both a web and a mobile component. With the help of this project, the entire process is digitalized, which increases efficiency and saves time. The issues stated in existing system will be addressed by our proposed inventory management system software.

5. TECHNOLOGIES USED

5.1 Backend:

5.1.1 Python:

Python is an interpretive, object-oriented, and deemed high-level programming language. What is Python? One of the most accessible and practical programming languages, Python is extensively utilized in the software sector. Python is used by people in web development, software creation, and competitive programming. For those who are new to the field of software engineering, it is advised because of its simplest syntax. Because it has so many applications in domains of modern technology including machine learning, data science, and automation tasks, its demand is rising extremely quickly. It has consistently been listed as one among the best programming languages for many years.

5.1.2 Django:

Django is a web framework that runs on Python and lets you quickly construct web applications without any of installation or dependency issues that come with other frameworks. A recurring set of elements is always required when creating a website: a mechanism to manage user authentication (registering, logging in, and out), a website management panel, forms, an upload function, and so forth. You can utilize ready-made components with Django.

5.1.3 SQLite DB:

An in-process library called SQLite implements a transactional, serverless, zero-configuration, self-contained SQL database engine. It's a zero-configured database, thus just like other databases, it doesn't require system configuration. Unlike other databases, SQLite database is not a stand-alone process; instead, it can be linked statically or dynamically with your application depending on your needs. Direct access to storage files is provided by SQLite.

5.2 Frontend:

5.2.1 Bootstrap:

Bootstrap is a free, open source front-end development framework for the creation of websites and web apps. Designed to enable responsive development of mobile-first websites, Bootstrap provides a collection of syntax for template designs. As a framework, Bootstrap includes the basics for responsive web development, so developers only need to insert the code into a pre-defined grid system. The Bootstrap framework is built on Hypertext Markup Language (HTML), cascading style sheets (CSS) and JavaScript. Web developers using Bootstrap can build websites much faster without spending time worrying about basic commands and functions.

5.2.2 HTML:

For HyperText Markup Language, see HTML. It is the common markup language for web page creation. HTML is a markup language and hypertext combination. The connection between web pages is known as hypertext. Web page structure is defined by the text document enclosed in the tag, which is defined using a markup language. Text can be annotated (noted down for the computer) using this language so that it can be understood by a machine and used for appropriate manipulation. Most markup languages, like HTML, are legible by humans. Tags are used by the language to specify what needs to be altered in the content.

5.2.3 CSS:

CSS stands for Cascading Style Sheets. It was created to make the process of presenting web pages easier. It allows you to apply styles to HTML documents. It outlines the ideal appearance of a webpage. It specifies fonts, colors, spacing, and other things. To put it briefly, customize the appearance of your website. Developers and designers may specify how an element acts, including where it appears in the browser, with CSS. While CSS uses rule sets, HTML uses tags, selectors are used to apply CSS styles to HTML element. Although CSS is simple to learn and comprehend, it offers an HTML document's display significant control.

4. FEATURES

- **Inventory items:** We can add stock of products/items to the inventory, we can view and manage the list of inventory items.
- **Suppliers:** We can add supplier/s who supplies the stock to your business. We can also view and manage suppliers.
- **Sales:** We can sell products to the customer. We can generate invoice, also we can take print and save it in PDF.
- **Sales history:** We can view sales history, also we can view invoice at particular date.
- **Purchases:** We can purchase items/stock from a supplier. And we can view purchase bill.

➔ **Home page:** In the home page we can view the stock levels dashboard, new upcoming stock and new outgoing stock.

5. APPLICATIONS

Applications for inventory management systems can be found in a wide range of sectors, including manufacturing, shipping, retail, and healthcare.

➔ **Retail stores:** Stores use them to monitor their inventory, such as clothing or gadgets, in order to determine when to place new orders.

➔ **Factories:** Factories: They support manufacturers by managing the supplies and components needed to make products like automobiles and phones, preventing shortages and enabling continuous production.

➔ **Warehouses:** Warehouses: These systems are used by locations that keep commodities to easily locate and arrange items, ensuring that they have an adequate supply of each.

➔ **Online stores:** Online stores: Product websites use them to display their inventory to clients and ensure that purchases will be delivered on schedule.

➔ **Hospitals:** Hospitals use them to keep track of medical supplies, such as bandages or medications, to ensure that staff members are constantly armed with what they need to provide patient care.

➔ **Restaurants:** Restaurants: They are used by restaurants to keep an eye on food and ingredients, ensuring that there is always enough for meals and that nothing is wasted.

Overall, across a variety of industries, inventory management systems are essential for optimizing inventory levels, cutting expenses, raising customer happiness, and boosting operational efficiency.

6. FUTURE SCOPE

➔ Forecasting demand and optimizing inventory levels through the use of predictive analytics.
➔ Integrating storage in the cloud for centralized data administration and accessibility.
➔ Creation of an adaptable reporting feature to produce in-depth analyses and insights regarding inventory performance.
➔ Efficient inventory replenishment techniques are achieved by analyzing historical data using machine learning algorithms.

7. CONCLUSION

In conclusion, the development of an inventory management system for our college final year project has provided valuable insights into the complexities of inventory management processes. For creating this project we have used technologies: Python, Django, SQLite DB and Briefcase. By using these technologies, we learned to create real time applications to make a software responsive with better designs with less code entanglement, also we learned how android applications are built using python's briefcase.

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