The Sequel to SQL:
Level 3 – Section 2

Relationships

3 Different Types of Table Relationships

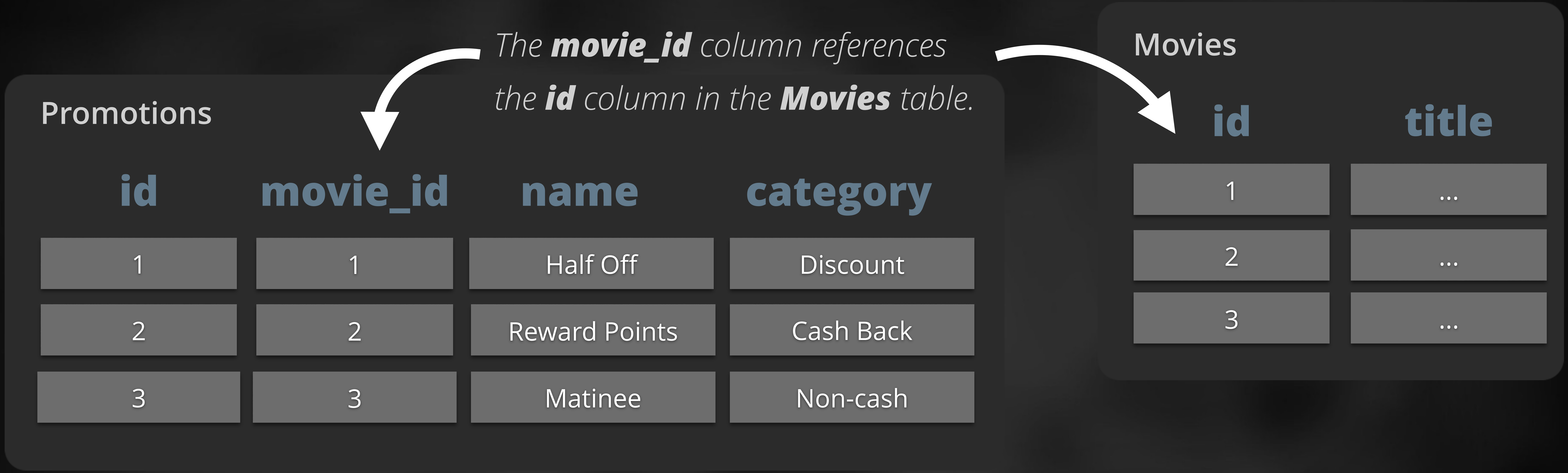
One-to-One

One-to-Many

Many-to-Many

In this level, we'll take a closer look at each of these.

Previous Example From Level 2



*The **movie_id** column references the **id** column in the **Movies** table.*

Promotions

id	movie_id	name	category
1	1	Half Off	Discount
2	2	Reward Points	Cash Back
3	3	Matinee	Non-cash

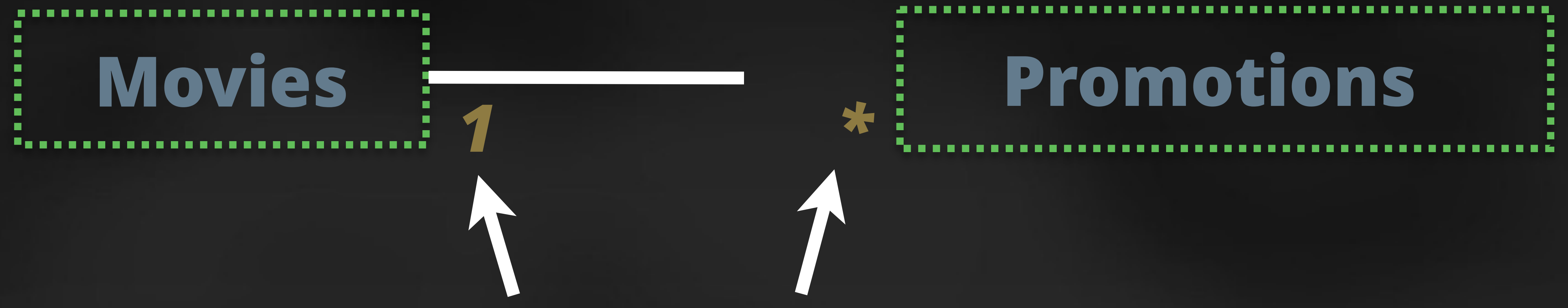
Movies

id	title
1	...
2	...
3	...

