CHAPTER 5: ADVANCED DATA MODELING

1. The entity supertype contains common characteristics, and the entity subtypes each contain their own uniquecharacteristics.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.171

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Entity supertypes and subtypes are organized in a specialization hierarchy.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.171

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. The relationships depicted within the specialization hierarchy are sometimes described in terms of “is­a”

relationships.

* 1. True
  2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.171

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Within a specialization hierarchy, a supertype can exist only within the context of a subtype.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.171

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. One important inheritance characteristic is that all entity subtypes inherit their primary key attribute from theirsupertype.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.172

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. A subtype contains attributes that are common to all of its supertypes.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.172

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. At the implementation level, the supertype and its subtype(s) depicted in the specialization hierarchy maintain a 1:1relationship.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.173

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Entity subtypes do not inherit the relationships in which the supertype entity participates.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.173

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. In specialization hierarchies with multiple levels of supertype and subtypes, a lower-level subtype can inherit only afew of the attributes and relationships from its upper-level supertypes.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Moderate REF: p.173

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: The Extended Entity Relationship Model

1. The property of a subtype discriminator enables an entity supertype to inherit the attributes and relationships of thesubtype.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.173

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. An entity supertype can have disjoint or overlapping entity subtypes.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.173

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Disjoint subtypes are subtypes that contain nonunique subsets of the supertype entity set.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.174

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Overlapping subtypes are subtypes that contain a unique subset of the supertype entity set.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.174

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Implementing overlapping subtypes requires the use of one discriminator attribute for each subtype.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.175

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Implementing nonoverlapping subtypes requires the use of one discriminator attribute for each subtype.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.175

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. The completeness constraint can be partial or total.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.175

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Specialization is the top-down process of identifying lower-level, more specific entity subtypes from a higher-levelentity supertype.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.176

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Generalization is based on grouping unique characteristics and relationships of the subtypes.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.176

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. An entity cluster is a “virtual” entity type used to represent multiple entities and relationships in the ERD.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.176

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Clustering

1. The function of the primary key is to describe an entity.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.178

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. To model time-variant data, one must create a new entity in an M:N relationship with the original entity.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Moderate REF: p.184

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: Design Cases: Learning Flexible Database Design

1. A design trap occurs when a relationship is improperly or incompletely identified and is therefore represented in away that is not consistent with the real world.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.186

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Design Cases: Learning Flexible Database Design

1. Some designs use redundant relationships as a way to simplify the design.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.187

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Design Cases: Learning Flexible Database Design

1. The extended entity relationship model (EERM) is sometimes referred to as the .
   1. enclosed entity relationship model b. enhanced entity relationship model

c. entity clustering relationship model d. extended entity relationship diagram

*ANSWER:* b

PTS: 1 DIF: Difficulty: Easy REF: p.170

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. is a generic entity type that is related to one or more entity subtypes.
   1. A subtype discriminator b. Inheritance

c. A specialization hierarchy d. An entity supertype

*ANSWER:* d

PTS: 1 DIF: Difficulty: Easy REF: p.171

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. The depicts the arrangement of higher-level entity supertypes (parent entities) and lower-level entity subtypes(child entities).
   1. subtype discriminator b. inheritance

c. specialization hierarchy d. entity supertype

*ANSWER:* c

PTS: 1 DIF: Difficulty: Easy REF: p.171

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Within a specialization hierarchy, every subtype can have supertype(s) to which it is directly related.
   1. zero b. only one

c. one or many d. many

*ANSWER:* b

PTS: 1 DIF: Difficulty: Easy REF: p.171-172

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. A specialization hierarchy can have level(s) of supertype**/**subtype relationships.
   1. zero b. only one

c. one or many d. many

*ANSWER:* d

PTS: 1 DIF: Difficulty: Easy REF: p.172

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. The property of enables an entity subtype to inherit the attributes and relationships of the supertype.
   1. subtype discriminator b. inheritance

c. specialization hierarchy d. entity supertype

*ANSWER:* b

PTS: 1 DIF: Difficulty: Easy REF: p.172

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. One important inheritance characteristic is that all entity subtypes inherit their key attribute from theirsupertype.
   1. primary b. natural

