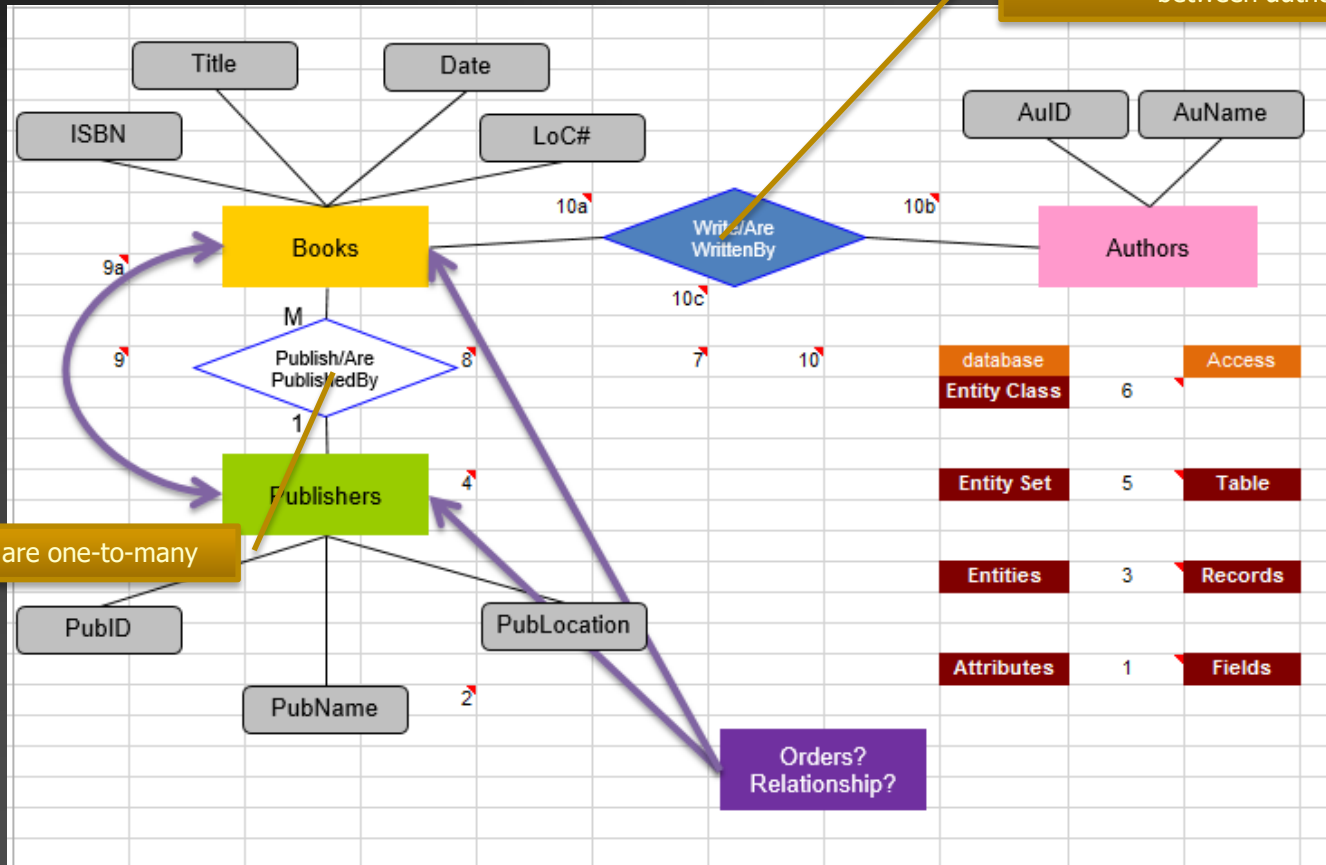


Relationships

One-to-many and Many-to-many

An Entity Relationship Diagram

But there is a many-to-many relationship link between authors and books



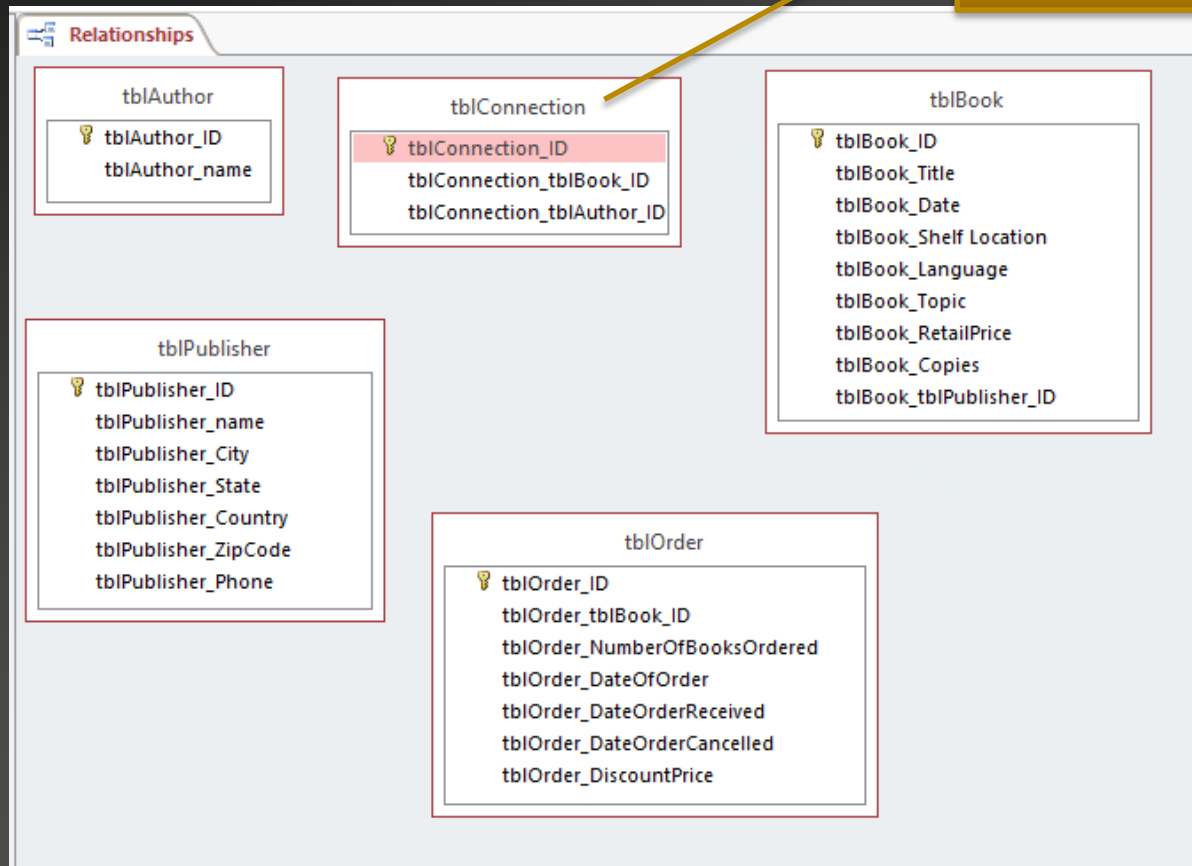
Most relationships are one-to-many

database	Access
Entity Class	6
Entity Set	5
Entities	3
Attributes	1
	Records
	Fields

Orders?
Relationship?

Transformed into an Access relationship

an intervening table must be created to enable Access to deal with a many-to-many relationship between books and authors



Primary Key

the Primary Key needs to be unique and not duplicated in this table

Field Name	Data Type	Description (Optional)
tblConnection_ID	AutoNumber	Primary Key
tblConnection_tblBook_ID	Number	Foreign Key; copy of PK from tblBook; field size needs to be long integer to match PK
tblConnection_tblAuthor_ID	Number	Foreign Key; copy of PK from tblAuthor; field size needs to be long integer to match PK

General Lookup	
Field Size	Long Integer
New Values	Increment
Format	
Caption	Connection ID
Indexed	Yes (No Duplicates)
Text Align	General

An index speeds up searches and sorting on the field, but may slow updates. Selecting "Yes - No Duplicates" prohibits duplicate values in the field. Press F1 for help on indexed fields.