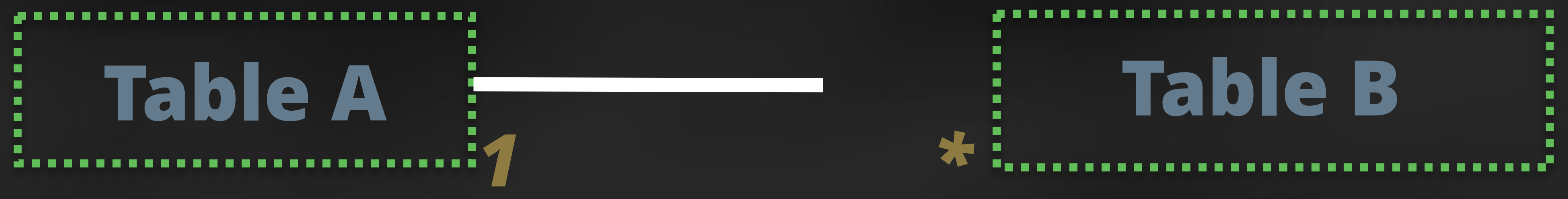
*What is the name for this type of relationship, where **a promotion can have 1 movie** and **a movie can have many promotions**?*

Looking at One-to-Many Relationship Diagrams

One movie… *…can have…* *…many promotions.*



*This means it's a **ONE-TO-MANY** relationship.*



One row on the left can refer to multiple rows on the right.

Naming Another Relationship

Movies

id	title	duration
1	Don Juan	110
2	Peter Pan	134
3	The Lost World	105
4	Robin Hood	143

Movies_Genres

movie_id	genre_id
1	1
2	2
2	3
3	3
4	2
4	3

Genres

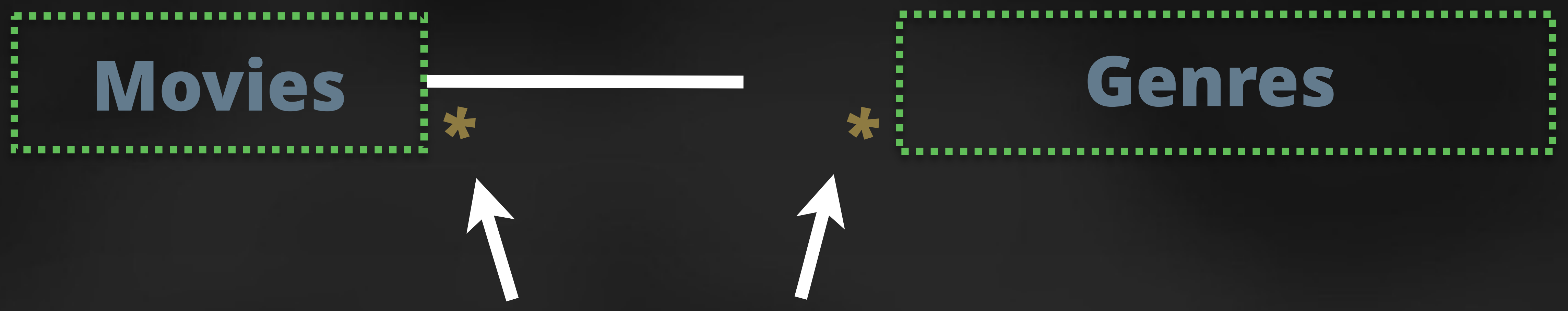
id	name
1	Romance
2	Adventure
3	Fantasy

*What is the name for this type of relationship, where **a movie can have many genres** and **a genre can have many movies**?*

Looking at Many-to-Many Relationship Diagrams

Many movies...

