Practice quiz 1 - ER diagrams

ⓘ This is a preview of the published version of the quiz

Started: Sep 4 at 10:10am

Quiz Instructions

This practice quiz focuses on entity-relation models and diagrams.

An entity-relationship (ER) model is a conceptual data model used in the field of database design to represent the structure of a database. It focuses on describing the entities (objects, concepts, or things) in a domain, the relationships between those entities, and the attributes (properties or characteristics) associated with the entities. The ER model is commonly used to visualize and understand the high-level organization of data within a system before it is implemented in a database management system.

Bloom's Taxonomy, revised in 2001, categorizes six levels of learning from lower- to higher-level thinking skills: Remember, Understand, Apply, Analyze, Evaluate, and Create.

The questions in this quiz get progressively harder as we move from level 2 *understand* to level 5 *evaluate*.

Understand

Multiple-choice questions at this level aim to test basic comprehension. Students might be asked about parts of an ER diagram, and asked to identify their meaning. For example, "What does this diamond-shaped symbol in an ER diagram represent?" The answer choices might include "Entity," "Attribute," "Relationship," and "Cardinality." The goal is to ascertain whether the student understands the fundamental elements of ER diagrams.

Question 1 1 pts

What are connecting lines used for in an ER diagram?

- ◯ To indicate primary keys
- ◯ To illustrate constraints
- ◯ To indicate relationships
- ◯ To separate entities

Question 2

1 pts

What do crow's feet notations indicate in an ER diagram?

- ◯ One-to-one relationship
- ◯ One-to-many relationship
- ◯ Many-to-many relationship
- ◯ Zero-or-one relationship

Question 3

1 pts

What is a composite attribute?

- ◯ An attribute that cannot be divided further
- ◯ An attribute that can be divided into smaller sub-parts
- ◯ An attribute that forms a primary key
- ◯ An attribute that combines two or more entities

Question 4

1 pts

Which of the following describes a ternary relationship?

- ◯ A relationship that exists for three instances
- ◯ A relationship between two entities and one attribute
- ◯ A relationship between three entities
- ◯ A relationship between three attributes

Question 5

1 pts

Which of these is NOT a type of attribute in ER modeling?

- ◯ Derived
- ◯ Multivalued
- ◯ Binary
- ◯ Primary

Question 6

1 pts

What do oval shapes usually signify in an ER diagram?

- ◯ Constraints
- ◯ Entities
- ◯ Relationships
- ◯ Attributes

Question 7

1 pts

In ER diagrams, what do rectangles usually represent?

- ◯ Entities
- ◯ Attributes
- ◯ Constraints
- ◯ Relationships

Question 8

1 pts

What is an attribute’s domain?

- ◯ The set of operations it can undergo
- ◯ The set of entities it relates to
- ◯ The set of permitted values it can take
- ◯ The set of tables in which it appears

Question 9

1 pts

What do attributes connected with a dashed line signify?

- ◯ Derived attributes
- ◯ Optional attributes
- ◯ Multivalued attributes
- ◯ Composite attributes

Question 10

1 pts

What is the function of a linking table?

- ◯ To link weak entities to their strong entities
- ◯ To store attributes
- ◯ To resolve a many-to-many relationship
- ◯ To enforce constraints

Apply

In this section, questions present a real-world scenarios or a textual description of a database need. Students are tasked with choosing the ER diagram that correctly represents the described situation from among multiple options. The aim is to gauge if students can take the theory they've learned and apply it to a practical example. For instance, a question might describe a library system involving books, patrons, and check-outs, and ask which of four ER diagrams accurately models this scenario.

Question 11

1 pts

If the attribute “Phone Number” in an “Employee” entity can have multiple values, what kind of attribute is it?

- ◯ Derived
- ◯ Multivalued
- ◯ Simple
- ◯ Composite

Question 12

1 pts

In a “Hospital” entity, you have attributes “Name”, “Address”, and “NumberOfBeds”. What might be a derived attribute here?

- ◯ BedOccupancyRate
- ◯ Name
- ◯ Address
- ◯ NumberOfBeds

Question 13

1 pts

If you have two entities “Book” and “Author”, and each book can be written by multiple authors, what type of relationship exists between these entities?

- ◯ Many-to-many
- ◯ Many-to-one
- ◯ One-to-one
- ◯ One-to-many

Question 14

1 pts

What should be the cardinality between a “Doctor” entity and an “Appointment” entity if each doctor can have multiple appointments but each appointment is with one specific doctor?

- ◯ 1..n to 1..1

- ◯ 1..1 to 1..n
- ◯ 0..1 to 1..1
- ◯ 0..n to 1..1

Question 15

1 pts

If an attribute “Address” is composed of “Street”, “City”, and “ZipCode”, what kind of attribute is “Address”?

- ◯ Composite
- ◯ Simple
- ◯ Multivalued
- ◯ Derived

Question 16

1 pts

What kind of attribute is “Age” if it can be derived from “Date of Birth”?

