

# Assignment

## Business-Driven Data Warehouse Design

### Objective

This assignment evaluates the student's ability to:

- Understand business urgency
  - Translate business needs into data architecture decisions
  - Apply core Data Warehousing concepts in a real-world scenario
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### Business Scenario

A medium-sized **Retail / E-Commerce company** operates multiple business modules, including:

- Sales
- Purchasing
- Accounting
- Human Resources
- Inventory

All modules currently rely on **separate operational databases** designed mainly for daily transactions.

Recently, **top management raised a critical concern**:

- Sales and Purchasing reports are **urgently needed**

- Executives require **fast and reliable insights** to support business decisions
- Existing reports are slow, inconsistent, and difficult to modify
- Other departments (Accounting, HR) are important but **not time-critical at the moment**

The company assigned you, as a **Junior Data Engineer**, to propose a suitable data solution.

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## Your Task

Prepare a **technical proposal** addressing the following points:

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### 1. Business Understanding

Explain:

- Why operational databases are not suitable for analytical reporting
  - Which business modules should be prioritized and why
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### 2. Data Warehouse Approach

Propose an approach for building a Data Warehouse that:

- Delivers quick value to the business
- Can be extended later to cover other modules

Explain your reasoning clearly.

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### 3. Architecture Overview

Describe the high-level data flow from:

- Operational systems  
to
- Analytical reporting

Include:

- Source systems
  - Data integration layer
  - Analytical storage
  - Reporting layer
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## 4. Data Modeling Strategy

For the analytical layer:

- What type of data modeling would you use?
  - Why is this modeling approach suitable for Sales and Purchasing analytics?
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## 5. Data Marts Strategy

Explain:

- Which Data Marts you would build first
  - How these Data Marts relate to the overall Data Warehouse
  - Why this strategy fits the company's urgent requirements
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## 6. Data Processing Method

Choose between:

- ETL
- ELT

Justify your choice based on scalability and future growth.

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## Submission Requirements

- File format: PDF or Word
  - Length: 2–3 pages
  - Answers must be research-based and written in your own words
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## Evaluation Criteria

- Business understanding and prioritization
  - Correct application of Data Warehousing concepts
  - Clarity of architecture and design decisions
  - Logical justification of choices
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## Notes:

This is **not a theoretical exam**.

You are expected to think like a Data Engineer solving a real business problem.