c. foreign d. surrogate

*ANSWER:* a

PTS: 1 DIF: Difficulty: Easy REF: p.172

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. At the implementation level, the supertype and its subtype(s) depicted in a specialization hierarchy maintain a(n) relationship.
   1. self-referencing b. 1:1

c. 1:M d. M:N

*ANSWER:* b

PTS: 1 DIF: Difficulty: Easy REF: p.173

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. A(n) is the attribute in the supertype entity that determines to which entity subtype each supertypeoccurrence is related.
   1. subtype discriminator b. inheritance discriminator

c. specialization hierarchy d. entity supertype

*ANSWER:* a

PTS: 1 DIF: Difficulty: Easy REF: p.173

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. The default comparison condition for the subtype discriminator attribute is the comparison.
   1. nonequality b. less than

c. greater than d. equality

*ANSWER:* d

PTS: 1 DIF: Difficulty: Easy REF: p.173

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Which of the following is a specialization hierarchy disjoint constraint scenario in case of partial completeness?
   1. Subtype discriminator can be null.
   2. Subtype discriminator cannot be null.
   3. Each supertype occurrence is a member of only one subtype.
   4. Each supertype occurrence is a member of atleast one subtype.

*ANSWER:* a

PTS: 1 DIF: Difficulty: Moderate REF: p.176

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: The Extended Entity Relationship Model

1. Which of the following is a specialization hierarchy overlapping constraint scenario in case of partial completeness?
   1. Subtype sets are unique.
   2. Supertype has optional subtypes.
   3. Subtype discriminators cannot be null.
   4. Subtype does not have a supertype.

*ANSWER:* b

PTS: 1 DIF: Difficulty: Moderate REF: p.176

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: The Extended Entity Relationship Model

1. Nonoverlapping subtypes are subtypes that contain a(n) subset of the supertype entity set.
   1. entity b. subtypes

c. unique d. nonunique

*ANSWER:* c

PTS: 1 DIF: Difficulty: Easy REF: p.174

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Overlapping subtypes are subtypes that contain subsets of the supertype entity set.
   1. null b. exclusive

c. solitary d. nonunique

*ANSWER:* d

PTS: 1 DIF: Difficulty: Easy REF: p.174

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. A total completeness constraint is represented by .
   1. a smaller circle inside a bigger circle
   2. a rhombus inside a circle
   3. a double horizontal line under a circle
   4. a single horizontal line above a circle

*ANSWER:* c

PTS: 1 DIF: Difficulty: Easy REF: p.175

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. A partial completeness constraint is represented by .
   1. a dotted line b. two dashed lines

c. a single horizontal line under a circle d. a double horizontal line over a circle

*ANSWER:* c

PTS: 1 DIF: Difficulty: Easy REF: p.175

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. In the context of total completeness, in a(n) , every supertype occurrence is a member of only one subtype.
   1. Foreign key constraint b. nonunique constraint

c. overlapping constraint d. disjoint constraint

*ANSWER:* d

PTS: 1 DIF: Difficulty: Easy REF: p.176

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. In the context of total completeness, in a(n) , every supertype occurrence is a member of at least onesubtype.
   1. Unique constraint b. disjoint constraint

c. overlapping constraint d. foreign key constraint

*ANSWER:* c

PTS: 1 DIF: Difficulty: Easy REF: p.175

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. is the bottom-up process of identifying a higher-level, more generic entity supertype from lower-level entitysubtypes.
   1. Specialization b. Generalization

c. Normalization d. Total completeness

*ANSWER:* b

PTS: 1 DIF: Difficulty: Easy REF: p.176

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. The purpose of a(n) is to simplify an entity-relationship diagram (ERD) and thus enhance its readability.
   1. Entity constraint b. entity cluster

c. entity interface d. entity discriminator

*ANSWER:* b

PTS: 1 DIF: Difficulty: Easy REF: p.176

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Clustering

1. An entity cluster is formed by combining multiple interrelated entities into .
   1. a single abstract entity object b. multiple abstract entity objects