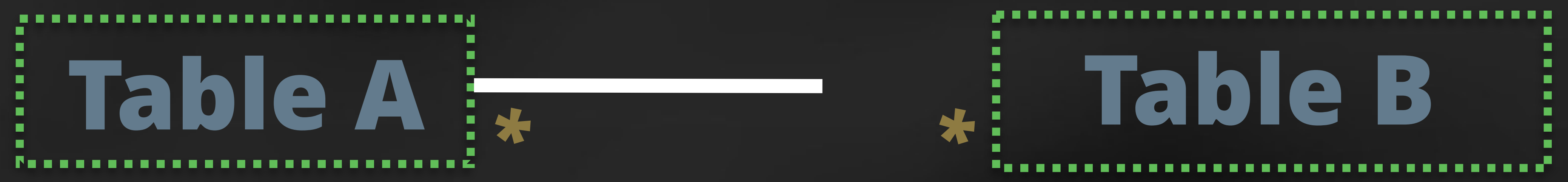
...can have...



...many genres.

This means it's a ***MANY-TO-MANY*** *relationship.*

Notice in this diagram we omit the join table.



Multiple rows on the left can refer to multiple rows on the right.

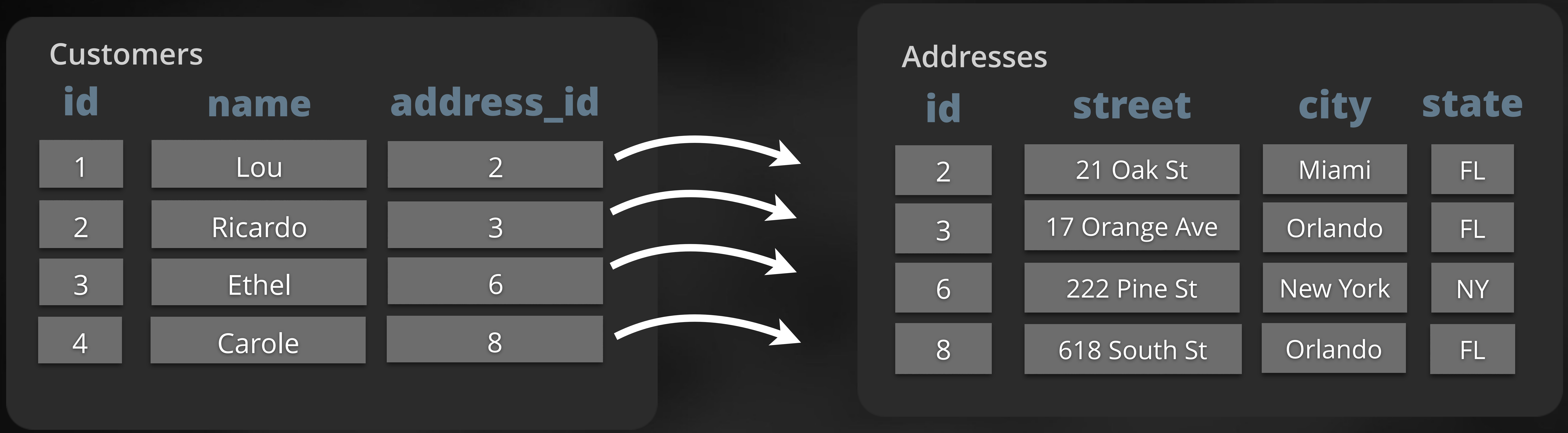
Splitting a Table Into 2

Customers

id	name	street	city	state
1	Lou	21 Oak St	Miami	FL
2	Ricardo	17 Orange Ave	Orlando	FL
3	Ethel	222 Pine St	New York	NY
4	Carole	618 South St	Orlando	FL

Sometimes you want to split a single table item into 2 tables.
For example, address information.

