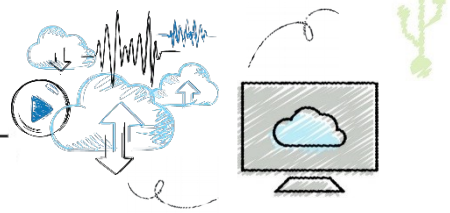
Access 2016 Module 5

Modifying the Database Structure



Module Objectives

- Examine relational databases
- Design related tables
- Create one-to-many relationships
- Create Lookup fields
- Modify Short Text fields
- Modify Number and Currency fields
- Modify Date/Time fields
- Modify validation properties
- Create Attachment fields

Examine Relational Databases (Slide 1 of 3)

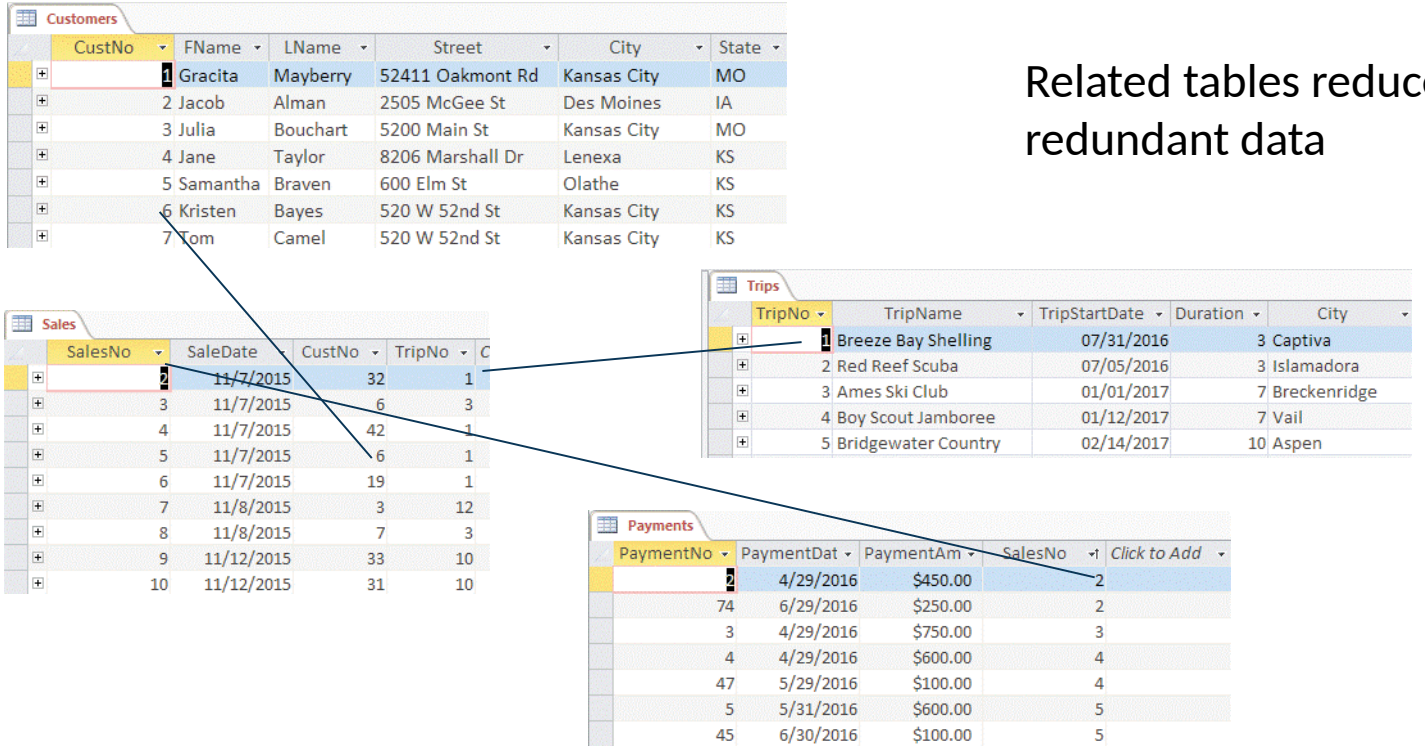
- The purpose of a relational database is to organize and store data in a way that minimizes redundancy and maximizes your flexibility when querying and analyzing data
- To redesign a list into a relational database
  - Design each table to contain fields that describe only one subject
  - Identify a **primary key field** for each table
  - Build one-to-many relationships

