

Excel Data Analysis - Tables

Table is a rectangular range of structured data. The key features are –

- Each row in the table corresponds to a single record of the data. Example - Employee information.
- Each column contains a specific piece of information. Example - The columns can contain data such as name, employee number, hire date, salary, department, etc.
- The top row describes the information contained in each column and is referred to as header row.
- Each entry in the top row is referred to as column header.

Table							
EmployeeID	ManagerID	Title	BirthDate	MaritalStatus	Gender	HireDate	
1	0	Chief Executive Officer	1/2/1969 S	M		1/11/2000	
2	1	Vice President of Engineering	8/1/1971 S	F		1/11/2000	
3	2	Engineering Manager	11/12/1974 M	M		1/11/2000	
4	3	Research and Development Engineer	12/12/1974 S	M		1/11/2000	
5	3	Design Engineer	9/27/1952 M	F		1/11/2000	
6	3	Research and Development Manager	2/24/1967 M	M		1/11/2000	
7	3	Senior Tool Designer	12/12/1974 S	M		1/11/2000	
8	4	Research and Development Engineer	6/1/1965 S	F		1/11/2000	
9	4	Research and Development Engineer	12/12/1974 S	M		1/11/2000	
10	4	Research and Development Manager	11/16/1984 M	M		1/11/2000	
11	4	Senior Tool Designer	12/12/1974 S	M		1/11/2000	
12	4	Tool Designer	7/29/1959 M	M		1/11/2000	
13	4	Senior Design Engineer	6/16/1979 S	M		1/11/2000	
14	3	Design Engineer	5/2/1961 M	F		1/11/2000	
15	3	Marketing Manager	8/1/1971 S	S		1/11/2000	
16	1	Marketing Assistant	3/6/1979 S	S		1/11/2000	
17	2	Marketing Specialist	3/6/1979 S	S		1/11/2000	
18	2	Marketing Assistant	3/17/1975 M	F		1/11/2000	
19	2	Marketing Specialist	2/4/1986 S	M		1/11/2000	
20	2	Marketing Assistant	5/21/1987 S	M		1/11/2000	
21	2	Marketing Specialist	5/21/1987 S	M		1/11/2000	
22	2	Marketing Assistant	5/21/1987 S	M		1/11/2000	

You can create and use an Excel table to manage and analyze data easily. Further, with Excel Tables you get built-in Filtering, Sorting, and Row Shading that gives you better reporting activities.

Further, Excel responds to the actions performed on a table intelligently. For example, you have a formula in a column or you have created a chart based on the data in the table. When you add more data to the table (i.e., more rows), Excel extends the formula to the new data and the chart expands automatically.

Difference between Tables and Ranges

Following are the differences between a table and range –

- A table is a more structured way of working with data than a range.
- You can convert a range into a table and Excel automatically provides –
 - Table Name
 - Column Header Names
 - Formatting to the Data (Cell Color and Font Color) for better Visualization
- Tables provide additional features that are not available for ranges. These are –
 - Excel provides table tools in the ribbon ranging from properties to styles.
 - Excel automatically provides a Filter button in each column header to sort the data or filter the table such that only rows that meet your defined criteria are displayed.
 - If you have multiple rows in a table, and you scroll down the sheet so that the header row disappears, the column letters in the worksheet are replaced by the table headers.
 - When you place a formula in any cell in a column of the table, it gets propagated to all the cells in that column.
 - You can use table name and column header names in the formulas, without having to use cell references or creating range names.
 - You can extend the table size by adding more rows or more columns by clicking and dragging the small triangular control at the lower-right corner of the lower-right cell.
 - You can create and use slicers for a table for filtering data.

You will learn about all these Features in this Chapter.

