

File Edit View History Bookmarks Tools Help

Notes on Relational Databases: x +

www.pgrocer.net/Cis54/relation.html

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Notes on Relational Databases:

A database can consist of multiple tables/files. These tables/files are related to each other in some way so that the programmer or developer can access information from multiple table/files at the same time. A database management system is the database and its functionality. In today's PC environment, the model of relating the table/files within a database is the relational database model. Things that must be considered in a relational database:

- Analyze the data and determine how to design the files - consider whether the data is in a one to one relationship, a one to many relationship or a many to many relationship.
- Consider functional dependence: An attribute B, is functionally depended on another attribute, A if a value for A determines a single value for B at any one time.
- The primary key has all attributes in the table functionally dependent upon it - to simplify you can think of the primary key as the minimum collection of fields that will get you one and only one record from the table/file.
- We must also consider the rules of normalization and establish the relationships so that the database is in third normal form.
- A relation is in **first normal form** if it does not contain repeating groups.
- A relation is in **second normal form** if it is in first normal form and no non-key attribute is dependent on only a portion of the primary key. (Note: an attribute is a non-key attribute if it is not a part of the primary key).
- A relation is in **third normal form** if it is in second normal form and if the only determinants it contains are candidate keys. (Note: any attribute that determines another attribute is called a determinant).

Tables:

	<u>Stutable</u>	<u>Stucrs</u>	
Primary key	Stuid	PK {	111 120 F14 F
	Stunamp		111 120 S15 B
	Stuadr		111 121 F14 C
		grade	

PK

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Tables:

Stutable
 Primary key → Stuid
 Stuname
 Studr

Stucrs
 PK { Stuid
 Crsno
 Sem yr
 grade
~~Crsname~~

Crstable
 PK → Crsno
 Crsname

link

link

link

PK

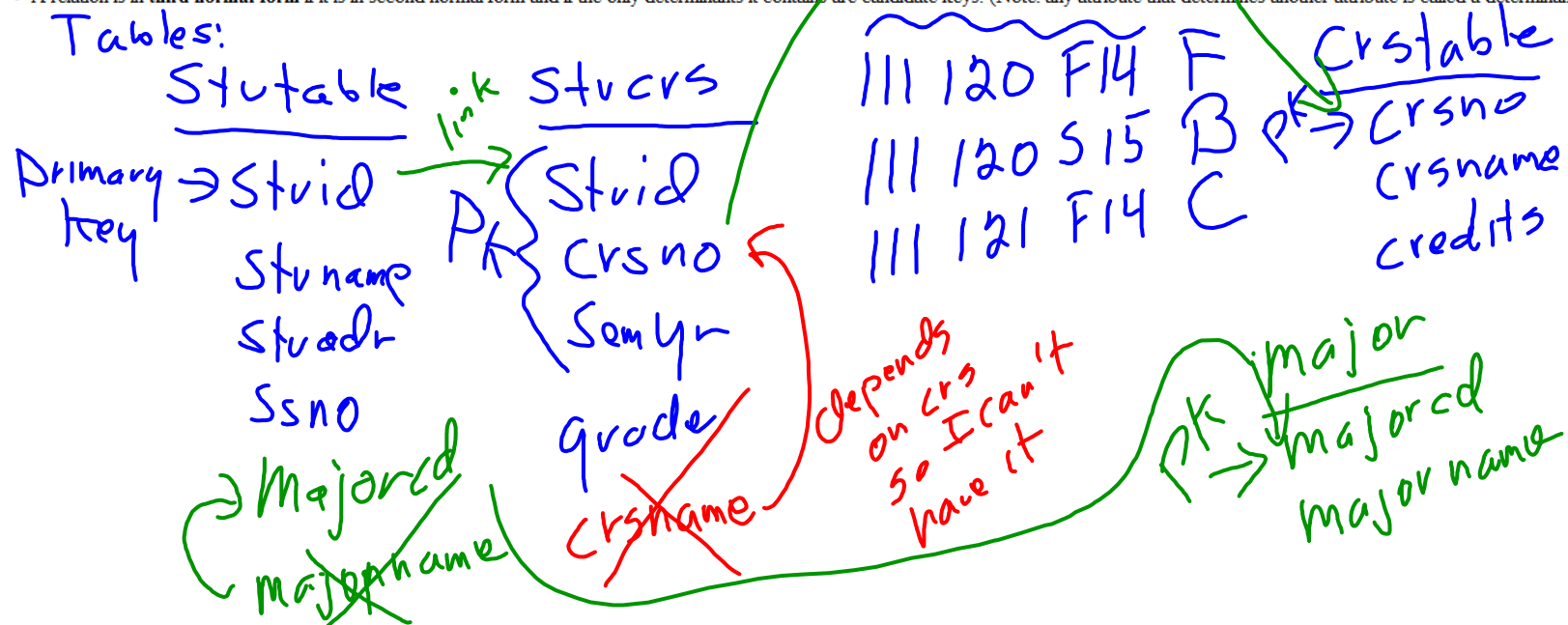
111	120	F14	F
111	120	S15	B
111	121	F14	C