Design view. F6 = Switch panes. F1 = Help.

Foreign Key

But the Primary Key from another table is a Foreign Key in this table and it needs to be capable of being repeated so that a record in this table may be related to a record in the home table

Field Name	Data Type	Description (Optional)
tblConnection_ID	AutoNumber	Primary Key
tblConnection_tblBook_ID	Number	Foreign Key; copy of PK from tblBook; field size needs to be long integer to match PK
tblConnection_tblAuthor_ID	Number	Foreign Key; copy of PK from tblAuthor; field size needs to be long integer to match PK

Field Properties	
Field Size	Long Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	Book Title
Default Value	
Validation Rule	
Validation Text	
Required	No
Indexed	Yes (Duplicates OK)
Text Align	General

An index speeds up searches and sorting on the field, but may slow updates. Selecting "Yes - No Duplicates" prohibits duplicate values in the field. Press F1 for help on indexed fields.

Design view. F6 = Switch panes. F1 = Help.

To create a relationship between a primary key and a foreign key

THERE ARE TWO METHODS

The first is to do it manually in the relationship view

THERE ARE TWO METHODS

After ensuring that the PK/FK fields are compatible, create the relationship

The screenshot shows the Microsoft Access Relationships window for a database named "2015-2016.spring.161-001.05.01.tables.05.01.Database". The Relationships ribbon is active, and the "tblConnection" relationship is selected. The Relationships window displays four tables: tblAuthor, tblConnection, tblBook, and tblOrder. The fields in each table are as follows:

- tblAuthor:** tblAuthor_ID (Primary Key), tblAuthor_name
- tblConnection:** tblConnection_ID (Primary Key), tblConnection_tblBook_ID, tblConnection_tblAuthor_ID
- tblBook:** tblBook_ID (Primary Key), tblBook_Title, tblBook_Date, tblBook_Shelf_Location, tblBook_Language, tblBook_Topic, tblBook_RetailPrice, tblBook_Copies, tblBook_tblPublisher_ID
- tblOrder:** tblOrder_ID (Primary Key), tblOrder_tblBook_ID, tblOrder_NumberOfBooksOrdered, tblOrder_DateOfOrder, tblOrder_DateOrderReceived, tblOrder_DateOrderCancelled

The "Edit Relationships" dialog box is open, showing the relationship between "tblBook" (Table/Query) and "tblConnection" (Related Table/Query). The primary key field "tblBook_ID" is linked to the foreign key field "tblConnection_tblBook_ID". The "Enforce Referential Integrity" checkbox is checked. The "Relationship Type" is set to "One-To-Many".

A yellow callout box with a red border contains the text: "Drag the PK from the one table to the FK in the many table to establish the relationship. Firm up the relationship by enforcing referential integrity". A yellow arrow points from this callout to the relationship line between the two tables.

But a better method is to use the lookup wizard tool

THERE ARE TWO METHODS

Find the lookup wizard on the FKs

2015-2016.spring.161-001.05.01.tables.05.01 : Database- C:\Users\Ron\OneDrive\2... Ron Bergquist

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS Acrobat DESIGN

Clipboard Sort & Filter Records Find Text Formatting

All Access Obj... Relationships tblConnection

Field Name	Data Type	Description (Optional)
tblConnection_ID	AutoNumber	Primary Key
tblConnection_tblBook_ID	Number	Foreign Key; copy of PK from tblBook; field size needs to be long integer to match PK
tblConnection_tblAuthor_ID	Short Text	Foreign Key; copy of PK from tblAuthor; field size needs to be long integer to match PK

Field Properties

General	
Field Size	Long Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	Book Title
Default Value	
Validation Rule	
Validation Text	
Required	No
Indexed	Yes (Duplicates OK)
Text Align	General

The data type determines the kind of values that users can store in the field. Press F1 for help on data types.

