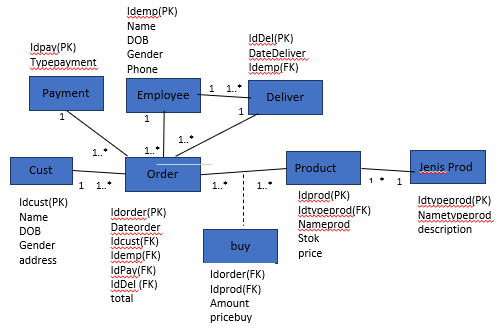
**Class Assignment**: collect your answering to spits.hendric@binus.ac.id

1. **Based in this OLTP model database, please design (a. star schema, b. snowflake, c. fact constellation schema)**



**Answer:**

1. **Star Schema**

Diagram

Description automatically generated

1. **Snowflake Schema**

Diagram

Description automatically generated

1. **Fact Constellation Schema**

Diagram

Description automatically generated

1. **What the differences between Data Warehouse and Data Mart?**

**Answer:**

|  |  |
| --- | --- |
| **Data Mart** | **Data Warehouse** |
| Deal with a single subject area like finance, marketing, or operation etc. | Deal with more than once subject like a range of subject areas together. |
| Info is often in summarized nature. | Info is made detailed as possible. |
| Easily built by a lone software engineer. | Requires a group of software engineers. |
| Confined only to the department wise data. | Comprised of the whole enterprise data. |
| Concentrated on a dimensional model. | necessarily made of dimensional models. |
| Star schema and snowflake schema are used. | Fact constellation schema is used. |
| Highly denormalization takes place | Lightly denormalization takes place. |

**References:**

Kimball, R., & Ross, M (2011). The data warehouse toolkit: the complete guide to dimensional modelling. : John Wiley & Sons.

1. **What do you understanding regarding with term of non-volatile in data warehouse characteristic?**

**Answer:**

Non-volatile means that once entered the data warehouse, data should not change because the purpose of a data warehouse is to enable to analyse what has occurred where it is kept separate from the operational database and therefore frequent changes in operational database is not reflected in the data warehouse.

**References:**

Vaisman, A., & Zimányi, E. (2014). Data Warehouse Systems: Design and Implementation. : Springer.

1. **What the difference between normalized and unnormalized database?**

**Answer:**

|  |  |
| --- | --- |
| **Normalized Database** | **Unnormalized Databased** |
| Optimize the uses of disk spaces. | Do not optimize the disk spaces. |
| Number of tables is increased. | Number of tables in decreased. |
| Redundancy is reduced or eliminated. | Redundancy is added/permitted. |
| Data integrity is maintained. | Data integrity is not maintained. |
| Data are stored in set schema. | Data are combined to execute the query quickly. |

**References:**

Kimball, R., & Ross, M (2011). The data warehouse toolkit: the complete guide to dimensional modelling. : John Wiley & Sons.

1. **Can we apply Data Warehouse on unstructured data?**

**Answer:**

Yes, in data warehousing the data be it unstructured or structured can be used for reporting and data analysis as well which is important as it is the core of business intelligence because the integration of data to several information and data coming from different sources being another important factor makes it important to be used.

One of the example of data warehouse which contains unstructured data such as Supermarket details, Clothing store etc. Users can be multiple and random for any such above mentioned information’s. The information from other sources could be the information from a retailer, or online requirement of goods with respect to the seller / vendor because these are the centralized data storage system which helps the business to integrate the data from multiple applications and sources to one specific location.

**References:**

Vaisman, A., & Zimányi, E. (2014). Data Warehouse Systems: Design and Implementation. : Springer.

