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| **Practicum Case** |  |
| ISYS6170 | ISYS6200  Data Warehouse |
| **Information Systems** | **O221-ISYS6200-CL01-01** |
| ***Valid on*** *Odd Semester Year 2021/2022* | **Revision 00** |

## Learning Outcomes

* Explain the basic concepts, components and architecture of data warehouse
* Explain the requirements and how to design data warehouse

## Topic

* The Data Warehouse Environment

## Subtopics

* Designing a fact and dimension table
* Determine the measure of data from the OLTP and other information in accordance with the needs of the desired information
* Identify the master table and transaction table of the OLTP (Online Transaction Processing)

## Soal

*Case*

**VanMart**

**VanMart** is a supermarket that is in Jakarta, Indonesia. **VanMart** sells daily items such as groceries, drinks, magazines, and newspapers.

To improve the customer’s experience and efficiency of transactions, **VanMart** needs a database system that can analyze the operational data for decision making. Therefore, you as **VanMart**’**s** database administrator are asked to build a data warehouse. This data warehouse is expected to handle internal information related to transactions occurred.

After doing an interview with the CEO of **VanMart**, you gain lots of information. Here is the requirement obtained from the interview:

* Report for **sales transaction**, i.e. **total earning** and **total goods sold**. The total earning is acquired from **total** of **multiplication** between the **quantity of goods sold** and the **selling price**.
* Report for **purchase transaction**, i.e. **total purchase cost** and **total goods purchased**. The total purchase cost is acquired from **total** of **multiplication** between the **quantity of goods purchased**  and the **buying price**.
* Report for **return transaction**, i.e. **total goods returned** and the **number of** **staff**.
* Report for **subscription transaction**, i.e. **total subscription earning** and the **number of subscriber**.
* **VanMart**’**s** CEO wants to see the report **monthly**, **quarterly**, and **annually.** Furthermore, the CEO wants an **ad-hoc report**,which can be generated anytime as well.
* The report must be able to be viewed in terms of **goods**, c**ustomer**, **staff**, **branch**, **benefit** and **supplier.**
* For **customer dimension** requested as follows
  + CEO needs data to analyze which items that are frequently purchased by the customer based on the gender and age to decide what kind of promo that will be issued.
  + CEO needs data to analyze the location which has the most number of customers to decide the location of the new branch.
  + CEO needs data to analyze the provider of telecommunication that has the most number of customers for the purpose of establishing cooperation with the provider company.
* For **goods dimension** requested as follows
  + CEO needs data for make decisions about selling profit.
  + CEO needs data to analyze who is supplier with the best price based on goods that frequently sold for collaboration need.
* For **staff dimension** requested as follows
  + CEO needs data to analyze which employee should be retired to decide how many employees that needed to be hired in the future.
  + CEO needs data to analyze the employee performance and their salary to decide whether the employee is eligible for raise.
  + CEO needs data for making decisions about employee hiring in certain position by seeing gender as one of the factors in hiring.
* For **supplier dimension** requested as follows
  + CEO needs data to analyze the location which has the most number of suppliers to decide the location of the new branch.
* For **branch dimension** requested as follows
  + CEO needs data to analyze the location of branch which has the most number of customers to decide the location of the new branch.
* For **benefit dimension** requested as follows
  + CEO needs data to analyze the benefit that most preferred by customer and its current price to decide the price of benefit in the future.

**Notes:**

* The **sales transaction** report must be able to be viewed in terms of **goods**, **staff**, **customer** and **branch**.
* The **return transaction** report must be able to be viewed in terms of **goods**, **staff**, **branch** and **supplier**.
* The **purchase transaction** report must be able to be viewed in terms of **goods**, **staff**, **branch** and **supplier**.
* The **subscription transaction** report must be able to be viewed in terms of **customer**, **staff** and **benefit**.
* **Customer** and **staff** **gender** have **Male** or **Female** as its value with a varchar data type of transaction data, and will be replaced with a **M** for **Male**, otherwise is **F** on analytical data**.**
* **Supplier address**, **branch address**, **customer phone** and **customer address**, can be updated and old data don’t have to be stored.
* **Benefit price, goods buying price, goods selling price** and **staff salary** can be updated, but old data must be kept.
* The following are some of the data provided:

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| **Benefit Name** | **Benefit Price** | **Benefit Description** |
| Free Delivery | 200000 | Free delivery of goods for subscriber. |
| Movie Streaming | 100000 | Streaming access for movies purchased in VanMart. |
| Prime Delivery | 300000 | One-day delivery guarantee for US subscriber. |
| Movie Midnight | 120000 | Watch your favorite movie for free at partner cinemas on Friday and Saturday every week. |
| Elevated Priority | 100000 | Get access to high-priority waiting line when making purchase at any VanMart store |

**VanMart OLTP Database Design**