Finding a Common Relationship Between Tables



Customers

id	name	address_id
1	Lou	2
2	Ricardo	3
3	Ethel	6
4	Carole	8

Addresses

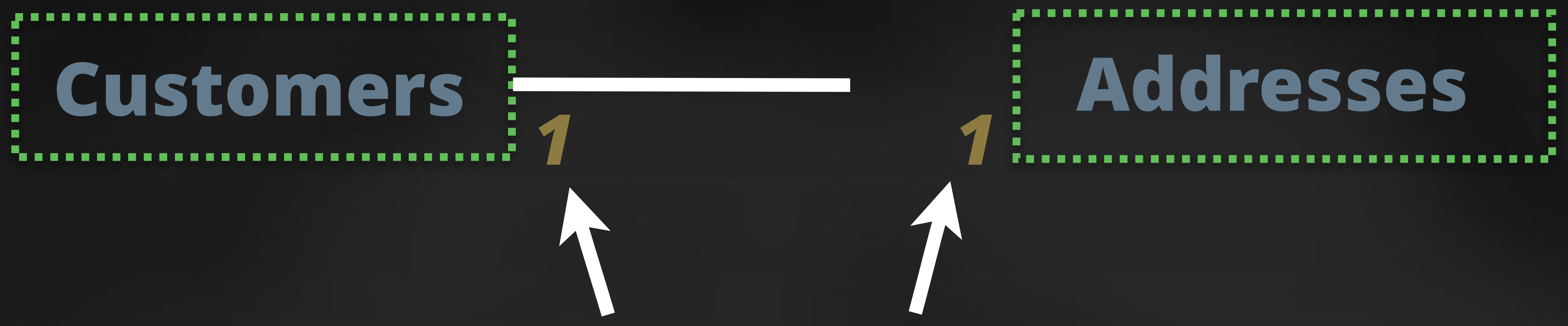
id	street	city	state
2	21 Oak St	Miami	FL
3	17 Orange Ave	Orlando	FL
6	222 Pine St	New York	NY
8	618 South St	Orlando	FL

A customer has 1 address *and* ***an address has 1 customer.***

Explaining One-to-One Relationship Diagrams

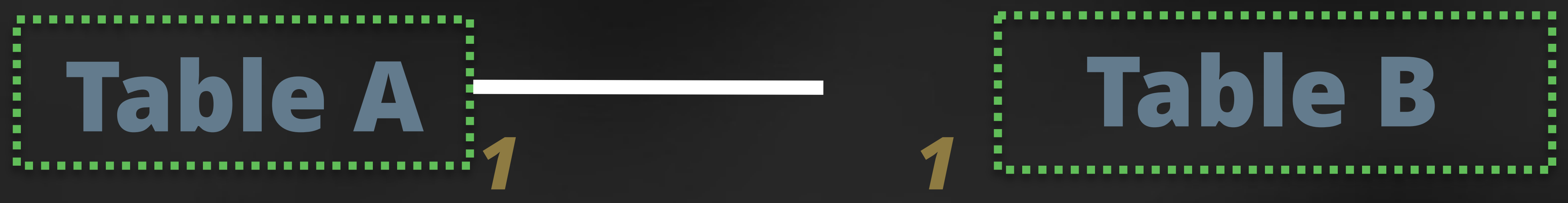
...can have...

A customer...



...only 1 address.

This means it's a ***ONE-TO-ONE*** *relationship.*



One row on the left can refer to 1 row on the right.

3 Different Types of Table Relationships

One-to-One

One-to-Many

Many-to-Many

Another Relationship Example

How should we relate these 2 tables?

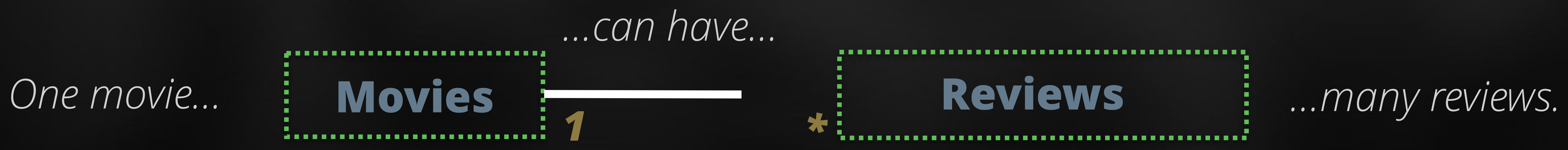
Movies

id	title	genre	duration
1	Don Juan	Romance	110
2	Peter Pan	Adventure	120
3	The Lost World	Fantasy	105
4	Robin Hood	Adventure	143

Reviews

id	review	date
1	Loved it!	10/09/2013
2	A must-see!	08/01/2012
3	Hated it	08/01/2012
4	It was okay	02/21/2015
5	Do not see!	03/12/2014

One-to-Many



One movie...

