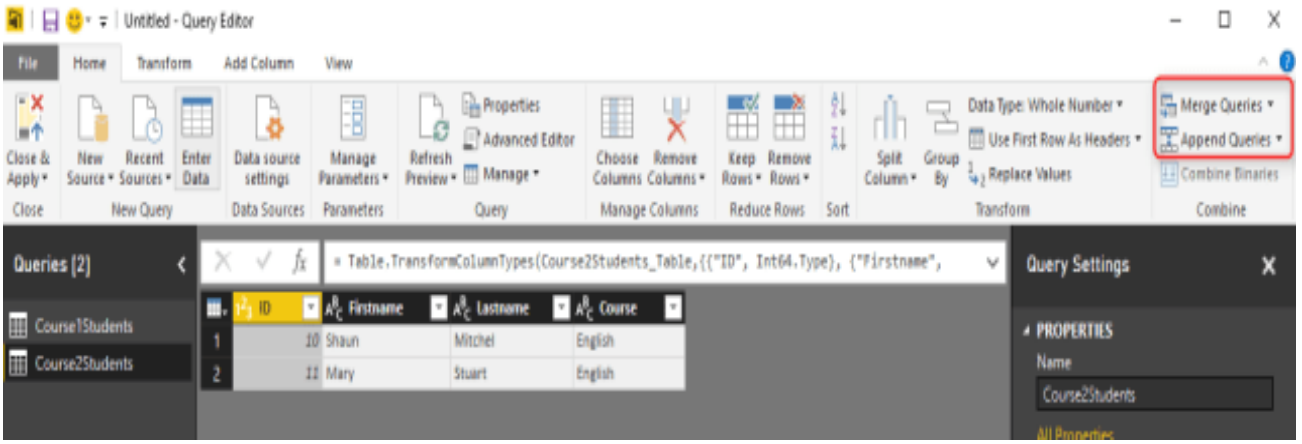
Append vs. Merge in Power BI and Power Query

Combining two queries in Power Query or in Power BI is one of the most basic and also essential tasks that you would need to do in most of data preparation scenarios. There are two types of combining queries; Merge, and Append. Database developers easily understand the difference, but the majority of Power BI users are not developers.

Why Combine Queries?

This might be the first question comes into your mind; Why should I combine queries? The answer is that; You can do most of the things you want in a single query, however, it will be very complicated with hundreds of steps very quickly. On the other hand, your queries might be used in different places. For example one of them might be used as a table in Power BI model, and also playing the part of data preparation for another query. Combining queries is a big help in writing better and simpler queries. I'll show you some examples of combining queries.

The result of a combine operation on one or more queries will be only one query. You can find Append or Merge in the Combine Queries section of the Query Editor in Power BI or in Excel.



Append

Append means results of two (or more) queries (which are tables themselves) will be combined into one query in this way:

- Rows will be appended after each other. (for example appending a query with 50 rows with another query with 100 rows, will return a result set of 150 rows)
- Columns will be the same number of columns for each query*. (for example, col1, col2,…, col10 in the first query, after appending with same columns in the second query will result into one query with a single set of col1,col2, …, col10)

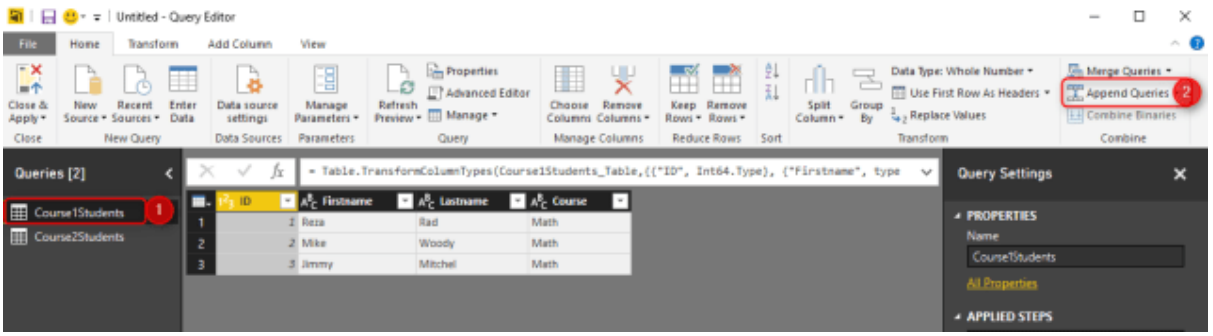
Consider two sample data sets; one for students of each course, Students of course 1:

ID	Firstname	Lastname	Course
1	Reza	Rad	Math
2	Mike	Woody	Math
3	Jimmy	Mitchel	Math

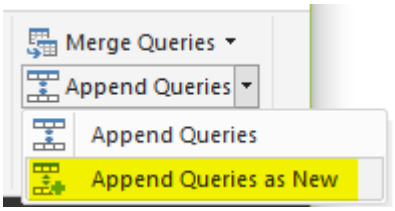
and Students of course 2:

ID	Firstname	Lastname	Course
10	Shaun	Mitchel	English
11	Mary	Stuart	English

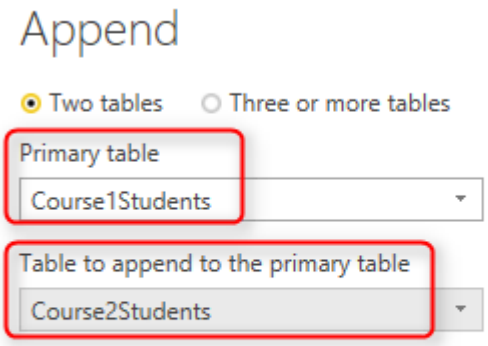
To append these queries, Click on one of them and select Append Queries from the Combine section of Home tab in Query Editor



If you want to keep the existing query result as it is and create a new query with the appended result choose Append Queries as New, otherwise just select Append Queries. In this example, I'll do Append Queries as New, because I want to keep existing queries intact.

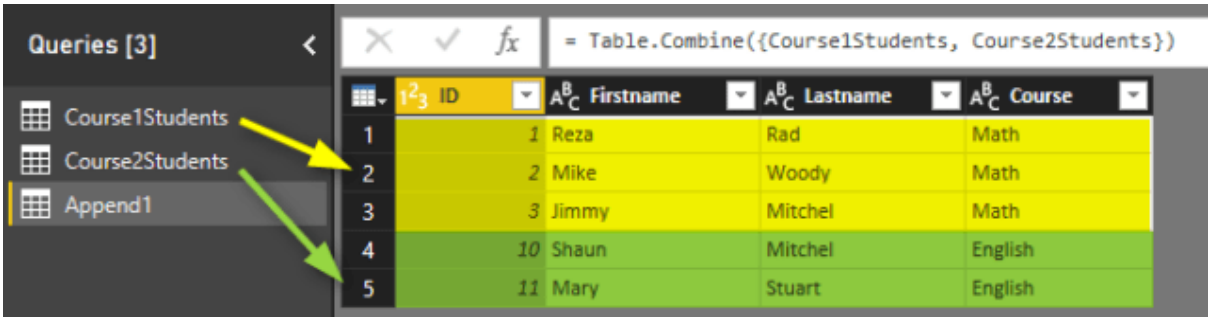


You can choose what is the primary table (normally this is the query that you have selected before clicking on Append Queries), and the table to append.

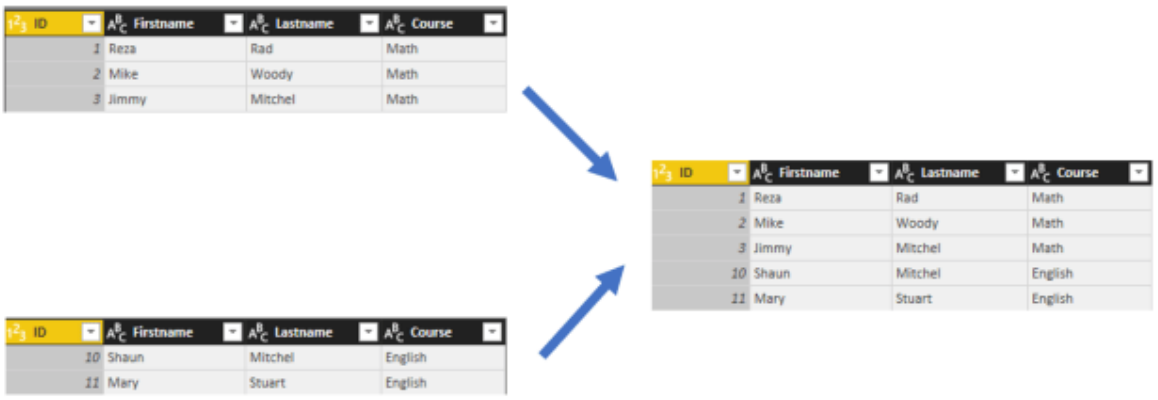


You can also choose to append Three or more tables and add tables to the list as you wish. For this example I have only two tables, so I'll continue with the above

configuration. Append Queries simply append rows after each other, and because column names are exactly similar in both queries, the result set will have same columns.



