IT214 DL7

11/19/2023

P2 Project Assignment

Happy learning database

Conceptual Analysis: Main
Entities Involved:

a. **CARETAKER:** Represents parents or caretakers responsible for making lunch orders for their children.
b. **CHILD:** Represents the children for whom lunch orders are made.
c. **LUNCH_ORDER:** Represents the lunch orders made by caretakers for their children.

Main Relationship Involved:

- **CARETAKER-CHILD Relationship:** Represents the association between caretakers and the children they are responsible for. **Relationship Type with Explanation:**
- **Type:** One-to-Many Relationship
- **Explanation:** This is a one-to-many relationship as one caretaker can have multiple children, but each child is associated with only one caretaker.

Conceptual Design - Entity Identification :

The main entities identified are "ITEM" and "ORDER," which suggests the inclusion of entities related to lunch items and order processing. **Conceptual Design - Relationship Identification:**

The main relationships identified are:

1. **STUDENT-ORDER (One-to-Many):** Each student can have multiple orders, but each order belongs to one student.
2. **ORDER-ITEM (Many-to-Many):** A many-to-many relationship exists between orders and items, facilitated by a bridge entity "ORDER_ITEM." **Conceptual Design - Relationship Type with Justification:**

1. **STUDENT-ORDER (One-to-Many):** This is a one-to-many relationship because one student can have multiple orders, but each order is associated with only one student.
2. **ORDER-ITEM (Many-to-Many):** A many-to-many relationship is justified as each order can contain multiple items, and each item can be present in multiple orders. **Conceptual Design - Bridges with Relationship:**

A bridge entity named "ORDER_ITEM" exists to manage the many-to-many relationship between orders and items. This ensures proper representation and normalization in the database, allowing flexibility in handling items within orders.

Entity: CARETAKER

- Entity Description: The CARETAKER entity represents parents or caretakers responsible for making lunch orders for their children. It stores information about the caretaker's details, such as their name and contact information.

Attribute Name	Attribute domain and size	Simple/composite	Single/MultiValue	Require/Duplicated	Unique/duplicated	Primary key	Foreign Key(s)
CARETAKE_ID_AM	INT	SIMPLE	SINGLE	REQUIRE	UNIQUE	YES	NONE
FIRST_NAME_AM	VARCHAR(30)	SIMPLE	SINGLE	REQUIRE	DUPLICATED	NO	NONE
LAST_NAME_AM	VARCHAR(30)	SIMPLE	SINGLE	REQUIRE	DUPLICATED	NO	NONE
EMAIL_AM	VARCHAR(30)	SIMPLE	SINGLE	REQUIRE	DUPLICATED	NO	NONE
PHONE_NUMBER_AM	VARCHAR(30)	SIMPLE	SINGLE	REQUIRE	DUPLICATED	NO	NONE

Entity: CHILD

- Entity Description: The CHILD entity represents the children for whom caretakers make lunch orders. It includes details about each child, such as their name and age.

Attribute Name	Attribute domain and size	Simple/composite	Single/MultiValue	Require/Duplicated	Unique/duplicated	Primary key	Foreign Key(s)
CHILD_ID_AM	INT	SIMPLE	SINGLE	REQUIRE	UNIQUE	YES	NONE
FIRST_NAME_AM	VARCHAR(30)	SIMPLE	SINGLE	REQUIRE	DUPLICATED	NO	NONE
LAST_NAME_AM	VARCHAR(30)	SIMPLE	SINGLE	REQUIRE	DUPLICATED	NO	NONE
AGE_AM	INT	SIMPLE	SINGLE	OPTIONAL	DUPLICATED	NO	NONE
DIETARY_RIGSITRATION_AM	VARCHAR(30)	SIMPLE	SINGLE	OPTONAL	DUPLICATED	NO	NONE

Entity: LUNCH_ORDER

- Entity Description: The LUNCH_ORDER entity represents the lunch orders made by caretakers for their children. It contains information about the ordered items, the order date, and possibly an order ID.

Attribute Name	Attribute domain and size	Simple/composite	Single/MultiValue	Require/Duplicated	Unique/duplicated	Primary key	Foreign Key(s)
ORDER_ID_AM	INT	SIMPLE	SINGLE	REQUIRED	UNIQUE	YES	NONE
CARETAKER_ID_AM	INT	SIMPLE	SINGLE	REQUIRED	DUPLICATED	NO	REFRENCES CARE TAK ER(CARETA KER_ID)
CHILD_ID_AM	INT	SIMPLE	SINGLE	REQUIRED	DUPLICATED	NO	REFERENCES CHILD (CHILD_ID)
ORDER_DATE_AM	INT	SIMPLE	SINGLE	REQUIRED	DUPLICATED	NO	NONE

Relationship Analysis:

1. Strength:

- Weak strength exists for the 1:M relationship between STUDENT and ORDER.
- Strong strength exists for the two 1:M relationships with the bridge entity ORDER_ITEM.

2. Entity Participation:

- Mandatory participation is required for all entities.
- All entities (STUDENT, ORDER, and ORDER_ITEM) must participate in the relationships.

3. Entity Cardinality:

- Cardinality for ORDER_ITEM is (1,4), indicating that each order can have a minimum of 1 and a maximum of 4 items.

4. Relationship Name: CARETAKER_ASSOCIATES_CHILD

- **Type:** One-to-Many Relationship
- **Explanation:** This relationship represents the association between a CARETAKER (parent or caretaker) and the CHILD(ren) they are responsible for. It's a one-to-many relationship because one caretaker can have multiple children, but each child is associated with only one caretaker.
- **Strength:** Strong Relationship

- **Explanation:** The relationship between a caretaker and their children is strong because a caretaker is directly responsible for their child(ren). There is a direct, significant connection between the caretaker and their child(ren).
- **Entities Participation:**
- **CARETAKER:** Participates on the "One" side of the relationship because each caretaker is associated with multiple children.
- **CHILD:** Participates on the "Many" side of the relationship because each child is associated with only one caretaker (their parent or caretaker).
- **Special Cardinality:**
- There is no special cardinality in this relationship. It's a typical one-to-many relationship.
- **Foreign Key Used for Representation:**
- In the CHILD entity, a foreign key named CARETAKER_ID is used to represent the relationship with the CARETAKER entity. This foreign key references the primary key CARETAKER_ID in the CARETAKER entity.

Database Design Report

The database model "HappyLearning" has been created to manage caretakers, children, and their lunch orders. It includes entities for CARETAKER, CHILD, and LUNCH ORDER, along with a many-to many relationship between CARETAEKR and CHILD. The design supports the kindergarten's daily menu selection process, ensuring data integrity and efficient management of lunch orders.