Design view. F6 = Switch panes. F1 = Help. NUM LOCK

It will allow you to create a lookup table using values from another table

Lookup Wizard

This wizard creates a lookup field, which displays a list of values you can choose from. How do you want your lookup field to get its values?

- I want the lookup field to get the values from another table or query.
- I will type in the values that I want.

Cancel < Back Next > Finish

Field Name: BOOK TITLE

Field Size: []

Format: []

Decimal Places: []

Input Mask: []

Caption: []

Default Value: []

Validation Rule: []

Validation Text: []

Required: No

Indexed: Yes (Duplicates OK)

Text Align: General

The data type determines the kind of values that users can store in the field. Press F1 for help on data types.

In this case, we want values from the book table

The screenshot shows the Microsoft Access interface with the 'tblConnection' table in design view. The 'Lookup Wizard' dialog box is open, displaying a list of tables to choose from for the lookup field. The 'tblBook' table is selected. The 'View' section has 'Tables' selected.

Field Name	Data Type	Primary
tblConnection_ID	AutoNumber	Primary
tblConnection_tblBook_ID	Number	Foreign
tblConnection_tblAuthor_ID	Number	Foreign

Lookup Wizard

Which table or query should provide the values for your lookup field?

- Table: tblAuthor
- Table: **tblBook**
- Table: tblConnection
- Table: tblOrder
- Table: tblPublisher
- Table: tblPublisher_country-codes
- Table: tblPublisher_state-codes

View

Tables Queries Both

Buttons: Cancel, < Back, Next >, Finish

We want the lookup table to show us the titles of the books

The screenshot shows the Microsoft Access interface with the 'Lookup Wizard' dialog box open. The background shows the 'tblConnection' table in the 'DESIGN' view, with fields: tblConnection_ID (AutoNumber, Primary Key), tblConnection_tblBook_ID (Number, Foreign Key), and tblConnection_tblAuthor_ID (Number, Foreign Key). The 'Lookup' tab is selected in the 'General' section, showing 'Field Size' as Long Integer, 'Caption' as 'Book Title', and 'Indexed' as 'Yes (Duplicates OK)'. The 'Lookup Wizard' dialog box has the following text: 'Which fields of tblBook contain the values you want included in your lookup field? The fields you select become columns in your lookup field.' Below this, there are two lists: 'Available Fields' and 'Selected Fields'. The 'Available Fields' list includes: tblBook_ID, tblBook_Date, tblBook_Shelf Location, tblBook_Language, tblBook_Topic, tblBook_RetailPrice, tblBook_Copies, and tblBook_tblPublisher_ID. The 'Selected Fields' list contains: tblBook_Title. The 'Next >' button is highlighted.

Field Name	Data Type	Primary Key	Foreign Key
tblConnection_ID	AutoNumber	Yes	No
tblConnection_tblBook_ID	Number	No	Yes
tblConnection_tblAuthor_ID	Number	No	Yes

Field Name	Data Type
tblBook_ID	AutoNumber
tblBook_Date	Date/Time
tblBook_Shelf Location	Text
tblBook_Language	Text
tblBook_Topic	Text
tblBook_RetailPrice	Number
tblBook_Copies	Number
tblBook_tblPublisher_ID	Number

Property	Value
Field Size	Long Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	Book Title
Default Value	
Validation Rule	
Validation Text	
Required	No
Indexed	Yes (Duplicates OK)
Text Align	General

And we want the titles in alphabetical order, not the order in which they exist in the book table

The screenshot shows the Microsoft Access interface with the 'tblConnection' table selected in the Relationships view. The 'Lookup Wizard' dialog box is open, asking 'What sort order do you want for the items in your list box?'. The dialog provides instructions: 'You can sort records by up to four fields, in either ascending or descending order.' There are four rows for selection, each with a dropdown menu and an 'Ascending' button. The first row has 'tblBook Title' selected in the dropdown. The 'Next >' button is highlighted in blue. The background shows the table structure for 'tblConnection' with fields: 'tblConnection_ID' (AutoNumber, Primary Key), 'tblConnection_tblBook_ID' (Number, Foreign Key), and 'tblConnection_tblAuthor_ID' (Number, Foreign Key). The 'General' tab of the table's properties is also visible, showing 'Caption' as 'Book Title' and 'Indexed' as 'Yes (Duplicates OK)'.