1. **How many DATA WAREHOUSE DEVELOPMENT METHODOLOGIES do you know and what are they? And explain each of them!**

**Answer:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Data Driven** | **User Driven** | **Goal Driven** |
| **Basic Approach** | Bottom-up | Bottom-up | Top-down |
| **Supported Management Method** | Taylorism Classical School of Management | No Company is culture reflected | Management by Objectives |
| **Project Support** | None | Department | Top Management |
| **Application Area / Requirement Domain** | Data Exploration and Data Mining | Raise the Acceptance of a System | Foundation for Decision Support |
| **Targeting Organisational Level** | Operational Partly Tactical | Depends on the Group of Interview Partners | Strategic Tactical Operational |
| **Focus** | Short-Term Focus | Short-Term Focus | Long-Term Focus |
| **Extent of End User Involvement** | None | High | Moderate |
| **Project Duration** | Low | Very High | High |
| **Skills of Project Members** | Data Warehouse Designer | Moderator Data Warehouse Designer | Moderator Economist Data Warehouse Designer |
| **Number of Measures** | Many | Many | Few |
| **Type of Measures** | Non-Financial and Quantitative Time-Based and Frequency-Based | Non-Financial and Quantitative Time-Based and Frequency-Based | Balanced Financial and Non-Financial as well as Qualitative and Quantitative |
| **Level of Granularity** | Low | Low | High |
| **Number of Dimensions** | Few | Many | Few |
| **Type of Dimensions** | Represents the Basic Structure of the Application | Represents the Basic Structure of the Application and external Sources | Represents the Strategic Building Blocks of the Organisation |
| **Number of Source Systems** | Low | Moderate | High |
| **Longevity / Stability of Data Model** | Long | Short | Long |
| **Cost** | Low | High | High |

**References:**

Kimball, R., & Ross, M (2011). The data warehouse toolkit: the complete guide to dimensional modelling. : John Wiley & Sons.

1. **Give examples of 3 types of slowly changing dimensions!**

**Answer:**

1. **Type 1**

* Overwrites the historical information and erases the old data for the database and only dimension change that happens in a form of corrections and there is no necessity for historical reporting.

|  |  |  |  |
| --- | --- | --- | --- |
| **Member ID** | **Client Name** | **Country** | **Phone Number** |
| 123456789 | John Doe | Indonesia | +623194556024 |

1. **Type 2**

* Saves the historical info by including a brand-new row and keeps a track of historical details with several rows and columns provided in the dimension table.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Member ID** | **Client Name** | **Country** | **Phone Number** | **Start Date** | **End Date** |
| 214365879 | John | Indonesia | +623194556024 | 16/04/2000 | 22/12/2004 |
| 896745231 | Doe | Indonesia | +6283870989358 | 05/04/2000 | NA |

The complete historical data is retained. If the importance of a selected attribute changes, the present record is closed. A brand-new report is produced with the changed information values and this brand-new record will become the present record.

1. **Type 3**

* Each record saves/stores the previous value as well as the present value of the selected feature and if the valuation of any of the selected characteristics changes, the present value is kept as the old value as well as the new value will become the present value.

|  |  |  |  |
| --- | --- | --- | --- |
| **Member ID** | **Client Name** | **Current Country** | **Previous Country** |
| 591827364 | Doe John | Indonesia | Japan |

**References:**

Kimball, R., & Ross, M (2011). The data warehouse toolkit: the complete guide to dimensional modelling. : John Wiley & Sons.

Vaisman, A., & Zimányi, E. (2014). Data Warehouse Systems: Design and Implementation. : Springer.

1. **What do you know regarding with factless fact table? Please give an example factless fact table !**

**Answer:**

It is a fact table that does not have any measures and it is intersection of dimension and contains dimension keys for describing events and coverage, meaning tables contain information that nothing has happened.

Diagram

Description automatically generated

There is nothing that can measure about a student’s attendance at a class. The student was there, and the attendance was recorded, or the student was not there, and no record is recorded.

**References:**

Kimball, R., & Ross, M (2011). The data warehouse toolkit: the complete guide to dimensional modelling. : John Wiley & Sons.