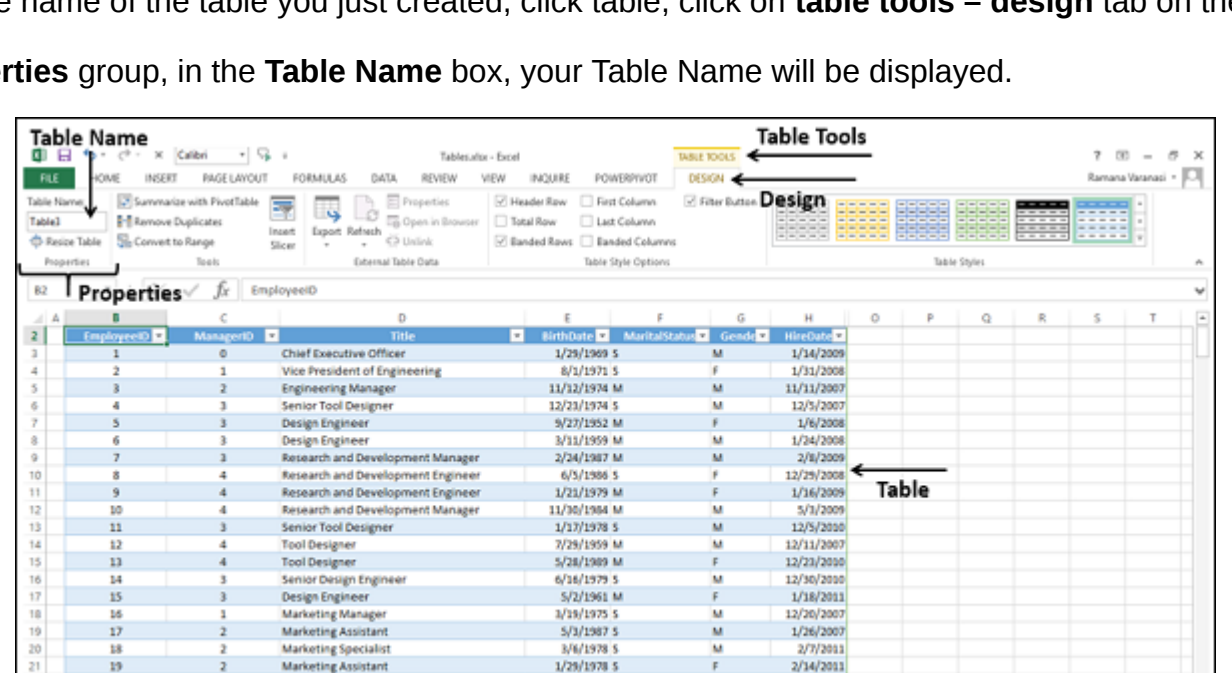
Create Table

To create a table from the data you have on the worksheet, follow the given steps –

Step 1 – Select the Range of Cells that you want to include in the Table. Cells can contain data or can be empty. The following Range has 290 rows of employee data. The top row of the data has headers.

EmployeeID	ManagerID	Title	BirthDate	MaritalStatus	Gender	HireDate
1	0	Chief Executive Officer	1/2/1969 S	M		1/11/2000
2	1	Vice President of Engineering	8/1/1971 S	F		1/11/2000
3	2	Engineering Manager	11/12/1974 M	M		1/11/2000
4	3	Research and Development Engineer	12/12/1974 S	M		1/11/2000
5	3	Design Engineer	9/27/1952 M	F		1/11/2000
6	3	Research and Development Manager	2/24/1967 M	M		1/11/2000
7	3	Senior Tool Designer	12/12/1974 S	M		1/11/2000
8	4	Research and Development Engineer	6/1/1965 S	F		1/11/2000
9	4	Research and Development Engineer	12/12/1974 S	M		1/11/2000
10	4	Research and Development Manager	11/16/1984 M	M		1/11/2000
11	4	Senior Tool Designer	12/12/1974 S	M		1/11/2000
12	4	Tool Designer	7/29/1959 M	M		1/11/2000
13	4	Senior Design Engineer	6/16/1979 S	M		1/11/2000
14	3	Design Engineer	5/2/1961 M	F		1/11/2000
15	3	Marketing Manager	8/1/1971 S	S		1/11/2000
16	1	Marketing Assistant	3/6/1979 S	S		1/11/2000
17	2	Marketing Specialist	3/6/1979 S	S		1/11/2000
18	2	Marketing Assistant	3/17/1975 M	F		1/11/2000
19	2	Marketing Specialist	2/4/1986 S	M		1/11/2000
20	2	Marketing Assistant	5/21/1987 S	M		1/11/2000
21	2	Marketing Specialist	5/21/1987 S	M		1/11/2000
22	2	Marketing Assistant	5/21/1987 S	M		1/11/2000

