Visio Tutorial: Database Model Design

IT 4153 Advanced Database

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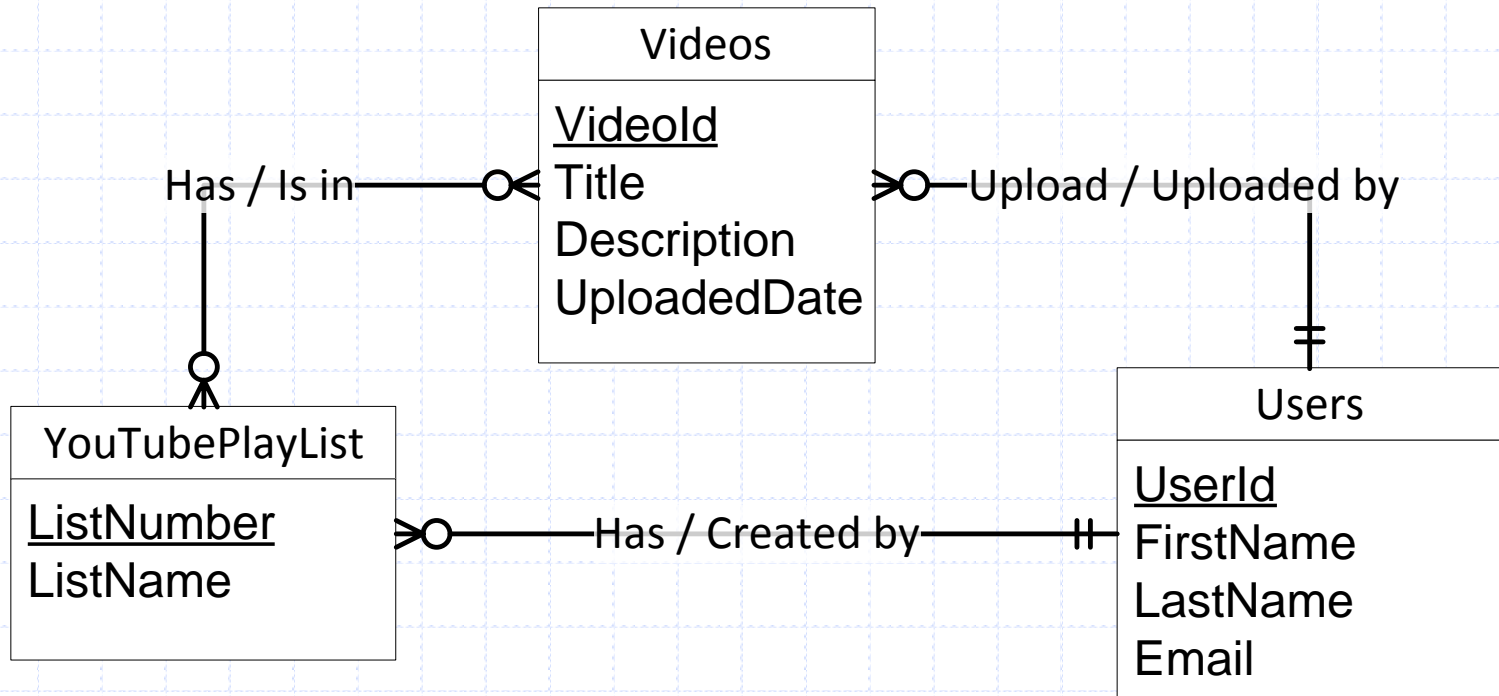
Overview / Introduction