Field Name	Data Type	Primary Key	Foreign Key
tblConnection_ID	AutoNumber	Yes	No
tblConnection_tblBook_ID	Number	No	Yes
tblConnection_tblAuthor_ID	Number	No	Yes

Property	Value
Field Size	Long Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	Book Title
Default Value	
Validation Rule	
Validation Text	
Required	No
Indexed	Yes (Duplicates OK)
Text Align	General

And our query is built to create a lookup table for us

The screenshot shows Microsoft Access in Design view for the 'tblConnection' table. The table structure is as follows:

Field Name	Data Type	Primary
tblConnection_ID	AutoNumber	Primary
tblConnection_tblBook_ID	Number	Foreign
tblConnection_tblAuthor_ID	Number	Foreign

The 'Lookup Wizard' dialog box is open, showing the 'Book Title' field selected in the list. The dialog asks: 'How wide would you like the columns in your lookup field?' and provides instructions on how to adjust column widths. The 'Hide key column (recommended)' checkbox is checked. The 'Next >' button is highlighted.

Below the dialog, the 'General' tab of the 'tblConnection' table properties is visible, showing the following settings:

Property	Value
Field Size	Long Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	Book Title
Default Value	
Validation Rule	
Validation Text	
Required	No
Indexed	Yes (Duplicates OK)
Text Align	General

The final step is to have the wizard create the relationship between a PK and a FK

The screenshot shows the Microsoft Access interface with the 'tblConnection' table in design view. The 'tblConnection_tblBook_ID' field is selected, and the 'Lookup Wizard' dialog box is open. The wizard is configuring a lookup field for this field. The source table is 'tblConnection_tblBook_ID' and the field to look up is 'Book Title'. The wizard is also configuring the delete behavior to 'Restrict Delete' and has checked the 'Enable Data Integrity' checkbox. The 'Finish' button is highlighted.

Field Name	Data Type	Primary Key	Foreign Key
tblConnection_ID	AutoNumber	Primary	
tblConnection_tblBook_ID	Number		Foreign
tblConnection_tblAuthor_ID	Number		Foreign

Property	Value
Field Size	Long Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	Book Title
Default Value	
Validation Rule	
Validation Text	
Required	No
Indexed	Yes (Duplicates OK)
Text Align	General

Which creates the 1:many relationship

The screenshot displays the Microsoft Access Relationships view for a database. The 'RELATIONSHIP TOOLS' ribbon is active, showing the 'DESIGN' tab. A yellow arrow points to the relationship line connecting the primary key 'tblConnection_ID' in the 'tblConnection' table to the foreign key 'tblBook_ID' in the 'tblBook' table. The relationship is labeled '1' on the 'tblConnection' side and '∞' on the 'tblBook' side, indicating a one-to-many relationship. Other tables shown include 'tblAuthor', 'tblPublisher', and 'tblOrder'.

tblAuthor

- tblAuthor_ID
- tblAuthor_name

tblConnection

- tblConnection_ID
- tblConnection_tblBook_ID
- tblConnection_tblAuthor_ID

tblBook

- tblBook_ID
- tblBook_Title
- tblBook_Date
- tblBook_Shelf Location
- tblBook_Language
- tblBook_Topic
- tblBook_RetailPrice
- tblBook_Copies
- tblBook_tblPublisher_ID

tblPublisher

- tblPublisher_ID
- tblPublisher_name
- tblPublisher_City
- tblPublisher_State
- tblPublisher_Country
- tblPublisher_ZipCode
- tblPublisher_Phone

tblOrder

- tblOrder_ID
- tblOrder_tblBook_ID
- tblOrder_NumberOfBooksOrdered
- tblOrder_DateOfOrder
- tblOrder_DateOrderReceived
- tblOrder_DateOrderCancelled

For all the foreign keys in the database

REPEAT THE PROCESS