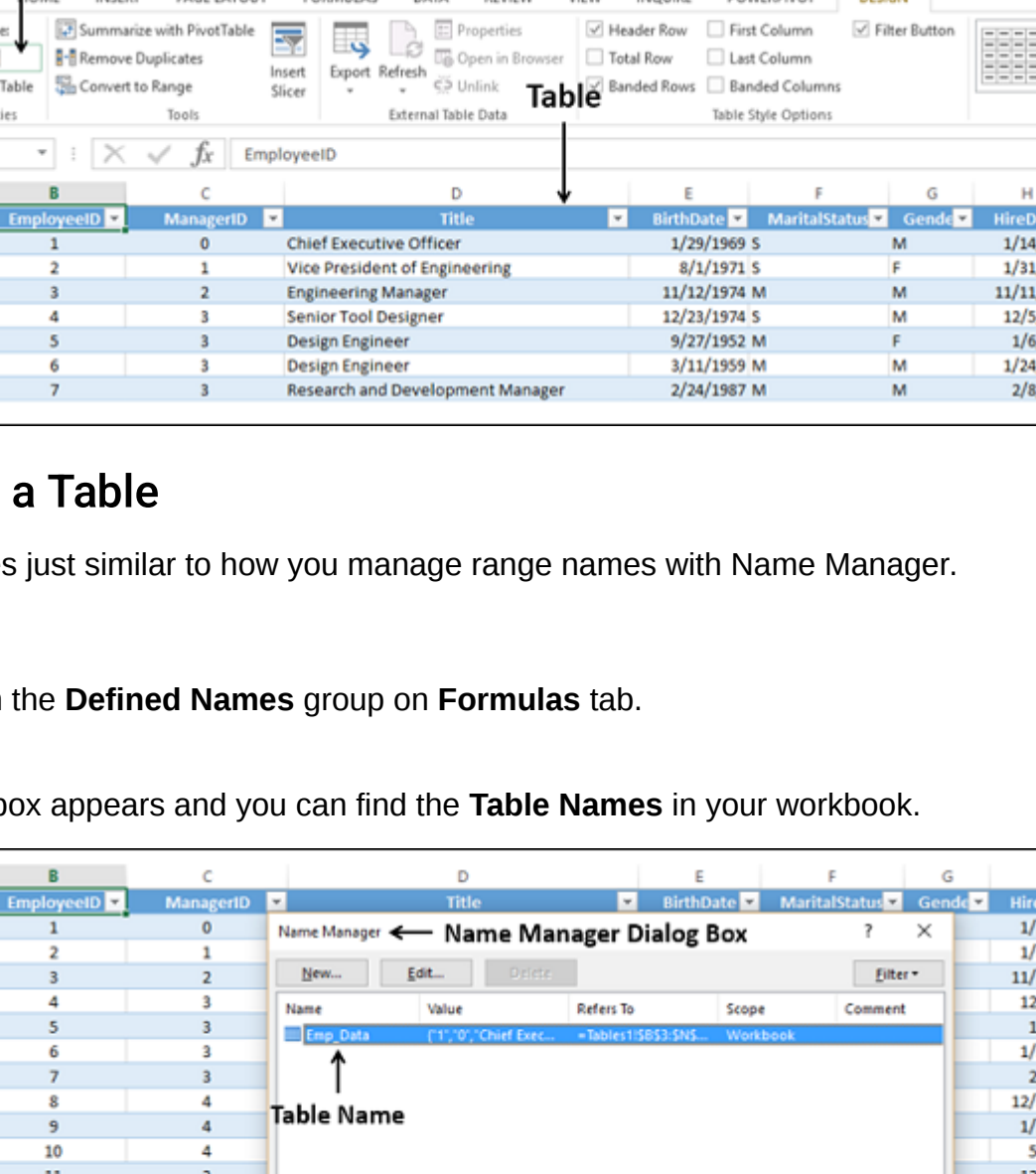
Step 2 – Under the Insert tab, in the Tables group, click Tables. The Create Table dialog box appears. Check that the data range selected in the Where is the data for your table? Box is correct.



Step 3 – Check the My table has headers box if the top row of the selected Range contains data that you want to use as the Table Headers.

Note – If you do not check this box, your table will have Headers – Column1, Column2, ...

Step 4 – Click OK.



Range is converted to Table with the default Style.

EmployeeID	ManagerID	Title	BirthDate	MaritalStatus	Gender	HireDate
1	0	Chief Executive Officer	1/2/1969 S	M		1/11/2000
2	1	Vice President of Engineering	8/1/1971 S	F		1/11/2000
3	2	Engineering Manager	11/12/1974 M	M		1/11/2000
4	3	Research and Development Engineer	12/12/1974 S	M		1/11/2000
5	3	Design Engineer	9/27/1952 M	F		1/11/2000
6	3	Research and Development Manager	2/24/1967 M	M		1/11/2000
7	3	Senior Tool Designer	12/12/1974 S	M		1/11/2000
8	4	Research and Development Engineer	6/1/1965 S	F		1/11/2000
9	4	Research and Development Engineer	12/12/1974 S	M		1/11/2000
10	4	Research and Development Manager	11/16/1984 M	M		1/11/2000
11	4	Senior Tool Designer	12/12/1974 S	M		1/11/2000
12	4	Tool Designer	7/29/1959 M	M		1/11/2000
13	4	Senior Design Engineer	6/16/1979 S	M		1/11/2000
14	3	Design Engineer	5/2/1961 M	F		1/11/2000
15	3	Marketing Manager	8/1/1971 S	S		1/11/2000
16	1	Marketing Assistant	3/6/1979 S	S		1/11/2000
17	2	Marketing Specialist	3/6/1979 S	S		1/11/2000
18	2	Marketing Assistant	3/17/1975 M	F		1/11/2000
19	2	Marketing Specialist	2/4/1986 S	M		1/11/2000
20	2	Marketing Assistant	5/21/1987 S	M		1/11/2000
21	2	Marketing Specialist	5/21/1987 S	M		1/11/2000
22	2	Marketing Assistant	5/21/1987 S	M		1/11/2000

