CPSC 203

DB - Week 3 Lab1-2

Introduction to Databases

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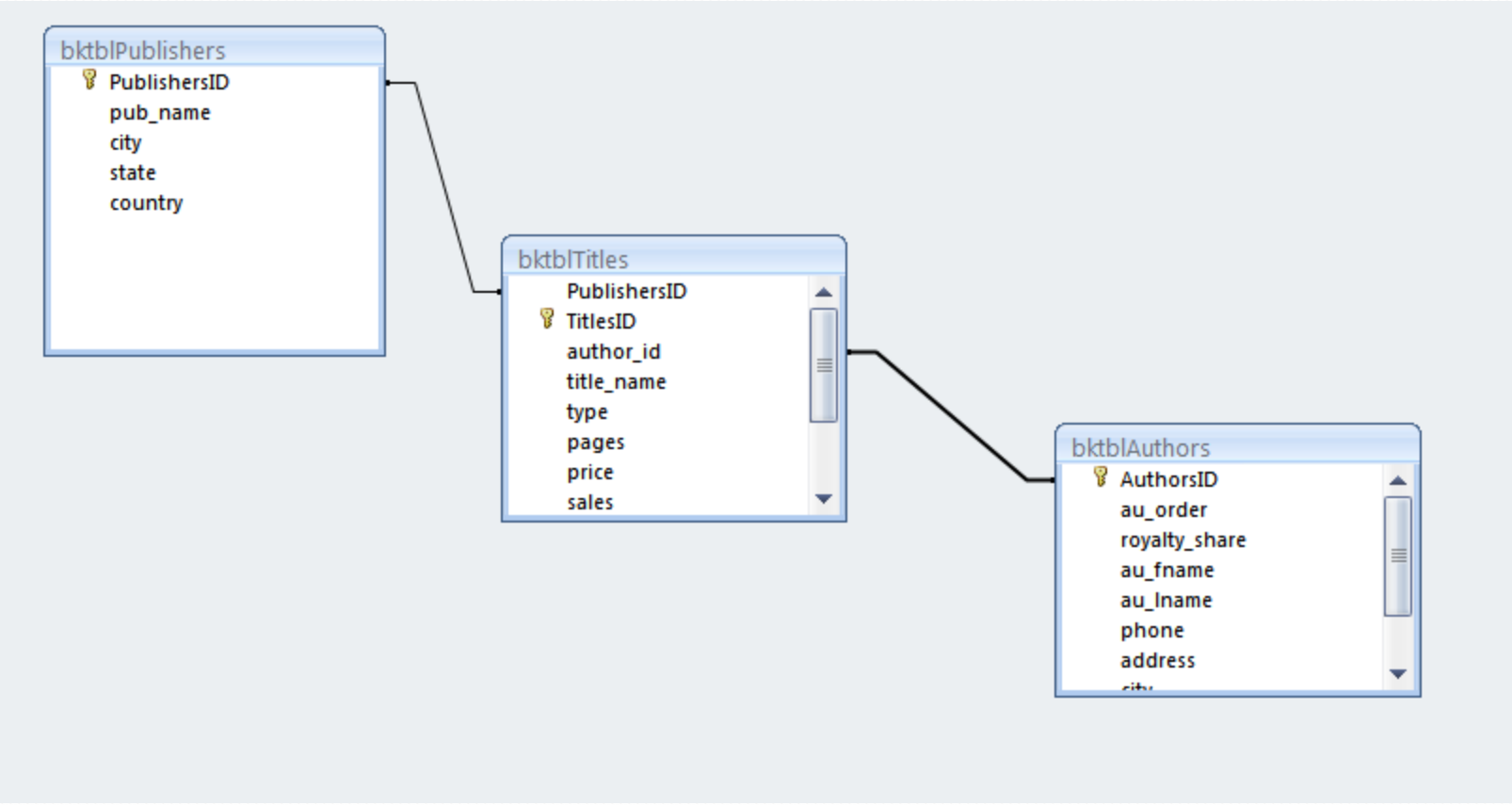
Relationships

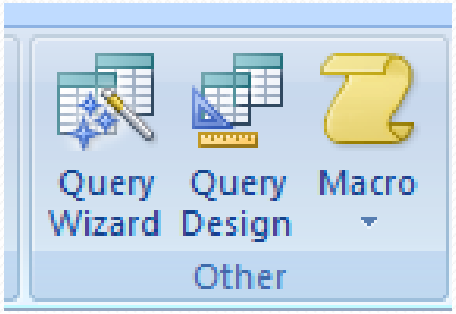
- Create a relationship as follows:
  - One-to-many s.t. field author_id in titles table is a foreign key from field AuthorID in authors table
  - One-to-many s.t. field PublisherID in titles table is a foreign key from field PublisherID in publishers table
- Steps:
  - Database Tools → Relationships
  - Drag the foreign key in the first table to the primary key in the second table

- Table/Query: is the table in which the field is a primary key
- Related Table/Query: is the table in which the field is a foreign key

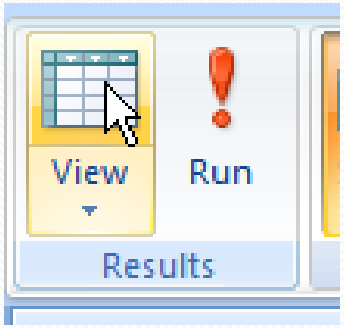

bktblPublishers
PublishersID
pub_name
city
state
country
bktblTitles
PublishersID
TitlesID
author_id
title_name
type
pages
price
sales
bktblAuthors
AuthorsID
au_order
royalty_share
au_fname
au_lname
phone
address

Queries

- Create → Query Design



- In the view:
  - Database view → Results
  - SQL view→ corresponding SQL
  - Design view → design the query
- Use Run! to execute the query
- Don't forget to save it



Design view facilities

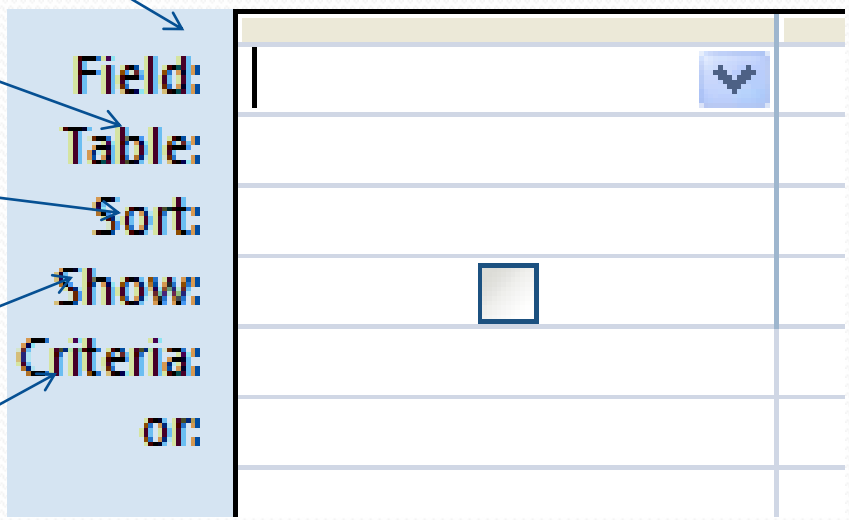
Which field to select?