Movies

1

...can have...

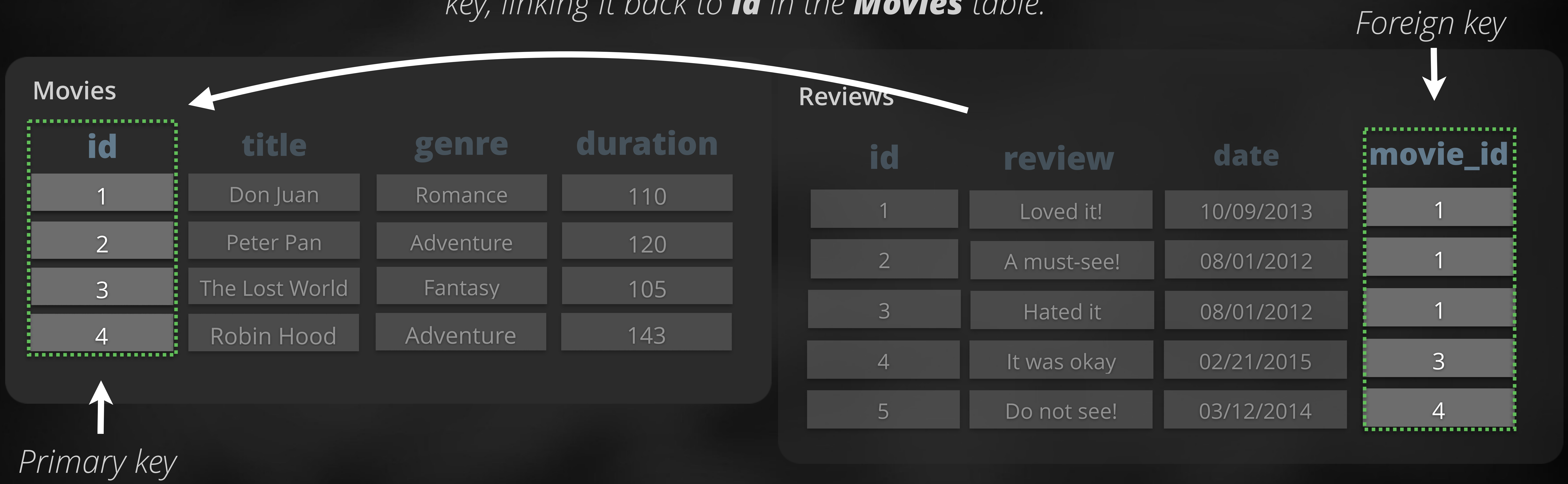
*

Reviews

...many reviews.

Adding a Linking Column

*The **movie_id** column is added as the foreign key, linking it back to **id** in the **Movies** table.*