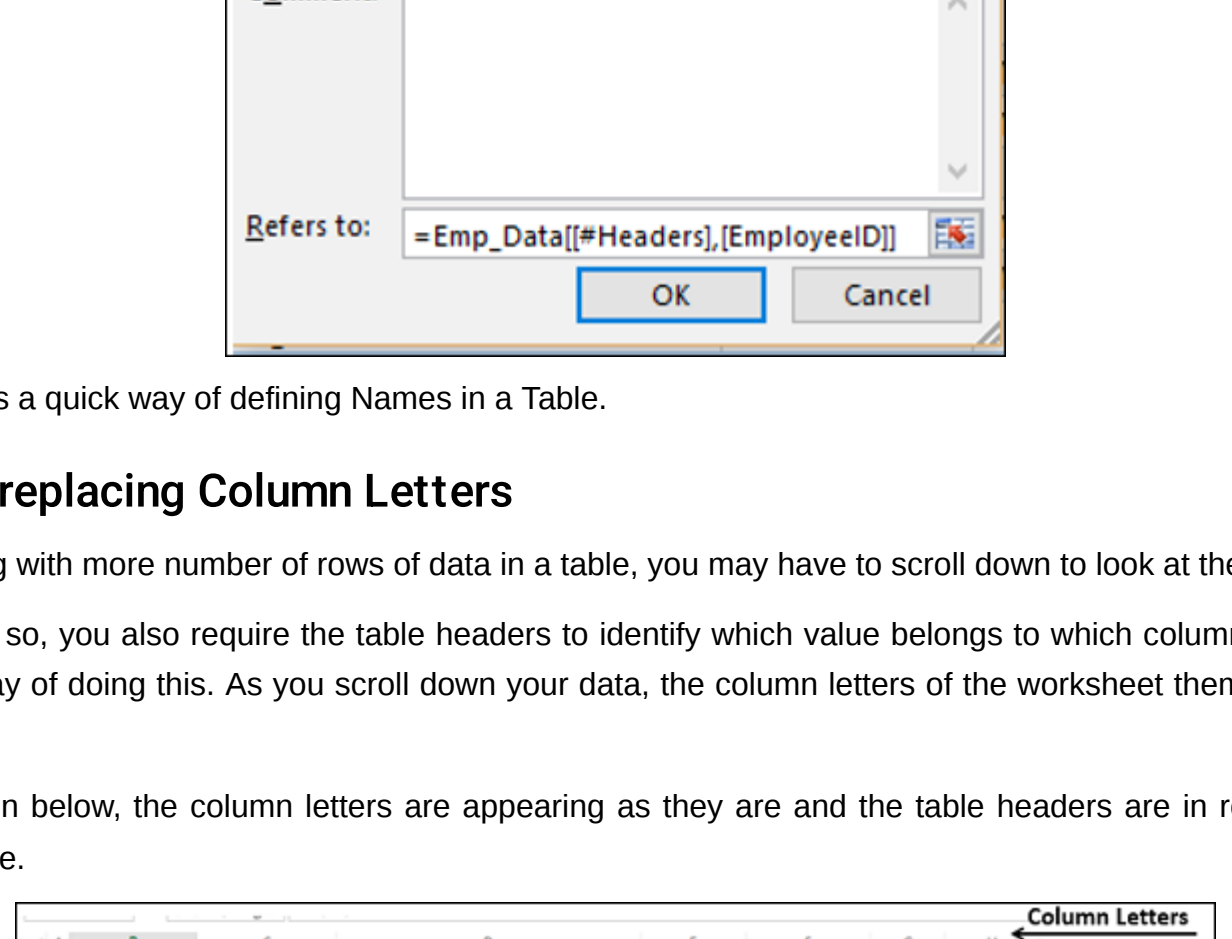
Step 5 – You can also convert a range to a table by clicking anywhere on the range and pressing Ctrl+T. A Create Table dialog box appears and then you can repeat the steps as given above.

Table Name

Excel assigns a name to every table that is created.

Step 1 – To look at the name of the table you just created, click table, click on table tools – design tab on the Ribbon.