- ◯ Derived
- ◯ Multivalued
- ◯ Composite
- ◯ Simple

Question 17

1 pts

In a music streaming service database, how might you represent that a song can belong to multiple playlists?

- ◯ Using a linking entity between Song and Playlist
- ◯ Making Song a multivalued attribute of Playlist
- ◯ Using a ternary relationship
- ◯ Making Playlist an attribute of Song

Question 18

1 pts

In a university database, the entity “Course” is related to the entity “Professor”. If each course must be taught by exactly one professor, what kind of cardinality is this?

- ◯ 1..n
- ◯ 0..n
- ◯ 1..1
- ◯ 0..1

Question 19

1 pts

In a banking database, an entity “Account” is related to another entity “Transaction”. What type of relationship should this be?

- ◯ One-to-many
- ◯ One-to-one
- ◯ Many-to-one
- ◯ Many-to-many

Question 20

1 pts

You are creating an ER diagram for a library. You have entities for “Book” and “Member”. Which additional entity might you include to track which books are borrowed by members?

- ◯ Transaction
- ◯ Inventory
- ◯ Library
- ◯ Category

Analyze

At the analyze level, the multiple-choice questions present a complex ER diagram and ask students to identify specific issues or characteristics. These might include identifying redundancies, spotting errors, or noticing the lack of normalization. For example, a question could ask, "Which of the following entities in this ER diagram appears to be unnecessarily duplicated?" By focusing on the identification of issues, these questions test the student's ability to break down a complex diagram into its components and understand the implications of its structure.

Question 21

1 pts

What is the main drawback of having too many ternary or higher-degree relationships?

- ◯ Leads to a performance gain
- ◯ May make the diagram difficult to understand and implement
- ◯ Improves data integrity

- ◯ Makes the ER diagram too simple

Question 22

1 pts

When analyzing an ER diagram, what does the presence of many weak entities suggest?

- ◯ The diagram is highly normalized
- ◯ The diagram is poorly designed
- ◯ The diagram is incomplete
- ◯ The diagram may have excessive dependencies

Question 23

1 pts

What issue arises if an ER diagram shows circular dependencies?

- ◯ Loss of data integrity
- ◯ Difficulty in mapping to a relational schema
- ◯ Lower database security
- ◯ Data redundancy

Question 24

1 pts

You notice that there are redundant relationships between entities in an ER diagram. What is the likely impact?

- ◯ It simplifies the diagram

- ◯ It enhances data integrity
- ◯ It improves performance
- ◯ It creates confusion and ambiguity

Question 25

1 pts

When the cardinality between two entities is unclear, what should you do?

- ◯ Consult with stakeholders for clarification
- ◯ Assume a Many-to-Many relationship
- ◯ Eliminate the relationship altogether
- ◯ Assume a One-to-One relationship

Evaluate

For evaluation, multiple-choice questions show multiple ER diagramming solutions to the same problem and ask students to select the most efficient or accurate one. Additionally, they might need to identify why one diagram is better than another based on a given criterion such as efficiency or adherence to best practices. For example, a question could present four different ER diagrams and ask, "Which ER diagram most efficiently handles a many-to-many relationship between 'Students' and 'Courses'?" A follow-up question might ask, "What makes this ER diagram more efficient than the others?" with choices explaining different attributes like "reduced redundancy," "better normalization," or "more accurate representation."

Question 26

1 pts

Your ER diagram includes an entity for “Seasons,” but it only has a single attribute for the year. What might you consider doing?

- ◯ Merge it into the “Matches” entity
- ◯ Add more attributes like “Start Date” and “End Date”
- ◯ Delete the “Seasons” entity as it is overly simplistic
- ◯ Create a relationship between “Seasons” and “Teams”

Question 27

1 pts

Which type of relationship should generally be avoided when possible?

- ◯ One-to-One
- ◯ One-to-Many
- ◯ Many-to-Many
- ◯ Ternary relationships

Question 28

1 pts

If there is a relationship between “Players” and “Teams,” but no role labels are provided, what should be done?

- ◯ Assume a generic “belongs to” relationship
- ◯ Add an attribute to the “Player” entity to describe the role
- ◯ Delete the relationship as it’s unclear
- ◯ Add role labels for clarification, like “plays for” or “captains”

Question 29

1 pts

What should you consider if the “Matches” entity has several derived attributes like “Winning Team,” “Losing Team,” and “Draw”?

- ◯ Make them composite attributes
- ◯ Convert them into separate entities
- ◯ Remove them and calculate these in queries to avoid redundancy
- ◯ Keep them to simplify queries

Question 30

1 pts

If an entity does not participate in any relationship, what would you consider doing?

- ◯ Force a relationship with another entity
- ◯ Delete the entity
- ◯ Merge it with another entity
- ◯ Evaluate whether it serves a unique purpose that justifies its isolation

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