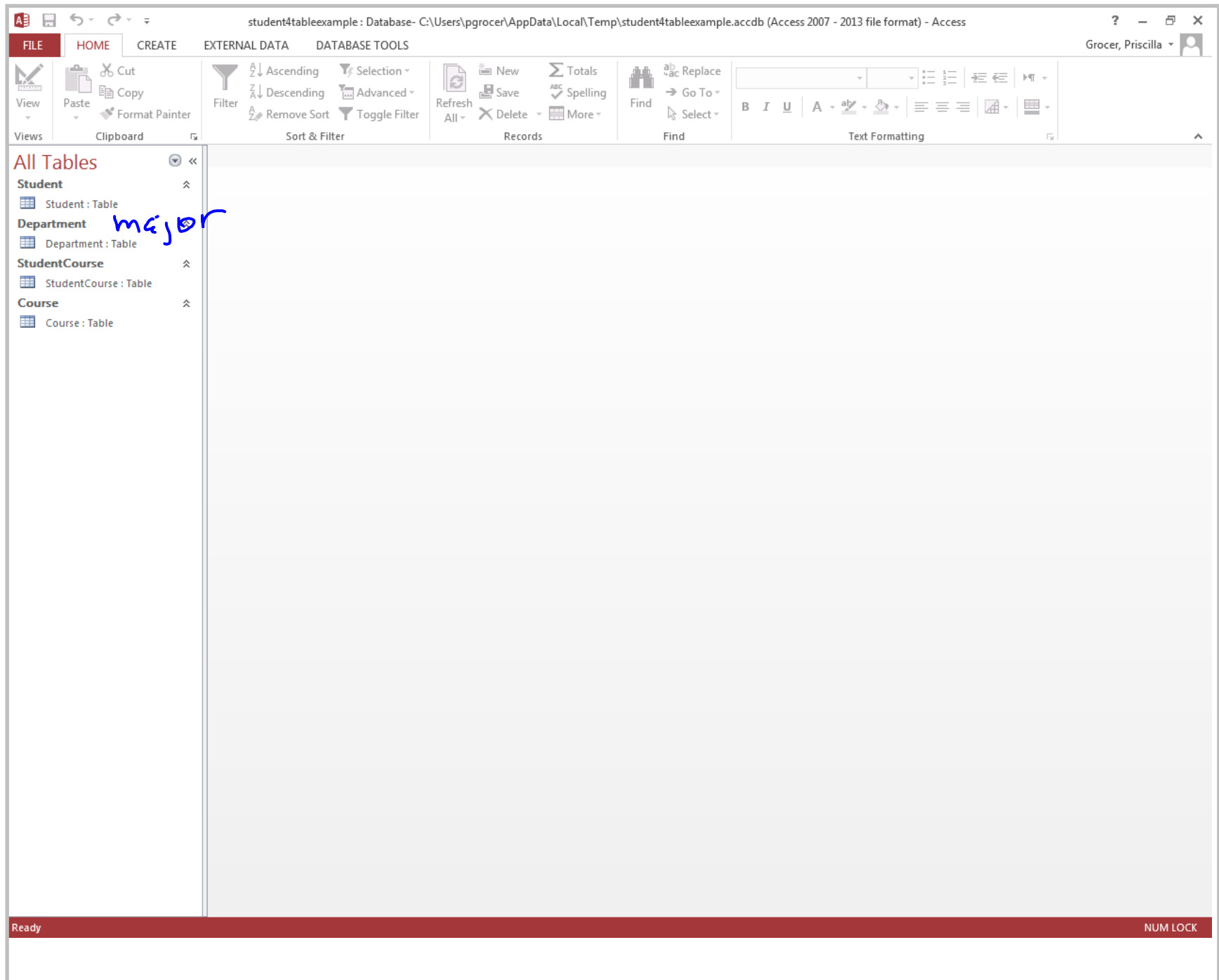
depends on crs so I can't have it

Notes on Relational Databases:

A database can consist of multiple tables/files. These tables/files are related to each other in some way so that the programmer or developer can access information from multiple table/files at the same time. A database management system is the database and its functionality. In today's PC environment, the model of relating the table/files within a database is the relational database model. Things that must be considered in a relational database:

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- Consider functional dependence: An attribute B, is functionally depended on another attribute, A if a value for A determines a single value for B at any one time.
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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 20... Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS TABLE TOOLS DESIGN

View Primary Key Builder Test Validation Rules Insert Rows Delete Rows Modify Lookups Property Indexes Sheet Show/Hide Create Data Macros Rename/Delete Macro Relationships Object Dependencies

All Tables

- Student
 - Student : Table
- Department
 - Department : Table
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Field Name	Data Type	Description (Optional)
StudentId	Short Text	
StudentName	Short Text	
StudentCity	Short Text	
StudentState	Short Text	
DeptCode	Short Text	
StudentGPA	Number	

Field Properties

General		Lookup
Field Size	5	
Format		
Input Mask		
Caption		
Default Value		
Validation Rule		
Validation Text		
Required	Yes	
Allow Zero Length	Yes	
Indexed	Yes (No Duplicates)	
Unicode Compression	No	
IME Mode	No Control	
IME Sentence Mode	None	
Text Align	General	

The field description is optional. It helps you describe the field and is also displayed in the status bar when you select this field on a form. Press F1 for help on descriptions.

Design view. F6 = Switch panes. F1 = Help. NUM LOCK 11:34 AM 4/23/2015

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 20...