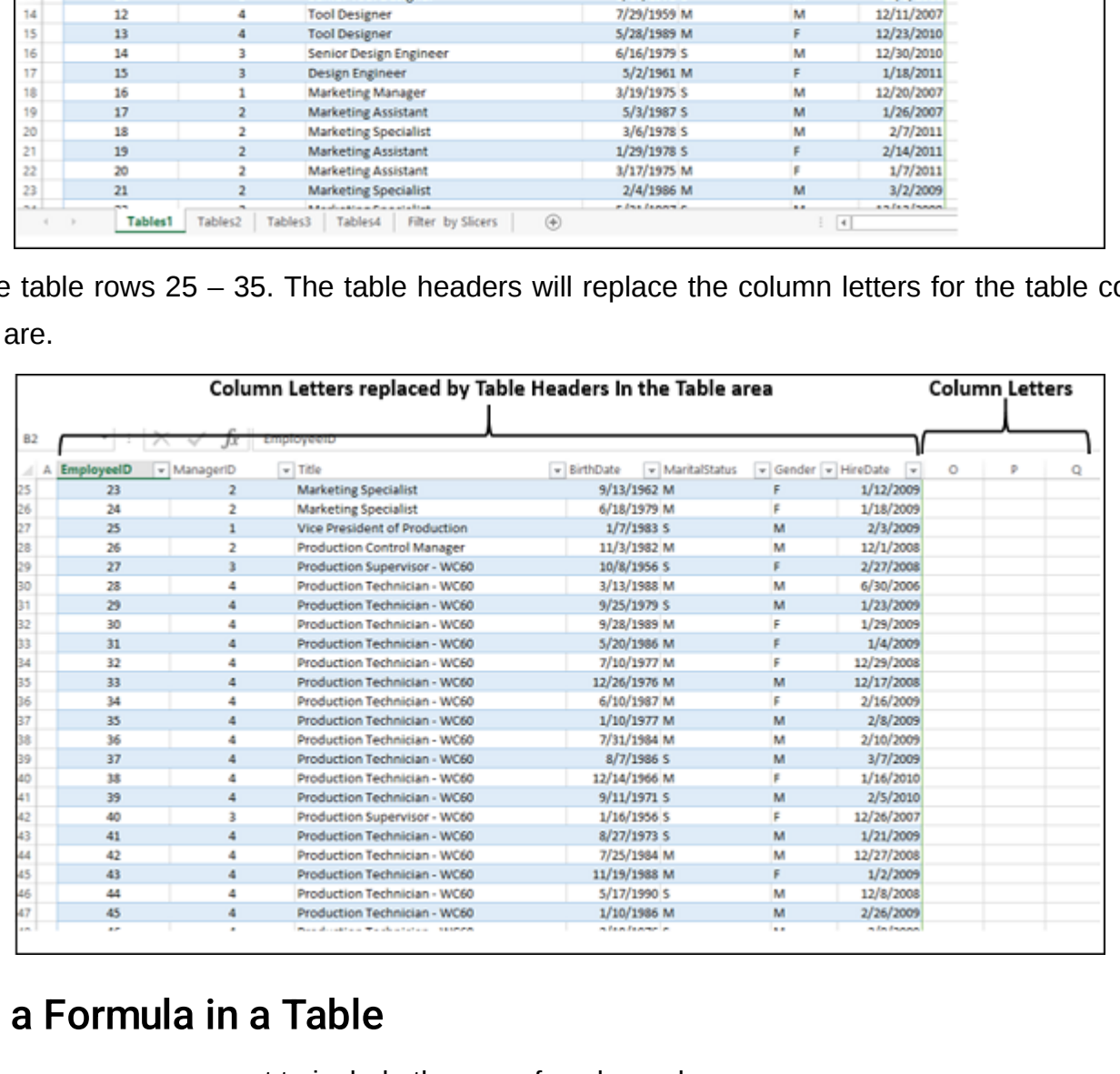
Step 2 – In the Properties group, in the Table Name box, your Table Name will be displayed.



Step 3 – You can edit this Table Name to make it more meaningful to your data.

Step 4 – Click the Table Name box. Clear the Name and type Emp_Data.

Note – The syntax rules of range names are applicable to table names.