- Use Visio for database modeling
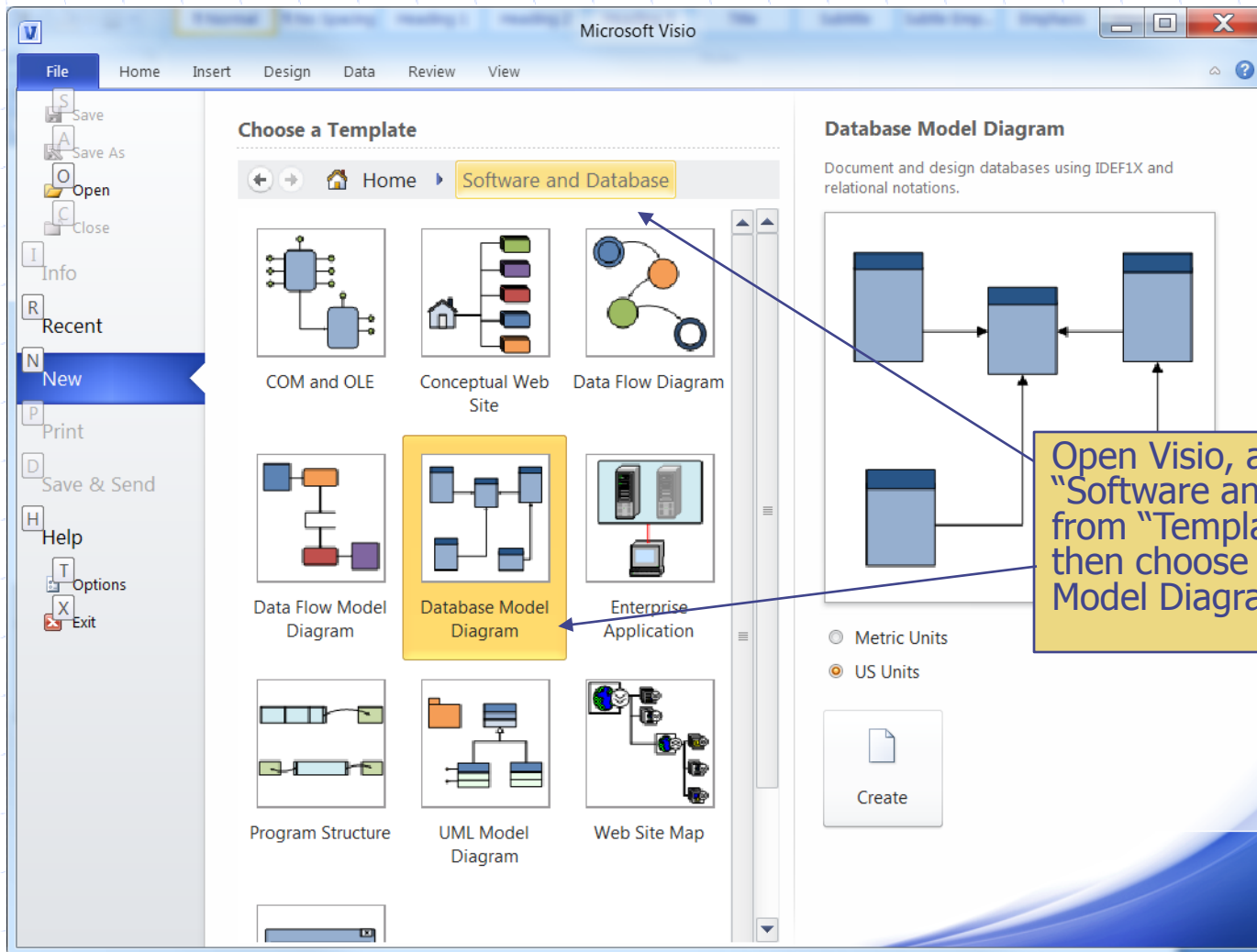
- Note
  - The database model diagram template in Visio is really a logical