Glossary

# A

**Attribute:** Property used to describe an entity or relationship.

# B

**Binary relationship:** Relationship between two entities.

# C

**Candidate key:** An attribute or set of attributes that uniquely identifies individual occurrences of an entity type.

**Cardinality ratio:** Describes the number of one entity that is related to another entity.

**Category:** When a subclass has more than one superclass that it may inherit from; also referred to as union type.

**Composite attribute:** An attribute composed of multiple components, each with an independent existence.

# D

**Database:** A shared collection of logically associated or related data.

**Degree of a relationship:** The number of participating entities in a relationship.

**Derived attribute:** An attribute that gets a value calculated or derived from the database.

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# E

**Entity:** “Something” in the real world that is of importance to a user and that needs to be represented in a database so that information about the entity may be recorded. An entity may have physical existence (such as a student or building) or it may have conceptual existence (such as a course).

**Entity set:** A collection of all entities of a particular entity type.

**Entity type:** A set of entities of the same type.

# F

**First normal form (1NF):** The domain of all attributes in a table must include only atomic (simple, indivisible) values, and the value of any attribute in a tuple (or row) must be single-valued from the domain of that attribute.

**Foreign key:** An attribute that is a primary key of another relation (table). A foreign key is how relationships are implemented in relational databases.

**Full participation:** All of one entity set participates in a relationship.

**Functional dependency:** A relationship between two attributes in a rela- tion. Attribute Y is functionally dependent on attribute X if attri- bute X identifies attribute Y. For every unique value of X, the same value of Y will always be found.

# G

**Generalization:** The process of minimizing the differences between enti- ties by identifying their common features and removing the com- mon features into a superclass entity.

# H

**Hierarchical model:** All data are arranged in a top-down fashion.

# I

**Identifying owner:** The strong entity on which a weak entity is dependent.

**Identifying relationship:** A weak relationship.

# K

**Key:** An attribute or data item that uniquely identifies a record instance or tuple in a relation.

# M

**Mandatory relationship:** Same as full participation; all of one entity set participates in a relationship.

**Many to many:** Many tuples (rows) of one relation can be related to many tuples (rows) in another relation.

**Many to one:** Many tuples (rows) of one relation can be related to one tuple (row) in another relation.

**Mapping:** The process of choosing a logical model and then moving to a physical database file system from a conceptual model (the ER diagram).

**Multivalued attribute:** An attribute that may have multiple values for a single entity.

# O

**One to many:** A relationship in which one tuple (or row) of one relation can be related to more than one tuple (row) in another relation.

**One to one:** A relationship in which one tuple (or row) of one relation can be related to only one tuple (row) in another relation.

**Optional participation:** A constraint that specifies whether the existence of an entity depends on its being related to another entity via a relationship type.

# P

**Partial key:** The unique key in a dependent entity.

**Partial participation:** Part of one entity set participates in a relationship.

**Participation constraints (also known as optionality):** Determines whether all or some of an entity occurrence is related to another entity.

**Primary key:** A unique identifier for a row in a table in a relational data- base; a selected candidate key of an entity.

# R

**Recursive relationship:** Relationship among entities in the same class.

**Regular entity:** *See* Entity.

**Relation:** A table containing single-value entries and no duplicate rows. The meaning of the columns is the same in every row, and the order of the rows and columns is immaterial. Often, a relation is defined as a populated table.

**Relationship:** An association between entities.

**Reverse engineering:** The process of going from relational tables to a logical model (or ER diagram).

# S

**Second normal form:** A relation that is in first normal form and in which each nonkey attribute is fully functionally dependent on the pri- mary key.

**Shared subclass:** A subclass that has more than one subclass for its parents.

**Simple attribute:** Attribute composed of a single value.

**Specialization:** The process of maximizing the differences between members of a superclass entity by identifying their distinguishing characteristics.

**Specialization hierarchy:** A subclass inherits from only one subclass.

**Specialization lattice:** A subclass has more than one subclass as its parent.

**Strong entity:** An entity that is not dependent on another entity for its existence.

**Structural constraints:** Indicate how many of one type of a record is related to another and whether the record must have such a rela- tionship. The cardinality ratio and participation constraints taken together form the structural constraints.

**Subclass:** An entity type that has a distinct role and is also a member of a superclass.

**Superclass:** An entity type that includes distinct subclasses that are required to be represented in a data model.

# T

**Table:** Same as relation; a tabular view of data that may be used to hold one or more columns of data; an implementation of an entity.

**Third normal form:** A relation that is in second normal form and in which no nonkey attribute is functionally dependent on another nonkey attribute (that is, there are no transitive dependencies in the relation).

# U

**Union type:** A subclass has more than one superclass it may inherit from; also referred to as a category.

**Unique identifier:** Any combination of attributes or relationships that serves to uniquely identify an occurrence of an entity.

# W

**Waterfall model:** A series of steps that software undergoes, from concept exploration through final retirement.

**Weak entity:** An entity that is dependent on some other entity for its existence