Which table?

Choose ascending, descending if the results are required to be sorted using this field

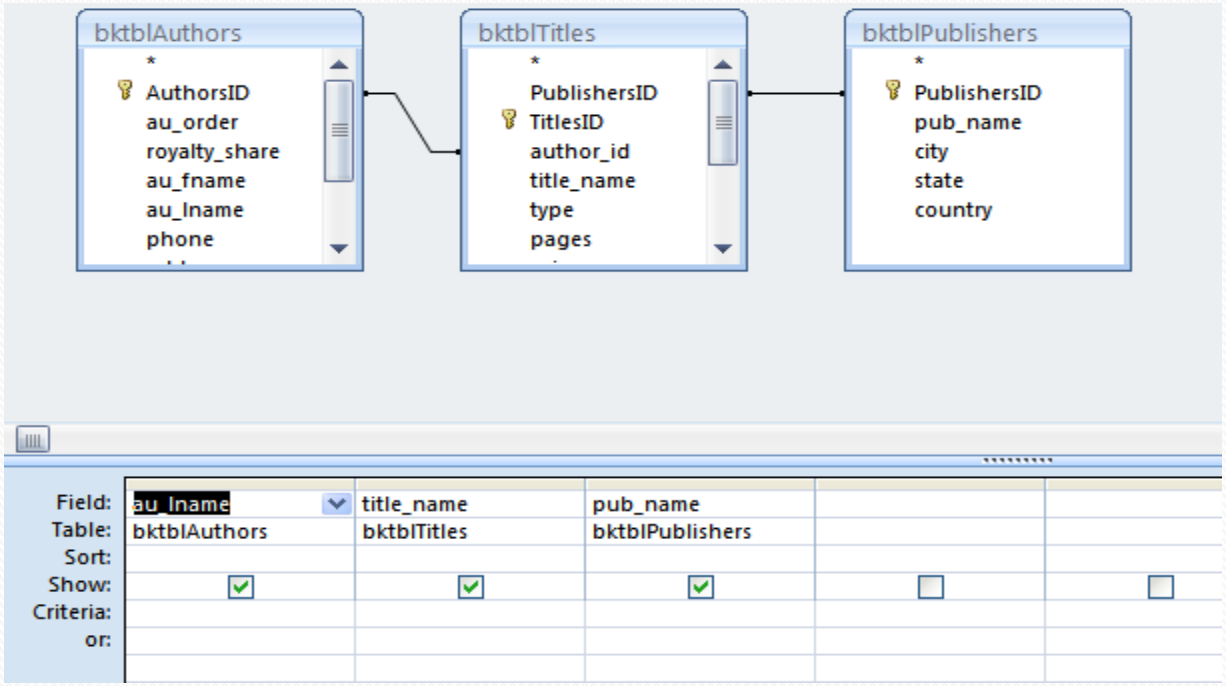
Check if this field will be shown in the results

Used for ANDing and Oring



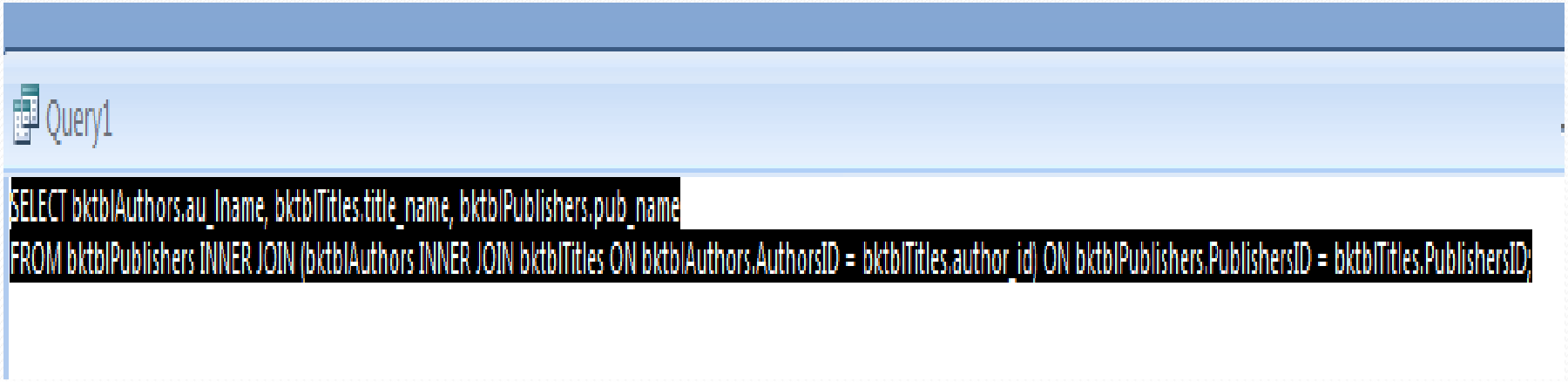
Queries

- Make a query “QueryA” to display the author last name, book title, and publisher name