c. a single entity object d. multiple entity objects

*ANSWER:* a

PTS: 1 DIF: Difficulty: Easy REF: p.176

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Clustering

1. The most important characteristic of an entity is its key, used to uniquely identify each entity instance.
   1. primary b. natural

c. foreign d. surrogate

*ANSWER:* a

PTS: 1 DIF: Difficulty: Easy REF: p.177

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. A key is a real-world, generally accepted identifier used to uniquely identify real-world objects.
   1. primary b. natural

c. foreign d. surrogate

*ANSWER:* b

PTS: 1 DIF: Difficulty: Easy REF: p.178

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. If one exists, a data modeler uses a as the primary key of the entity being modeled.
   1. foreign key b. combination key

c. surrogate key d. natural identifier

*ANSWER:* d

PTS: 1 DIF: Difficulty: Easy REF: p.178

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. A is a primary key created by a database designer to simplify the identification of entity instances.
   1. Composite key b. compound key

c. natural key d. surrogate key

*ANSWER:* d

PTS: 1 DIF: Difficulty: Easy REF: p.180

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. A primary key’s main function is to uniquely identify a(n) within a table.
   1. attribute b. entity instance or row

c. entity subtype d. natural key or identifier

*ANSWER:* b

PTS: 1 DIF: Difficulty: Easy REF: p.178

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. Composite primary keys are particularly useful as identifiers of composite entities, where each primary keycombination is allowed only once in the relationship.

a. 0:1 b. 1:1

c. 1:M d. M:N

*ANSWER:* d

PTS: 1 DIF: Difficulty: Easy REF: p.179

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. The “ ” characteristic of a primary key states that the primary key must uniquely identify each entity instance,must be able to guarantee unique values, and must not contain nulls.
   1. unique values b. nonintelligent

c. preferably single-attribute d. security-complaint

*ANSWER:* a

PTS: 1 DIF: Difficulty: Easy REF: p.179

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. The “ ” characteristic of a primary key states that the selected primary key must not be composed of any

attribute(s) that might be considered a violation.

* 1. unique values b. nonintelligent

c. preferably single-attribute d. security-compliant

*ANSWER:* d

PTS: 1 DIF: Difficulty: Easy REF: p.179

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. According to the “preferably single­attribute” characteristic of a primary key, the primary key:
   1. must be able to guarantee unique attribute values.
   2. should have the minimum number of attributes possible.
   3. should have embedded semantic meaning associated with each attribute.
   4. must be composed of attributes that are free from security risks or violations.

*ANSWER:* b

PTS: 1 DIF: Difficulty: Moderate REF: p.179

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: Entity Integrity: Selecting Primary Keys

1. The “ ” characteristic of a primary key states that the primary key should not have embedded semanticmeaning.
   1. unique values b. nonintelligent

c. preferably single-attribute d. security-compliant

*ANSWER:* b

PTS: 1 DIF: Difficulty: Easy REF: p.179

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. Surrogate primary keys are especially helpful when there is no key.
   1. primary b. natural

c. foreign d. composite

*ANSWER:* b

PTS: 1 DIF: Difficulty: Easy REF: p.181

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. keys work with primary keys to properly implement relationships in the relational model.
   1. Foreign b. Composite

c. Natural d. Surrogate

*ANSWER:* a

PTS: 1 DIF: Difficulty: Easy REF: p.182

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Design Cases: Learning Flexible Database Design

1. The preferred placement for a foreign key when working with a 1:1 relationship is to .
   1. use the same primary key for both entities b. create a bridge entity

c. place the foreign key in one for the entities d. place the surrogate key in both entities

*ANSWER:* c

PTS: 1 DIF: Difficulty: Moderate REF: p.182

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: Design Cases: Learning Flexible Database Design

1. When selecting a foreign key placement for a 1:1 relationship, place the PK of the entity on the mandatory side inthe entity on the optional side as a FK, and make the FK mandatory when .
   1. one side is mandatory and the other sides is optional b. one side participates in another relationship

c. both sides are optional d. both sides are mandatory

*ANSWER:* a

PTS: 1 DIF: Difficulty: Moderate REF: p.183

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: Design Cases: Learning Flexible Database Design

