Thanks to ITI our team had the opportunity to work on this project for an airline company theoretically where we had the chance to design a data warehouse architecture which fulfilled the whole business requirements.

The project steps were:

1. We defined the business processes based on the company’s requirements and each process’s granularity based on the know-how of the business itself.
2. Through the common interactions between the different business processes and their properties we managed to declare our fact and dimension tables and then of course the bus matrix which illustrates the relations between both types of tables.
3. Designed a logical model that represents the structure of the DWH and its relationships utilizing dimensional modeling concept and a diagram tool.
4. Created physical data model using Toad tool (Oracle) creating RDBMS which houses the dimension and fact tables.
5. Inserted Dummy data to be used in our queries that answers some of the business questions

The data warehouse schema was a galaxy schema consisting of the following fact tables:

1. Flight Activity Fact
   1. Level of Granularity is leg level
   2. It serves business requirements regarding finance and flights activity in general for the following departments.
      1. Executives: It analyzes the flights activity to ensure good ongoing business for the high-level management.
      2. Finance team: It analyzes the company’s profit and monitors which channels are used most in the ticket reservation process and how passengers pay for their tickets.
      3. Marketing team: It analyzes how long passenger’s overnights in case of there were stop stations in the flights and how often they upgrade their class (Economy – Business …etc.)
2. Frequent Flyers Fact
   1. Level of granularity is ticket number.
   2. It serves the business requirement regarding frequent flyers for the marketing team:
      1. analyzes the frequent flyers actions, the miles their flights take and the miles they earned and in which they convert those earned miles (discount – premium cabins…etc.).
      2. Analyzes their response to the promotion offers they get.
      3. What proportion in each membership class (silver – gold – platinum…etc.)
3. Customer Care Fact
   1. Level of granularity is ticket number.
   2. It analyzes the performance of the staff of the company towards the interactions of the passengers whether it was (before – within – after) the flight.
   3. It monitors the inquiries and complaints of the passengers and its severity, also the feedback rates to offer the best service for the passengers.

All of this wasn’t accomplished without our teamwork me any my team that involved (team’s names) and the our brilliant instructor’s supervision Eng.Ebtehal El hussieny

Also included in the repository of github a report about indexes types used in Data warehouse.

Thanks to ITI, our team had the unique opportunity to work on a theoretical project for an airline company, where we had the chance to design a comprehensive data warehouse architecture that met all of the business requirements.

▶ Here is a breakdown of the steps we followed:

📌 We defined business processes and their level of granularity based on airline company requirements and industry understanding.

📌 By identifying common interactions between different business processes and their properties we established fact and dimension tables, also bus matrix that illustrates relationships between these tables.

📌 Designed a logical model that represents the structure of the data warehouse using dimensional modeling principles and a diagram tool.

 📌 Created a physical data model using Toad, an Oracle-based tool for the RDBMS housing the dimension and fact tables.

📌 Inserted Dummy data to be used in our queries that answer some of the business questions

▶The data warehouse schema we devised adopted a galaxy schema approach and included the following fact tables:

🔴 Flight Activity Fact:

♦ This fact table, operating at the leg level of granularity,

describes each point the aircraft stops at.

♦ It facilitated analysis for multiple departments, including

executives, finance, and marketing.

🔴 Frequent Flyers Fact

♦ With a focus on frequent flyers, this fact table provided

valuable insights to the marketing team.

♦ It enabled analysis of frequent flyers' actions, earned and

redeemed miles, and responses to promotional offers.

It is to be noted that those are different from regular passengers that were mentioned also in the DWH

🔴 Customer Care Fact:

♦ This fact table monitored the performance of staff members in

handling passenger interactions.

♦ It helped track inquiries, complaints, severity levels, and

feedback rates, contributing to enhanced customer service.

None of this would have been possible without the exceptional teamwork exhibited by me and my talented team members: [Team Members' Names]. We were guided through the course by the exceptional expertise and supervision of our instructor, Eng. Ebtihal…

▶ Lastly, we've included a report on the types of indexes employed within the data warehouse in our GitHub repository.

⚡This project was a testament to our dedication, collaboration, and commitment to delivering high-quality solutions in the field of data warehousing. ⚡

🛑 ⚡ 📌 ▶ ♦

GITHUB description

1. Introduction:
   * A major airline company hires you to assist the executive management.
   * Goal: Analyze current business processes and discover new opportunities for expansion.
2. Flight Activity Analysis:
   * Executives prioritize analyzing flight activity for ongoing business process improvement.
   * Marketing department's interests:
     + Flights taken by frequent flyers.
     + Fare basis paid by frequent flyers.
     + Frequency of upgrades by frequent flyers.
     + Earn and redemption of frequent flyer miles.
     + Response to special fare promotions.
     + Duration of overnight stays.
     + The proportion of frequent flyers with gold, platinum, aluminum, or titanium status.
3. Reservation Process Analysis:
   * Finance team is interested in analyzing company profit through the reservation process.
   * Note: Reservations can occur through multiple channels.
4. Customer Care Interaction Analysis:
   * Customer care interactions are provided before, during, and after trips.
   * Purpose: Handle customer inquiries, complaints, and collect feedback for business enhancements.
   * Analysis includes:
     + Interaction types.
     + Problem severity (if issues exist).

The data warehouse schema we devised adopted a galaxy schema approach and here is a breakdown of the steps we followed:

📌 We defined business processes and their level of granularity based on airline company requirements and industry understanding.

📌 By identifying common interactions between different business processes and their properties we established fact and dimension tables, also bus matrix that illustrates relationships between these tables.

📌 Designed a logical model using dimensional modeling principles and a diagram tool.

 📌 Created a physical data model using Toad, an Oracle-based tool for the RDBMS housing the dimension and fact tables.

📌 Inserted Dummy data to be used in our queries that answer some of the business questions