database model (plus some physical model), not really a conceptual ERD model
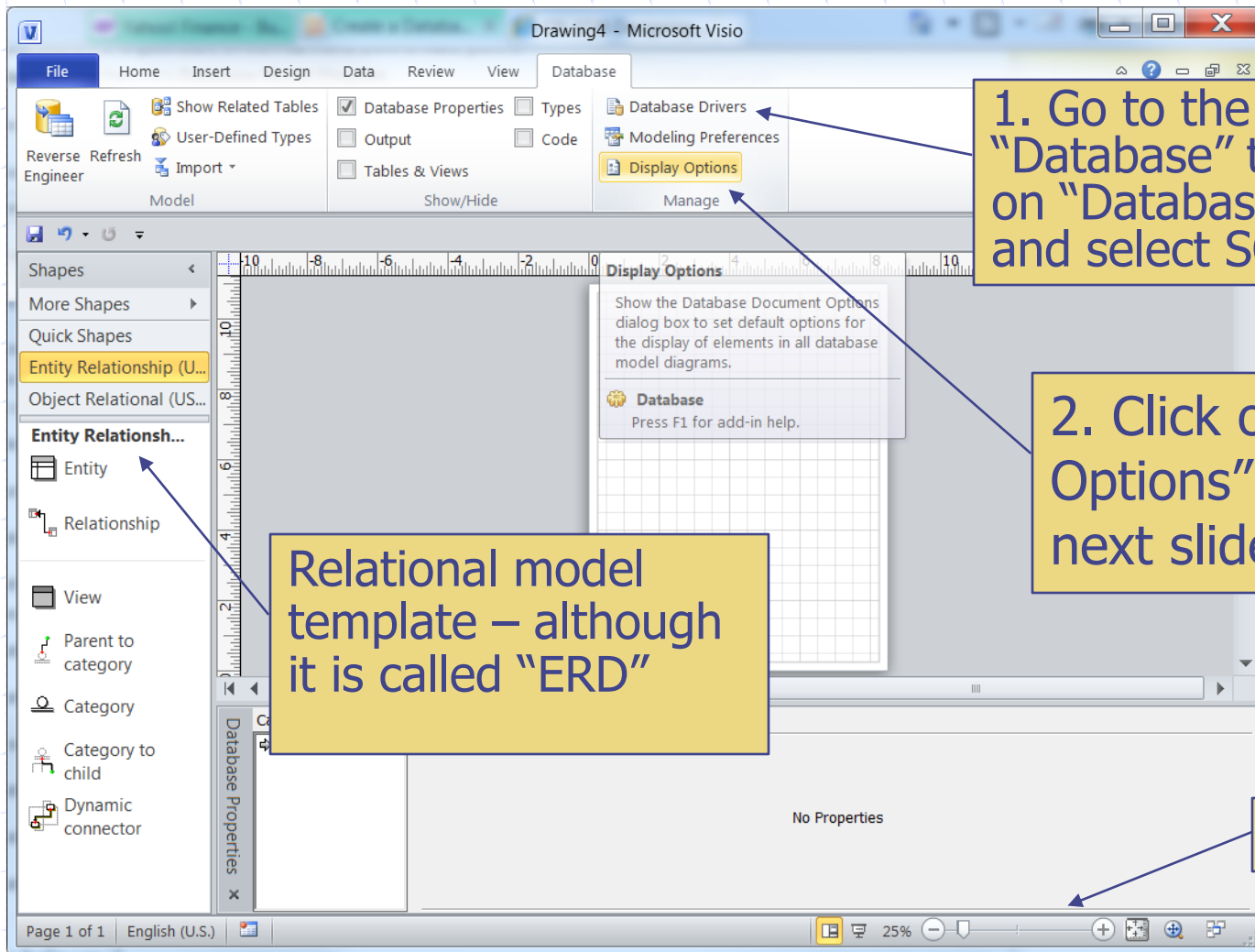
Starting from an ERD Example