1. data refer to data whose values change over time and for which one must keep a history of the datachanges.
   1. Time-sensitive b. Time-variant

c. Historical d. Change-based

*ANSWER:* b

PTS: 1 DIF: Difficulty: Easy REF: p.183

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Design Cases: Learning Flexible Database Design

1. A occurs when there is one entity in two 1:M relationships to other entities, thus producing an associationamong the other entities that is not expressed in the model.
   1. surrogate primary key b. time-variant data

c. design trap d. fan trap

*ANSWER:* d

PTS: 1 DIF: Difficulty: Easy REF: p.186

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Design Cases: Learning Flexible Database Design

1. relationships occur when there are multiple relationship paths between related entities.
   1. Redundant b. Duplicated

c. Time-variant d. Supertype

*ANSWER:* a

PTS: 1 DIF: Difficulty: Easy REF: p.187

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Design Cases: Learning Flexible Database Design

1. The is the result of adding more semantic constructs to the original entity relationship (ER) model.

*ANSWER:* extended entity relationship model (EERM)

EERM (extended entity relationship model)

extended entity relationship model

EERM

PTS: 1 DIF: Difficulty: Easy REF: p.170

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Disjoint subtypes are also known as subtypes.

*ANSWER:* non-overlapping

Nonoverlapping

PTS: 1 DIF: Difficulty: Easy REF: p.174

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Subtypes that contain nonunique subsets of the supertype entity set are known as subtypes.

*ANSWER:* overlapping

PTS: 1 DIF: Difficulty: Easy REF: p.174

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. The specifies whether each entity supertype occurrence must also be a member of at least one subtype.

*ANSWER:* completeness constraint

PTS: 1 DIF: Difficulty: Easy REF: p.175

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. completeness means that not every supertype occurrence is a member of a subtype.

*ANSWER:* Partial

PTS: 1 DIF: Difficulty: Easy REF: p.175

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. completeness means that every supertype occurrence must be a member of at least one subtype.

*ANSWER:* Total

PTS: 1 DIF: Difficulty: Easy REF: p.175

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. Specialization is based on grouping characteristics and relationships of the subtypes.

*ANSWER:* unique

PTS: 1 DIF: Difficulty: Easy REF: p.176

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: The Extended Entity Relationship Model

1. An entity cluster is considered “virtual” or “ ” in the sense that it is not actually an entity in the final ERD.

*ANSWER:* abstract

PTS: 1 DIF: Difficulty: Easy REF: p.176

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Clustering

1. Usually, a data modeler uses a natural identifier as the of the entity being modeled, assuming that the entityhas a natural identifier.

*ANSWER:* primary key

PTS: 1 DIF: Difficulty: Easy REF: p.178

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. Unique values can be better managed when they are , because the database can use internal routines toimplement a counter-style attribute that automatically increments values with the addition of each new row.

*ANSWER:* numeric

PTS: 1 DIF: Difficulty: Easy REF: p.179

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. Composite primary keys are particularly useful as identifiers of composite entities, where each primary keycombination is allowed in the M:N relationship.

*ANSWER:* only once

once

PTS: 1 DIF: Difficulty: Easy REF: p.179

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. Composite keys are useful as identifiers of weak entities, where the weak entity has a strong relationshipwith the parent entity.

*ANSWER:* identifying

PTS: 1 DIF: Difficulty: Easy REF: p.179

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. A weak-entity in a strong identifying relationship with a parent entity is normally used to represent a(n) that isrepresented in the data model as two separate entities.

*ANSWER:* real-world object

PTS: 1 DIF: Difficulty: Easy REF: p.180

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. One practical advantage of a(n) key is that because it has no intrinsic meaning, values for it can be generatedby the DBMS to ensure that unique values are always provided.

*ANSWER:* surrogate

PTS: 1 DIF: Difficulty: Easy REF: p.180

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. While using a surrogate key, one must ensure that the candidate key of the entity in question performs properlythrough the use of the “ ” and “not null” constraints.