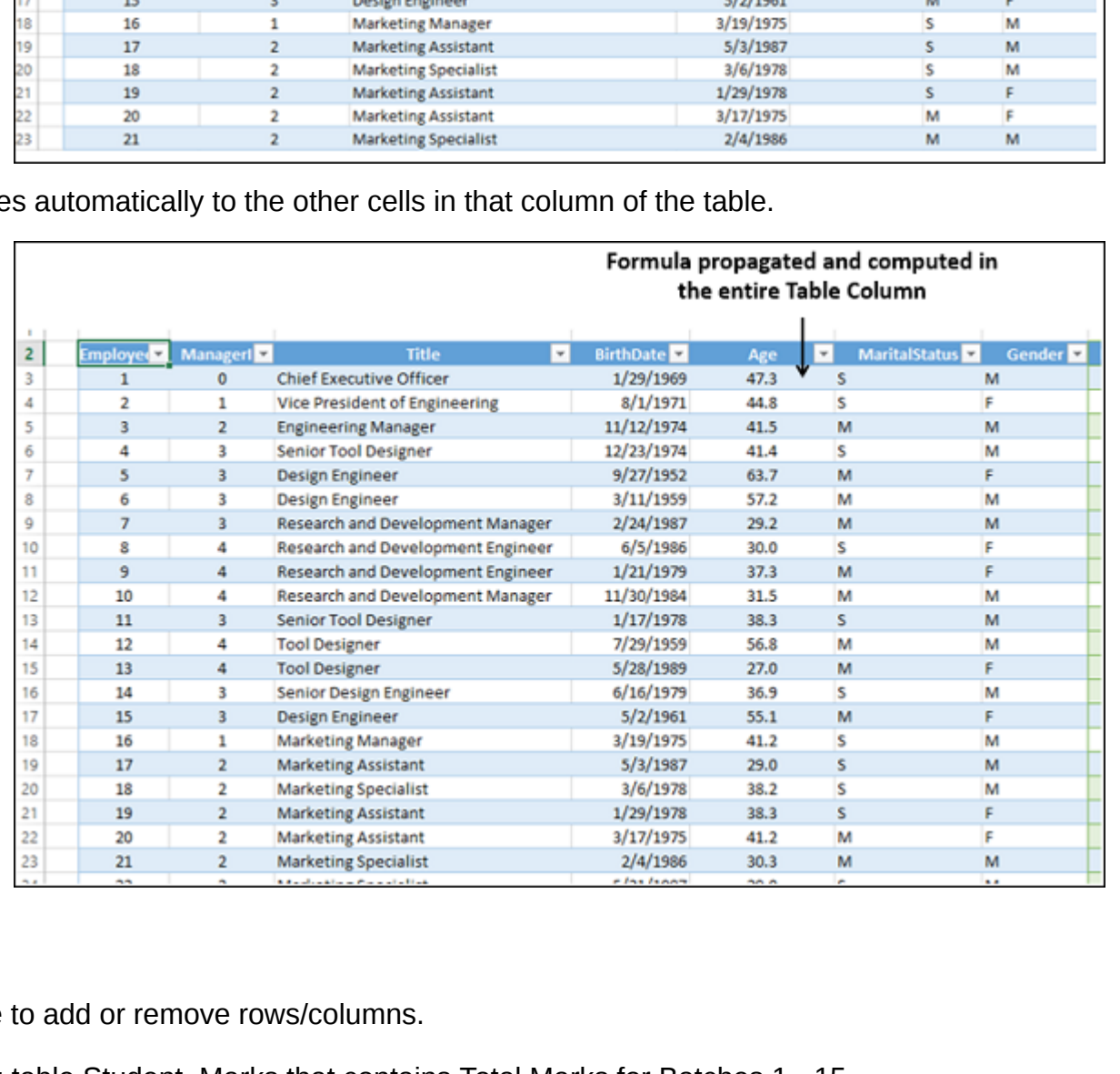


Managing Names in a Table

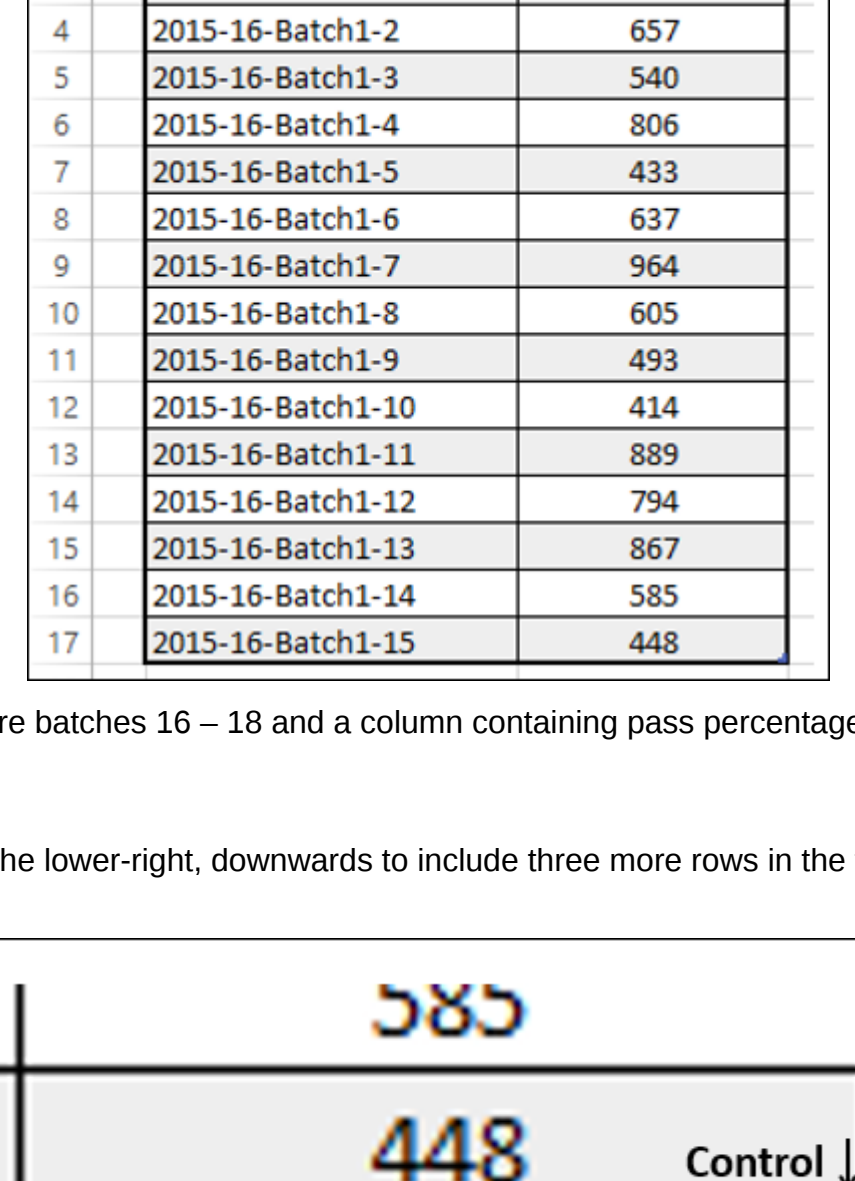
You can manage table names just similar to how you manage range names with Name Manager.

