Session 2: MS Excel Advanced

Duration: 3 Hours

Agenda/Session Outcomes

Advanced Excel

At the end of this session, you will be able to:

01 **Restricting Wrong Entries in Data Using Data Validation**

02 **Data Forecasting, Data Consolidation**

03 **What-if Analysis**

04 **Data Protection**

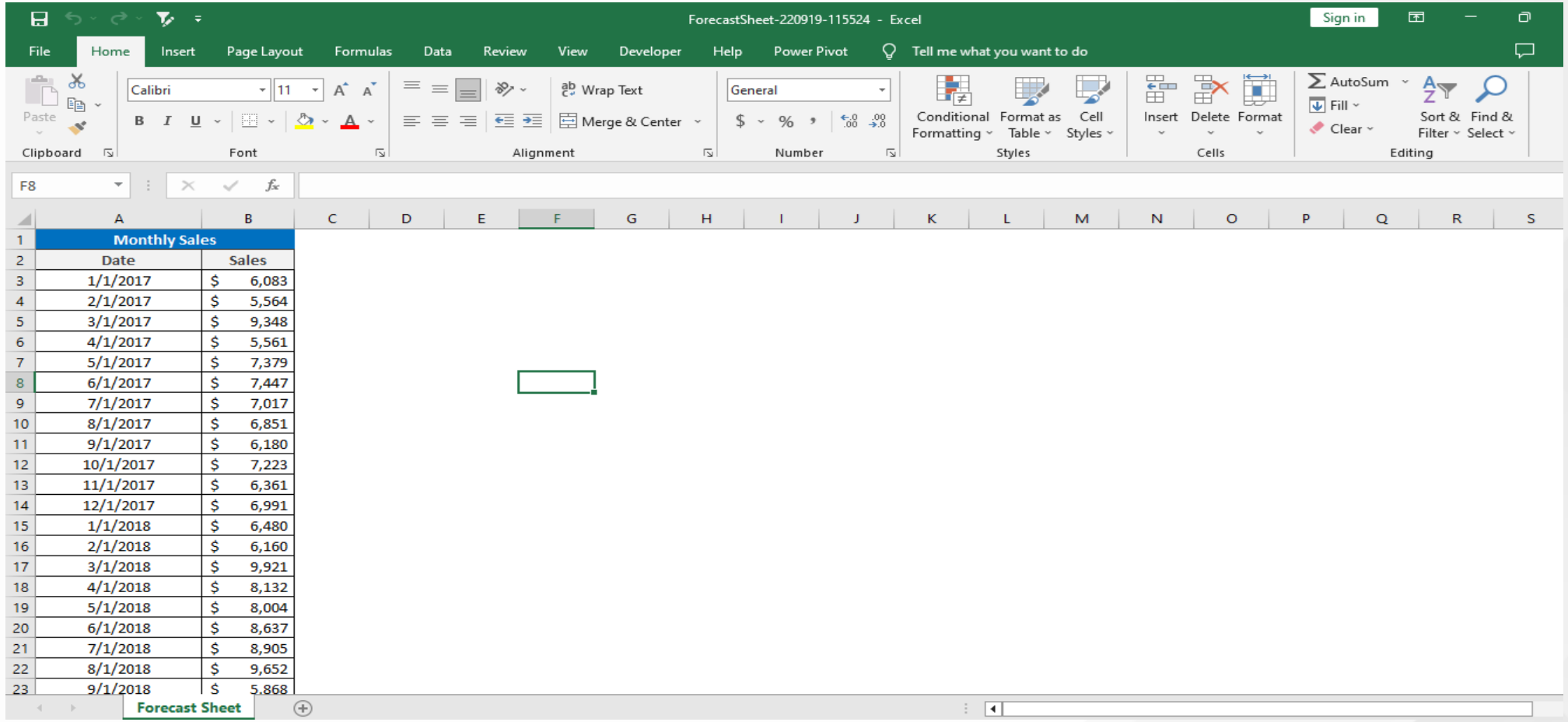
Advance Functions in MS Excel

Forecast

- Forecasting is a decision-making tool used by many businesses to help in budgeting, planning, and estimating the future growth.
- In the simplest terms, forecasting is the attempt to predict the future outcomes based on past events and management insight.