*ANSWER:* unique index

PTS: 1 DIF: Difficulty: Easy REF: p.181

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Entity Integrity: Selecting Primary Keys

1. From a data modeling point of view, data refer to data whose values change over time and for which onemust keep a history of the data changes.

*ANSWER:* time-variant

PTS: 1 DIF: Difficulty: Easy REF: p.183

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Design Cases: Learning Flexible Database Design

1. A(n) occurs when a relationship is improperly or incompletely identified and is therefore represented in a waythat is not consistent with the real world.

*ANSWER:* design trap

PTS: 1 DIF: Difficulty: Easy REF: p.186

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Design Cases: Learning Flexible Database Design

1. The main concern with redundant relationships is that they remain across the model.

*ANSWER:* consistent

PTS: 1 DIF: Difficulty: Moderate REF: p.187

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: Design Cases: Learning Flexible Database Design

1. What do specialization hierarchies do?

*ANSWER:* Entity supertypes and subtypes are organized in a specialization hierarchy, which depicts thearrangement of higher-level entity supertypes (parent entities) and lower-level entity subtypes (childentities). Specialization hierarchies enable the data model to capture additional semantic content(meaning) into the ERD. A specialization hierarchy provides the means to:

* Support attribute inheritance.
* Define a special supertype attribute known as the subtype discriminator.
* Define disjoint/overlapping constraints and complete/partial constraints.

PTS: 1 DIF: Difficulty: Moderate REF: p.171-172

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: The Extended Entity Relationship Model

1. Differentiate between specialization and generalization.

*ANSWER:* Specialization is the top-down process of identifying lower-level, more specific entity subtypes from ahigher-level entity supertype. Specialization is based on grouping the unique characteristics andrelationships of the subtypes. On the other hand, generalization is the bottom-up process of identifying ahigher-level, more generic entity supertype from lower-level entity subtypes. Generalization is based ongrouping the common characteristics and relationships of the subtypes.

PTS: 1 DIF: Difficulty: Moderate REF: p.171

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: The Extended Entity Relationship Model

1. Explain the two criteria that help a designer in determining when to use subtypes and supertypes.

*ANSWER:* Two criteria help a designer determine when to use subtypes and supertypes:

1. There must be different, identifiable kinds or types of an entity in the user’s environment.

2. The different kinds or types of instances should each have one or more attributes that are unique tothat kind or type of instance.

PTS: 1 DIF: Difficulty: Moderate REF: p.171

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: The Extended Entity Relationship Model

1. Describe an entity cluster.

*ANSWER:* An entity cluster is a “virtual” entity type used to represent multiple entities and relationships in the ERD.An entity cluster is formed by combining multiple interrelated entities into a single, abstract entity object.An entity cluster is considered “virtual” or “abstract” in the sense that it is not actually an entity in thefinal ERD. Instead, it is a temporary entity used to represent multiple entities and relationships, with thepurpose of simplifying the ERD and thus enhancing its readability.

PTS: 1 DIF: Difficulty: Moderate REF: p.176

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: Entity Clustering

1. Explain the “no change over time” characteristic of a primary key.

*ANSWER:* If an attribute has semantic meaning, it might be subject to updates, which is why names do not makegood primary keys. If a primary key is subject to change, the foreign key values must be updated, thusadding to the database work load. Furthermore, changing a primary key value means that one is basicallychanging the identity of an entity. In short, the PK should be permanent and unchangeable.

PTS: 1 DIF: Difficulty: Moderate REF: p.179

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: Entity Integrity: Selecting Primary Keys

1. In which two cases are composite primary keys particularly useful?

*ANSWER:* Composite primary keys are particularly useful in two cases:

1. As identifiers of composite entities, in which each primary key combination is allowed only once inthe M:N relationship.
2. As identifiers of weak entities, in which the weak entity has a strong identifying relationship withthe parent entity

PTS: 1 DIF: Difficulty: Moderate REF: p.179

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: Entity Integrity: Selecting Primary Key s