- Click the Table.
- Click Name Manager in the Defined Names group on Formulas tab.

The Name Manager dialog box appears and you can find the Table Names in your workbook.



You can Edit a Table Name or add a comment with New option in the Name Manager dialog box. However, you cannot change the range in Refers to.

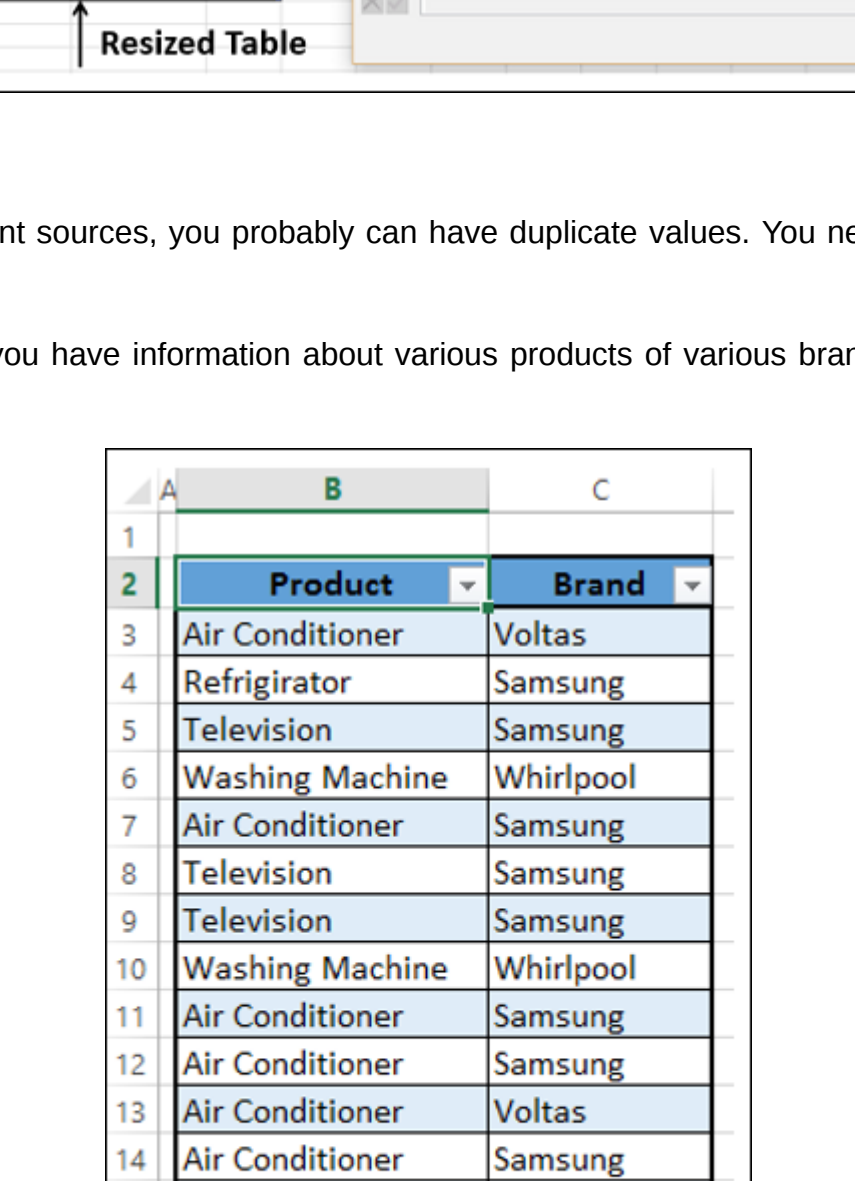


You can Create Names with column headers to use them in formulas, charts, etc.

- Click the Column Header EmployeeID in the Table.
- Click Name Manager.
- Click New in the Name Manager dialog box.

The New Name dialog box appears.

In the Name box, you can find the Column Header, and in the Refers to box, you will find Emp_Data[Headers],[EmployeeID].



As you observe, this is a quick way of defining Names in a Table.

Table Headers replacing Column Letters

When you are working with more number of rows of data in a table, you may have to scroll down to look at the data in those rows.

However, while doing so, you also require the table headers to identify which value belongs to which column. Excel automatically provides a smooth way of doing this. As you scroll down your data, the column letters of the worksheet themselves get converted to table headers.

In the worksheet given below, the column letters are appearing as they are and the table headers are in row 2. 21 rows of 290 rows of data are visible.

