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Designing Inventory Information Systems at UD. Miasa Desktop-Based

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Abstract

Inventory information system is a system to determine stock inventory in the warehouse of a company. Inventory information system has been widely used or developed in a company with a wide range of technologies and systems. Problems at UD. Miasa is not the availability of an information system for controlling inventory of stock items available in the warehouse. a system of inventory information would be very helpful UD. Miasa in running the business. Therefore, in this study will be to design and build an information system that supplies desktop based on inventory information in clear and detailed. The system built can also perform archiving of data such as data items item master data, supplier master data, master customer data, incoming goods, goods out, inventory taking, as well as forecasting for the purchase of goods in the next month. The end result of this research is the creation of an information system invetory built using Visual Studio 2010 application and uses the MySQL database system.

Keywords—*Inventory Information Systems, Data Processing Goods, Forecasting.*

1. INTRODUCTION

The development of human civilization, Information Technology (IT) is growing very rapidly in various ways or community and business activities. Where all kinds of activities really need information technology assistance to facilitate work. Therefore, every company or institution or organization should be able to utilize information technology assistance. With the existence of a good information system, it will provide convenience in accessing everything related to the activities carried out by the parties concerned.

Trading business or abbreviated as UD is one of the activities engaged in the economy and trade transactions. UD. Miasa is one of the distributors engaged in businesses that serve food and beverage distribution. Where in serving food and beverage sales can be done directly come to the store to make ordering which will then be delivered directly to the ordering shop.

Until now the inventory or inventory system used by UD. Miasa still uses a manual or paper based system, that is by using a filing or storage system in the inventory book. The filing activity often results in errors in calculating the amount of stock available at the warehouse. Because of the frequent occurrence of errors causing the inaccuracy of rural goods to suppliers, there is often a scarcity of inventory items or excess inventory.

Given the complexity of these problems for a company, one of the efforts that can be done is to make a computerized inventory system. With the help of an inventory information

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system, it will make it easier for shop owners to check the amount of stock in the warehouse and do calculations to predict the amount of expenditure for the following month. So that the store can make the right decision to order goods to the supplier.

According to Assauri [1] Inventory includes all goods owned by the company at certain times, with the aim of being resold or assumed in the normal operating cycle of the company as goods that are owned for sale or assumed for the future, all tangible items can be referred to as inventory depending on the nature and type of business of the company.

With the existence of this inventory information system, it is expected that later it will help support the calculation and checking of outgoing goods, incoming goods and goods in the warehouse stock and predict the purchase of goods in the following months.

Based on the foregoing, a study was outlined in the form of a final assignment entitled "DESIGN OF INVENTORY INFORMATION SYSTEM IN UD. MIASA DESKTOP BASED".

2. METHODS

Analysis of a system is very necessary to find out what processes are running on the system. The purpose of knowing these processes is to understand the nets of the system as a whole and the obstacles that may exist during system development.

At this stage what needs to be done is an analysis of the system to be built and knowing how the flow of data or information that will run in the system, which will be explored through problem analysis and system requirements analysis.

Based on the problems that have been described in the background, namely the constraints of shop owners in calculating and archiving the stock of goods in the warehouse. Therefore an inventory information system was built which is expected to help in calculating and checking out goods, incoming goods and items in the warehouse stock.

In this system requires three types of data, namely, data items along with their attributes, customer data and attributes, and supplier data and attributes. Item data is the overall information of the goods both the name of the goods, the price of goods and the units of the goods. Customer data is the whole of customers such as customer names, customer addresses, and customer contacts. Supplier data is all data related to suppliers such as supplier names, supplier contacts, and items that can be distributed.

2.1 Information Systems

Definition of Information Systems according to Ladjamudin [2] is a system in an organization that brings together transaction processing needs, supports managerial operations, and strategic activities of an organization and provides certain outside parties with the necessary reports.

While the definition of Information Systems according to bin Ladjamudin [2], states that: Information systems are a set of organizational procedures that when implemented will provide information for decision makers and or to control the organization.

Based on the two definitions above, the writer concludes that information systems are systems of an organization that will provide information to control the organization and strategic activities of an organization.