Queries

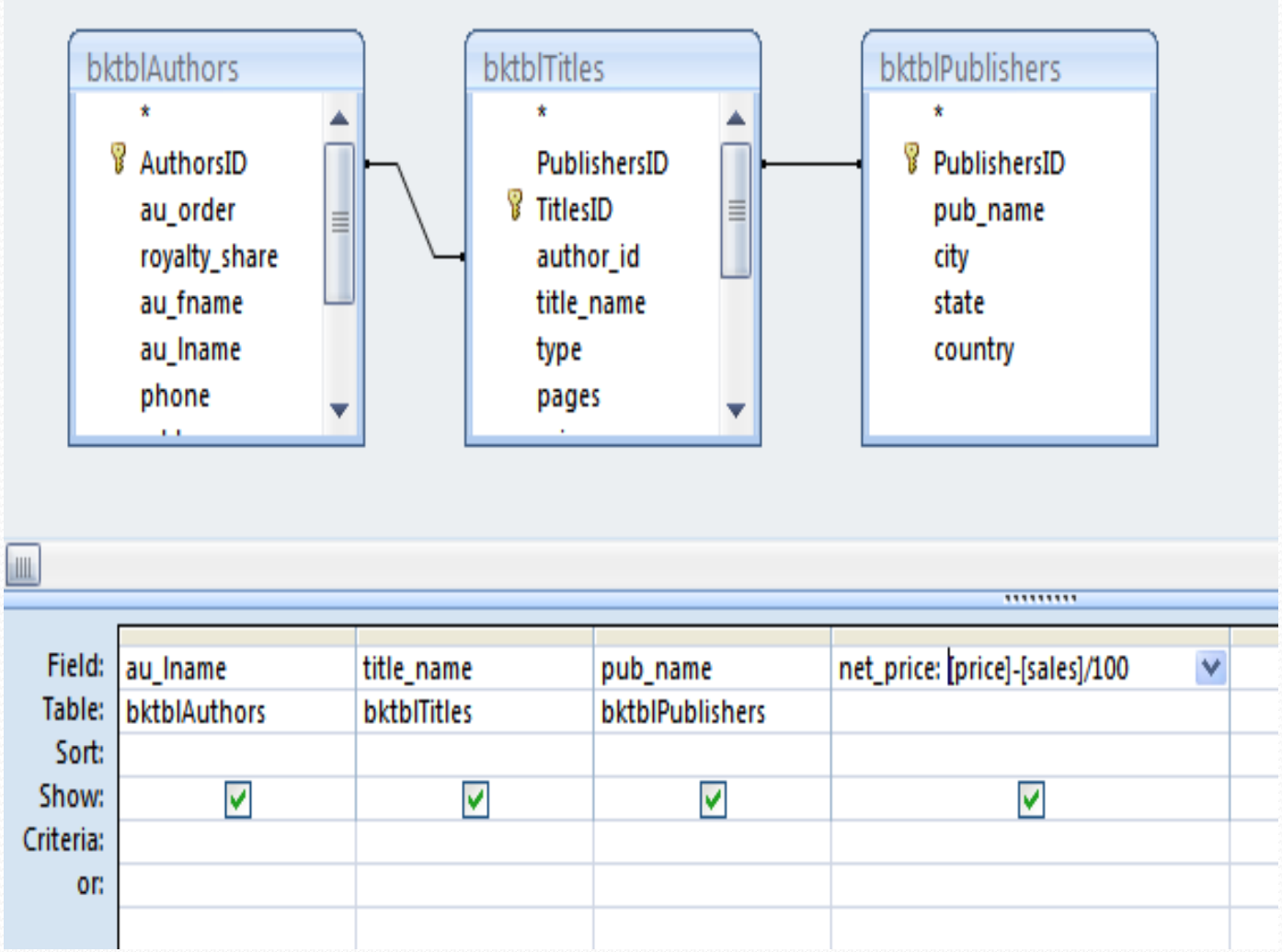
- Choose view → SQL view



Queries

- Modify the previous query to display the price of the book after the sale as well using this function:
  - Net_price = price – sales /100

```
SELECT bktblAuthors.au_lname, bktblTitles.title_name,
bktblPublishers.pub_name, [price]-[sales]/100 AS net_price
FROM bktblPublishers INNER JOIN (bktblAuthors INNER JOIN
bktblTitles ON bktblAuthors.AuthorsID = bktblTitles.author_id) ON
bktblPublishers.PublishersID = bktblTitles.PublishersID;
```

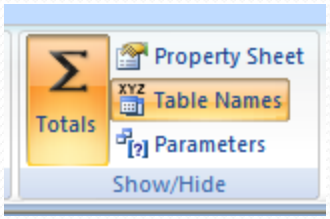

bktblAuthors
*
AuthorsID
au_order
royalty_share
au_fname
au_lname
phone
bktblTitles
*
PublishersID
TitlesID
author_id
title_name
type
pages
bktblPublishers
*
PublishersID
pub_name
city
state
country
Field: au_lname title_name pub_name net_price: [price]-[sales]/100
Table: bktblAuthors bktblTitles bktblPublishers
Sort:
Show:
Criteria:
or:

- Make a query to display the author phone number and the complete name of the author.

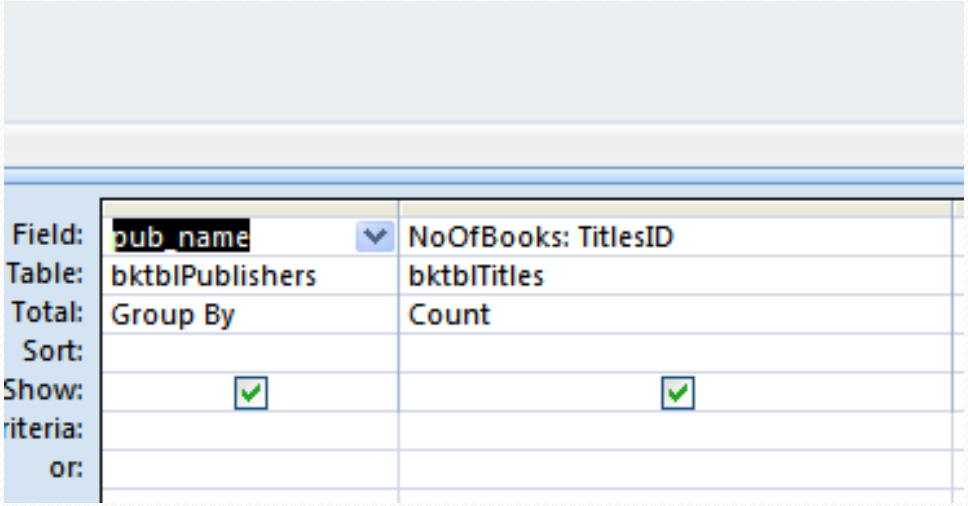
Query2

phone	authoer_name
718-496-7223	Sarah Buchman
415-549-4278	Hallie Hull
415-549-4278	Klee Hull
415-549-4278	Klee Hull
303-986-7020	Wendy Heydemark
650-836-7128	Kellsey
650-836-7128	Kellsey
303-986-7020	Wendy Heydemark
415-549-4278	Hallie Hull
415-549-4278	Klee Hull
650-836-7128	Kellsey
303-986-7020	Wendy Heydemark
212-771-4680	Christian Kells
718-496-7223	Sarah Buchman
303-986-7020	Wendy Heydemark
415-549-4278	Klee Hull
718-496-7223	Sarah Buchman
*	

Aggregate Queries

- Make a query to display the number of books for each publisher
  - Create → Query design
  - Where is this information?
    - Publisher name in publisher table
    - No of books can be obtained from titles table
  - Select pub_name to display
  - Click 

- You notice that additional row has been added “total”
- The word “Group by” is written under the pub_name
- Choose “count” for TitlesID field and write its name as “NoOfBooks”