Forecast

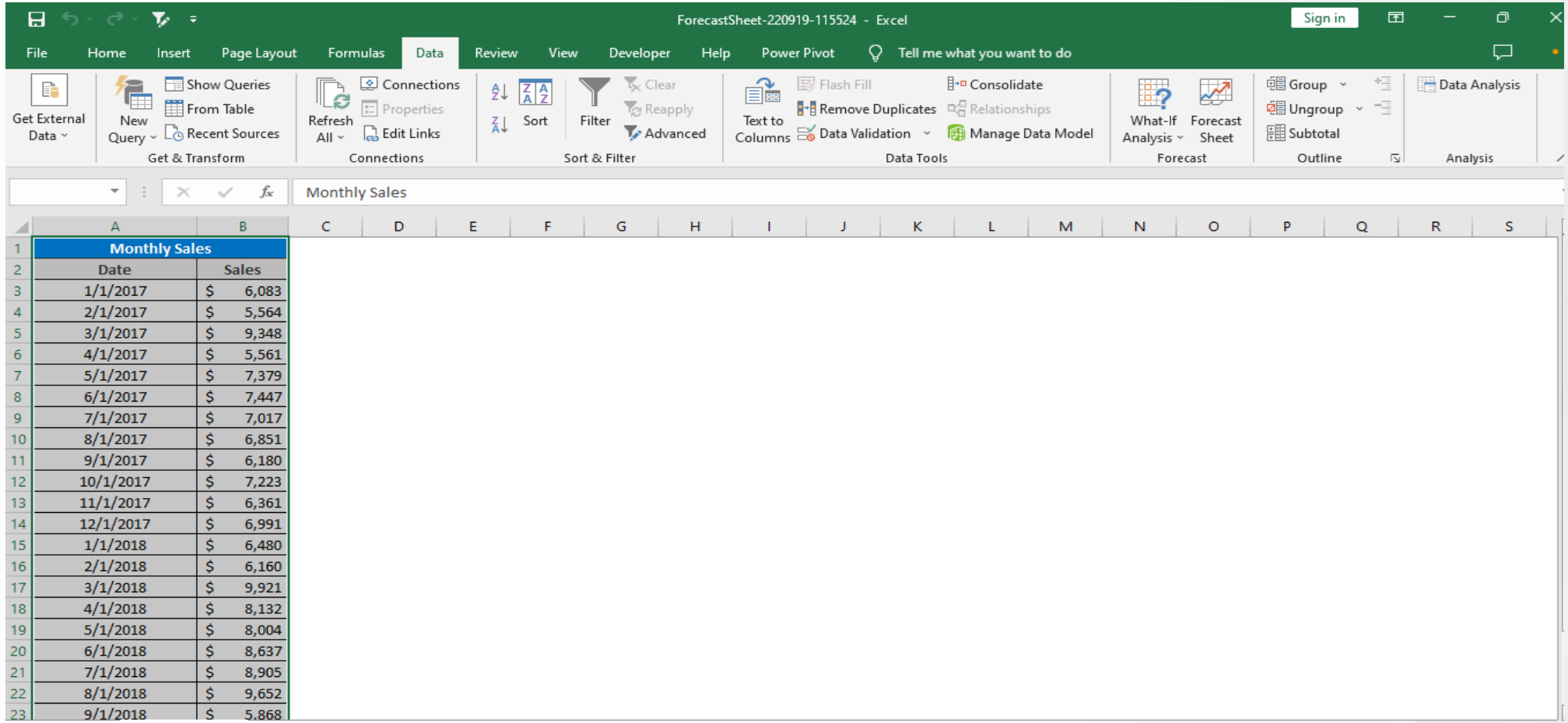
The data is on sales done from **Jan 2017 till Dec 2018.**



Monthly Sales	
Date	Sales
1/1/2017	$ 6,083
2/1/2017	$ 5,564
3/1/2017	$ 9,348
4/1/2017	$ 5,561
5/1/2017	$ 7,379
6/1/2017	$ 7,447
7/1/2017	$ 7,017
8/1/2017	$ 6,851
9/1/2017	$ 6,180
10/1/2017	$ 7,223
11/1/2017	$ 6,361
12/1/2017	$ 6,991
1/1/2018	$ 6,480
2/1/2018	$ 6,160
3/1/2018	$ 9,921
4/1/2018	$ 8,132
5/1/2018	$ 8,004
6/1/2018	$ 8,637
7/1/2018	$ 8,905
8/1/2018	$ 9,652
9/1/2018	$ 5,868

Forecast

For forecast in Excel, we need to select the **“data”** tab.