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Primary Key Builder Test Validation Rules Insert Rows Delete Rows Modify Lookups Property Indexes Sheet Show/Hide Create Data Macros Rename/Delete Macro Relationships Object Dependencies

All Tables

- Student
 - Student : Table
- Department
 - Department : Table
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Field Name	Data Type	Description (Optional)
StudentId	Short Text	
CourseNumber	Short Text	
SemYr	Short Text	
Grade	Short Text	

Note that the key consists of three fields you can highlight them all and click the key button.

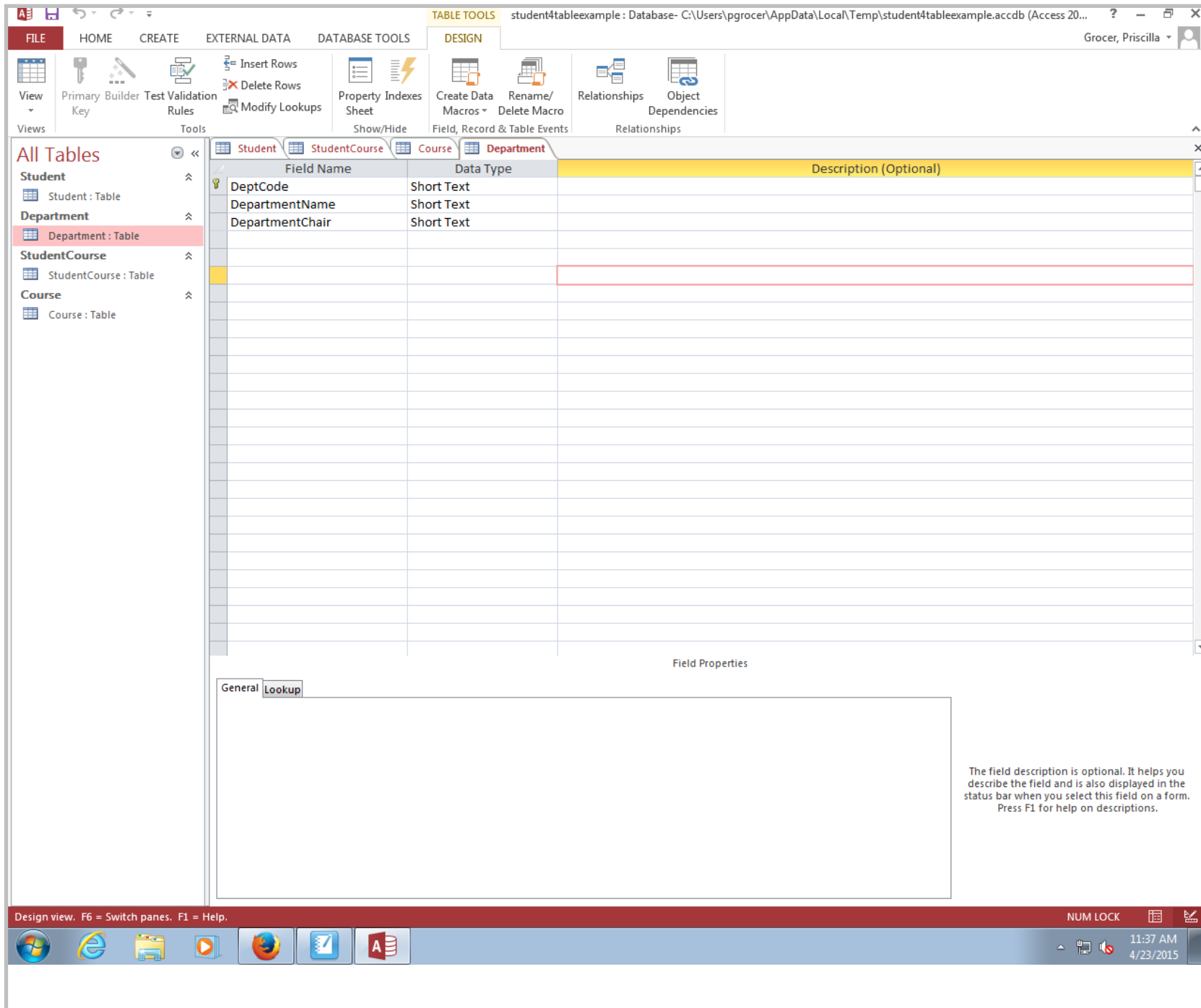
Field Properties

General **Lookup**

A field name can be up to 64 characters long, including spaces. Press F1 for help on field names.

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

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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Paste Copy Format Painter Filter Sort & Filter Records Find Text Formatting

Calibri 11

All Tables

- Student
 - Student : Table
- Department
 - Department : Table
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

StudentId	StudentName	Student.DeptCode	Department.DeptCode	Department
11111	Jane Costa	CI	CI	Computer Info
12345	John Doe	CI	CI	Computer Info
23456	Linda Brown	CI	CI	Computer Info
22222	David Smith	BU	BU	Business Admi
33333	James Souza	BU	BU	Business Admi

Record: 1 of 5

NUM LOCK

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Query code shown on next slide.