Examine Relational Databases (Slide 2 of 3)

Single Sales table results in duplicate data

TripName	City	Price	SalesNo	SaleDate	FName	LName	PaymentDat	PaymentAm
Breeze Bay Shelling	Captiva	$1,000	5	11/7/2015	Kristen	Bayes	5/31/2016	$600.00
Breeze Bay Shelling	Captiva	$1,000	5	11/7/2015	Kristen	Bayes	6/30/2016	$100.00
Breeze Bay Shelling	Captiva	$1,000	5	11/7/2015	Kristen	Bayes	7/31/2016	$200.00
Ames Ski Club	Breckenridge	$850	3	11/7/2015	Kristen	Bayes	4/29/2016	$750.00
Breeze Bay Shelling	Captiva	$1,000	4	11/7/2015	Kris	Goode	4/29/2016	$600.00
Breeze Bay Shelling	Captiva	$1,000	4	11/7/2015	Kris	Goode	5/29/2016	$100.00
Breeze Bay Shelling	Captiva	$1,000	6	11/7/2015	Naresh	Hubert	6/30/2016	$300.00
Breeze Bay Shelling	Captiva	$1,000	6	11/7/2015	Naresh	Hubert	7/31/2016	$200.00
Breeze Bay Shelling	Captiva	$1,000	6	11/7/2015	Naresh	Hubert	5/31/2016	$600.00

Examine Relational Databases (Slide 3 of 3)



Customers

CustNo	FName	LName	Street	City	State
1	Gracita	Mayberry	52411 Oakmont Rd	Kansas City	MO
2	Jacob	Alman	2505 McGee St	Des Moines	IA
3	Julia	Bouchart	5200 Main St	Kansas City	MO
4	Jane	Taylor	8206 Marshall Dr	Lenexa	KS
5	Samantha	Braven	600 Elm St	Olathe	KS
6	Kristen	Bayes	520 W 52nd St	Kansas City	KS
7	Tom	Camel	520 W 52nd St	Kansas City	KS

Sales

SalesNo	SaleDate	CustNo	TripNo	C
2	11/7/2015	32	1	
3	11/7/2015	6	3	
4	11/7/2015	42	1	
5	11/7/2015	6	1	
6	11/7/2015	19	1	
7	11/8/2015	3	12	
8	11/8/2015	7	3	
9	11/12/2015	33	10	
10	11/12/2015	31	10	

Trips

TripNo	TripName	TripStartDate	Duration	City
1	Breeze Bay Shelling	07/31/2016	3	Captiva
2	Red Reef Scuba	07/05/2016	3	Islamadora
3	Ames Ski Club	01/01/2017	7	Breckenridge
4	Boy Scout Jamboree	01/12/2017	7	Vail
5	Bridgewater Country	02/14/2017	10	Aspen

Payments

PaymentNo	PaymentDat	PaymentAm	SalesNo	Click to Add
2	4/29/2016	$450.00	2	
74	6/29/2016	$250.00	2	
3	4/29/2016	$750.00	3	
4	4/29/2016	$600.00	4	
47	5/29/2016	$100.00	4	
5	5/31/2016	$600.00	5	
45	6/30/2016	$100.00	5	

Related tables reduce redundant data

Design Related Tables (Slide 1 of 2)

