

Assumption:

Online PC parts store that has warehouses at Tokyo, Shanghai, Singapore and Delhi. It purchases the PC parts from vendors across worldwide.

Request: *want to customize the product records*

Operation

1. Add the information of the recently purchased CPU into the system.
The company purchases a new CPU model (Intel Core i7-6950X) which is not listed in the system.
Currently, there is no way to add a new product into the system.
The product information has to be inserted by technical staff at the server side.
2. Remove a motherboard product from the Inventory List.
The company has no stock for H110M-HDV motherboard and decides not to purchase it anymore.
The product will remain on the Inventory List as there is no way to delete it.
If the product is deleted by technical staff at the server side, there will be no way to retrieve its information anymore.
3. Convert the purchase price from foreign currency.
The company has vendors from China and Korea and has warehouses in Singapore and Japan. Therefore, the company wants to convert the price from CNY and KRW dollars into SGD and JPY for tax and accounting purpose.
The exchange rates change every day, and different products are purchased by different currency.
The prices have to be calculated product by product based on different exchange rates.
4. Find the products that should be re-ordered.
The company neither want to re-order a product too late when it is out-of-stock nor want to re-order a product too early as it takes space and money to store them.
When to re-order a product is decided by many factors, e.g. maximum selling amount, average selling amount, safety stock. And the value of the factors is different for different products.
Finding the re-order point are done by the calculation product by product.
5. Find the economic order quantity (EOQ) during procurement.
The company wants to find the “right” price and amount to purchase. Suppliers often promise price-quantity break (the more you order, the lower the price is). However, lower prices are not always better. More stock means more spending on storage facilities and a higher risk of having product going out-of-date.
Both the EOQ is determined by the demand of the product. And the demand is forecasted by the information of previous months.
The economic order quantity needs to be calculated product by product.

Problem:

1. There is no function for adding or deleting a product information in the system.
2. There is no place to store the past product information. Once a product is deleted, its information is gone forever.
3. Showing the prices of products in another currency is troublesome.
4. It is hard to decide when to place a new order by just monitoring the stocks of the products.
5. It is troublesome to forecast the demand and then determine the EOQ of each product.

User A

Position: Inventory Officer (Alice)

Situation: Maintain the products information.

IT Literacy: Basic knowledge of computer operation.

Business Operation:

Purpose of using the software: Alice wants to input the information of the recently purchased CPU (Intel Core i7-6950X) into the system.

Situation of using the software: Intel Core i7-6950X is a new CPU model that is not recorded in the current system. In the current system, there is no function for adding a new product into the system. Alice has to ask the technical staff to insert the product information into the database at the server side.

Frequency: Very high

Expectation:

- (1) There is a function for inputting a new product information into the system.
- (2) There is a GUI for the function, so it is easy to operate.
- (3) The inputted information will be updated automatically and displayed on Inventory List page.

Proposal Solution:

- (1) Provide a GUI form for Alice to input the product information.
- (2) Save Alice's input information automatically and displayed on Inventory List page.

Business Operation:

Purpose of using the software: Alice wants to remove the information of H110M-HDV motherboard from the Inventory List.

Situation of using the software: The company has no stock for H110M-HDV motherboard and decides not to purchase it anymore. For current system, this motherboard will remain in the Inventory List. To remove it from Inventory List, Alice has to ask the technical staff to delete the product from the database at the server side. However, once the product is removed, there will be no way to retrieve its information anymore.

Frequency: Very high

Expectation:

- (1) There is a function for removing the inactive product from Inventory List.
- (2) The product is just removed from the Inventory List but not from database, so that its information can still be used for analysis.

Proposal Solution:

- (1) Allow users to deactivate a product so that the product will be removed from the Inventory List.
- (2) The removed product will be displayed on another page called Inactive List.
- (3) Users can re-activate the product listed on Inactive List, so the product is removed from Inactive List and displayed on Inventory List again. All its information will be preserved.

User B

Position: Tax Accountant (Bob)

Situation: Calculate and declare import duty to Customs.

IT Literacy: Basic knowledge of computer operation.

Business Operation:

Purpose of using the software: Find the purchase prices of products. Convert the prices into local currency for calculating the import duty.

Situation of using the software: The company wants to import the PC parts produced in China to the warehouse in Singapore. To calculate the import duty paid to Singapore Customs, Bob needs to convert the purchase prices into SGD.

Frequency: Very high

Expectation:

- (1) The system stores the purchase price of each product in the currency purchasing it.
- (2) The system can convert the price into a selected currency automatically.

Proposal Solution:

- (1) The system will store the purchase price of each product in the currency purchasing it.
- (2) Users can select which currency to use to display the prices.
- (3) The system will convert the price into the selected currency automatically based on current exchange rate.

User C

Position: Procurement Officer (Charles)

Situation: Place orders to keep sufficient stocks of products

IT Literacy: Basic knowledge of computer operation.

Business Operation:

Purpose of using the software: Find the products that need to re-order.

Situation of using the software: Charles wants to avoid the popular products to be out-of-stock. To do so, he has to monitor the stock of products every day so that he can find the products that are selling fast and are going to out-of-stock.

Frequency: Very high

Expectation:

- (1) The system can calculate the re-order stock for each product based on the user-defined formula.
- (2) When the stock of a product reaches the re-order stock, the system will alter the user to re-order this product.

Proposal Solution:

- (1) Allow users to define a formula for calculating the re-order stock for each product.
- (2) The system saves the user-defined formula and applies the formula to calculate the re-order stock for each product automatically.
- (3) The system highlights the products whose stock are equal or less than the re-order stock.