2.2 Database

According to Fathansyah [3], the Database consists of 2 words, namely Base and Data. Base can more or less be interpreted as a base or warehouse, nesting / gathering place. While Data is a representation of real-world facts that represent an object such as humans (employees,

students, buyers, customers). As a whole term, the Database (Database) itself can be defined in a number of perspectives such as:

a. The set of groups of data (archives) that are interconnected organized in such a way that later can be reused quickly and easily.
b. Collection of interconnected data stored together in such a way and without unnecessary repetition (redundancy), to meet various needs.
c. Collection of files / tables / archives that are interconnected stored in electronic storage media.

The database and file cabinet actually have the same working principles and goals. The main principle is the arrangement of data / archives. And the main goal is ease and speed in retrieving data / archives.

2.3 Concepttual Data Model (CDM)

According to Hanif [4], CDM is a model made based on the assumption that the real world consists of a collection of basic objects called entities and relationships between those entities. Usually the CDM is represented in the form of an Entity Relationship Diagram. As for the benefits of using CDM in database design:

1. Provide a complete picture of the database structure, namely meaning, relationships, and boundaries
2. Communication tool between database users, designers, and analysts.

2.4 Physical Data Model

PDM Is a model that uses a number of tables to describe data and relationships between these data. Each table has a number of columns where each column has a unique name.

2.5 Black Box Testing

According to Nugroho [5], stated that in this test we do not need to know what actually happened in the system or software.

Thus black box testing can be concluded as a type of software testing like a "black box" which does not matter its contents, but is quite well known for testing on the outside.

Benefits of Black Box Testing

Some of the benefits of black box testing include:

1. The tester team members do not have to be someone who has technical skills in the field of programming.
2. Errors from software or bugs are often found by tester components that come from users.
3. The results of black box testing can clarify the contradictions or poisonings that might arise from the execution of a software.

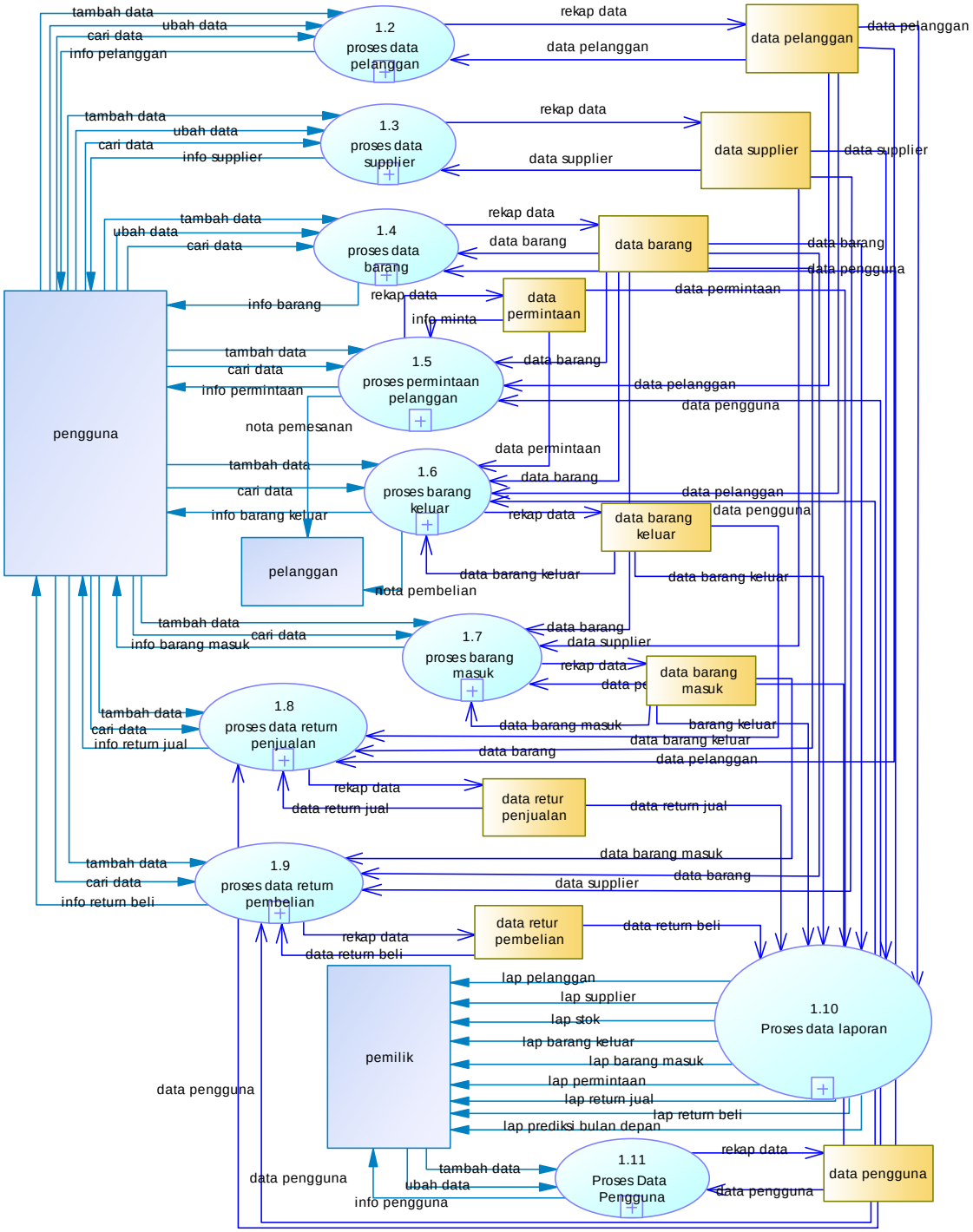
The testing process can be done faster than white box testing.