- We will create a logical model based on this ERD

Videos

VideoId
Title
Description
UploadedDate

Has / Is in

Upload / Uploaded by

YouTubePlayList

ListNumber
ListName

Has / Created by

Users

UserId
FirstName
LastName
Email

Open Visio 2010

Open Visio, and choose "Software and Database" from "Template Categories", then choose "Database Model Diagram"
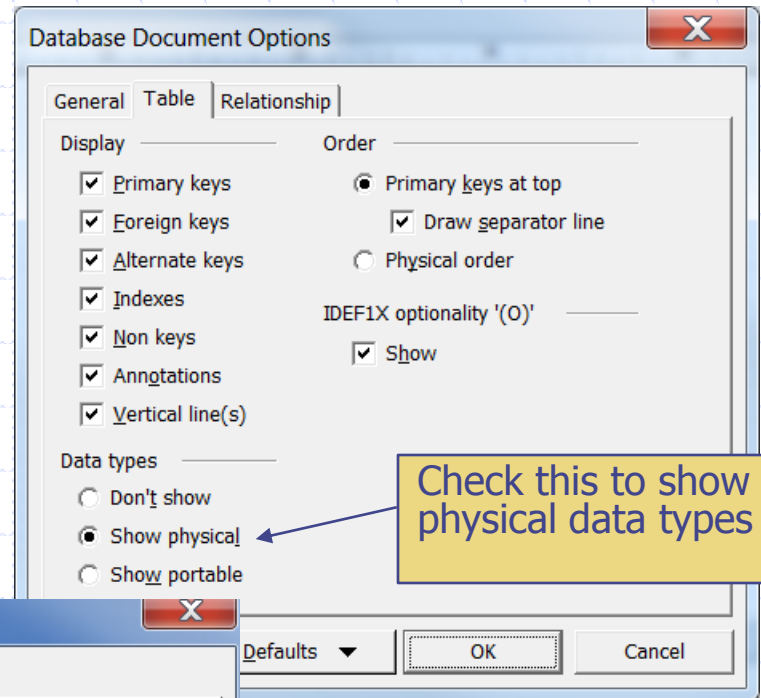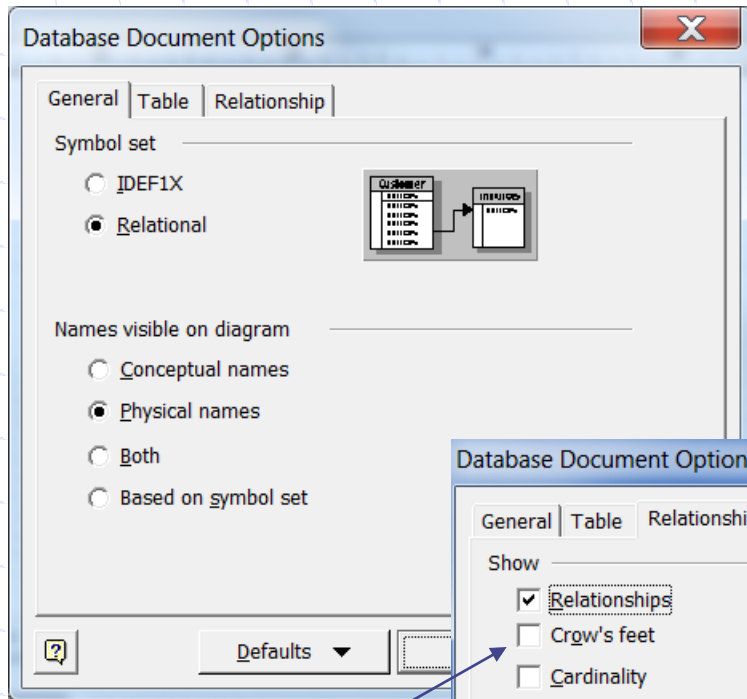
Settings in the Database Tab

