



HABIB UNIVERSITY

Database Systems

CS/CE 355/373 Fall 2023

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E-R Diagram to Relation Schema Solution

Student 1: _____

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Following are the specifications of an E-R Diagram. Using these specifications, convert the ERD to Relation Schema

- **Strong Entity Sets:**
 - Employee: A strong entity with attributes EmployeeID (Primary Key), FirstName, LastName, and Birthdate.
 - Address: A composite attribute within the Employee entity, consisting of StreetAddress, City, State, and PostalCode.
 - Skill: A multivalued attribute within the Employee entity, representing the skills possessed by an employee. It can have multiple values, such as "Programming," "Project Management," and "Data Analysis."
 - Department: Another strong entity with attributes DepartmentID (Primary Key) and DepartmentName.
- **Weak Entity Sets:**
 - Dependent: A weak entity that depends on the Employee entity. It has attributes DependentName and Relationship (e.g., spouse, child) and a partial key EmployeeID (part of the primary key).
- **Relationship Sets:**
 - WorksIn: A relationship between the Employee and Department entities, indicating that an employee works in a department. The "WorksIn" relationship has an attribute called "StartDate."
 - HasDependent: A relationship that shows an employee having dependents. The "HasDependent" relationship connects the Employee entity to the Dependent entity.

ONE TENTATIVE SOLUTION:

- Employee(EmployeeID, FirstName, LastName, Birthdate, StreetAddress, City, State, PostalCode)
- Skill (EmployeeID, SkillName)
- Department (DepartmentID, DepartmentName)
- Dependent (EmployeeID, DependentName, Relationship)
- WorksIn (EmployeeID, DepartmentID, StartDate)
- ~~HasDependent (EmployeeID, DependentName)~~
 - This table/relation provides the same detail as that of Dependent so we remove it as it will be repetitive

Following are the specifications of an E-R Diagram. Using these specifications, convert the ERD to Relation Schema

- **Strong Entity Sets:**
 - Customer: A strong entity with attributes CustomerID (Primary Key), FirstName, LastName, and Email.
 - PhoneNumber: A multivalued attribute within the Customer entity, representing multiple phone numbers associated with a customer.
 - Order: Another strong entity with attributes OrderID (Primary Key), OrderDate, and TotalAmount.
 - ProductInfo: A composite attribute within the Order entity, consisting of ProductName and ProductDescription.
- **Weak Entity Sets:**
 - Address: A weak entity that depends on the Customer entity. It has attributes AddressID (Partial Key), StreetAddress, City, State, and PostalCode. The partial key is associated with CustomerID (from Customer).
- **Relationship Sets:**
 - PlacesOrder: A relationship between the Customer and Order entities, indicating that a customer places orders. The "PlacesOrder" relationship has an attribute called "OrderQuantity."
 - ShipsTo: A relationship between the Order entity and the Address entity, representing the shipping address for an order. It connects Order to Address via AddressID.

ONE TENTATIVE SOLUTION:

- Customer (CustomerID, FirstName, LastName, Email)
- PhoneNumber (CustomerID, Number)
- Order (OrderID, OrderDate, TotalAmount, ProductName, ProductDescription)
- Address (CustomerID, AddressID, StreetAddress, City, State, PostalCode)
- PlacesOrder (OrderID, CustomerID, OrderQuantity)
- ShipsTo (OrderID, AddressID)