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Builder Insert Rows Delete Rows Insert Columns Delete Columns Return: All Totals Parameters Table Names Property Sheet

Results Query Type Query Setup Show/Hide

All Tables

- Student
 - Student : Table
- Department
 - Department : Table
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

Student

- StudentId
- StudentName
- StudentCity
- StudentState
- DeptCode
- StudentGPA

Department

- DeptCode
- DepartmentName
- DepartmentChair

For the output for the previous slide, I did not have the CI under DeptCode. If you look at the next slide, you will see the impact.

Field:	StudentId	StudentName	DeptCode	DeptCode	DepartmentName				
Table:	Student	Student	Student	Department	Department				
Sort:									
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:			"CI"						
or:									

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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Paste Copy Cut Paste Format Painter Filter Ascending Descending Selection Advanced Remove Sort Toggle Filter Refresh Save Delete More Find Replace Go To Select Calibri 11 B I U A

Views Clipboard Sort & Filter Records Find Text Formatting

All Tables

- Student
 - Student : Table
- Department
 - Department : Table
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

Studentid	StudentNarr	Student.DeptCode	Department.DeptCode	Department
11111	Jane Costa	CI	CI	Computer Info
12345	John Doe	CI	CI	Computer Info
23456	Linda Brown	CI	CI	Computer Info

Record: 1 of 3 No Filter Search

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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS Grocer, Priscilla

View Paste Cut Copy Format Painter Filter Sort & Filter Records Find Text Formatting

All Tables

- Student
 - Student : Table
 - studept
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

When I link these table, I can link the idno on the student table to the idno on the studentcourse table and I can link the crsno on the student course table to the crsno on the course table.

Student	Student course	course table
idno	idno	crsno
name	crsno	crsname
	Semyr	

Ready NUM LOCK

Microsoft Access - QUERY TOOLS - DESIGN - student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... - Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Tables

- Student
 - Student : Table
 - studept
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

```

graph LR
    subgraph Student
        S1[StudentId]
        S2[StudentName]
        S3[StudentCity]
        S4[StudentState]
        S5[DeptCode]
    end
    subgraph StudentCourse
        SC1[StudentId]
        SC2[CourseNumber]
        SC3[SemYr]
        SC4[Grade]
    end
    subgraph Course
        C1[CourseNumber]
        C2[CourseName]
        C3[NumCredits]
    end
    S1 --- SC1
  
```

Note that when I set up a query I need the lines to link the fields. On the last one I apparently did not take picture of the development. So here they are. If the lines are not there then you can drag CourseNumber from one table on top of the CourseNumber field on the other table.

Field: Table: Sort: Show: Criteria: or:

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Microsoft Access window: student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2...)

QUERY TOOLS: DESIGN

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Builder Insert Rows Delete Rows Insert Columns Delete Columns Return: All Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Tables

- Student
 - Student : Table
 - studept
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

```

    graph LR
      Student((Student)) --- StudentCourse((StudentCourse))
      StudentCourse --- Course((Course))
  
```

Student Table Fields: StudentId (PK), StudentName, StudentCity, StudentState, DeptCode

StudentCourse Table Fields: StudentId (FK), CourseNumber (FK), SemYr, Grade

Course Table Fields: CourseNumber (PK), CourseName, NumCredits

Field Table:

Field:	Table:	Sort:	Show:	Criteria:	or:
			<input type="checkbox"/>		
			<input type="checkbox"/>		
			<input type="checkbox"/>		
			<input type="checkbox"/>		
			<input type="checkbox"/>		
			<input type="checkbox"/>		
			<input type="checkbox"/>		
			<input type="checkbox"/>		
			<input type="checkbox"/>		
			<input type="checkbox"/>		

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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... ? - Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Tables

- Student
 - Student : Table
 - studept
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

Student

- * StudentId
- StudentName
- StudentCity
- StudentState
- DeptCode

StudentCourse

- * StudentId
- CourseNumber
- SemYr
- Grade

Course

- * CourseNumber
- CourseName
- NumCredits

If the links are not there you will get every possible combination.

Field:	StudentId	StudentName	StudentId	CourseNumber	SemYr	CourseNumber	CourseName		
Table:	Student	Student	StudentCourse	StudentCourse	StudentCourse	Course	Course		
Sort:									
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:									
or:									

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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS Grocer, Priscilla

View Paste Copy Format Painter Filter Sort & Filter Records Find Text Formatting

All Tables

- Student
 - Student : Table
 - studept
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

