

***Assignments***

***Teacher:***

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***Subject:***

*Data Warehousing*

***Question: 01***

Identify an organization whose business needs cannot be fulfilled by existing operational database systems and it require a data warehouse solution. List down the issues, which cannot be resolved by operational databases for this particular organization and how a data warehouse would help. Also identify required levels of granularity.

***Organization Scenario***

A multi-channel consumer electronics retailers operate in dynamic and highly competitive market conditions, they are under constant pressure to invest in new communication and information technologies that automate or support retail activities to increase productivity and gain competitive advantage. Various software applications are in current use by retailers to assist with customer sale transactions, online business, and inventory management, purchasing process, finance and human resource management. These software applications generate a huge volume of transactional and other types of data such as web logs, customer feedback, and foot fall counters. Retailers are facing challenges in utilizing the generated datasets to support managers in deciding optimal inventory, choosing a profitable price, introducing new product lines, and satisfying customers. To address these challenges, data warehousing is one of the most popular and effective solutions since it integrates all available data sources into a central corporate data repository and organizes data in such a way that it answers business questions easily and quickly.

***Issues that DWH has resolved***

1. Deciding optimal inventory
2. Choosing a profitable price
3. Introducing new product lines
4. Satisfying customers etc.

These were the main issues that an operational system had not resolved. Because these type of problems wants analysis of current and past data but operational system failed to give any analytical information they just give you the current values of data. While the data warehouse contain past and current data for analysis and making strategic decisions. That’s why data warehouse in the scenario is the only viable solution.

***Required Level Of Granularity***

|  |  |  |
| --- | --- | --- |
| Daily Details | Monthly Summary | Six Months Summary |
| Amount | Amount | Amount |
| Sales | Sales | Sales |
| Order | Order | Order |
| Product | Product | Product |
| - | Month | Month |
| - | Number of online booking | Number of online booking |
| - | Profit | Profit |
| - | Loss | Loss |
| - | - | Quarterly |

***Question: 02***

A data warehouse is subject – oriented. What would be the major critical business subjects for the following companies?

a. an international manufacturing company

b. a local community bank

c. a domestic hotel chain

a. an international manufacturing company

Business Subjects:

1. Product
2. Sales
3. Customer
4. Region
5. Store
6. Policy
7. Claims
8. Orders
9. Shipment

b. a local community bank

Business Subjects:

1. Account
2. User
3. Withdraw
4. Deposit
5. Savings
6. Loans
7. Funds
8. Transactions
9. Money Transfer

c. a domestic hotel chain

Business Subjects:

1. Customer
2. Orders
3. Delivery
4. Menu
5. Deals
6. Discount
7. Services
8. Employees

***Question: 03***

For an airline company, identify three operational applications that would feed into the data warehouse. What would be the data load and refresh cycles?

**Three Operational Applications**

1. Seat Reservation Application
2. Flight Management Application
3. Airline Staff Management Application

**Data Load and Refresh Cycles**

The data should be loaded and refreshed every week so that new data is moved from different operational sources to the data warehouse. This data is then used for providing strategic information to the managers and executives of airline. The data is not updated on occurrence of every transaction.

***Question: 04***

You are the Vice President of Marketing for a nation – wide appliance manufacturer with three production plants. Describe any three different ways you will tend to analyze your sales. What are the business dimension for your analysis?

**FIRST WAY TO ANALYZE SALES**

Business Dimensions: Product, Time, Geography

**Hyderabad**

**Juicer**

**January**

**PRODUCT**

**GEOGRAPHY**

**TIME**

**SECOND WAY TO ANALYZE SALES**

Business Dimensions: Product, Customer, Time

**Coffee Maker**

**2020**

**Female**

**PRODUCT**

**TIME**

**CUSTOMER**

**THIRD WAY TO ANALYZE SALES**

Business Dimensions: Product, Ship-mode, Time

**Winters**

**Toaster**

**By Air**

**PRODUCT**

**TIME**

**SHIP-MODE**

***Question: 05***

Construct an information package diagram for analyzing expenses against provided budget for a large scale manufacturing organization dispersed across 15 countries, more than 50 divisions and districts. Management would like to study and analyze expenses over time, district, division and budget line items. Show also a drill down dimension.

Information Subject: Manufacturing Expenses

Dimensions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time | Product | Division/District | Geography | Material |
| Year | Model name | Division/District name | Country | Purchasing |
| Quarter | Model number | Division/District code | State | Parts |
| Month | Product line | Location | City | Color |
| Week | Interior color | Branches | Branches | Quantity |
| Day | Exterior color | Stores | Stores | Size |
| Facts: Purchasing amount, Estimated Budget, Actual Manufacturing Expenses, Loans, Manufacturing Stores Maintenance, Cost of Required Tools | | | | |

***Question: 06***

Construct an information package diagram for hotel stays, identifying the dimensions, attributes, and facts. The hotel management would like to study the occupancy patterns in their hotel over time, location, travel agents, customers, rooms types, rate plans, etc. Furthermore, they would also like to have ready access to the rooms that are occupied or vacant on a given date.

Information Subject: Hotel Stays

Dimensions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Time | Customer | Travel Agents | Location | Room type | Rate plans |
| Year | Age group | Agent id | Country | Type of bed | Number of occupants |
| Quarter | Gender | Agent name | State | Floor number | Extras with meals |
| Month | Profession | Years of Experience | City | Kitchen | Extra services |
| Week | Nationality | Background | Street | Area | Hourly Rate |
| Day |  | Address | Building |  | Daily Rate |
| Facts: Number of occupied rooms, Number of vacant rooms, Number of occupants, Revenue, Number of International tourists, Booked Rooms. | | | | | |

***Question: 07***

Big Book Inc. is a large book distributor with domestic and international distribution channels. The company orders from publishers and distributes publications to all the leading booksellers. Initially, you want to build a data warehouse to analyze shipments that are made from the company’s many warehouses. Determine the metrics or facts and the business dimensions. Prepare an information package diagram.

Information Subject: Shipment Information

Dimensions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time | Book | Publisher | Geography | Bookseller |
| Year | Book Category | Publisher Code | Country | Seller code |
| Quarter | Book ISBN | Location | State | Stores |
| Month | Book title | International/Domestic | City | Reputation |
| Week | Author info |  | Region | Domestic |
| Day | Price |  | Branch | International |
| Facts: Total sold units, Purchasing Amount, Selling Amount, Monthly Shipment, Weekly Shipment, Number of ordered stock. | | | | |