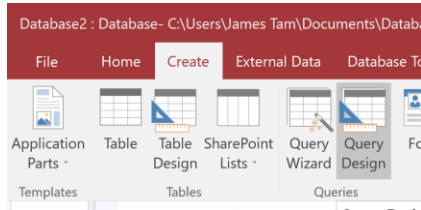# Week6: First Tutorial

- Covering select portions of the midterm examination

Week6: Second Tutorial

- Forming queries graphical using the Access design view
- Defining queries using SQL
- Specifying tables and attributes to appear in query results
- Constraining query results ('criteria' under the graphical design view and the 'Where' clause of SQL)
- Logic and queries

Graphically Forming Queries Using Access

- `Create->query design`

- Avoid using the query wizard

Example Database

- For consistency it will be the same one from previous tutorials
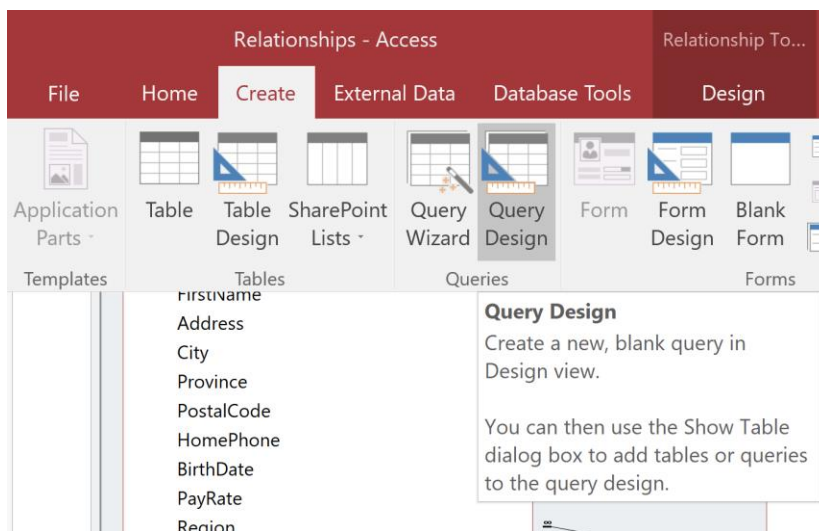
First Query

- TA will first show you how to form this query 'live' (completing the steps in front of you).
- If you miss any of the steps however the following slides will show screenshots of the process.
- A single table, no condition (e.g., from the example database show the `full name` and `EMPLOYEE #` of all the records in the Employees table)
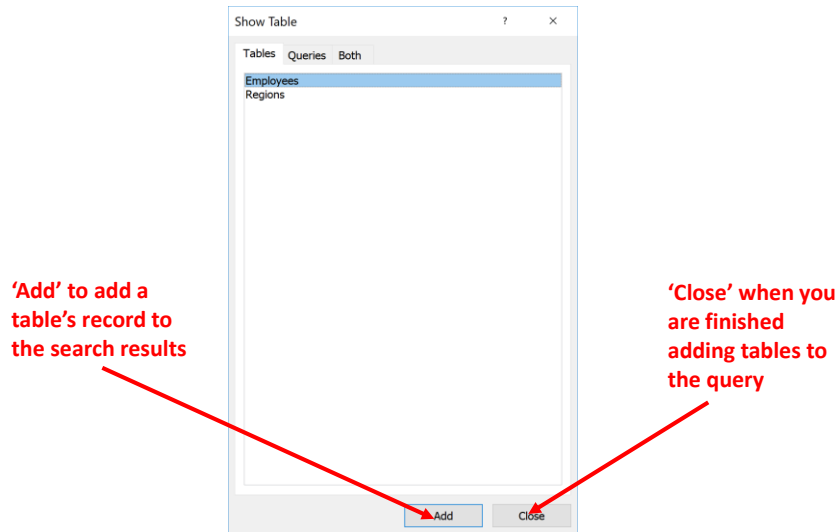
Author: James Tam