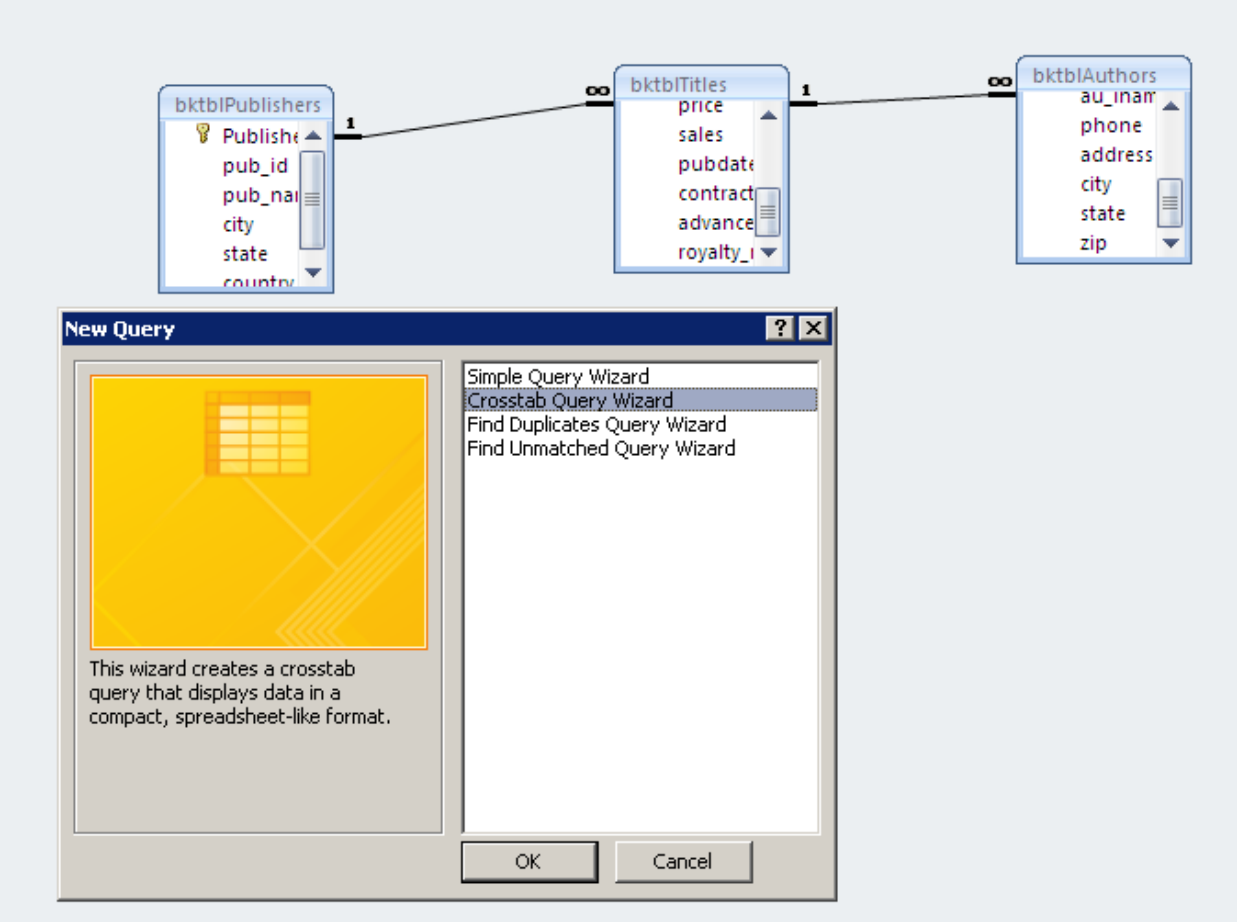
```
SELECT bktblPublishers.pub_name,
Count(bktblTitles.TitlesID) AS NoOfBooks
FROM bktblPublishers INNER JOIN
bktblTitles ON bktblPublishers.PublishersID =
bktblTitles.PublishersID
GROUP BY bktblPublishers.pub_name;
```