Student.Stu	StudentNam	StudentCou	StudentCou	SemYr	Course.Cou	CourseName
11111	Jane Costa	11111	CIS120	S10	ACC111	Accounting I
12345	John Doe	11111	CIS120	S10	ACC111	Accounting I
22222	David Smith	11111	CIS120	S10	ACC111	Accounting I
23456	Linda Brown	11111	CIS120	S10	ACC111	Accounting I
33333	James Souza	11111	CIS120	S10	ACC111	Accounting I
11111	Jane Costa	11111	CIS120	S10	CIS120	Programming L
12345	John Doe	11111	CIS120	S10	CIS120	Programming L
22222	David Smith	11111	CIS120	S10	CIS120	Programming L
23456	Linda Brown	11111	CIS120	S10	CIS120	Programming L
33333	James Souza	11111	CIS120	S10	CIS120	Programming L
11111	Jane Costa	11111	CIS120	S10	CIS121	Operating Syst
12345	John Doe	11111	CIS120	S10	CIS121	Operating Syst
22222	David Smith	11111	CIS120	S10	CIS121	Operating Syst
23456	Linda Brown	11111	CIS120	S10	CIS121	Operating Syst
33333	James Souza	11111	CIS120	S10	CIS121	Operating Syst
11111	Jane Costa	11111	CIS120	S10	MAR111	Marketing
12345	John Doe	11111	CIS120	S10	MAR111	Marketing
22222	David Smith	11111	CIS120	S10	MAR111	Marketing
23456	Linda Brown	11111	CIS120	S10	MAR111	Marketing
33333	James Souza	11111	CIS120	S10	MAR111	Marketing
11111	Jane Costa	11111	CIS120	S10	CIS122	Internet Devel
12345	John Doe	11111	CIS120	S10	CIS122	Internet Devel
22222	David Smith	11111	CIS120	S10	CIS122	Internet Devel
23456	Linda Brown	11111	CIS120	S10	CIS122	Internet Devel
33333	James Souza	11111	CIS120	S10	CIS122	Internet Devel
11111	Jane Costa	11111	MAR111	S10	ACC111	Accounting I
12345	John Doe	11111	MAR111	S10	ACC111	Accounting I
22222	David Smith	11111	MAR111	S10	ACC111	Accounting I
23456	Linda Brown	11111	MAR111	S10	ACC111	Accounting I
33333	James Souza	11111	MAR111	S10	ACC111	Accounting I
11111	Jane Costa	11111	MAR111	S10	CIS120	Programming L
12345	John Doe	11111	MAR111	S10	CIS120	Programming L
22222	David Smith	11111	MAR111	S10	CIS120	Programming L
23456	Linda Brown	11111	MAR111	S10	CIS120	Programming L
33333	James Souza	11111	MAR111	S10	CIS120	Programming L
11111	Jane Costa	11111	MAR111	S10	CIS121	Operating Syst
12345	John Doe	11111	MAR111	S10	CIS121	Operating Syst
22222	David Smith	11111	MAR111	S10	CIS121	Operating Syst

Record: 1 of 250 No Filter Search

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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS QUERY TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Totals Parameters Table Names Property Sheet

Results Query Type Query Setup Show/Hide

All Tables

- Student
 - Student : Table
 - studept
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

```

    graph LR
      Student --> StudentCourse
      StudentCourse --> Course
  
```

When I link them then I only get things with a matching studentid and a matching coursenumber.

Field:	StudentId	StudentName	StudentId	CourseNumber	SemYr	CourseNumber	CourseName
Table:	Student	Student	StudentCourse	StudentCourse	StudentCourse	Course	Course
Sort:							
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:							
or:							

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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS Grocer, Priscilla

View Paste Copy Format Painter Filter Ascending Descending Selection Advanced Remove Sort Toggle Filter Refresh All Save Delete More Find Replace Go To Select

Calibri 11 B I U Text Formatting

All Tables

- Student
 - Student : Table
 - studept
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

Student.Stu	StudentNar	StudentCoi	StudentCoi	SemYr	Course.Cou	CourseNam
11111	Jane Costa	11111	CIS120	S10	CIS120	Programming L
11111	Jane Costa	11111	MAR111	S10	MAR111	Marketing
12345	John Doe	12345	CIS121	F09	CIS121	Operating Syst
22222	David Smith	22222	CIS122	F09	CIS122	Internet Devel
22222	David Smith	22222	ACC111	F09	ACC111	Accounting I
23456	Linda Brown	23456	CIS120	F09	CIS120	Programming L
23456	Linda Brown	23456	CIS121	F09	CIS121	Operating Syst
33333	James Souza	33333	ACC111	F09	ACC111	Accounting I
33333	James Souza	33333	ACC111	S10	ACC111	Accounting I
33333	James Souza	33333	MAR111	S10	MAR111	Marketing
*						

Record: 1 of 10 No Filter Search

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Microsoft Access - student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... Grocer, Priscilla

QUERY TOOLS DESIGN

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Builder Insert Rows Delete Rows Insert Columns Delete Columns Return: All Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Tables

- Student
 - Student : Table
 - studept
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

```

    graph LR
      Student[Student] --- StudentCourse[StudentCourse]
      StudentCourse --- Course[Course]
  
```

Now I am asking for two things in an AND relationship. So in addition to linking, I am also asking for CIS121 and F09.

Field:	StudentId	StudentName	StudentId	CourseNumber	SemYr	CourseNumber	CourseName		
Table:	Student	Student	StudentCourse	StudentCourse	StudentCourse	Course	Course		
Sort:									
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:				"CIS121"	"F09"				
or:									

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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

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View Paste Copy Format Painter Filter Sort & Filter Records Find Text Formatting

Ascending Descending Selection Advanced Refresh All Save Delete More Find Replace Go To Select

Calibri 11 B I U

All Tables

- Student
 - Student : Table
 - studept
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

Student.Stu	StudentNam	StudentCou	StudentCou	SemYr	Course.Cou	CourseName
12345	John Doe	12345	CIS121	F09	CIS121	Operating Syst
23456	Linda Brown	23456	CIS121	F09	CIS121	Operating Syst