1. Go to the "Database" tab; click on "Database Drivers" and select SQL Server.

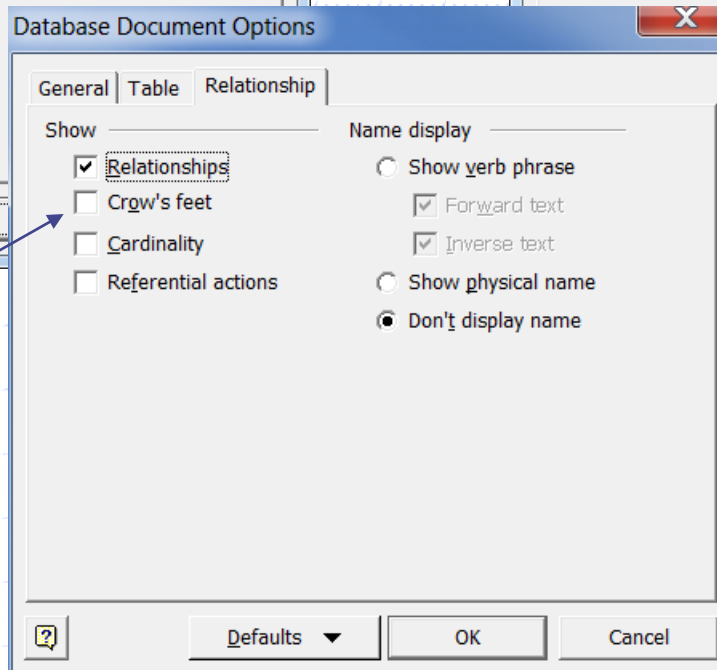2. Click on "Display Options" and see next slide

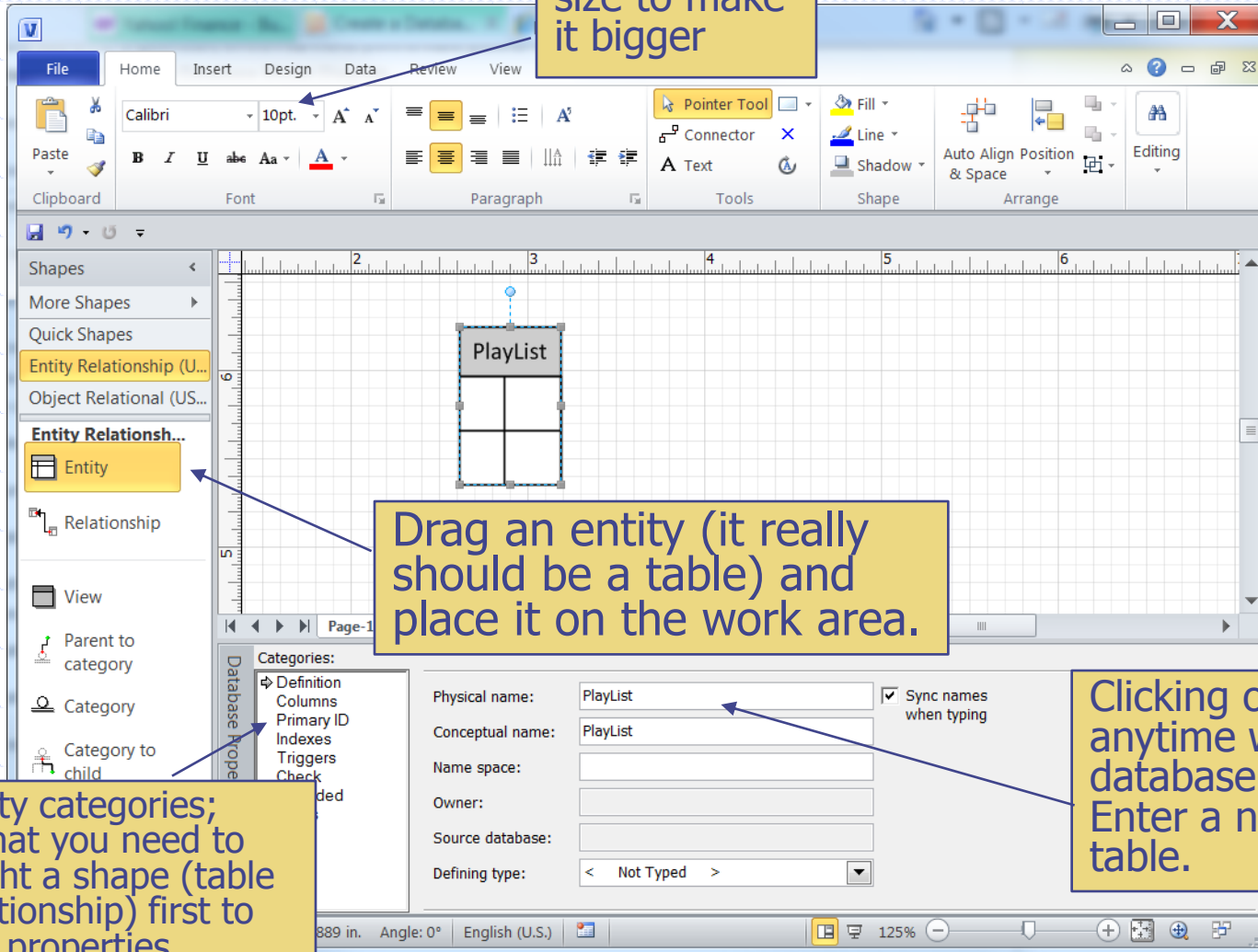Relational model template – although it is called "ERD"