Movies

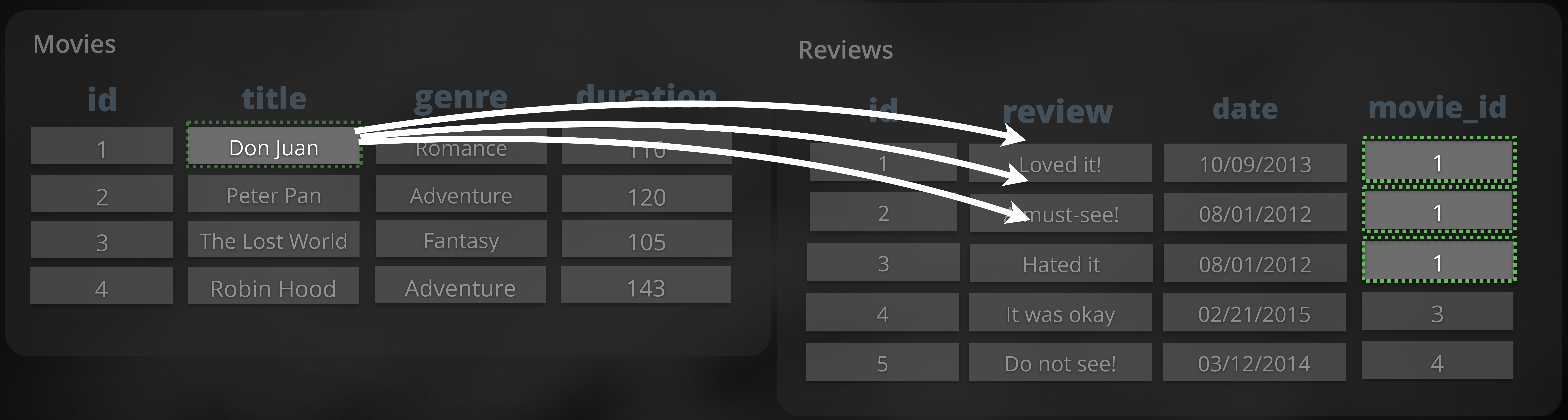
id	title	genre	duration
1	Don Juan	Romance	110
2	Peter Pan	Adventure	120
3	The Lost World	Fantasy	105
4	Robin Hood	Adventure	143

Reviews

id	review	date	movie_id
1	Loved it!	10/09/2013	1
2	A must-see!	08/01/2012	1
3	Hated it	08/01/2012	1
4	It was okay	02/21/2015	3
5	Do not see!	03/12/2014	4

Looking at How the Values Are Now Related

Don Juan *has many reviews through the*
movie_id *foreign key column.*



Movies

id	title	genre	duration
1	Don Juan	Romance	110
2	Peter Pan	Adventure	120
3	The Lost World	Fantasy	105
4	Robin Hood	Adventure	143

Reviews

id	review	date	movie_id
1	Loved it!	10/09/2013	1
2	A must-see!	08/01/2012	1
3	Hated it	08/01/2012	1
4	It was okay	02/21/2015	3
5	Do not see!	03/12/2014	4

Forming a Different Relationship

Movies can have many different promotions.

Movies

id	title	date
1	Don Juan	14-JUN-2014
2	The Wolf Man	04-JUL-2014
3	Frankenstein	20-JUL-2014
4	Peter Pan	18-JUN-2014
5	The Lost World	20-JUL-2014
6	Robin Hood	23-JUL-2014

↑

Primary key

Promotions

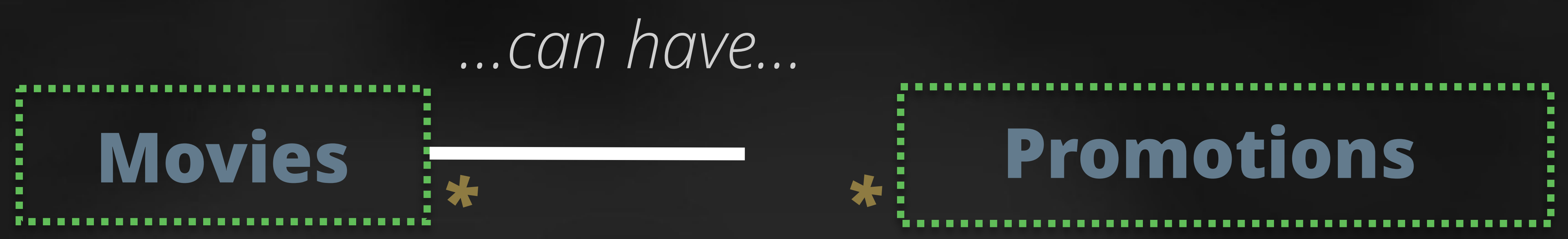
id	name	category
1	Half Off	Discount
2	Reward Points	Cash Back
3	Matinee	Non-cash
4	Giveaways	Merchandise
5	Free Pass	Non-cash

↑

Primary key

This Is a Many-to-Many Relationship

Many movies...