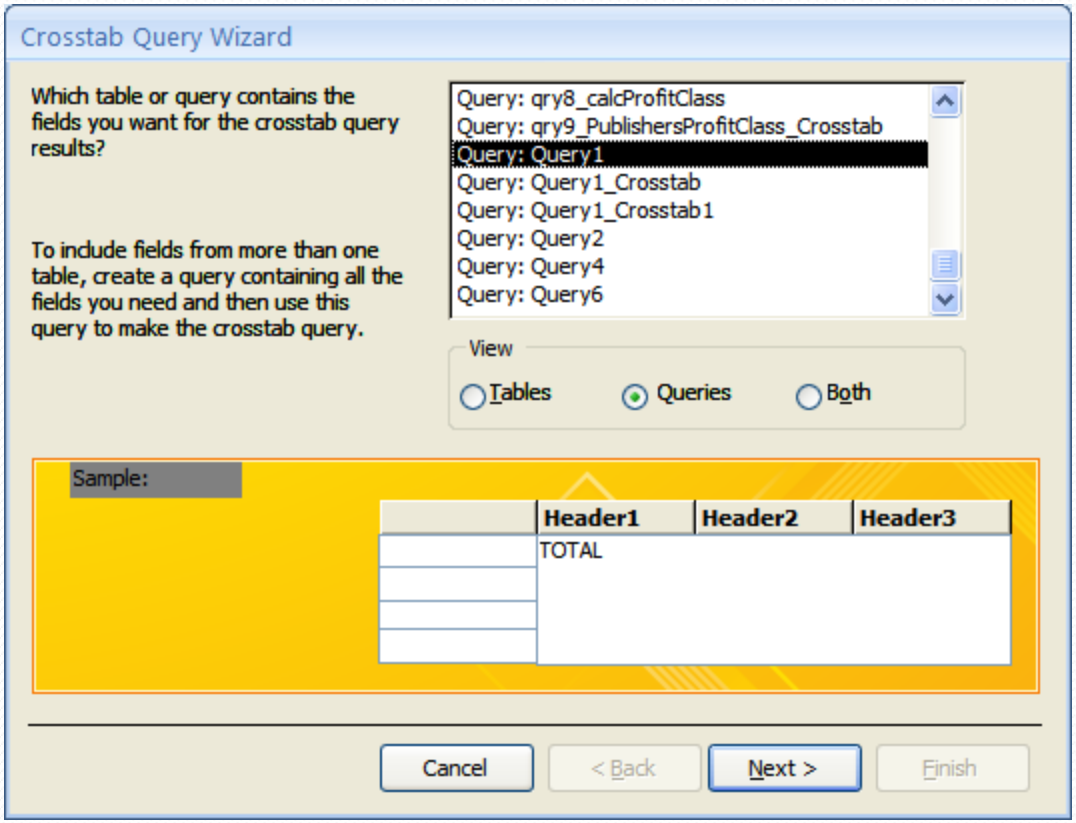
Adding a condition

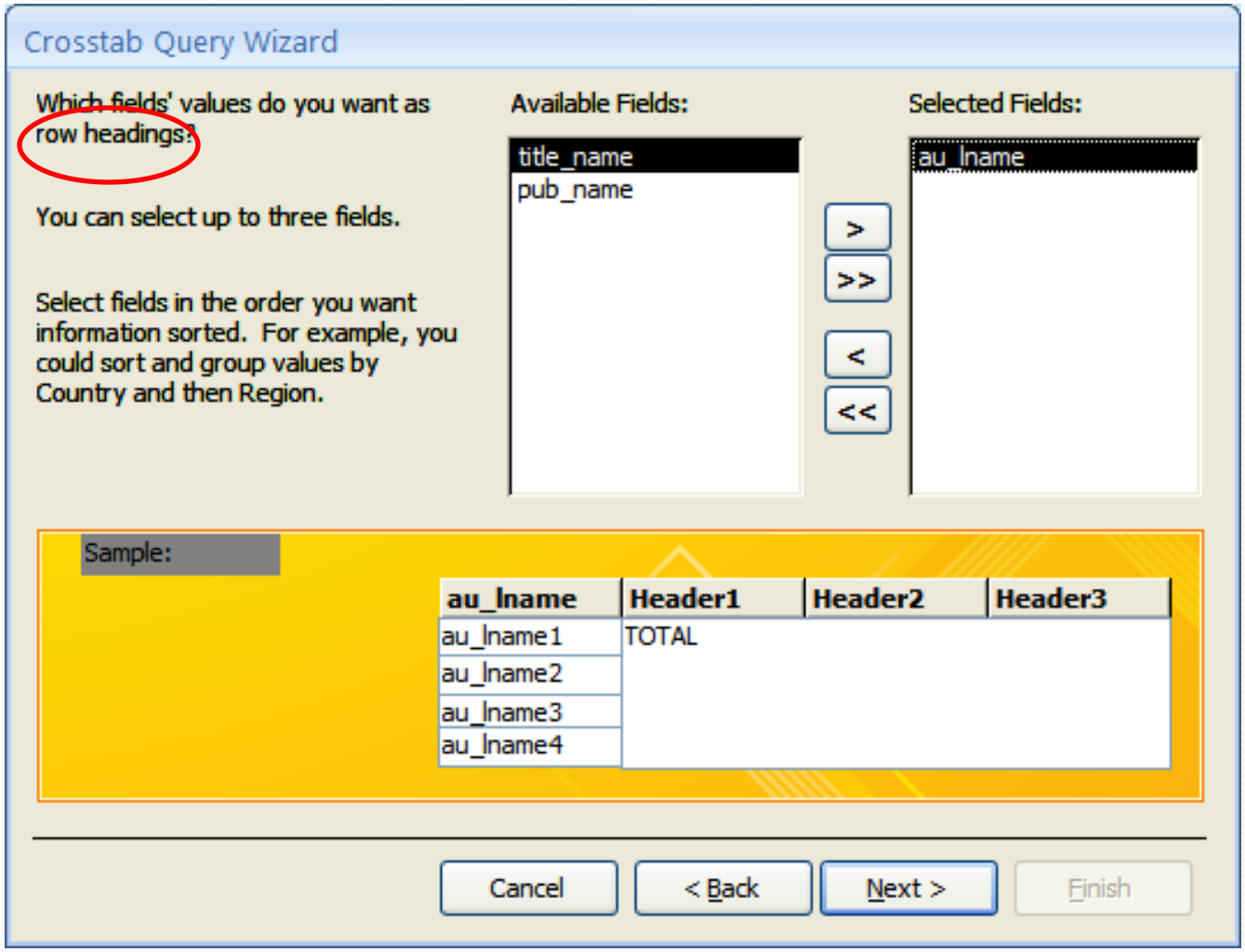
- Modify the previous query to display only publishers who published more than two books

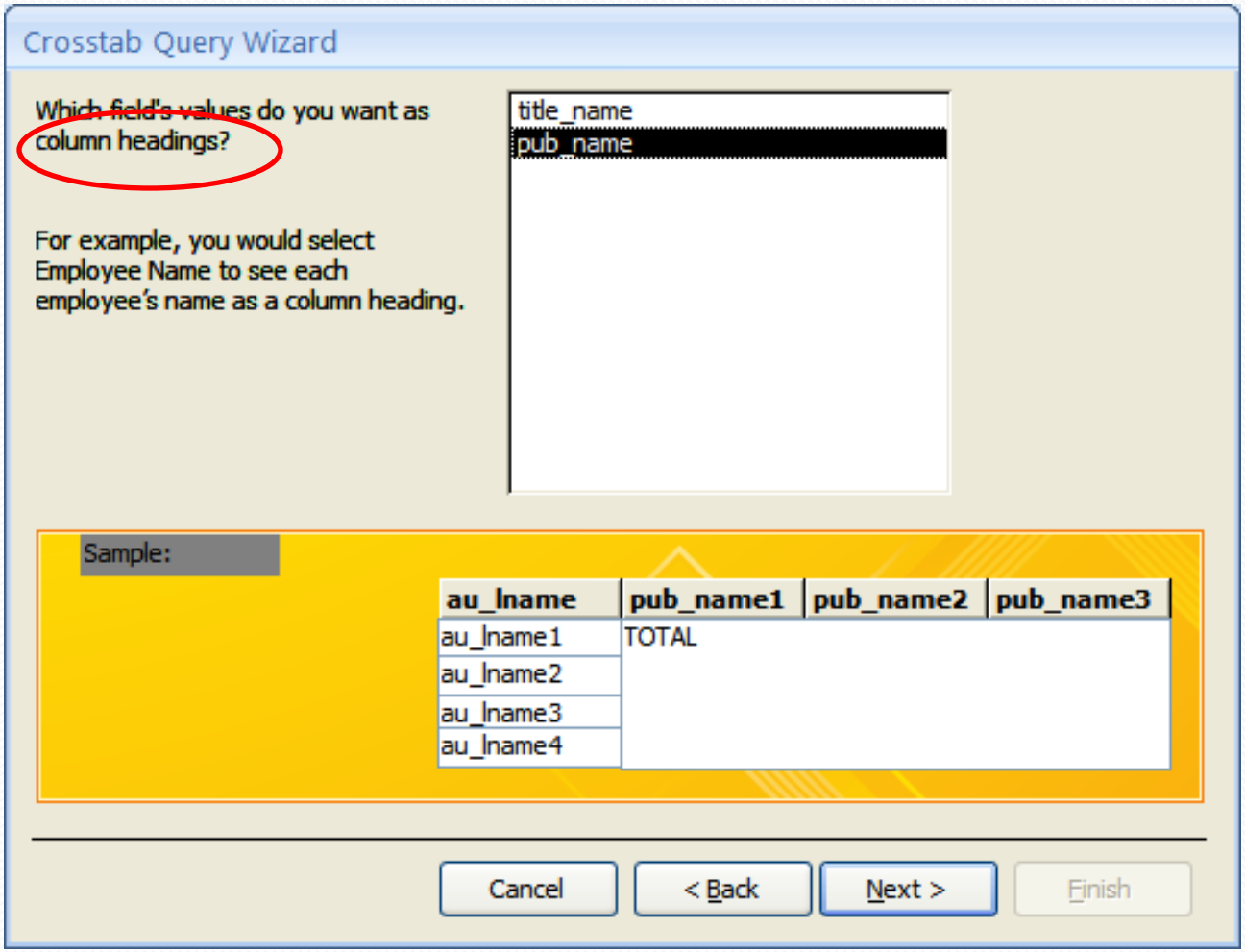
```
SELECT bktblPublishers.pub_name, Count(bktblTitles.TitlesID) AS
NoOfBooks
FROM bktblPublishers INNER JOIN bktblTitles ON
bktblPublishers.PublishersID = bktblTitles.PublishersID
GROUP BY bktblPublishers.pub_name
HAVING (((Count(bktblTitles.TitlesID))>2));
```