Monthly Sales	
Date	Sales
1/1/2017	$ 6,083
2/1/2017	$ 5,564
3/1/2017	$ 9,348
4/1/2017	$ 5,561
5/1/2017	$ 7,379
6/1/2017	$ 7,447
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3/1/2018	$ 9,921
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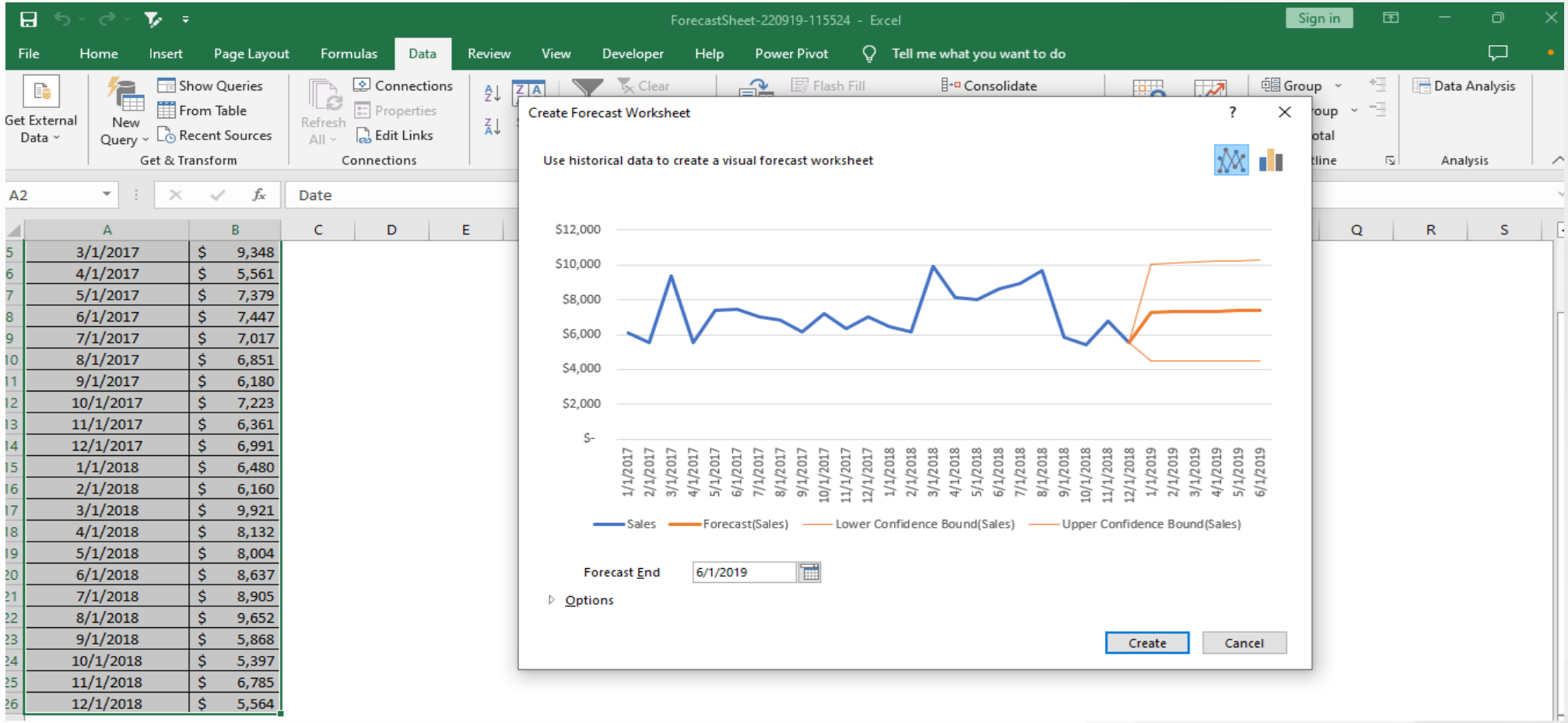
5/1/2018	$ 8,004
6/1/2018	$ 8,637
7/1/2018	$ 8,905
8/1/2018	$ 9,652
9/1/2018	$ 5,868