Zooming

Display Options

Database Document Options

General | Table | Relationship

Symbol set
- ○ IDEF1X
- ● Relational

Names visible on diagram
- ○ Conceptual names
- ● Physical names
- ○ Both
- ○ Based on symbol set

Defaults ▼

Database Document Options

General | Table | Relationship

Display
- ☑ Primary keys
- ☑ Foreign keys
- ☑ Alternate keys
- ☑ Indexes
- ☑ Non keys
- ☑ Annotations
- ☑ Vertical line(s)

Order
- ● Primary keys at top
  - ☑ Draw separator line
- ○ Physical order

IDEF1X optionality '(O)'
- ☑ Show

Data types
- ○ Don't show
- ● Show physical
- ○ Show portable

Defaults ▼   OK   Cancel

Check this to show physical data types

Database Document Options

General | Table | Relationship

Show
- ☑ Relationships
- ☐ Crow's feet
- ☐ Cardinality
- ☐ Referential actions

Name display
- ○ Show verb phrase
  - ☑ Forward text
  - ☑ Inverse text
- ○ Show physical name
- ● Don't display name

Defaults ▼   OK   Cancel

You may want to show crow's feet

Create the First Table

Change font size to make it bigger

Drag an entity (it really should be a table) and place it on the work area.

Clicking on the table anytime will bring up this database property panel. Enter a name for the table.

Property categories; note that you need to highlight a shape (table or relationship) first to see its properties.

Define Columns

Callout annotations on the screenshot:

- Continue to create other 2 tables directly transformed from entities.
- No direct editing in the shape. Use "database properties" panel at the bottom
- Enter name, choose data type, required or not, primary key (PK) here based on the transformation guidelines; double-click a data type to edit column size.
- Advanced properties for columns, such as an identity column

Database Properties panel — Categories:
- Definition
- Columns
- Primary ID
- Indexes
- Triggers
- Check
- Extended
- Notes

Physical Name	Data Type	Req'd	PK	Notes
ListNumber	int	☑	☑	ListNumber identifies PlayList
ListName	char(10)	☐	☐	ListName is of PlayList
		☐	☐	

Show: ○ Portable data type   ● Physical data type   (Microsoft SQL Server)

Buttons: Add, Remove, Edit..., Move Up, Move Down

PlayList table:

PK	ListNumber	int
	ListName	char(10)

Define Relationships

Drag a relationship shape from the template. Connect the arrow end to the "one" side, and the other end to the "many" side. You may practice a while to move only the line end only (not the complete line).

When the red border appears, it's connected.

The FK column is automatically added by Visio when the relationship line is connected. Sometimes you have another same column already. Just delete one which is not assigned as FK.

