### Outline

\*\*I. Introduction\*\*

- Overview of the lecture

- Key topics covered

\*\*II. Data Warehousing and Cube Structure\*\*

- Explanation of data warehousing concepts

Data warehousing is a system used for reporting and data analysis, serving as a core component of business intelligence. It integrates data from multiple sources into a single, comprehensive database. By consolidating diverse data, it supports analytical reporting, structured and/or ad hoc queries, and decision making. Data warehousing involves data cleaning, data integration, and data consolidations. It uses relational databases to store information and is designed to query and analyze rather than process transactions. Data warehouses store current and historical data and are used for creating trending reports for senior management reporting such as annual and quarterly comparisons.

- Introduction to cube structures in data analysis

\*\*III. Data Warehouse Operations\*\*

- Description of various data warehouse operations

- Examples of operations: slicing, dicing, rolling up, drilling down

\*\*IV. Data Warehouse Schemas\*\*

- Overview of different schemas (Star, Snowflake, Galaxy)

- Characteristics and uses of each schema

\*\*V. Data Warehousing in Practical Scenarios\*\*

- Application of data warehousing concepts in real-world examples

- Case studies and examples

\*\*VI. Advanced Data Warehousing Techniques\*\*

- Discussion on advanced techniques in data warehousing

- Real-world application and examples

\*\*VII. Conclusion\*\*

- Recap of key points

- Final thoughts and future directions

### Study Guide

\*\*1. Data Warehousing Basics\*\*

- Understand the fundamentals of data warehousing, including its purpose and basic operations.

- Familiarize with cube structures and how they are used in data analysis.

\*\*2. Data Warehouse Operations\*\*

- Learn about various operations like slicing, dicing, rolling up, and drilling down. Understand how they manipulate and analyze data.

\*\*3. Data Warehouse Schemas\*\*

- Study different types of schemas such as Star, Snowflake, and Galaxy.

- Understand their unique characteristics and practical applications.

\*\*4. Real-World Applications\*\*

- Review case studies and examples where data warehousing is applied in real-world scenarios.

- Understand the practical implications and outcomes of these applications.

\*\*5. Advanced Techniques\*\*

- Dive into advanced data warehousing techniques and their applications.

- Explore how these techniques are used in complex data scenarios.

### Glossary

- \*\*Data Warehousing\*\*: A system for storing and retrieving large sets of data, primarily used for analysis and reporting.

- \*\*Cube Structure\*\*: A multi-dimensional array of data in data warehousing, used for complex data analysis.

- \*\*Slicing and Dicing\*\*: Operations in data warehousing that involve viewing and analyzing data from different perspectives.

- \*\*Rolling Up\*\*: A data summarization technique where data is aggregated.

- \*\*Drilling Down\*\*: The process of moving from a summary to more detailed data.

- \*\*Star Schema\*\*: A type of database schema that is characterized by a central fact table surrounded by dimension tables.

- \*\*Snowflake Schema\*\*: A more complex database schema where dimension tables are normalized.

- \*\*Galaxy Schema\*\*: A database schema that allows multiple fact tables to share dimension tables.