- Develop a valid relational database design, then define the tables
- Using **Table Design View**, can specify all characteristics of a table including:
  - field names
  - data types
  - field descriptions
  - field properties
  - Lookup properties
  - primary key field designations

Design Related Tables (Slide 2 of 2)

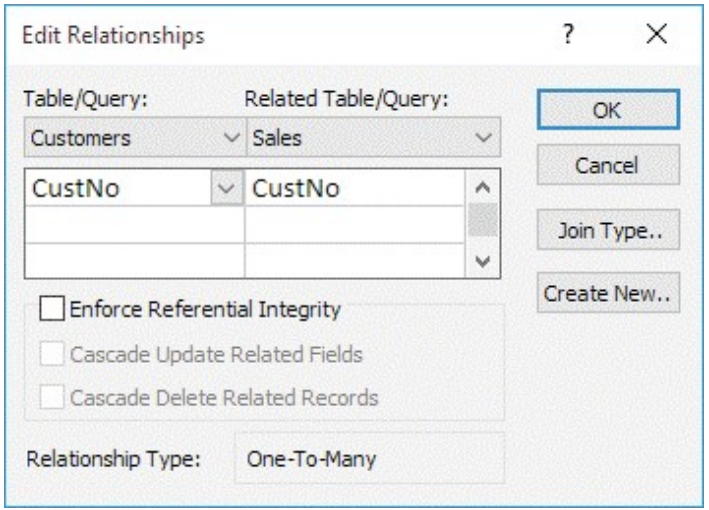
Table Design View for the new Payments table

Table1

Field Name	Data Type	Description (Optional)
PaymentNo	AutoNumber	Unique payment number and primary key field
PaymentDate	Date/Time	Date the payment is made
PaymentAmt	Currency	Amount of the payment
SalesNo	Number	Foreign key field to the Sales table

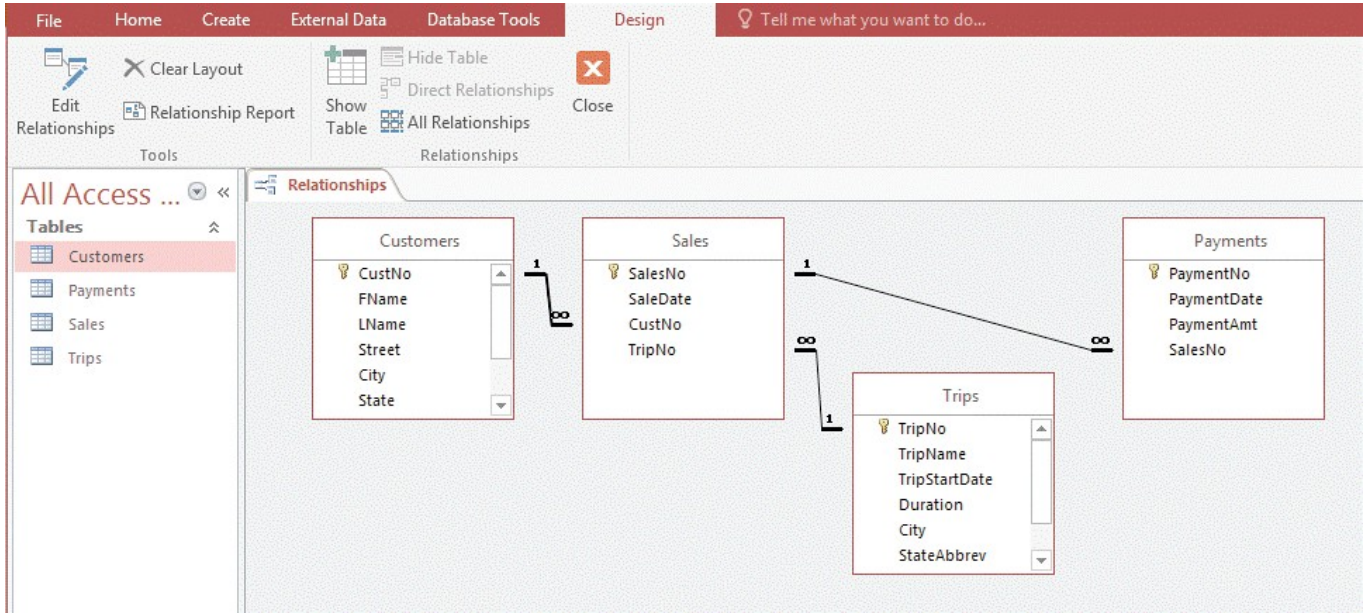
Create One-to-Many Relationships (Slide 1 of 2)