2.6 Statement Of Purpose

Statement of Purfose from inventory information system at UD. Miasa is a system that includes the processing of all kinds of information relating to the inventory of items that exist at UD. Miasa itself. In addition to information inventory processing this system also includes transactions that occur daily at UD. Miasa. Making this application is based on the results of research that the author has done at UD. Miasa, which menyimpukan very necessary to make an information system that can help shop owners in carrying out all activities related to the inventory.

2.7 Data Flow Diagram Inventory Level 0

At level 0 DFD describes the process of overall data flow on the system. In figure 2.1 is a level 0 DFD from the inventory information system at UD. Miasa. Each process of data flow that exists in this system will be described in detail. So that in general all data streams and processes on this system can be easy
mudahdipahami.

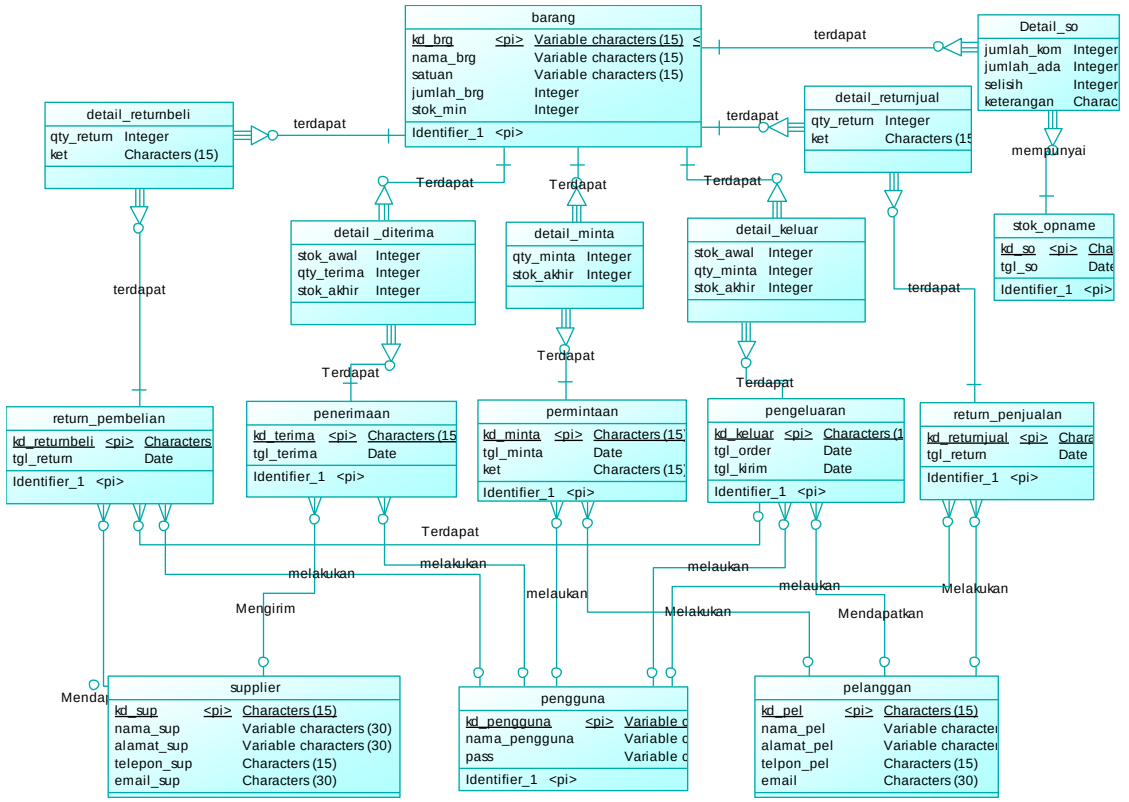


Gambar 2.1 Data Flow Diagram Inventory Level 0

2.8 Entity Relation Diagram (ERD) and Physical Data Model (PDM)

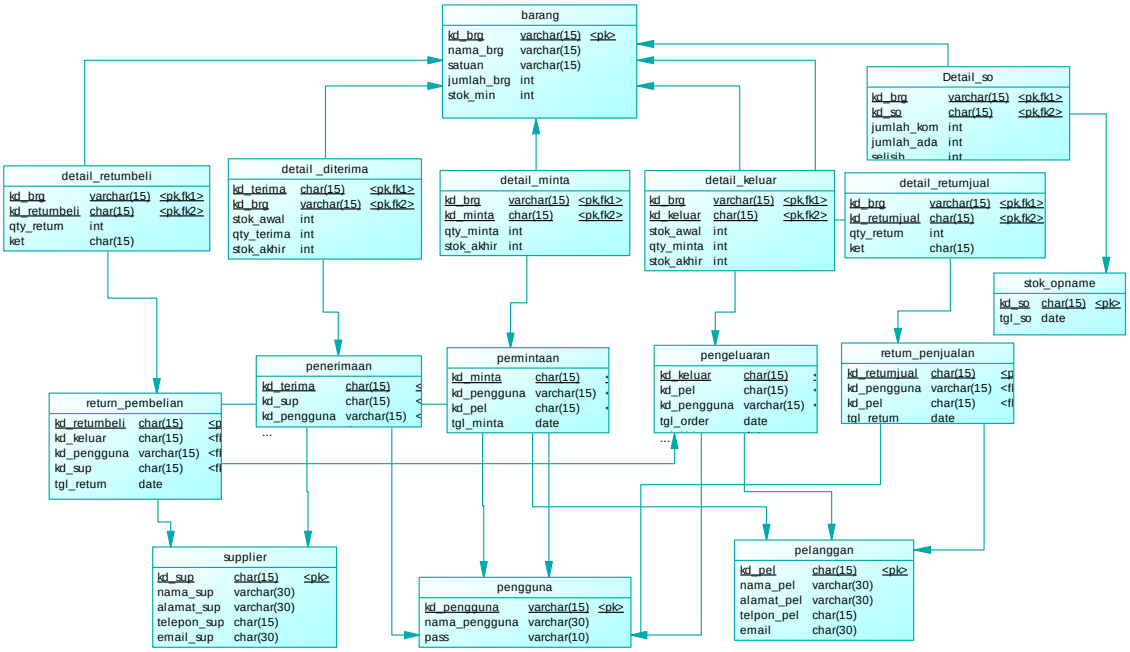
Entity Relationship Diagram (ERD) which describes the relationship / relationship between entities on the system that will be created. In Figure 2.2 below is a draft conceptual data model for inventory information systems at UD. Miasa, where this design identifies and

analyzes data requirements that will interact in the database. The relationship between the entity interactions will be seen more clearly in this design.



Gambar 2.2 CDM Sistem Informasi Inventory pada UD Miasa.

In figure 2.3 below, it is the result of Physical Data Model which is derived from Conceptual Data Model in Figure 2.2. Physical Data Model is more specific and detailed. This design is a physical or actual representation of the database for inventory information systems at UD. Miasa.



Gambar 2.3 PDM Sistem Informasi Inventory pada UD Miasa.

2.9 Calculation of the Single Moving Average Method

The forecasting method used is a single moving average, which is one way to change the influence of past data on the middle value as a forecast is to determine from the beginning how many past observation values will be entered to calculate the middle value. Every new observation value appears, the new average value can be calculated by removing the oldest observation value and entering the most recent observation value

In algebra, the moving average can be written as follows.