Business Operation:

Purpose of using the software: Find the economic order quantity (EOQ) during procurement

Situation of using the software: Suppliers often promise price-quantity break (the more you order, the lower the price is). Charles wants to find the EOQ so that he can minimize the carrying costs while matching customer demand as much as possible. However, the EOQ is determined by the demand for each product. To find the demand for each product, Charles has to find the selling history of the product and do calculation one by one.

Frequency: Very high

Expectation:

- (1) The system can analyze the demand of each product based on its selling history.
- (2) The system can calculate the EOQ of each product automatically.
- (3) The EOQ result is displayed together with the products.

Proposal Solution:

- (1) The system will retrieve the selling history of each product and analyze the demand of that product automatically.
- (2) The system will calculate the EOQ of each product based on its demand.
- (3) The system will display the EOQ result together with the product.

Ideal

Operation 1

- Users can add a new product record directly in the system.
- The system will gather the required information (i.e. warehouse, classification, code, maker, detail, price and initial stock) of the product by a form.
- The information will be saved into the database, and the product record will be added to Inventory List.

Operation 2

- The system will highlight the products that are inactive*.
- If a User doesn't want to see a product on Inventory List anymore, the user can deactivate the product so that the product will be removed from the Inventory List.
- The deactivated product will NOT be deleted from the database. Instead, it will be displayed on Inactive List. Users still can retrieve the information of the inactive products for business analysis.
- The products in the Inactive List can be reactivated and put back on Inventory List.

*An **inactive product** is a product whose stock has not changed for more than three months.*

Operation 3

- The will store the purchase price of each product in the currency purchasing it. That means, if a product is bought from a Chinese vendor with 1000CNY, the 1000CNY will be saved in the system.
- By default, the system will display the price in the currency of the country where the product is imported to. That means if the product is imported to Singapore, its price will be converted from CNY to SGD.
- Additionally, users can also specify which currency they want the price to be converted to.

Operation 4

- The system will ask users to define a formula for calculating the re-order stock.
- The system will save the user-defined formula and apply the formula to calculate the re-order stock for each product automatically.
- The system will highlight the products whose stock is equal or less than the re-order stock so users can easily find them and place an order.

Operation 5

- The system will retrieve the selling history of each product and analyze the demand of that product automatically.
- By applying the forecasting demand a product, the system will calculate the EOQ of that product.
- The system will display the EOQ result together with the product so users can decide the quantity of the re-order by referencing the EOQ.

What is the feature of COMPANY<Enventory>

The Enventory is an upgraded version for the previous Inventory Management System. Functions help users to maintain the product records will be added. There will be a function for users to add new product records into the system. In the new system, users are also able to deactivate/ reactivate products to keep the products organized. Furthermore, the new system will have functions to assists the procurement process by providing suggestions on the products should be re-ordered and the economic quantity of purchasing. Multiple currencies conversion will be supported.

List up merits of your software for users

1. Simplify the job of adding new product record into the system by providing a GUI function so that it saves time and human resources for doing the same job on the server side.
2. Improve the efficiency of maintaining and monitoring the product records by removing the distracted inactive information.
3. The preserved data of the inactive products can be used for marketing analysis. The knowledge mined from the data can help the company to forecast the market behavior and decide its business strategies.
4. Automatic detection of products that should be re-ordered reduces the judgment made by human and improves the efficiency of procurement.
5. Improve the efficiency and accuracy by automating the calculation of economic order quantity. It helps the company to minimize the carrying costs while maximizing the profit.
6. Convert the price from one currency to another currency saves users time of seeking for convert rate and calculating.

Features to achieve merits

Merit 1

- 1) Create a form for gathering product information
To add a product record to the system, the user only need to fill the required fields in the form. It is easier for a user to finish the operation by a GUI function.
- 2) Insert the information into database
Once the user clicked the 'submit' button to submit the form, the information gathered by the form will be saved and inserted to database automatically. It does not require any technical knowledge from the user to finish this operation.
- 3) Update the Inventory List to show the new created product
The new created product will be added into Inventory List automatically after the user submitted the form. The user is able to do all the operations (i.e. update stock of the product, calculate re-order stock, calculate EOQ, convert currency) towards this product.

Merit 2

4) Detect and highlight the products that are inactive

Finding the inactive products for user can be very helpful. There may be thousands of PC parts listed in the Inventory List. It is a distraction for users to show the products are out-of-date and will not be sold or purchased. Highlighting the inactive products saves users' time for find them and deactivate them.

5) Deactivate a selected product

The user can deactivate a product by a simple click, then the product will be removed from the Inventory List so that the user can focus on the active products.

Merit 3

6) Remove the deactivated product from Inventory List and display it on Inactive List

Though the product is inactive, its inventory information is still crucial for mining information and analysis market behavior. Therefore, the system won't delete the deactivated products and their inventory information. All these data will be stored on another view called Inactive List.

7) Reactivate a selected product

It is possible that a product becomes popular again or the company changes its decision and want to sell a product again. Therefore, the system also provide a function for users to reactivate an inactive product.

Merit 4

8) A view for user to define the formula for calculating re-order stock

This view allow users to define their customized formula for calculating the re-order stock for their products.

9) Calculate the re-order stock for each product automatically

It saves users' time to calculate the re-order stock product by product. Also, as the the results are calculated by the system based on the user-defined formula, potential error cause by human can be avoid.

10) Highlighted the products whose stock is equal or less then the re-order stock

Highlighting the products makes it easier for users to find the products that should be re-ordered.

Merit 5

11) Calculate the EOQ for each product

The EOQ of each product can assist users to decide the proper amount to purchase a product. It not only saves users' time for calculating but also help to maximize users' profit.

12) Display the EOQ result of each product

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Merit 6

13) A view for user to select which currency to display

14) Convert the price of each product to the selected currency