Enterprise Database Design
Key Terms

Week 1 Key Terms:

Data - Raw facts that have little meaning unless organized and context provided.

Information - Data that have been processed to provide context to increase the knowledge of the person who uses it.

Database - An organized collection of logically related data.

Database management system - A software system that is used to create, maintain, and provide controlled access to user databases.

Data governance – The management of the availability, usability, integrity, and security of the data created and used in an enterprise. A robust data governance program includes a governing, a defined set of procedures, and a plan to execute those procedures.

IT governance – The management of IT projects, IT systems and IT strategy with the organization's business strategy, ensuring that companies stay on track to achieve their strategies and goals.

Week 2 Key Terms:

Conceptual data model - A detailed, technology-independent specification of the overall structure of organizational data. The conceptual data model is typically an Entity Relationship Diagram showing all entities and relationships between entities.

Logical data model - The representation of data for a data management system. In the case of a relational data model, elements include tables, columns, rows, primary and foreign keys, as well as constraints.

Physical data model - A set of specifications that detail how data from a logical data models are stored in a computer's secondary memory for a specific database management system. There is one physical data model for each logical data model.

Entity - A person, place, object, event, or concept in the user environment about which the organization wishes to maintain data.

Associative entity - An entity that associates the instances of one or more entity and contains attributes that are peculiar to the relationship between those entity instances.

Weak entity – An entity whose existence depends on some other entity.

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Week 2 Key Terms Continued:

Entity-relationship model – A logical representation of the data for an organization or for the business requirements.

Relationship type – A meaningful association between entities.

Attribute – A property or characteristic of an entity type that is of interest to the organization.

Identifier – An attribute (or combination of attributes) that uniquely identifies individual instances of an entity type.

Constraint – A rule that cannot be violated by database users.

Cardinality constraint – Specifies the number of instances of one entity that can (or must) be associated with each instance of another entity.

Candidate key – A "candidate to be the primary identifier" of an entity.

Primary key – A primary key is a candidate key that has been selected as the identifier for an entity type. The primary key uniquely identifies a row; cannot contain null values. A primary key can be composed of multiple columns.

Foreign key – Column(s) whose values match the values in a candidate key of another table.

Week 3 Key Terms:

Normalization - The process of decomposing relations with anomalies to produce smaller, well-structured relations.

Determinant - The attribute on the left-hand side of the arrow in a functional dependency.

Functional dependency - A constraint between two attributes or two sets of attributes.

Transitive dependency - A functional dependency between two (or more) non-key attributes.

Normal form - A state of a relation that results from applying simple rules regarding functional dependencies (or relationships between attributes) to that relation.

Partial functional dependency - A functional dependency in which one or more non-key attributes (such as Name) are functionally dependent on part (but not all) of the primary key.

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Week 3 Key Terms Continued:

1NF – No multi-valued attributes; no repeating groups that have assumed values rather than real values; every attribute value is atomic; all relations are in 1NF.

2NF – Every non-key column depends on a entire primary key, not part of a key; no partial functional dependencies; every relationship/table is in both 2NF and 1NF.

3NF – Every non-key column depends only on a key not on non-key columns; no transitive dependencies; every relationship/table is in 3NF, 2NF and 1NF.

Week 4 Key Terms:

Conceptual data model - A detailed, technology-independent specification of the overall structure of organizational data.

Logical data model - The representation of data for a particular data management technology. In the case of a relational data model, elements include tables, columns, rows, primary and foreign keys, as well as constraints.

Physical data model - A set of specifications that detail how data from a logical data models is stored in a computer's secondary memory for a specific database management system. There is one physical data model for each logical data model.

Database - An organized collection of logically related data.

Database management system - A software system that is used to create, maintain, and provide controlled access to user databases.

Structured Query Language (SQL) - This is the language used to retrieve and manage data within relational database management systems. The language includes groupings of the language such as DDL, DCL, and DML.

Data Definition Language (DDL) - These commands are used to create, alter, and drop tables and other database structures. The commands include the CREATE, ALTER, DROP, and TRUNCATE commands.

Data Manipulation Language (DML) - These commands are used to manipulate the data within the tables. The commands include INSERT, UPDATE, DELETE, and MERGE.

Data Control Language (DCL) - These commands are used to authorize users to access various data and data structures. These commands use keywords GRANT, DENY, and REVOKE.

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Week 5 Key Terms:

Database management system - A software system that is used to create, maintain, and provide controlled access to user databases.

Structured Query Language (SQL) - This is the language used to retrieve and manage data within relational database management systems. The language includes groupings of the language such as DDL, DCL, and DML.

Data Definition Language (DDL) - These commands are used to create, alter, and drop tables and other database structures. The commands include the CREATE, ALTER, DROP, and TRUNCATE commands.

Data Manipulation Language (DML) - These commands are used to manipulate the data within the tables. The commands include INSERT, UPDATE, DELETE, and MERGE.

Data Control Language (DCL) - These commands are used to authorize users to access various data and data structures. These commands use keywords GRANT, DENY, and REVOKE.

Join - Return rows when there is at least one match in both tables

Left Outer Join - Returns all rows from the left table, even if there are no matches in the right table

Right Outer Join - Returns all rows from the right table, even if there are no matches in the left table

Full Outer Join - Returns rows from both tables, even when the row is not matched.

In - Operates on any records in the containing command where the specified expression appears in the subquery results.

Exists - Operates on any records in the containing command where the subquery result has at least one row.