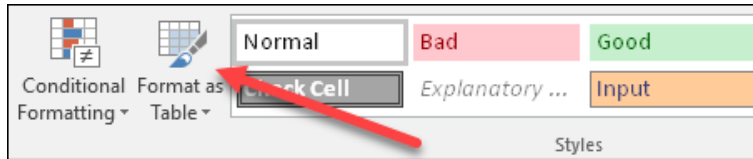


Create a Relationship to build a Pivot Table

In Excel 2013 and 2016/365 you can now create a relationship between tables of data. This is a feature that can be used to pull data from the different tables to build a PivotTable.

The first step in this process is to format the data/table with the **Format as Table** feature. This can be found on the **Home** tab, as part of the **Styles** group.



Once you have formatted the table you need to give it a name. Naming the tables will make it easier to identify and work with your data in the Pivot Table. Third, you will need to setup a relationship between each of the three tables.

In the following scenario, using hotel data (*you as the employee*), have downloaded new data into Excel from the hotel's SQL database. You have downloaded three tables that you would like to use in a pivot table. These three tables are; Customers, Reservations and Rooms tables.

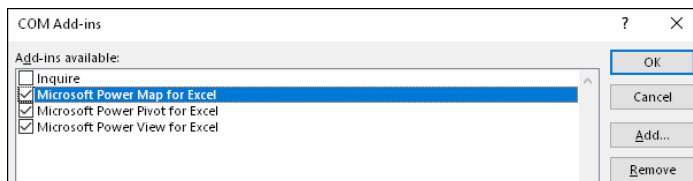
As mentioned above, to be able to build a pivot table from all three tables you will need to prepare the data first. The first step is to format each table as a table using the **Format as Table** feature. Second name each table with a unique name. Third, setup a relationship with each table using the **Relationship** feature on the **Data** ribbon.

After the above three steps are done, you will need to use of Excel's Business Intelligent the PowerPivot add-in. If it is not currently one of your tabs in Excel, you will need to activate this add-in.

(Click *File, Options, Add-ins* category. At the bottom of the dialog box click the down arrow for *Manage* and select *COM Add-ins* and click the *Go* button.



In the Add-ins available list check the box for Microsoft Power Pivot for Excel. Then click **OK**.)



Using the Power Pivot ribbon you add each table to your Data Model. After all are added, click *Manage*, Click *Pivot Table* on the *Home* ribbon.

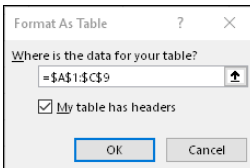
Building a pivot table using multiple tables

1. Click in the **Customers** table.
2. On the *Home* ribbon, click the *Format as Table* button and select **Blue, Table Style Medium 6**.

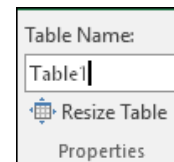


The style is in the Medium section first row.

3. In the Format As Table dialog box, confirm that **“My table has headers”** is checked.



4. Click the **OK** button.
5. On the *Design* ribbon click in the *Table Name* box, type: **Customers** and press [Enter]



You have created your first formatted table and named the table.

1. Repeat steps 1 – 5 for the other two tables.
2. Name the tables the same as the sheet names; **Reservations** and **Rooms**.

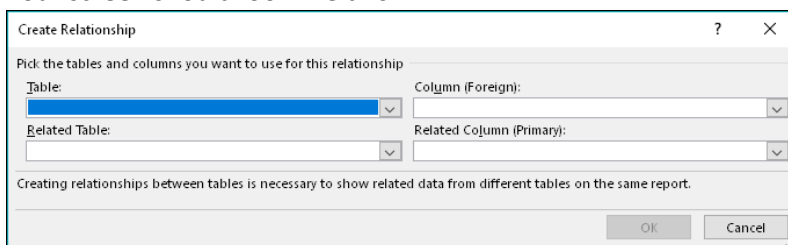
In the next few steps you will create the relationship between the three tables. If you look at each table you will notice that the Customers table has a CustID column and the Reservations table has a CustID column. This unique identifier will be used to create the first relationship. The second will be between the Reservations table which has a RoomID column and the Rooms table which has a RoomID column.

1. With the Customers worksheet selected, click the **Data** tab, in the Data Tools group click **Relationships** button.



2. In the *Manage Relationships* dialog, click the **New** button.

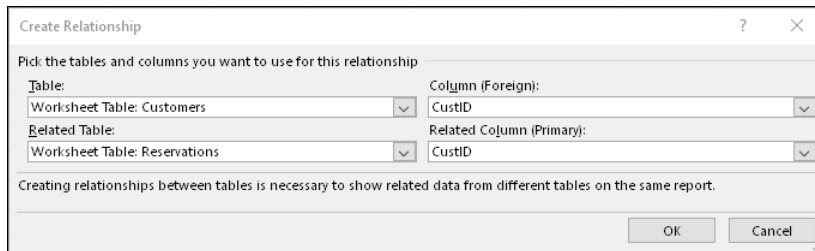
Your screen should look like this.