- Create tables then link them together in appropriate one-to-many relationships
  - Use primary key field in “one” table
  - Use foreign key field in “many” table
- Establish relationships before building queries, forms or reports for multiple tables



Create One-to-Many Relationships (Slide 2 of 2)

Final Relationships window

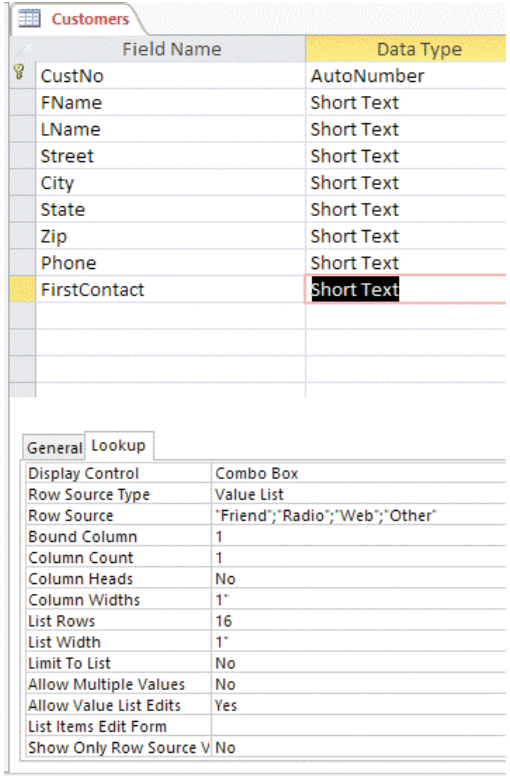


Create Lookup Fields (Slide 1 of 2)

- **Lookup field**
  - a field that contains Lookup properties
- **Lookup properties**
  - field properties that supply a drop-down list of values for a field
  - values can be stored in another table or directly stored in **Row Source** Lookup property of field.
- Can set Lookup properties for a field in Table Design View using **Lookup Wizard**

Create Lookup Fields (Slide 2 of 2)