The result of Append as simple as that



Append is similar to UNION ALL in T-SQL.

What about Duplicates?

Append Queries will NOT remove duplicates. You have to use Group By or Remove Duplicate Rows to get rid of duplicates.

What if columns in source queries are not exactly matched?

Append requires columns to be exactly similar to work in the best condition. if columns in source queries are different, append still works, but will create one column in the output per each new column, if one of the sources doesn't have that column the cell value of that column for those rows will be null.

Merge

Merge is another type of combining queries which are based on matching rows, rather than columns. The output of Merge will be a single query with;

- There should be joining or matching criteria between two queries. (for example StudentID column of both queries to be matched with each other)
- Number of rows will be dependent on matching criteria between queries
- Number of Columns will be dependent on what columns selected in the result set. (Merge will create a structured column as a result).

Understanding how Merge works might look a bit more complicated, but it will be very easy with an example, let's have a look at that in action;

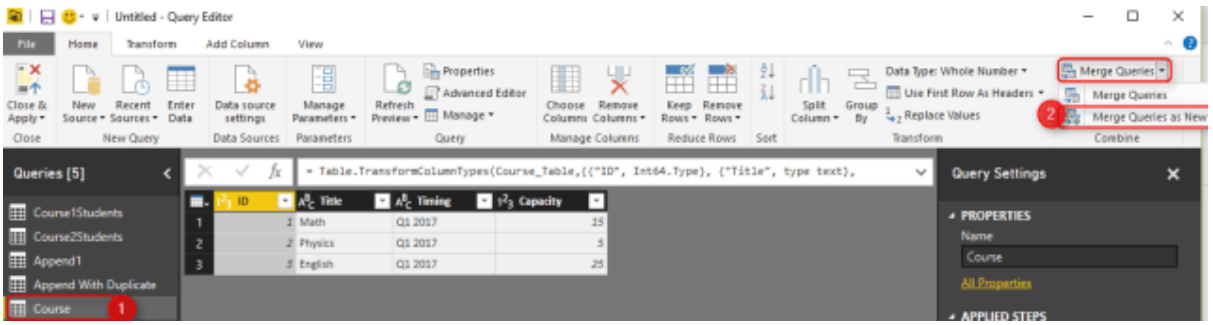
In addition to tables in the first example, consider that there is another table for Course's details as below:

ID	Title	Timing	Capacity
1	Math	Q1 2017	15
2	Physics	Q1 2017	5
3	English	Q1 2017	25

Now if I want to combine Course query with the Appended result of courseXstudents to see which students are part of which course with all details in each row, I need to use Merge Queries. Here is the appended result again;

ID	Firstname	Lastname	Course
1	Reza	Rad	Math
2	Mike	Woody	Math
3	Jimmy	Mitchel	Math
10	Shaun	Mitchel	English
11	Mary	Stuart	English

Select Course Query first, and then Select Merge Queries (as New)



Merging Queries require joining criteria. Joining criteria is field(s) in each source query that should be matched with each other to build the resulting query. In this example, I want to Merge Course query with Append1, based on Title of the course

POWER BI FUNCTION

Text Functions

String functions in excel matches to the text DAX functions in Power BI. List of DAX functions as follows:

- VALUE
- UPPER
- UNICHAR
- TRIM
- SUBSTITUTE
- SEARCH

- RIGHT
- REPT
- REPLACE
- MID
- LOWER
- LEN
- LEFT
- FORMAT
- FIXED
- FIND
- EXACT
- CONCATENATEX
- CONCATENATE
- COMBINEVALUES
- CODE
- BLANK

Table Functions

The functions that apply conditions and operations on the entire table are known as Table Functions in DAX formula. The input in other arguments or expressions comes from the output of table functions used in a DAX formula. The relationship between that table is retained due to the results of these functions. List of DAX functions as follows:

- RELATEDTABLE
- DISTINCT
- VALUES
- FILTER
- ALL

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Case Study :--

Create two table one is employeeinfo and department info
Employee info →Eid, eName DOB, Address,City , Phone ,Deptid,,Joining Date,Present Status
Department info -- Deptid, Deptname,Salary

Merge both tables. After merging, create getage custom function to find out the exact age of the employee. For Joining date create function to find out the date of retirement. If the user is present in 60

years then a particular cell reflects red color and the rest of the cell green color.