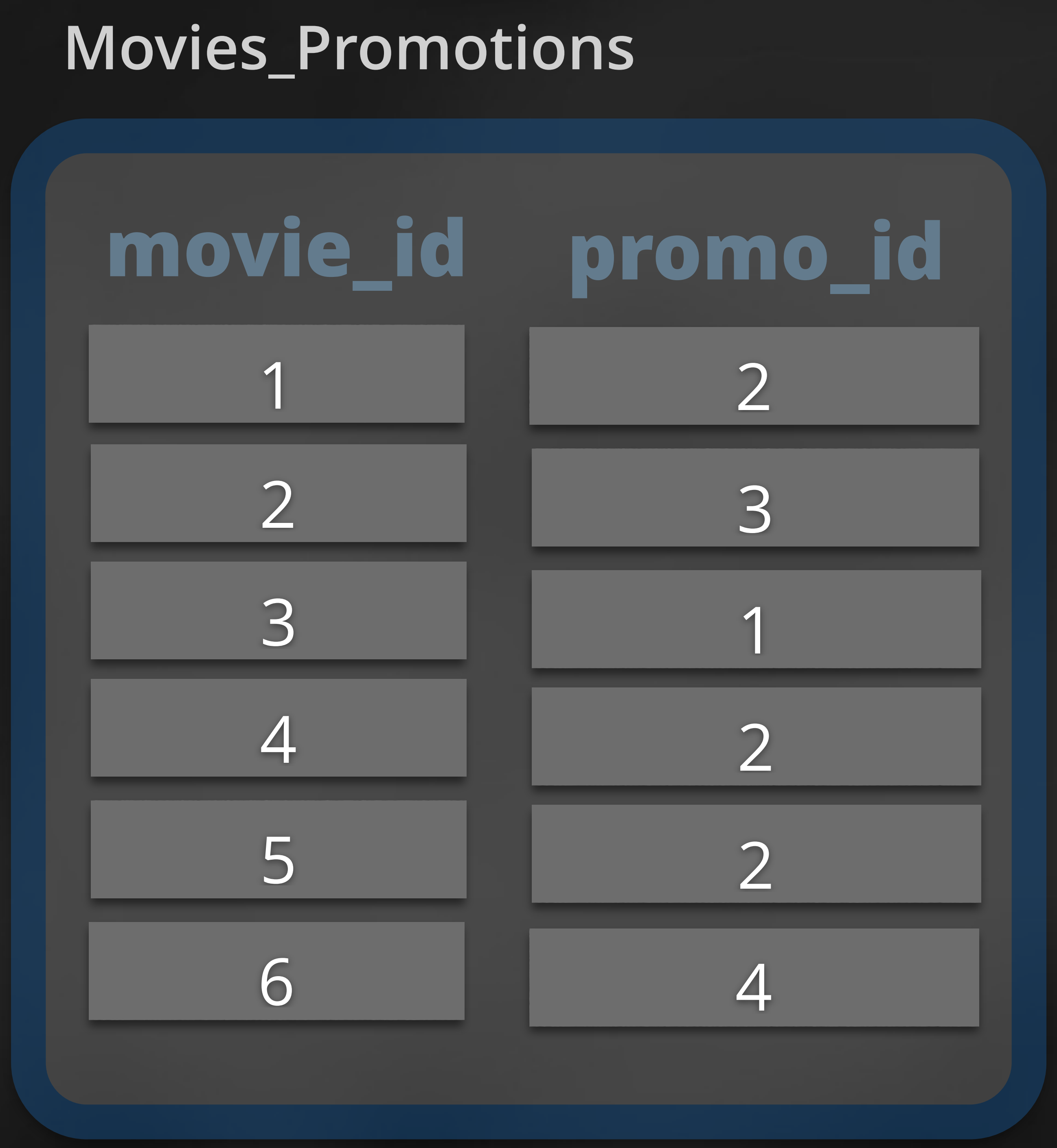
...can have...

...many promotions.

Creating a Join Table

In this case, we need a join table in order to form a relationship between 2 tables.

Join Table



Movies_Promotions

movie_id	promo_id
1	2
2	3
3	1
4	2
5	2
6	4

Created with only the primary keys from both tables