Viewing Lookup properties

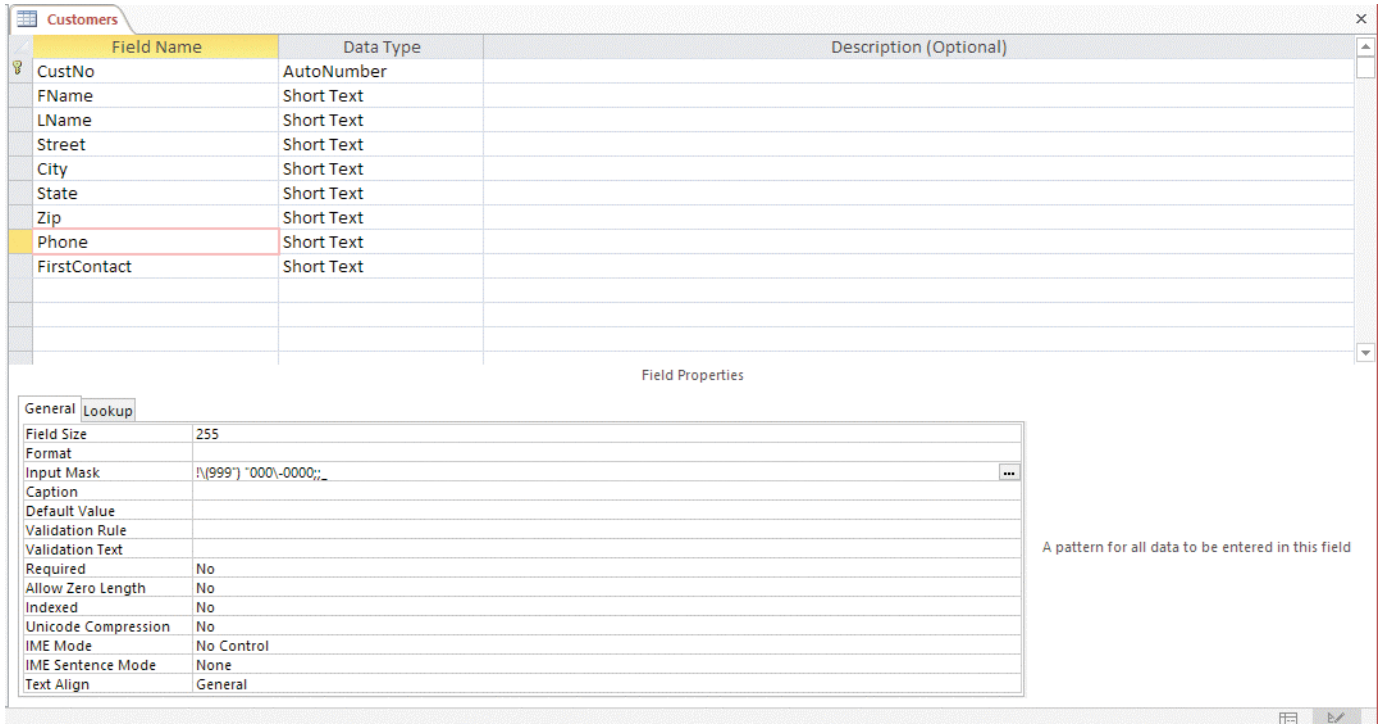


Modify Short Text Fields (Slide 1 of 3)

- **Field properties** are the characteristics that describe each field
  - Field Size
  - Default Value
  - Caption
  - Row Source
- Properties help ensure database accuracy and clarity

Modify Short Text Fields (Slide 2 of 3)

Changing Short Text field properties



Modify Short Text Fields (Slide 3 of 3)

Common Short Text field properties

property	description	sample field	sample property entry
Field Size	Controls how many characters can be entered into the field	State	2
Format	Controls how information will be displayed and printed	State	> (displays all characters in uppercase)
Input Mask	Provides a pattern for data to be entered	Phone	!(999) 000-0000;1;_
Caption	Describes the field in the first row of a datasheet, form, or report; if the Caption property is not entered, the field name is used to label the field	EmpNo	Employee Number
Default Value	Displays a value that is automatically entered in the given field for new records	City	Kansas City
Required	Determines if an entry is required for this field	LastName	Yes

Modify Number and Currency Fields (Slide 1 of 3)

- Number and Currency fields
  - have similar properties because they both contain numeric values
- Currency fields store values that represent money
- Number fields store values that represent values such as quantities, measurements, and scores

Modify Number and Currency Fields (Slide 2 of 3)

Changing Currency and Number field properties

Trips

Field Name	Data Type
TripNo	AutoNumber
TripName	Short Text
TripStartDate	Date/Time
Duration	Number
City	Short Text
StateAbbrev	Short Text
Category	Short Text
Price	Currency

General | Lookup

Format	Currency
Decimal Places	0
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Indexed	No
Text Align	General

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Modify Number and Currency Fields (Slide 3 of 3)