Record: 1 of 2 No Filter Search

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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Builder Insert Rows Delete Rows Insert Columns Delete Columns Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Tables

- Student
 - Student : Table
 - studept
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

```

    erDiagram
      Student ||--o{ StudentCourse : "1 to many"
      StudentCourse ||--o{ Course : "1 to many"
  
```

Field: StudentId StudentName StudentId CourseNumber SemYr CourseNumber CourseName

Table: Student Student StudentCourse StudentCourse StudentCourse Course Course

Show:

Criteria: "CIS121" "F09"

or:

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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS Grocer, Priscilla

View Paste Copy Format Painter Filter Sort & Filter Records Find Text Formatting

All Tables

- Student
 - Student : Table
 - studept
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
- Course
 - Course : Table

Query1

StudentId	StudentNar	CourseNuml	SemYr	CourseName
12345	John Doe	CIS121	F09	Operating Syst
23456	Linda Brown	CIS121	F09	Operating Syst
*				

Record: 1 of 2 No Filter Search

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student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... ? - X)

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Builder Insert Rows Delete Rows Insert Columns Delete Columns Totals Parameters Table Names Property Sheet

Results Query Type Query Setup Show/Hide

All Tables

- Student
 - Student : Table
 - studept
 - threetables
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
 - threetables
- Course
 - Course : Table
 - threetables

Query1

```

    graph TD
      Student[Student] --- Department[Department]
      Student --- StudentCourse[StudentCourse]
      StudentCourse --- Course[Course]
  
```

Showing the links with all four tables.

Field:									
Table:									
Sort:									
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:									
or:									

Ready NUM LOCK 11:56 AM 4/23/2015

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Tables

- Student
 - Student : Table
 - studept
 - threetables
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
 - threetables
- Course
 - Course : Table
 - threetables

Fields I link need same type & size

Field:									
Table:									
Sort:									
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:									
or:									

Ready NUM LOCK SQL

student4tableexample : Database - C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Tables

- Student**
 - Student : Table
 - studept
 - threetables
- Department**
 - Department : Table
 - studept
- StudentCourse**
 - StudentCourse : Table
 - threetables
- Course**
 - Course : Table
 - threetables

Query1

```

    erDiagram
        Student ||--o{ StudentCourse : "StudentId"
        StudentCourse ||--o{ Course : "CourseNumber"
        StudentCourse ||--o{ Department : "DeptCode"
    
```

Field: StudentId StudentName CourseNumber SemYr Grade CourseName DepartmentName
 Table: Student Student StudentCourse StudentCourse StudentCourse Course Department
 Sort:
 Show:
 Criteria:
 or:

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Paste Copy Format Painter Filter Sort & Filter Records Find Text Formatting

All Tables

- Student
 - Student : Table
 - studept
 - threetables
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
 - threetables
- Course
 - Course : Table
 - threetables

Query1

StudentId	StudentName	CourseNum	SemYr	Grade	CourseName	Department
11111	Jane Costa	CIS120	S10	A	Programming L	Computer Info
11111	Jane Costa	MAR111	S10	B	Marketing	Computer Info
12345	John Doe	CIS121	F09	B	Operating Syst	Computer Info
22222	David Smith	ACC111	F09	B	Accounting I	Business Admi
22222	David Smith	CIS122	F09	C	Internet Devel	Business Admi
23456	Linda Brown	CIS120	F09	A	Programming L	Computer Info
23456	Linda Brown	CIS121	F09	A-	Operating Syst	Computer Info
33333	James Souza	ACC111	F09	F	Accounting I	Business Admi
33333	James Souza	ACC111	S10	C	Accounting I	Business Admi
33333	James Souza	MAR111	S10	C	Marketing	Business Admi
*						

Record: 1 of 10 No Filter Search

Ready NUM LOCK SQL 12:00 PM 4/23/2015

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... ? - X)

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS QUERY TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Builder Insert Rows Delete Rows Insert Columns Delete Columns Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Tables

- Student**
 - Student : Table
 - studept
 - threetables
- Department**
 - Department : Table
 - studept
- StudentCourse**
 - StudentCourse : Table
 - threetables
- Course**
 - Course : Table
 - threetables

Query1

```

    erDiagram
        Student ||--o{ StudentCourse : "has"
        StudentCourse ||--o{ Course : "has"
        StudentCourse ||--o{ Department : "has"
    
```

Field: StudentId StudentName CourseNumber SemYr Grade CourseName DepartmentName DeptCode

Table: Student Student StudentCourse StudentCourse StudentCourse Course Department Student

Sort:

Show:

Criteria:

or:

Ready NUM LOCK 12:00 PM 4/23/2015

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS Grocer, Priscilla

View Paste Copy Format Painter Filter Sort & Filter Records Find Text Formatting

All Tables

- Student
 - Student : Table
 - studept
 - threetables
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
 - threetables
- Course
 - Course : Table
 - threetables

Query1

Studentid	StudentNar	CourseNuml	SemYr	Grade	CourseNami	Department	DeptCode
11111	Jane Costa	CIS120	S10	A	Programming L	Computer Info	CI
11111	Jane Costa	MAR111	S10	B	Marketing	Computer Info	CI
12345	John Doe	CIS121	F09	B	Operating Syst	Computer Info	CI
22222	David Smith	ACC111	F09	B	Accounting I	Business Admi	BU
22222	David Smith	CIS122	F09	C	Internet Devel	Business Admi	BU
23456	Linda Brown	CIS120	F09	A	Programming L	Computer Info	CI
23456	Linda Brown	CIS121	F09	A-	Operating Syst	Computer Info	CI
33333	James Souza	ACC111	F09	F	Accounting I	Business Admi	BU
33333	James Souza	ACC111	S10	C	Accounting I	Business Admi	BU
33333	James Souza	MAR111	S10	C	Marketing	Business Admi	BU

Record: 1 of 10 No Filter Search

Ready NUM LOCK SQL

Next I asked the class to try this one. CI has to be true and either of the other two also has to be true.