EmployeeID	ManagerID	Title	BirthDate	MaritalStatus	Gender	HireDate
1	0	Chief Executive Officer	1/2/1969 S	M		1/11/2000
2	1	Vice President of Engineering	8/1/1971 S	F		1/11/2000
3	2	Engineering Manager	11/12/1974 M	M		1/11/2000
4	3	Research and Development Engineer	12/12/1974 S	M		1/11/2000
5	3	Design Engineer	9/27/1952 M	F		1/11/2000
6	3	Research and Development Manager	2/24/1967 M	M		1/11/2000
7	3	Senior Tool Designer	12/12/1974 S	M		1/11/2000
8	4	Research and Development Engineer	6/1/1965 S	F		1/11/2000
9	4	Research and Development Engineer	12/12/1974 S	M		1/11/2000
10	4	Research and Development Manager	11/16/1984 M	M		1/11/2000
11	4	Senior Tool Designer	12/12/1974 S	M		1/11/2000
12	4	Tool Designer	7/29/1959 M	M		1/11/2000
13	4	Senior Design Engineer	6/16/1979 S	M		1/11/2000
14	3	Design Engineer	5/2/1961 M	F		1/11/2000
15	3	Marketing Manager	8/1/1971 S	S		1/11/2000
16	1	Marketing Assistant	3/6/1979 S	S		1/11/2000
17	2	Marketing Specialist	3/6/1979 S	S		1/11/2000
18	2	Marketing Assistant	3/17/1975 M	F		1/11/2000
19	2	Marketing Specialist	2/4/1986 S	M		1/11/2000
20	2	Marketing Assistant	5/21/1987 S	M		1/11/2000
21	2	Marketing Specialist	5/21/1987 S	M		1/11/2000

Scroll down to see the table rows 25 – 35. The table headers will replace the column letters for the table columns. Other column letters remain as they are.

EmployeeID	ManagerID	Title	BirthDate	MaritalStatus	Gender	HireDate
25	3	Design Engineer	9/27/1952 M	F		1/11/2000
26	3	Research and Development Manager	2/24/1967 M	M		1/11/2000
27	3	Senior Tool Designer	12/12/1974 S	M		1/11/2000
28	4	Research and Development Engineer	6/1/1965 S	F		1/11/2000
29	4	Research and Development Engineer	12/12/1974 S	M		1/11/2000
30	4	Research and Development Manager	11/16/1984 M	M		1/11/2000
31	4	Senior Tool Designer	12/12/1974 S	M		1/11/2000
32	4	Tool Designer	7/29/1959 M	M		1/11/2000
33	4	Senior Design Engineer	6/16/1979 S	M		1/11/2000
34	3	Design Engineer	5/2/1961 M	F		1/11/2000
35	3	Marketing Manager	8/1/1971 S	S		1/11/2000
36	1	Marketing Assistant	3/6/1979 S	S		1/11/2000
37	2	Marketing Specialist	3/6/1979 S	S		1/11/2000
38	2	Marketing Assistant	3/17/1975 M	F		1/11/2000
39	2	Marketing Specialist	2/4/1986 S	M		1/11/2000
40	2	Marketing Assistant	5/21/1987 S	M		1/11/2000
41	2	Marketing Specialist	5/21/1987 S	M		1/11/2000
42	2	Marketing Assistant	5/21/1987 S	M		1/11/2000

Propagation of a Formula in a Table

In the table given below, suppose you want to include the age of each employee.

Step 1 – Insert a column to the right of the column BirthDate. Type Age in the Column Header.

Step 2 – In any of the Cells in that empty column, type the Formula, =DAYS(TODAY(),@BirthDate)/365 and Press Enter.

EmployeeID	ManagerID	Title	BirthDate	Age	MaritalStatus	Gender
1	0	Chief Executive Officer	1/2/1969	42.3	S	M
2	1	Vice President of Engineering	8/1/1971	44.8	S	F
3	2	Engineering Manager	11/12/1974	41.5	M	M
4	3	Research and Development Engineer	12/12/1974	41.4	S	M
5	3	Design Engineer	9/27/1952	63.7	M	F
6	3	Research and Development Manager	2/24/1967	57.2	M	M
7	3	Senior Tool Designer	12/12/1974	41.4	S	M
8	4	Research and Development Engineer	6/1/1965	59.0	S	F
9	4	Research and Development Engineer	12/12/1974	41.4	S	M
10	4	Research and Development Manager	11/16/1984	31.5	M	M
11	4	Senior Tool Designer	12/12/1974	41.4	S	M
12	4	Tool Designer	7/29/1959	64.8	M	M
13	4	Senior Design Engineer	6/16/1979	45.9	S	M
14	3	Design Engineer	5/2/1961	55.1	S	F
15	3	Marketing Manager	8/1/1971	44.8	S	S
16	1	Marketing Assistant	3/6/1979	46.2	S	M
17	2	Marketing Specialist	3/6/1979	46.2	S	M
18	2	Marketing Assistant	3/17/1975	49.2	M	F
19	2	Marketing Specialist	2/4/1986	38.3	S	M
20	2	Marketing Assistant	5/21/1987	36.9	S	F
21	2	Marketing Specialist	5/21/1987	36.9	S	M
22	2	Marketing Assistant	5/21/1987	36.9	S	M

The formula propagates automatically to the other cells in that column of the table.

|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|