Common Number field properties

property	description
Field Size	Determines the largest number that can be entered in the field, as well as the type of data (e.g., integer or fraction)
Byte	Stores numbers from 0 to 255 (no fractions)
Integer	Stores numbers from –32,768 to 32,767 (no fractions)
Long Integer	Stores numbers from –2,147,483,648 to 2,147,483,647 (no fractions)
Single	Stores numbers (including fractions with six digits to the right of the decimal point) times 10 to the –38th to +38th power
Double	Stores numbers (including fractions with more than 10 digits to the right of the decimal point) in the range of 10 to the –324th to +324th power
Decimal Places	The number of digits displayed to the right of the decimal point

Modify Date/Time Fields (Slide 1 of 2)

- Date/Time field properties are same as Short Text or Number data types
- One difference
  - **Format** property, which helps you format dates in various ways such as January 25, 2017; 25-Jan-17; or 01/25/2017

Modify Date/Time Fields (Slide 2 of 2)

Changing Date/Time field properties

Trips

Field Name	Data Type
TripNo	AutoNumber
TripName	Short Text
TripStartDate	Date/Time
Duration	Number
City	Short Text
StateAbbrev	Short Text
Category	Short Text
Price	Currency

General | Lookup

Format	mm/dd/yyyy
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Indexed	No
IME Mode	No Control
IME Sentence Mode	None
Text Align	General
Show Date Picker	For dates

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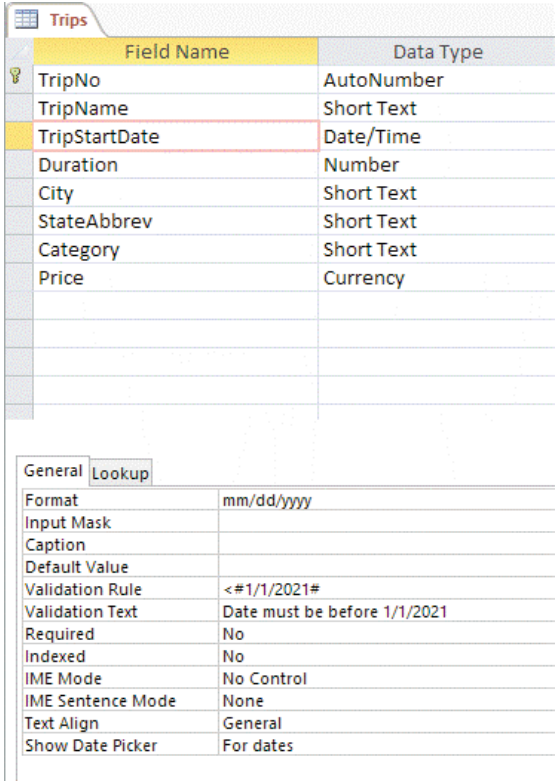
Modify Validation Properties (Slide 1 of 3)

- **Validation Rule** property
  - determines what entries a field can accept.
- **Validation Text** property
  - displays an explanatory message when a user tries to enter data that breaks validation rule

Modify Validation Properties (Slide 2 of 3)

Entering Validation properties



Modify Validation Properties (Slide 3 of 3)

Validation Rule expressions

data type	validation rule expression	description
Number or Currency	>0	The number must be positive
Number or Currency	>10 And <100	The number must be greater than 10 and less than 100
Number or Currency	10 Or 20 Or 30	The number must be 10, 20, or 30
Short Text	"AZ" Or "CO" Or "NM"	The entry must be AZ, CO, or NM
Date/Time	>=#7/1/17#	The date must be on or after 7/1/2017
Date/Time	>#1/1/10# And <#1/1/2030#	The date must be greater than 1/1/2010 and less than 1/1/2030

Create Attachment Fields (Slide 1 of 2)

- **Attachment field**
  - allows you to attach an external file to a record
- Attachment data type is superior to OLE
  - it stores data more efficiently, stores more file formats, and requires no additional software to view the files from within Access

Create Attachment Fields (Slide 2 of 2)

Adding an Attachment field