CI and either CIS120
or
B

Microsoft Access Query Design View for 'Query1'. The design grid shows a join between Student, StudentCourse, and Course tables. The Student table is linked to StudentCourse, and StudentCourse is linked to Course. The Department table is also linked to StudentCourse. The criteria line shows filters for CourseNumber (CIS120) and Grade (B).

Remember from when we first did Access, the thing that has to be true is put on both lines. And the either of two other things means one is on the criteria line and one is on the or line. So if I look at the criteria line it has CIS120 and CI major and if I look at the or line it has B and CI major.

Field:	StudentId	StudentName	CourseNumber	SemYr	Grade	CourseName	DepartmentName	DeptCode
Table:	Student	Student	StudentCourse	StudentCourse	StudentCourse	Course	Department	Student
Sort:								
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			"CIS120"					"CI"
or:					"B"			"CI"

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Paste Copy Cut Format Painter Filter Sort & Filter Records Find Text Formatting

Calibri 11

Query1

StudentId	StudentName	CourseNuml	SemYr	Grade	CourseName	Department	DeptCode
11111	Jane Costa	CIS120	S10	A	Programming I	Computer Info	CI
11111	Jane Costa	MAR111	S10	B	Marketing	Computer Info	CI
123	John Doe	CIS121	F09	B	Operating Syst	Computer Info	CI
23456	Linda Brown	CIS120	F09	A	Programming I	Computer Info	CI

Record: 1 of 4 No Filter Search

NUM LOCK 12:06 PM 4/23/2015

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS Grocer, Priscilla

View Paste Copy Format Painter Filter Sort & Filter Records Find Text Formatting

All Tables

- Student
 - Student : Table
 - studept
 - thretables
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
 - thretables
- Course
 - Course : Table
 - thretables

Query1

StudentId	StudentNar	CourseNuml	SemYr	Grade	CourseNam	Department	DeptCode
11111	Jane Costa	CIS120	S10	A	Programming L	Computer Info	CI
11111	Jane Costa	MAR111	S10	B	Marketing	Computer Info	CI
12345	John Doe	CIS121	F09	B	Operating Syst	Computer Info	CI
23456	Linda Brown	CIS120	F09	A	Programming L	Computer Info	CI

CIS120 B all

Record: 1 of 4 No Filter Search

Ready NUM LOCK SQL

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Insert Rows Delete Rows Insert Columns Delete Columns Return: All Totals Parameters Table Names

Results Query Type Query Setup Show/Hide

All Tables

- Student
 - Student : Table
 - studept
 - threetables
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
 - threetables
- Course
 - Course : Table
 - threetables

Query1

If I do not put the CI on both the criteria line and the or line then I have a problem. The criteria line still says CIS120 and CI while the or line had just B standing alone so it can be any major.

Field:	StudentId	StudentName	CourseNumber	SemYr	Grade	CourseName	DepartmentName	DeptCode
Table:	Student	Student	StudentCourse	StudentCourse	StudentCourse	Course	Department	Student
Sort:								
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			"CIS120"					"CI"
or:					"B"			

Ready NUM LOCK SQL 12:07 PM 4/23/2015

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2007 - 2013 file format) - Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Paste Copy Format Painter Filter Sort & Filter Records Find Text Formatting

All Tables

- Student
 - Student : Table
 - studept
 - thretables
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
 - thretables
- Course
 - Course : Table
 - thretables

Query1

Studentid	StudentNarr	CourseNuml	SemYr	Grade	CourseName	Department	DeptCode
11111	Jane Costa	CIS120	S10	A	Programming L	Computer Info	CI
11111	Jane Costa	MAR111	S10	B	Marketing	Computer Info	CI
12345	John Doe	CIS121	F09	B	Operating Syst	Computer Info	CI
22222	David Smith	ACC111	F09	B	Accounting I	Business Admi	BU
23456	Linda Brown	CIS120	F09	A	Programming L	Computer Info	CI
*							

Record: 1 of 5 No Filter Search

Ready NUM LOCK SQL

because
CI
not on
or line

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 2... Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Tables

- Student
 - Student : Table
 - studept
 - threetables
- Department
 - Department : Table
 - studept
- StudentCourse
 - StudentCourse : Table
 - threetables
- Course
 - Course : Table
 - threetables

Query1

```

    graph LR
      Student[Student] --- StudentCourse[StudentCourse]
      StudentCourse --- Course[Course]
      Student --- Department[Department]
  
```

Student fields: StudentId, StudentName, StudentCity, StudentState, DeptCode, StudentGPA