Visio will automatically detect the PK/FK pair. If not correct, click on the relationship and change it here.
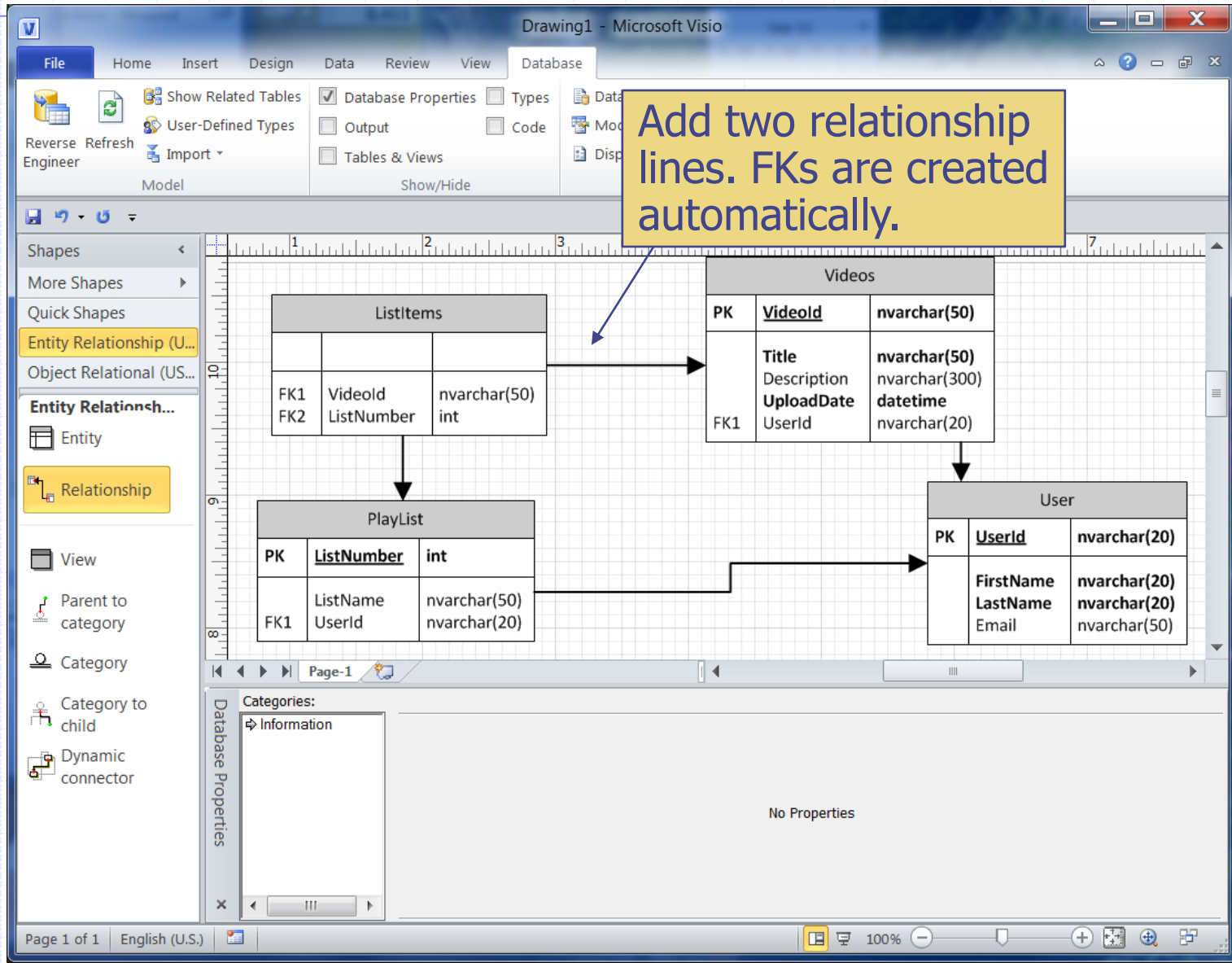
Transform N:M Relationship -1

Transform N:M Relationship -2

Transform N:M Relationship -3

Set the composite PK.

Completed

Additional Tutorials

- Create a database model
    - http://office.microsoft.com/en-us/visio-help/create-a-database-model-also-known-as-entity-relationship-diagram-HA010115477.aspx
    - Check out section 1 (should be 0, "create a new model diagram from scratch") and 1

- Database Concepts 5th edition Online Appendix D
    - http://www.pearsonhighered.com/kroenke

- Visio 2007 video tutorial (there are three parts)
    - http://www.youtube.com/watch?v=1BYt3wmkgXE