DATABASES: RELATIONSHIPS & SQL

Year 13 - Wednesday 8th February 2023

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TYPES OF RELATIONS?

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One-To-One

One-To-Many

Many-To-Many

Relationship between Passengers and a Bus

Each Bus has one Passenger, and each Passenger has one Bus

Each Bus has many Passengers, and each Passenger is on one Bus

Each Bus has many passengers, and each Passenger can ride many buses.

2
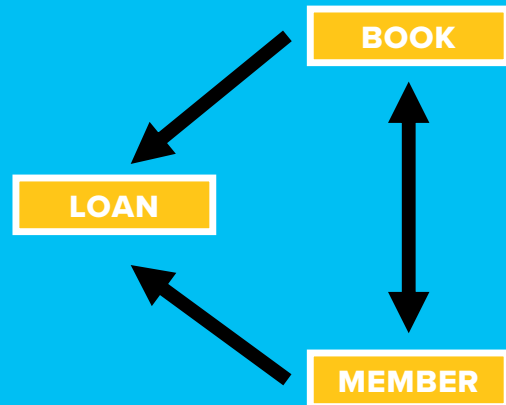
EXAM STYLE QUESTIONS

A Library uses a Database Management System using the following 3 relations:

Book(BookID, Title, Author, Publisher)

Member(MemberID, Surname, FirstName, EmailAddress)
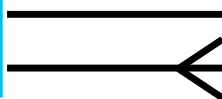
Loan(MemberID, BookID, LoanDate, DueBackDate, Returned)

The library does not stock more than one copy of the same book.

BOOK

LOAN

MEMBER

3

HOW CAN WE TELL?

PHYSICAL THINGS

People, Cars etc.

SHARED COMPOSITE KEYS

Loan(MemberID, BookID, LoanDate, DueBackDate, Returned)
PartUsedForJob(JobID, PartID, Quantity)

It's not Easy.

We have to really think about the types of relationships and how they're related
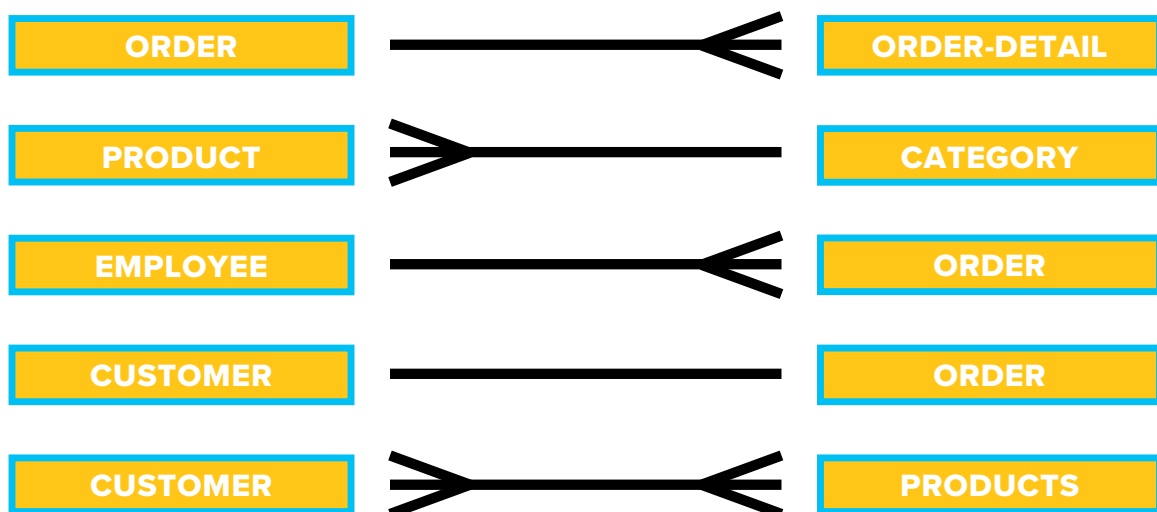
4

EXAM STYLE QUESTIONS

Customer(CustomerID, Name, PostalCode)

Categories(CategoryID, CategoryName, Description)

Employees(EmployeeID, Name, DOB)

OrderDetails(OrderID, ProductID, Quantity)

Order(OrderID, CustomerID, EmplyeeID, Date)

Products(ProductID, ProductName, CategoryID, Price)

This is a really bad shop. So, customers never come back to the shop again. They only do one order.

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SOLUTION

ORDER		ORDER-DETAIL
PRODUCT		CATEGORY
EMPLOYEE		ORDER
CUSTOMER		ORDER
CUSTOMER		PRODUCTS

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SQL

SELECT …
FROM …
(JOIN … ON …)
WHERE …
(ORDER BY …)

What attributes do I want?

How can I bring these attributes together?

What conditions should they meet?

How should I order them?

7

EXAM STYLE QUESTIONS

A Library uses a Database Management System using the following 3 relations:

Book(BookID, Title, Author, Publisher)

Member(MemberID, Surname, FirstName, EmailAddress)

Loan(MemberID, BookID, LoanDate, DueBackDate, Returned)

The Library is holding a literature event for Slyvia Plath and wants to invite all members that have borrowed a Book by Slyvia Plath in the last year. The library wants the names and email addresses of all such people.

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EXAM STYLE QUESTIONS

A Library uses a Database Management System using the following 3 relations:

Book(**BookID,** Title, **Author**, Publisher)

Member(**MemberID,** Surname, FirstName, EmailAddress)

Loan(**MemberID, BookID, LoanDate,** DueBackDate, Returned)

The Library is holding a literature event for Slyvia Plath and wants to invite all members that have borrowed a Book by Slyvia Plath. The library wants the **names** and **email addresses** of all such people.

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SQL

SELECT FirstName, Surname, Email

FROM Member, Loan, Book

WHERE Member.MemberID = Loan.MemberID
AND Loan.BookID = Book.BookID

AND Book.Author = "Sylvia Plath"

SELECT FirstName, Surname, Email

FROM Member
JOIN Loan ON Member.MemberID = Loan.MemberID
JOIN Book ON Loan.BookID = Book.BookID

WHERE Book.Author = "Sylvia Plath"

**What attributes do I want?
FirstName, Surname, Email**

**How can I bring these attributes together?
From Member to Loan to Book**

**What conditions should they meet?
Author is Sylvia Plath**

**How should I order them?
We don't mind**

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