StudentCourse fields: StudentId, CourseNumber, SemYr, Grade

Course fields: CourseNumber, CourseName, NumCredits

Department fields: DeptCode, DepartmentName, DepartmentChair

Field:	StudentId	StudentName	CourseNumber	SemYr	Grade	CourseName	DepartmentName	DeptCode
Table:	Student	Student	StudentCourse	StudentCourse	StudentCourse	Course	Department	Student
Sort:								
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			"CIS120"		"B"			"CI"
or:								"CI"

Ready NUM LOCK 12:10 PM 4/23/2015

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 20... ? - Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Primary Key Builder Test Validation Rules Insert Rows Delete Rows Modify Lookups Property Indexes Sheet Show/Hide Create Data Macros Rename/Delete Macro Relationships Object Dependencies Relationships

All Tables Student

Field Name	Data Type	Description (Optional)
StudentId	Short Text	
StudentName	Short Text	
StudentCity	Short Text	
StudentState	Short Text	
DeptCode	Short Text	
StudentGPA	Number	

Showing that things that are linked need the same type and length.

Field Properties

General		Lookup
Field Size	5	
Format		
Input Mask		
Caption		
Default Value		
Validation Rule		
Validation Text		
Required	Yes	
Allow Zero Length	Yes	
Indexed	Yes (No Duplicates)	
Unicode Compression	No	
IME Mode	No Control	
IME Sentence Mode	None	
Text Align	General	

A field name can be up to 64 characters long, including spaces. Press F1 for help on field names.

Design view. F6 = Switch panes. F1 = Help. NUM LOCK 12:10 PM 4/23/2015

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 20...

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS TABLE TOOLS DESIGN

View Primary Key Builder Test Validation Rules Delete Rows Modify Lookups Property Indexes Sheet Create Data Macros Rename/Delete Macro Relationships Object Dependencies

All Tables

- Student
 - Student : Table
 - fourtables
 - studept
 - threetables
- Department
 - Department : Table
 - fourtables
 - studept
- StudentCourse
 - StudentCourse : Table
 - fourtables
 - threetables
- Course
 - Course : Table
 - fourtables
 - threetables

Field Name	Data Type	Description (Optional)
Studentid	Short Text	
CourseNumber	Short Text	
Sen	Short Text	
Grade	Short Text	

Field Properties

General	Lookup
Field Size	5
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	Yes
Allow Zero Length	Yes
Indexed	No
Unicode Compression	No
IME Mode	No Control
IME Sentence Mode	None
Text Align	General

A field name can be up to 64 characters long, including spaces. Press F1 for help on field names.

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

NUM LOCK 12:10 PM 4/23/2015

student4tableexample : Database- C:\Users\pgrocer\AppData\Local\Temp\student4tableexample.accdb (Access 20... ? - Grocer, Priscilla

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Primary Builder Test Validation Rules Insert Rows Delete Rows Property Indexes Sheet Create Data Macros Rename/Delete Macro Relationships Object Dependencies

Views Tools Show/Hide Field, Record & Table Events Relationships

All Tables

- Student
 - Student : Table
 - fourtables
 - studept
 - threetables
- Department
 - Department : Table
 - fourtables
 - studept
- StudentCourse
 - StudentCourse : Table
 - fourtables
 - threetables
- Course
 - Course : Table
 - fourtables
 - threetables

Field Name	Data Type	Description (Optional)
StudentId	Short Text	
StudentName	Short Text	
StudentCity	Short Text	
StudentState	Short Text	
DeptCode	Short Text	
StudentGPA	Number	

Field Properties

General		Lookup	
Field Size	2		
Format			
Input Mask			
Caption			
Default Value			
Validation Rule			
Validation Text			
Required	No		
Allow Zero Length	Yes		
Indexed	Yes (Duplicates OK)		
Unicode Compression	Yes		
IME Mode	No Control		
IME Sentence Mode	None		
Text Align	General		

A field name can be up to 64 characters long, including spaces. Press F1 for help on field names.

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

12:11 PM 4/23/2015

FILE TOOLS VIEW Donormultiple.docx (Protected View) - Word

PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing

Multiple table (relational) database:

Donor table	Donation table	Drive table
donorid PK	donorid (part 1 of primary key)	driveno PK
donorname	driveno (part 2 of primary key)	drivename
donoradr	datedon (part 3 of primary key)	drivegoal
	amt	

Set up these three tables in Access and populate them. When you populate, be sure that you make the fields that link the same type and size. So donorid should be the same type and size on the donor table and the donation table. Note that the donation table has 3 parts to the primary key – they are: donorid, driveno, datedon.

Look at the queries below when you populate the table so you will have data to test.

Now do these queries using the user interface:

- Use two tables that relate and do a query using two things in an and relationship.
- Use two tables that relate and do a query using two things in an or relationship.
- List the donorid, the donorname, the amt, the driveno, the drivename.
- List the donorid, the donorname, the amt, the driveno, the drivename for all donations where the amt is greater than 100 (you can change this amt if your data does not have many records with amt greater than 100).
- List all of the information where the driveno is equal

to a certain number and either the drivegoal is greater than a certain amount or the amt is greater than a certain amount. For example driveno is 123 and either drivegoal is greater than 50000 or amt is greater than 100.

Can be year

End of document

SCREENS 1-2 OF 2 140%