3. Click the *Table* down arrow and select **Worksheet Table: Customers** from the list.
4. Click the *Column (Foreign)* down arrow and select **CustID** from the list.

5. Click the Related Table down arrow and select **Worksheet Table: Reservations** from the list.
6. Click the Related Column (*Primary*) down arrow and select **CustID** from the list.

Your screen should look like this.

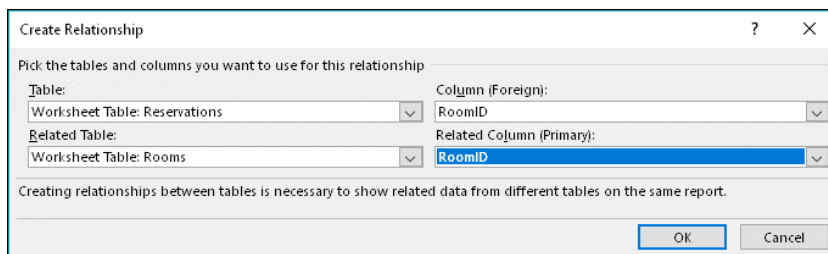


7. Click the **OK** button to complete the first relationship.

Next you will create the second relationship.

1. Click the **New...** button in the *Manage Relationships* dialog.
2. Click the **Table** down arrow and select **Worksheet Table: Reservations** from the list.
3. Click the Column (Foreign) down arrow and select **RoomID** from the list.
4. Click the Related Table down arrow and select **Worksheet Table: Rooms** from the list.
5. Click the Related Column (Primary) down arrow and select **RoomID** from the list.

Your screen should look like this.

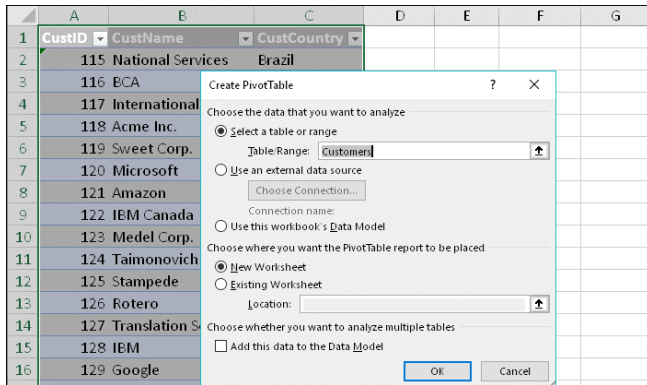


6. Click the **OK** button to complete the second relationship.
7. Click the **Close** button to exit the *Manage Relationships* dialog.

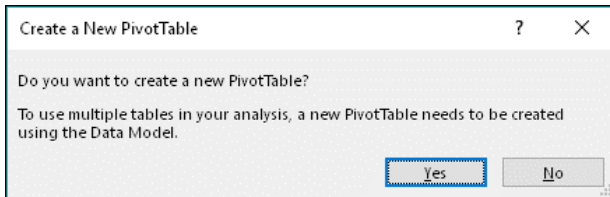
Now you are ready to build your PivotTable with three different sheets.

1. Click the **Insert** tab and click the **PivotTable** button in the *Table* group.

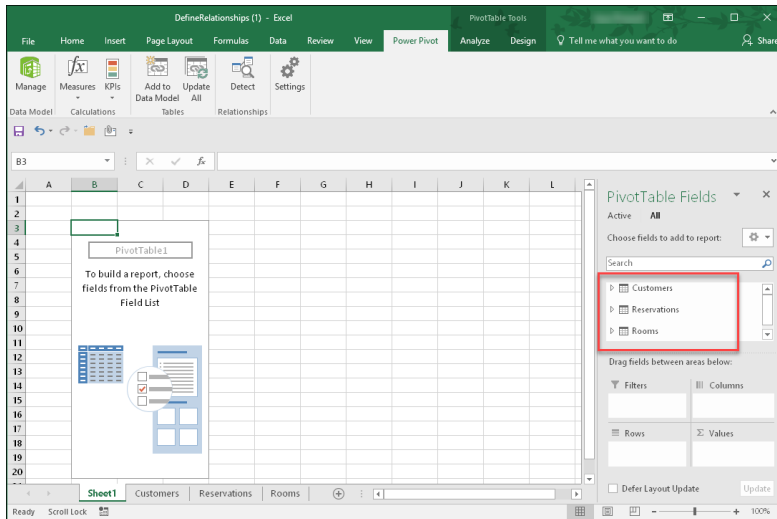
Your screen should look like this.



2. Click **OK** button.
3. In the PivotTable Field pane, click the **More Tables...** link.
4. When the Create a New PivotTable dialog appears, click the **Yes** button.