Step 1: Create The Query

Author: James Tam

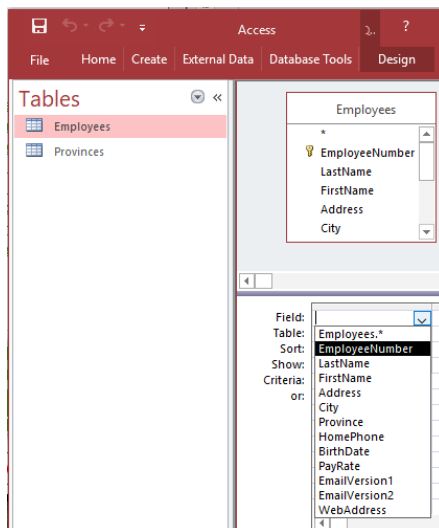# Step 2: Select The Table Or Tables

'Add' to add a table's record to the search results

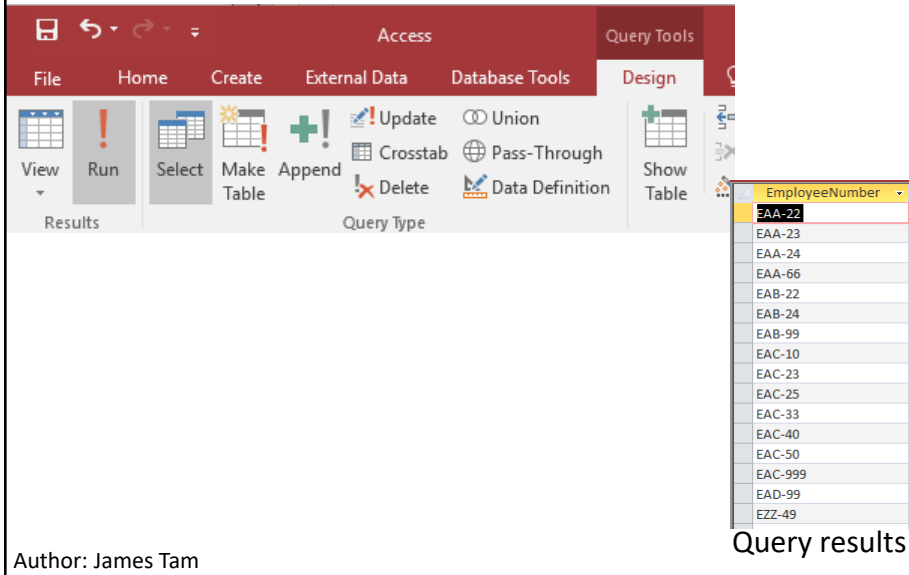**'Close' when you are finished adding tables to the query**

Author: James Tam

Step 3: Add The Attributes That Form Part Of Query

Author: James Tam

Step 4: "Run" The Query To View The Results Of The Search

Query results

Author: James Tam

First Query SQL

- Recall from lecture there are four clauses or parts when forming a query

    SELECT: Specifies the relevant attributes of which tables are involved in the query e.g., `CallSign` attribute of the `Gamers` table

    FROM: Lists the tables from which the data is to be selected

    WHERE: Provides the conditions to determine if a particular row shows or doesn't show as a query result

    ORDER BY: Specifies the order in which rows are to be returned**;**

- Format of the first two clauses

    SELECT: *<Table name[1]>.<Attribute name[1]>, <Table name[1]>.<Attribute name[1]>….*
    FROM: *<Table name[1]>, <Table name[1]>… <Table name[1]>*

    1 Only include the tables and attributes that will actually be displayed in the query results

Author: James Tam

Student Exercise #1A

- Form the following query using the graphical design view of Access.
- Show the `Employee_Number`, `Birthdate` and `Salary` of employees.
- TA provides 5 minutes to complete the exercise

Author: James Tam

Student Exercise #1B

- Form the previous query using SQL
  - That is, you are expected to be able to form SQL queries for the examination
- Show the `Employee_Number`, `Birthdate` and `Salary` of employees.
- TA provides 5 minutes to complete the exercise

Author: James Tam

Second Query

- A single table, simple condition (e.g., e.g., from the example database show the full name, address and city of employees who live in Calgary).
- Unlike the previous query this one requires a 'condition' to be fulfilled.
- Query conditions can be entered in the final step of the design view.

