The Learning House

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Louisville KY 40202

Table Relationships Recap

.NET Cohort

Coding Bootcamp

SOFTWARE GUILD

Lesson Goals

- Cover one-to-many, zero-to-many, and many-to-many relationships with illustrations

Recap: What is a Relationship?

Relationships exist when keys are used to link multiple tables' data rows together. Generally, the *primary key* of one table is a *foreign key* in another.

EmpID	LastName	FirstName	HireDate	LocationID	ManagerID	Status
1	Adams	Alex	2001-01-01 00:00:00.000	1	11	NULL
2	Brown	Barry	2002-08-12 00:00:00.000	1	11	NULL
3	Osako	Lee	1999-09-01 00:00:00.000	2	11	NULL
4	Kennson	David	1996-03-16 00:00:00.000	1	11	Has Tenure
5	Bender	Eric	2007-05-17 00:00:00.000	1	11	NULL
6	Kendall	Lisa	2001-11-15 00:00:00.000	4	4	NULL
7	Lonning	David	2000-01-01 00:00:00.000	1	11	On Leave
8	Marshbank	John	2001-11-15 00:00:00.000	NULL	4	NULL
9	Newton	James	2003-09-30 00:00:00.000	2	3	NULL
10	O'Haire	Terry	2004-10-04 00:00:00.000	2	3	NULL
11	Smith	Sally	1989-04-01 00:00:00.000	1	NULL	NULL

GrantID	GrantName	EmpID	Amount
001	92 Purr_Scents %% team	7	4750.00
002	K_Land fund trust	2	15750.00
003	Robert@BigStarBank.com	7	18100.00
004	Norman's Outreach	NULL	21000.00

LocationID	Street	City	State
1	111 First ST	Seattle	WA
2	222 Second AVE	Boston	MA
3	333 Third PL	Chicago	IL
4	444 Ruby ST	Spokane	WA

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Zero-to-Many Relationships

A zero-to-many relationship exists when there is an optional key relationship between two tables. In this case, EmpID on Grant is nullable, so it is a zero-to-many relationship.

EmpID	LastName	FirstName	HireDate	LocationID	ManagerID	Status
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3	Osako	Lee	1999-09-01 00:00:00.000	2	11	NULL
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Zero-to-Many Examples

- An employee and their health insurance choice (employees can waive coverage)
- Apartment and tenant (it could be vacant)

One-to-Many Relationships

In a one-to-many relationship, a primary key from one table is a required field on another. In this example, it doesn't make sense to have an order detail line without a product id… so it is a one-to-many relationship.

OrderID	ProductID	UnitPrice	Quantity	Discount
10248	11	14.00	12	0
10248	42	9.80	10	0
10248	72	34.80	5	0
10249	14	18.60	9	0
10249	51	42.40	40	0
10250	51	42.40	35	0.15

ProductID	ProductName	SupplierID	CategoryID	QuantityPerUnit	UnitPrice
11	Queso Cabrales	5	4	1 kg pkg.	21.00
14	Tofu	6	7	40 - 100 g pkgs.	23.25
42	Singaporean Hokkien Fried Mee	20	5	32 - 1 kg pkgs.	14.00
51	Manjimup Dried Apples	24	7	50 - 300 g pkgs.	53.00
72	Mozzarella di Giovanni	14	4	24 - 200 g pkgs.	34.80

One-to-Many Examples

- A specific college course and its instructor
- An employee and his/her department
- A stock symbol and its daily close data
- A grocery store product and its category
- A person and his/her birth place

Many-to-Many Relationships

In a many-to-many relationship, we are attempting to model a complex relationship where a record in one table can be linked to many records in another table. These are also called Map tables, Bridge tables, or Junction tables. An invoice can have many products, and a product can be on many invoices, so there is many-to-many relationship between order and product in the invoice detail table.

dbo.Product	
P_ID	**P_Name**
1	Toy Car
2	Furchee
3	Timbot
4	Go-Duck
5	Pet Mock

dbo.InvoiceDetail	
P_ID	**Inv_ID**
1	5631
2	5631
2	5632
5	5632
1	5633
4	5633
4	5634
1	5634

dbo.Invoice	
Inv_ID	**Inv_Date**
5631	1/1/2009
5632	3/5/2009
5633	7/15/2009
5634	9/22/2009

Many-to-Many Examples

- Parents and children
- College students and classes
- A bus and bus stops (some bus stops are shared by many bus routes)
- Authors and books

Lab Exercise (Northwind Database)

1. Write a query showing the customer and order information for customer AROUT.
2. Write a query that combines Orders, Order Details, and Products. Show the OrderID, OrderDate, Order UnitPrice, Product Unit Price, Quantity, Discount, and ProductName.

Fin

- Next up: NULL, Expressions, and Identity Fields