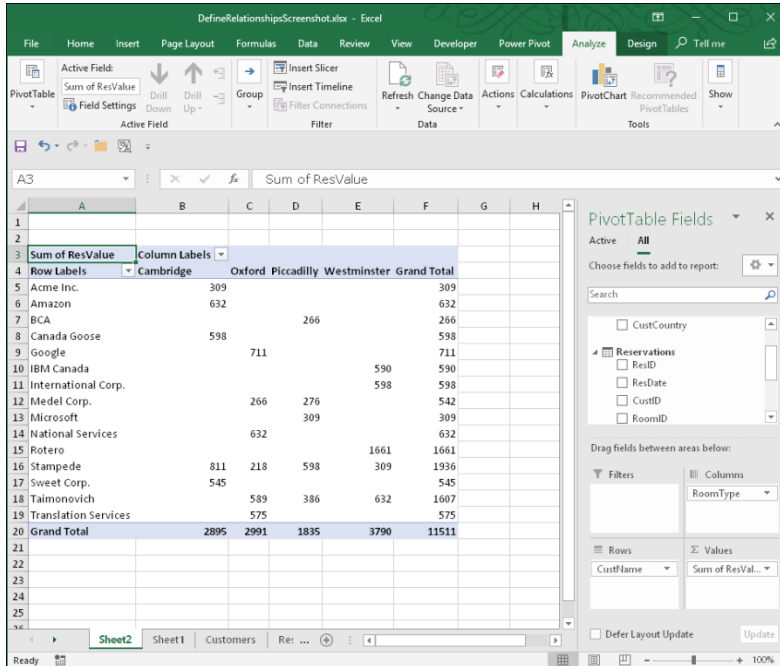


Your screen should look like this.



1. Click the arrow head next to *Customers* to expand and drag **CustName** down to Rows box.
2. Click the arrow head next to *Reservations* to expand and drag **ResValue** down to Values box.
3. Click the arrow head next to *Rooms* to expand and drag **RoomType** down to Columns box.

Your screen should look like this.



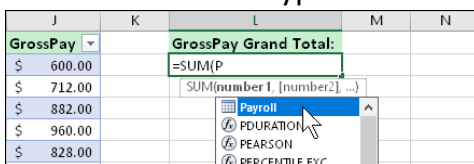
You have created a PivotTable from 3 different sheets of data, using a relationship to connect all three together which creates a Data Model.

What is DAX

DAX stands for Data Analyze Expression and is used in Excel to write formulas using words rather than cell addresses. Primarily it is used when working in PowerPivot but can be used with a formatted table.

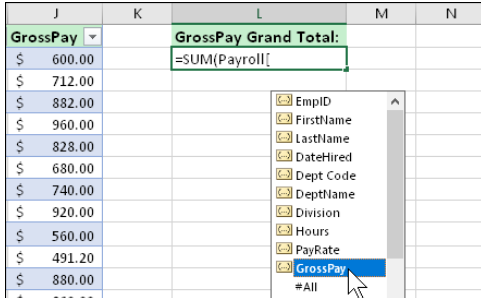
Data Analysis Expressions (DAX) sounds a little intimidating at first, but don't let the name fool you. DAX basics are really quite easy to understand. First things first - DAX is NOT a programming language. DAX is a formula language. You can use DAX to define custom calculations for Calculated Columns and for Measures (*also known as calculated fields*). DAX includes some of the functions used in Excel formulas, and additional functions designed to work with relational data and perform dynamic aggregation. The following is a simple example.

1. Click the **Employee List** worksheet tab.
2. The current table, **Format as Table** and name table **Payroll**.
3. Click in cell **L4** and type the following: **=SUM(P**



4. Double click **Payroll** in the drop down list.

5. Type an open square bracket: [



6. Double click the **GrossPay** field in the drop down list.
7. Add a close square bracket] and close parenthesis).
8. Press [Enter] to complete your DAX formula.

Your screen should look like this.

EmpID	FirstName	LastName	DateHired	Dept Code	DeptName	Division	Hours	PayRate	GrossPay	GrossPay Grand Total:
EMP123	Hazel	Kane	7/22/2004	TR	Training Region	Yakima	40	\$15.00	\$ 600.00	\$ 147,667.00
EMP124	Liza	Bode	7/22/2004	BF	Backup Floor	Bremerton	32	\$22.25	\$ 712.00	
EMP125	Robert	Witt	7/22/2004	NB	North Bank	Wenatchee	42	\$21.00	\$ 882.00	
EMP126	Howard	Clausen	4/23/2005	PP	Pepper Park	Anacortes	40	\$24.00	\$ 960.00	
EMP127	Maxine	Jogues	4/23/2005	DR	Docking Range	Hoquiam	36	\$23.00	\$ 828.00	
EMP128	Joe	Jongkind	7/22/2005	TR	Training Region	Sedro Woolle	40	\$17.00	\$ 680.00	
EMP129	Gail	Kellerman	7/22/2005	BF	Backup Floor	Walla Walla	40	\$18.50	\$ 740.00	
EMP130	Alyssa	Herman	8/27/2005	NB	North Bank	Yakima	40	\$23.00	\$ 920.00	
EMP131	Sheryl	Wessel	8/27/2005	PP	Pepper Park	Bremerton	40	\$14.00	\$ 560.00	
EMP132	Molly	Huizinga	9/14/2005	TR	Training Region	Wenatchee	32	\$15.35	\$ 491.20	