Field:	LastName	FirstName	Address	City
Table:	Employees	Employees	Employees	Employees
Sort:				
Show:	☑	☑	☑	☑
Criteria:				"Calgary"
or:				

Author: James Tam

Second Query: SQL

- This query requires a condition to be specified
- Query conditions can be specified under the 'WHERE' clause

SELECT: Specifies the relevant attributes of which tables are involved in the query e.g., CallSign attribute of the Gamers table

FROM: Lists the tables from which the data is to be selected

WHERE: Provides the conditions to determine if a particular row shows or doesn't show as a query result

ORDER BY: Specifies the order in which rows are to be returned;

Author: James Tam

Third Query

- Show the same information from the previous query yet exclude the redundant 'city' information (all results will show 'Calgary' as the city).
- Reminder:
  - Include the 'city' attribute when forming the query (so "Calgary" can be specified as a query filter)
  - Uncheck 'city' when displaying query results

Field:	LastName	FirstName	Address	City
Table:	Employees	Employees	Employees	Employees
Sort:				
Show:	☑	☑	☑	☐
Criteria:				"Calgary"

LastName	FirstName	Address
Smith	John	123 Peanut Lane
Carswell	Mary	425 Remington Ave
Edgar	Maureen	300, Lockinvar Road

Author: James Tam

Third Query: SQL Solution

- To include an attribute as a query filter (specify under a 'WHERE' clause)
- To exclude that attribute from query results simply exclude the attribute under the 'SELECT' clause)

```
SELECT Employees.LastName, Employees.FirstName,
Employees.Address
FROM Employees

WHERE ((Employees.City ="Calgary"));
```

Author: James Tam

Student Exercise #2

- Using the graphical design view of Access show the first name, last name and hourly pay rate of employees that earn over ~$27 per hour
- Form the equivalent query using SQL
- TA provides ~5 minutes to complete the exercise

Logic And Queries

- Logical operators: AND, OR can be used to combine Boolean Expressions specified under the 'WHERE' clause
  WHERE ((BOOLEAN EXPRESSION) AND (BOOLEAN EXPRESSION));
  WHERE ((BOOLEAN EXPRESSION) OR (BOOLEAN EXPRESSION));
  – Of course more than two Boolean expressions can be combined with AND, OR
- NOT can be used to negate these expressions (inequality or 'not equal to' can often be used as well)
  WHERE NOT (BOOLEAN EXPRESSION);

Fourth Query

- Show the first name, last name and city of employees who live either in Calgary or Silent Hill

Field:	LastName	FirstName	City	
Table:	Employees	Employees	Employees	
Sort:				
Show:	☑	☑	☑	
Criteria:			"Calgary" Or "Silent Hill"	

```
SELECT Employees.LastName, Employees.FirstName,
Employees.City
FROM Employees
WHERE ((Employees.City="Calgary") Or
(Employees.City ="Silent Hill"));
```

Author: James Tam

Fifth Query

- Show the first name, last name and city of all employees who live everywhere except for the city of Calgary.
- Solution 1 (NOT operator)

Field:	FirstName	LastName	City
Table:	Employees	Employees	Employees
Sort:			
Show:	☑	☑	☑
Criteria:			Not "Calgary"

```
SELECT Employees.FirstName, Employees.City
FROM Employees
WHERE ((Not (Employees.City)="Calgary"));
```

Author: James Tam

Fifth Query (2)

- Solution 2 (Inequality operator)

Field:	FirstName	LastName	City
Table:	Employees	Employees	Employees
Sort:			
Show:	☑	☑	☑
Criteria:			<>"Calgary"

```
SELECT Employees.FirstName, Employees.LastName,
Employees.City
FROM Employees
WHERE (((Employees.City)<>"Calgary"));
```

Author: James Tam