Information:
Ft + 1 : forecast value for the next period.
Yt : data in the period to T
N : moving average period

The example of using a single moving average method for sales forecasting is as follows.
For example, forecasting glass tea is made with the following 5-month leveling period.
January sales = 100 dus
February sales = 200 dus
March sales = 250 dus
April sales = 300 dus
May sales = 200 dus

$$\text{June forecast} = \frac{100 + 200 + 250 + 300 + 200}{5}$$

$$= \frac{1050}{5}$$

= 210 dus

Suppose the reality of April sales is 200 kg then

$$\text{July forecast} = \frac{200 + 250 + 300 + 200 + 200}{5}$$

$$= \frac{1150}{5}$$

= 230 dus
Etc.

3. RESULTS AND DISCUSSION

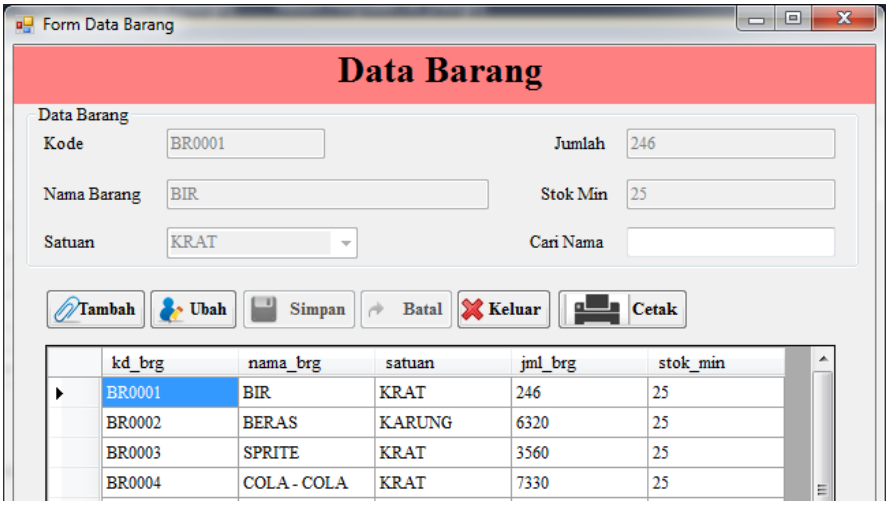
System implementation is building or realizing a system in this case in the form of an inventory information system so that it can function according to the results of system analysis and design. The system that has been built will be tested and re-analyzed against the advantages and disadvantages.

3.1 Interface Implementation

Implementation of the interface is useful as a display of system users. Implementation of the interface is done on each interface design that is made into the application form. The implementation of this interface is the result of transformation from the previous design results into the application program.

3.1.1 Master Data Item Page

Item data master page shows the overall information from item data such as, code_barang, nama_barang, unit_barang, number_barang, and stok_minimal. The item data master page is shown in Figure 3.1.



Gambar 3.1 Halaman master data barang

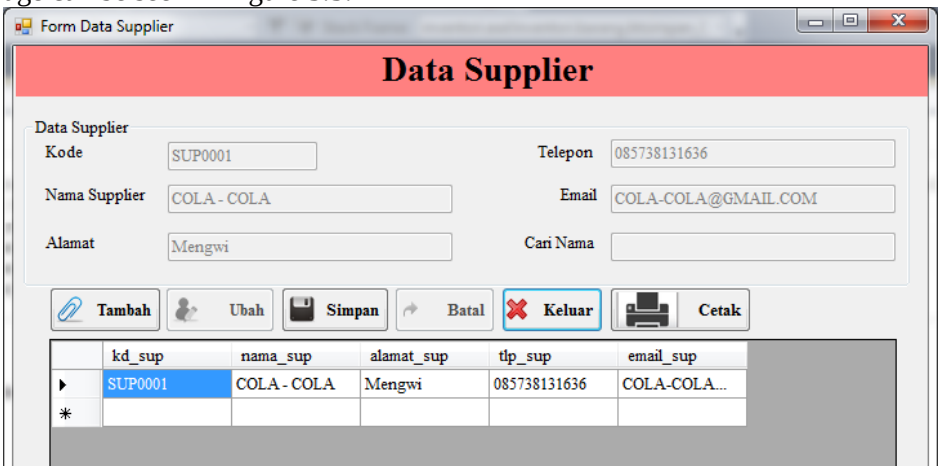
3.1.2 Customer Data Report

Untuk To display customer data reports by pressing the print button, printview customer data will appear. As shown in figure 3.2.