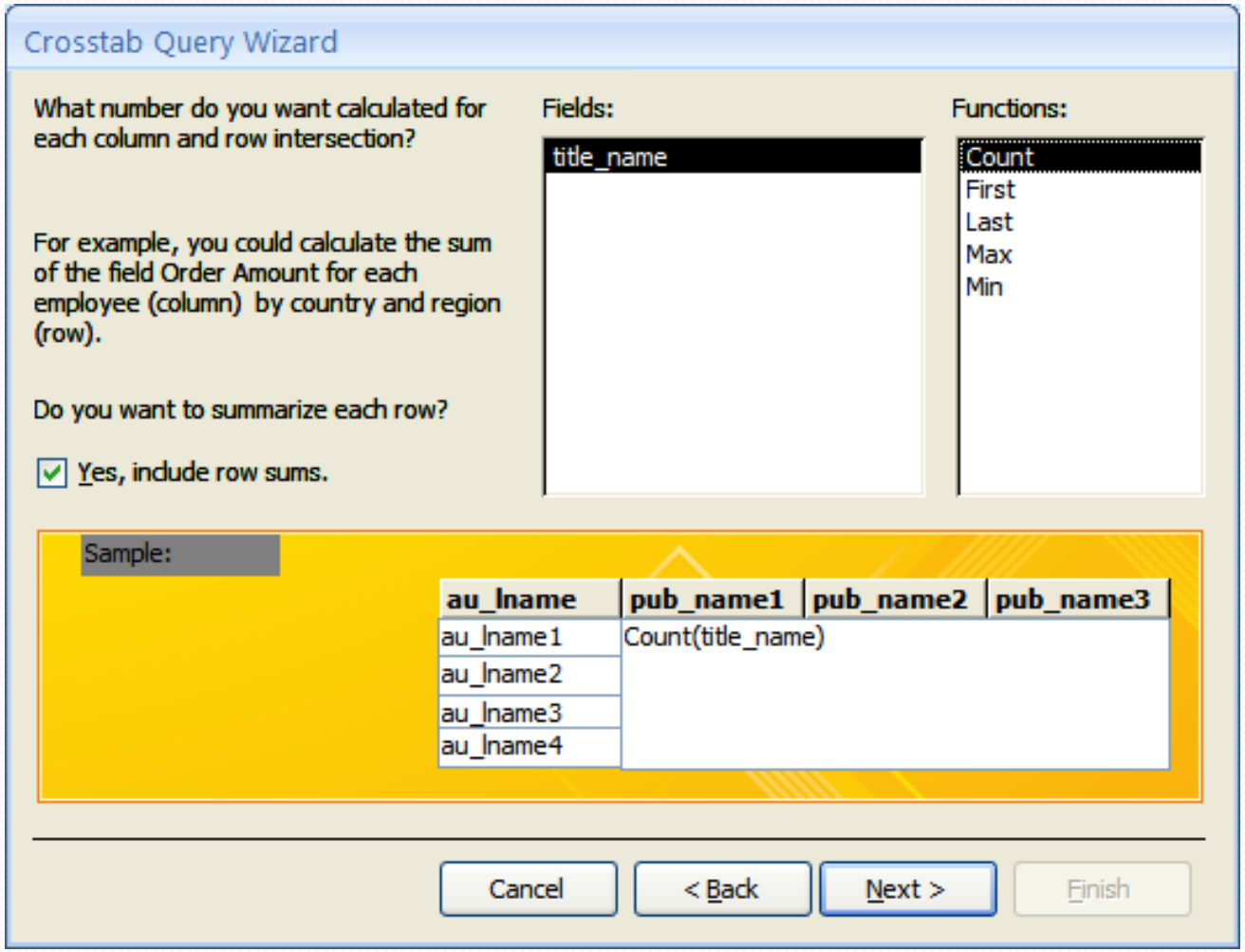
Crosstab Query




Crosstab Query Wizard
Which table or query contains the fields you want for the crosstab query results?
To include fields from more than one table, create a query containing all the fields you need and then use this query to make the crosstab query.
Query: qry8_calcProfitClass
Query: qry9_PublishersProfitClass_Crosstab
Query: Query1
Query: Query1_Crosstab
Query: Query1_Crosstab1
Query: Query2
Query: Query4
Query: Query6
View
Tables
Queries
Both
Sample:
Header1
Header2
Header3
TOTAL
Cancel
< Back
Next >
Finish


Crosstab Query Wizard
Which fields' values do you want as row headings?
You can select up to three fields.
Select fields in the order you want information sorted. For example, you could sort and group values by Country and then Region.
Available Fields:
title_name
pub_name
Selected Fields:
au_lname
>
>>
<
<<
Sample:
au_lname
Header1
Header2
Header3
au_lname1
au_lname2
au_lname3
au_lname4
TOTAL
Cancel
< Back
Next >
Finish


Crosstab Query Wizard
Which field's values do you want as column headings?
For example, you would select Employee Name to see each employee's name as a column heading.
title_name
pub_name
Sample:
au_lname
pub_name1
pub_name2
pub_name3
au_lname1
TOTAL
au_lname2
au_lname3
au_lname4
Cancel
< Back
Next >
Finish


Crosstab Query Wizard
What number do you want calculated for each column and row intersection?
For example, you could calculate the sum of the field Order Amount for each employee (column) by country and region (row).
Do you want to summarize each row?
Yes, include row sums.
Fields:
title_name
Functions:
Count
First
Last
Max
Min
Sample:
au_lname
pub_name1
pub_name2
pub_name3
au_lname1
au_lname2
au_lname3
au_lname4
Count(title_name)
Cancel
< Back
Next >
Finish

au_lname	Total Of title_name	Abatis Publishers	Core Dump Books	Schadenfreude Press
Buchman	4	3		1
Heydemark	1		1	
Hull	8	6		2

If statement

- Make a query based on QueryA by adding another field so that
  - If the net_price of the book >= 20 → expensive
  - Else if it is >= 10 → ok
  - Otherwise → cheap

class: IIf(netPrice>=20," expensive",IIf(netPrice>=10," ok", "cheap"))

The same format as excel but use IIF instead if if
Don't forget quotes for string

Exercise

1) Create a new database named Stuff.