Gambar 3.2 Laporan Data Pelanggan

3.1.3 Supplier Data Master page

The customer data master page displays all data from customer data, such as supplier code, supplier name, supplier address, supplier telephone, and supplier email. The supplier data master page can be seen in Figure 3.3.



Gambar 3.3 Halaman master data suplier

3.2 Black Box Testing

The system testing phase is carried out to reexamine all the stages that have been carried out during the implementation and draw conclusions on the results of the trials that have been carried out on the system. The system is called feasible if the output given by the system matches the expected output. All functions add data, change data, search data and method calculations can run as it should.

3.2.1 Master Supplier Testing

After it is done on the incoming goods page and the test results can be seen in table 3.1.

Table 3.1 Master Supplier Testing

No	**Tujuan**	**Skenario Input**	**Expected results**	**Test result**
1	Ensure that supplier data is successfully added	Supplier data has been completed and stored	A notification appears when the data is saved	corresponding
2	Ensure that supplier data is successfully changed	Supplier data has been updated	A notification appears when the data is saved	corresponding
3	Ensure data search is successful	Search data has been entered	Search data is displayed in the table	corresponding

3.2.2 Analysis of the Single Moving Average Method

Analysis of the single moving average method is used to forecast the purchase of goods in the following month. The first step is to determine the number of periods to be used. In this study using a time period of 5 months.

Table 3.2 Calculation of methods

Month	March		April		May		June		July		Jml
TR	Tr1	Tr2	Tr1	Tr2	Tr1	Tr2	Tr1	Tr2	Tr 1	Tr2	10
Jml	80	90	100	50	70	80	90	100	100	80	840
Jml B	170		150		150		190		180		840

So:

- Total transactions for 5 months = 10 transactions
- Total sales of BR0001 for 5 months = 840

So forecasting for August in accordance with the single moving average analysis is

$$\text{Forecasting} = \frac{\text{March} + \text{April} + \text{May} + \text{June} + \text{July}}{5}$$

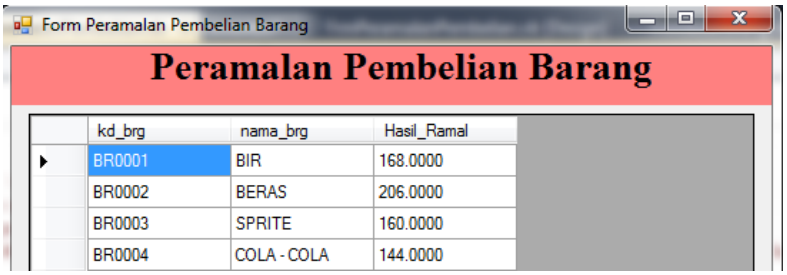
$$= \frac{170 + 150 + 150 + 190 + 180}{5}$$

$$= \frac{840}{5}$$

$$= 168 \text{ goods}$$

kd_brg	tgl_kirim	Periode_5
BR0001	2015-03-30	80
BR0001	2015-03-30	90
BR0001	2015-04-29	100
BR0001	2015-04-30	50
BR0001	2015-05-30	70
BR0001	2015-05-30	80
BR0001	2015-06-30	90
BR0001	2015-06-30	100
BR0001	2015-07-30	100
BR0001	2015-07-30	80

Gambar 3.4 Select barang 5 bulan



Gambar 3.5 hasil peramalan

4. CONCLUSION

Inventory information system design starts from the process of data collection, data analysis process, and system design then implemented into an information system and tested every process based on the results of system analysis.

Inventory information system that is built is able to manage master data such as master users, master items, master suppliers, master customers, order transactions, goods receipt transactions, goods expenditure transactions, purchase returns, sales returns, goods purchase forecasting, stock purchase and report preparation.

The information system built is able to give a warning if there is a stock of goods whose amount is less than the minimum stock of goods.

Inventory information system built has been able to do computerized data archiving so as to minimize errors in calculating the amount of stock available in the warehouse.

5. SUGGESTION

The suggestions from research and implementation of inventory information systems are as follows.

1. This system only covers item data processing, researchers hope that further research can be further developed to include sales and purchase transactions.
2. Need for development in forecasting calculations such as knowing the number of errors from calculations and actual results.

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