2) Create a table called Orders with the fields: OrderID, ProductID, SalespersonName, SalesDate, Quantity and SellingPricePerPiece.

- What is the primary key?
- Data type for ProductID?
- Data type for SalespersonName?
- Data type for SalesDate?

Exercise

3) Create a table called Products with the fields ProductID, PName, PurchaseDate, Supplier and PurchasePricePerPiece.

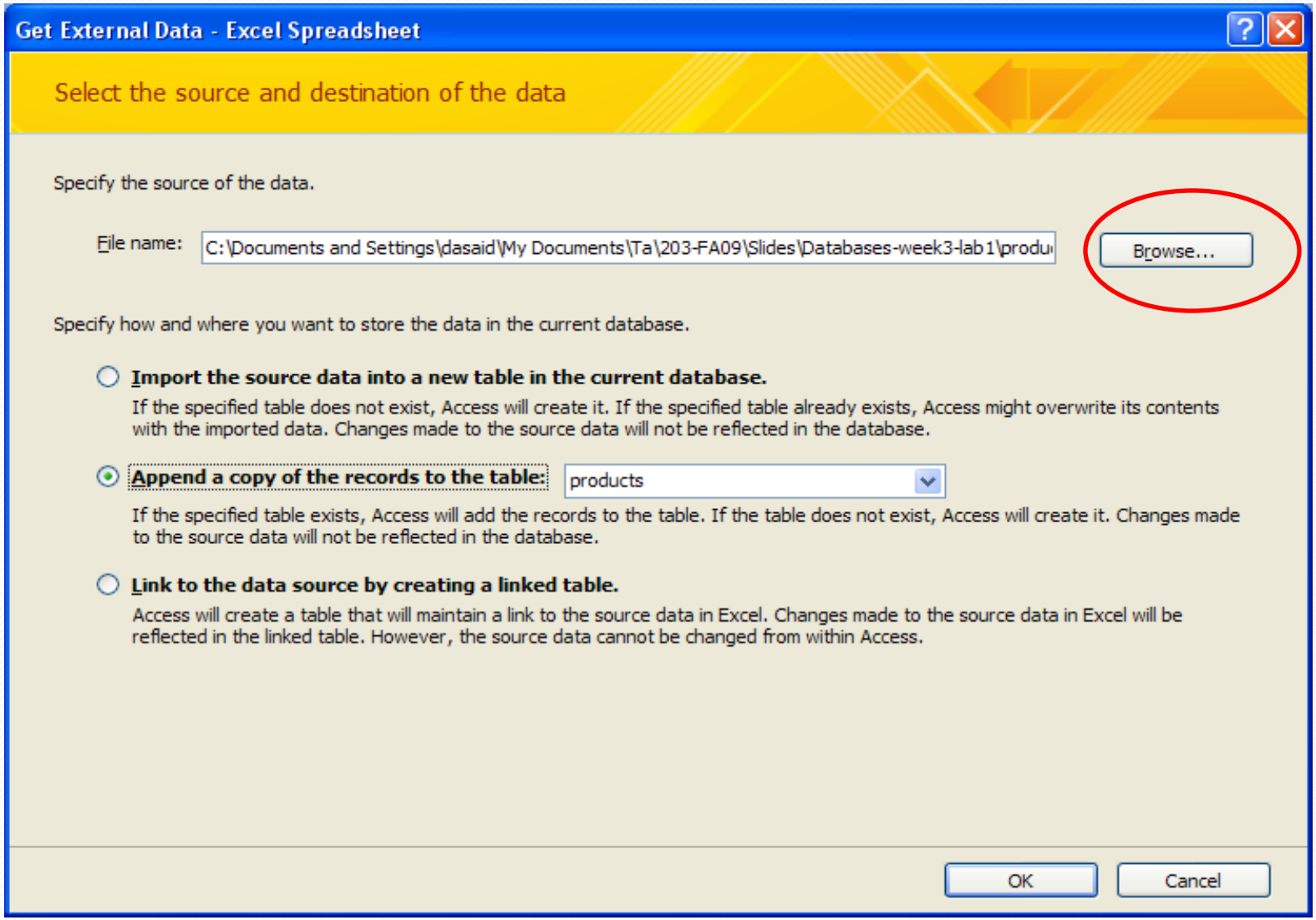
4) What relationships might be required between products and orders tables?

5) Set the default quantity in the Orders table to 0 and make pName in products table “required”

Exercise

6) Now, to save your time, import data for both tables from the excel files provided on the wiki page

Right click of the table → import → excel


Get External Data - Excel Spreadsheet
Select the source and destination of the data
Specify the source of the data.
File name:
C:\Documents and Settings\dasaid\My Documents\Ta\203-FA09\Slides\Databases-week3-lab1\produ
Browse...
Specify how and where you want to store the data in the current database.
Import the source data into a new table in the current database.
If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.
Append a copy of the records to the table:
products
If the specified table exists, Access will add the records to the table. If the table does not exist, Access will create it. Changes made to the source data will not be reflected in the database.
Link to the data source by creating a linked table.
Access will create a table that will maintain a link to the source data in Excel. Changes made to the source data in Excel will be reflected in the linked table. However, the source data cannot be changed from within Access.
OK
Cancel

Exercise

7) Create a query named query_1 that displays all fields in both tables sorted ascending by the quantity, but limit the query to the Supplier "Lush".

Notes:

- productID should appear only once in the resulting
- Supplier name should not appear since it is known that it is Lush for all of them

Hint:

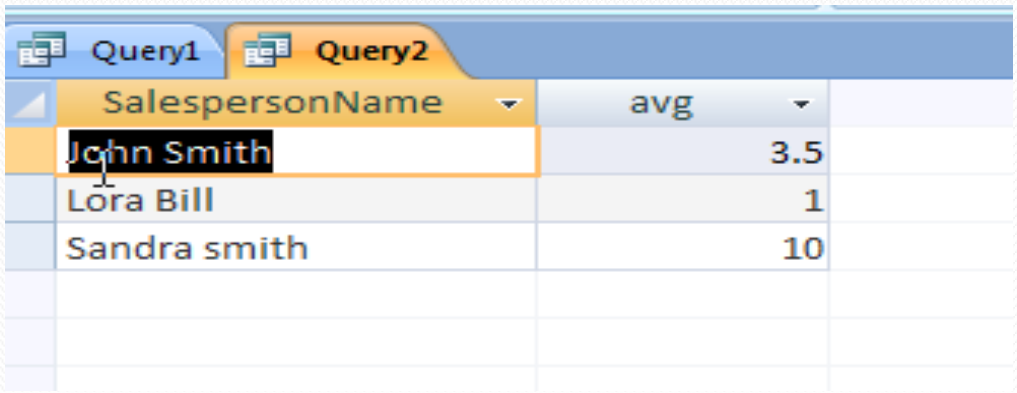
You can select all the field in orders table using orders.*, then you select quantity to sort by it, however it shouldn't be shown again in the output

orders | Query1

orderID	productID	Salesperson	SalesDate	Quantity	SellingPrice	pName	PurchaseDate	PurchasePricePerPiece
2	10769	Lora Bill	12/1/2009	1	3	Shampoo	10/2/2008	$8.00
4	10768	John Smith	2/1/2009	5	5	Shower Gel	10/1/2008	$4.00
3	10768	Sandra smith	5/1/2009	10	5	Shower Gel	10/1/2008	$4.00
(New)								

Exercise

8) Create an aggregate query (make sure the Totals button is selected) named query_2. Group the query using SalesPersonName and calculate the Average quantity he/she sells. Rename average quantity to be “Avg”



Exercise

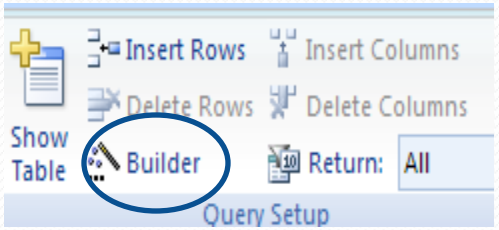
9) Create query_3 based on query 1. Then, create a new field called Status. This should display "Profit" **if** SellingPricePerPiece>PurchasePricePerPiece, "Breakeven" if they were equal and "Loss" otherwise.

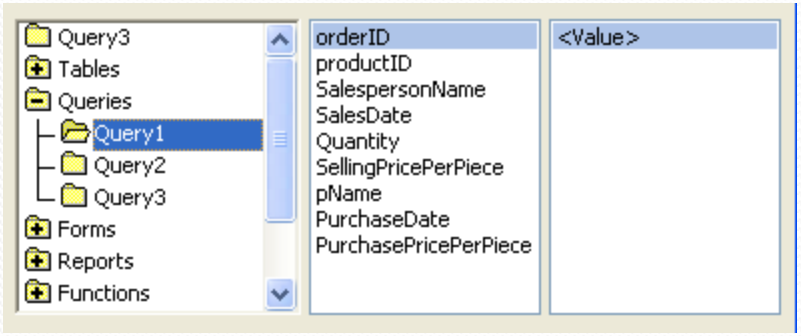
Hint:

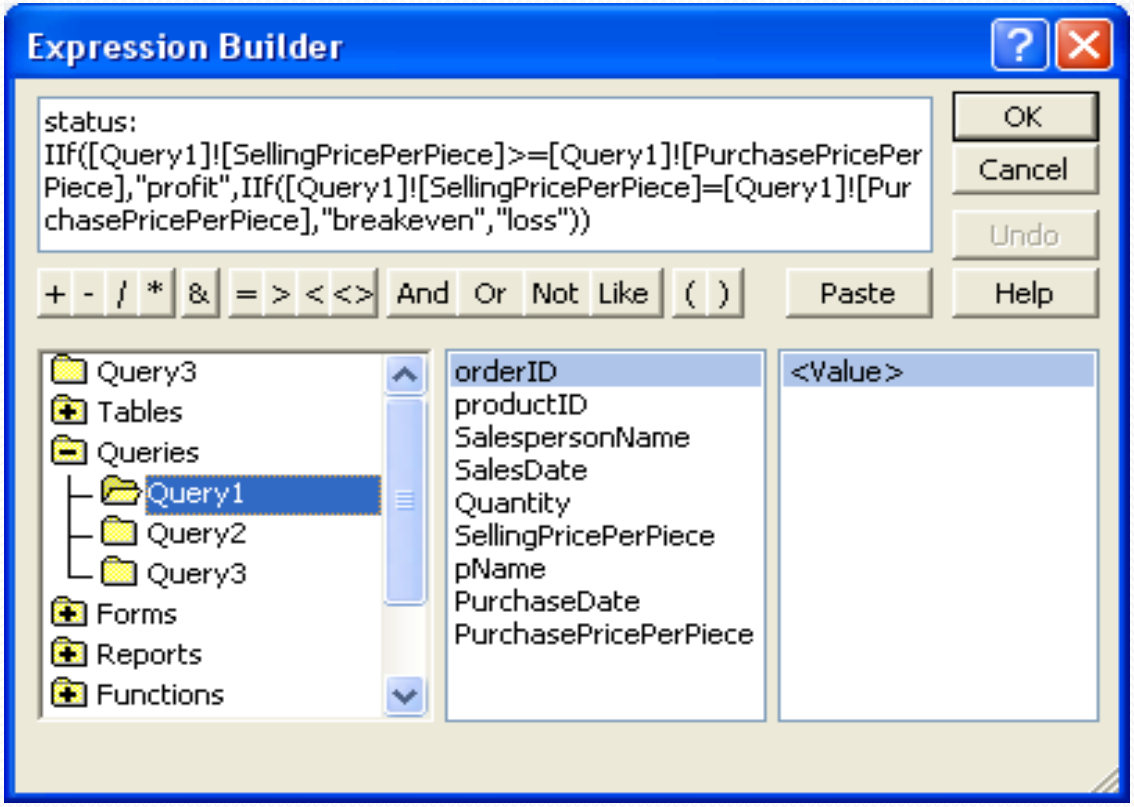
Use Query builder for fast editing of field names

Query Builder

- Choose builder from query setup
- Enter your If statement as usual, however, when you want to enter a field name select it






Expression Builder
status:
IIf([Query1]![SellingPricePerPiece]>=[Query1]![PurchasePricePer
Piece],"profit",IIf([Query1]![SellingPricePerPiece]=[Query1]![Pur
chasePricePerPiece],"breakeven","loss"))
OK
Cancel
Undo
Help
+ - / * & = > < <> And Or Not Like ( )
Paste
Query3
Tables
Queries
Query1
Query2
Query3
Forms
Reports
Functions
orderID
productID
SalespersonName
SalesDate
Quantity
SellingPricePerPiece
pName
PurchaseDate
PurchasePricePerPiece
<Value>

Exercise

- Create a report of query_3.