Forecast

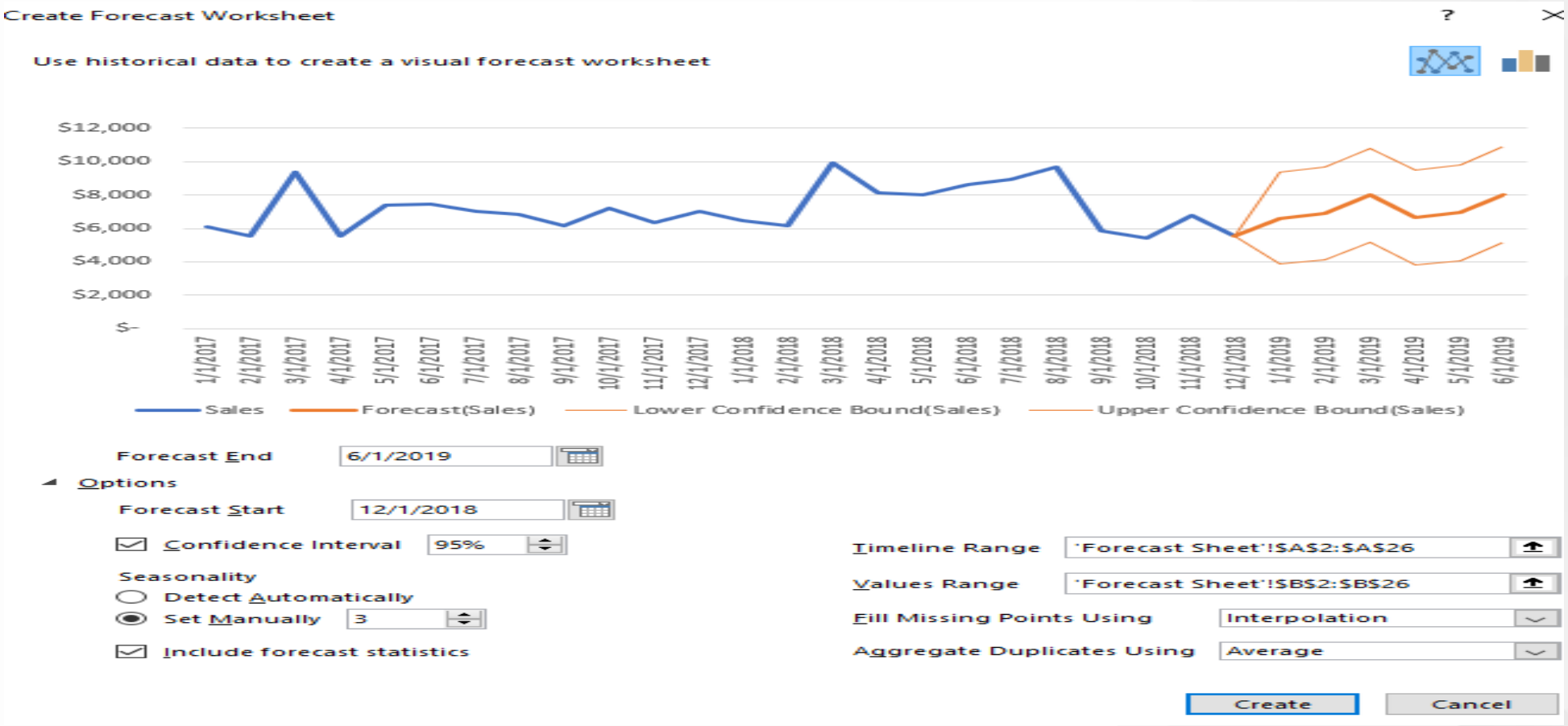
A **“create forecast sheet”** dialog box appears:



	A	B
5	3/1/2017	$ 9,348
6	4/1/2017	$ 5,561
7	5/1/2017	$ 7,379
8	6/1/2017	$ 7,447
9	7/1/2017	$ 7,017
10	8/1/2017	$ 6,851
11	9/1/2017	$ 6,180
12	10/1/2017	$ 7,223
13	11/1/2017	$ 6,361
14	12/1/2017	$ 6,991
15	1/1/2018	$ 6,480
16	2/1/2018	$ 6,160
17	3/1/2018	$ 9,921
18	4/1/2018	$ 8,132
19	5/1/2018	$ 8,004
20	6/1/2018	$ 8,637
21	7/1/2018	$ 8,905
22	8/1/2018	$ 9,652
23	9/1/2018	$ 5,868
24	10/1/2018	$ 5,397
25	11/1/2018	$ 6,785
26	12/1/2018	$ 5,564

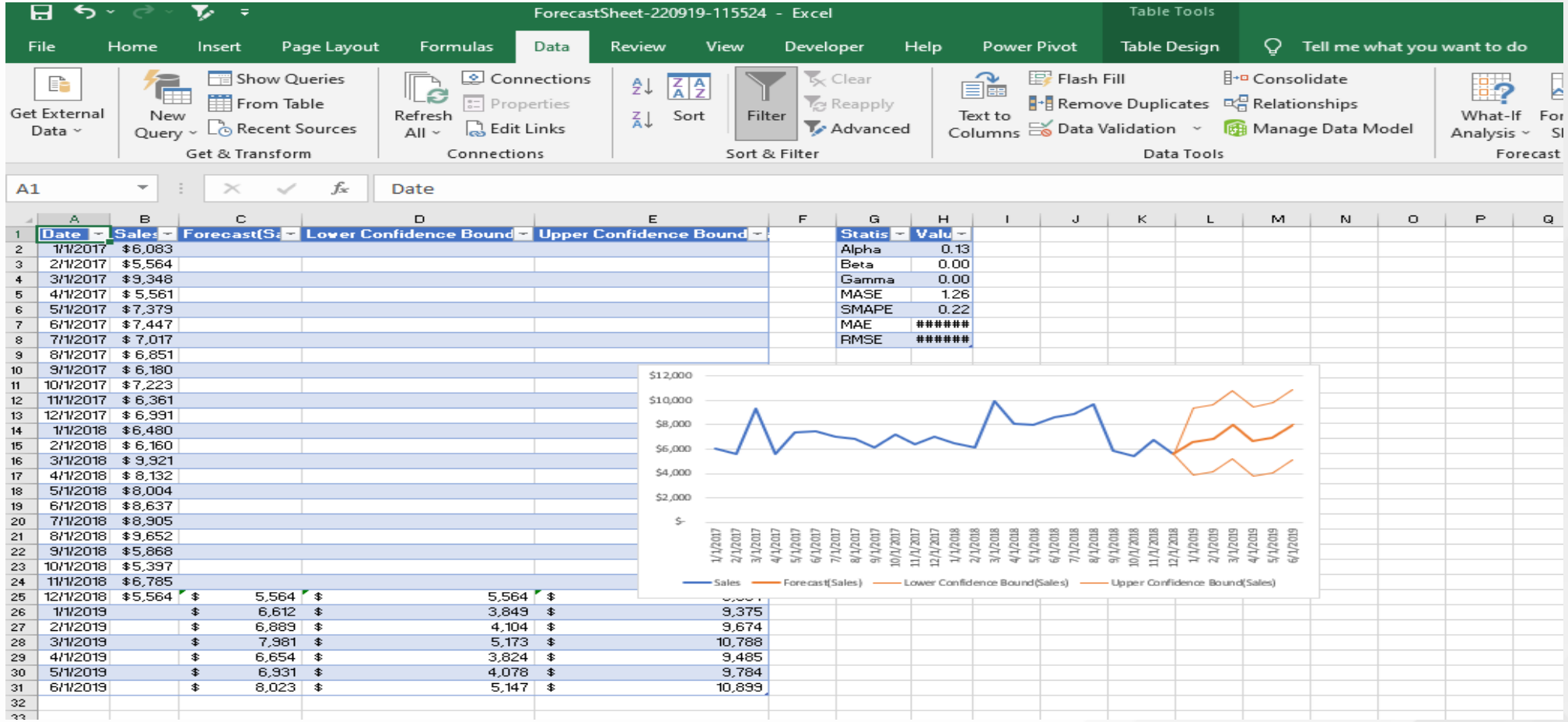
Forecast

We can **add** more criteria to the forecast period.



Forecast

The forecast have been predicted:



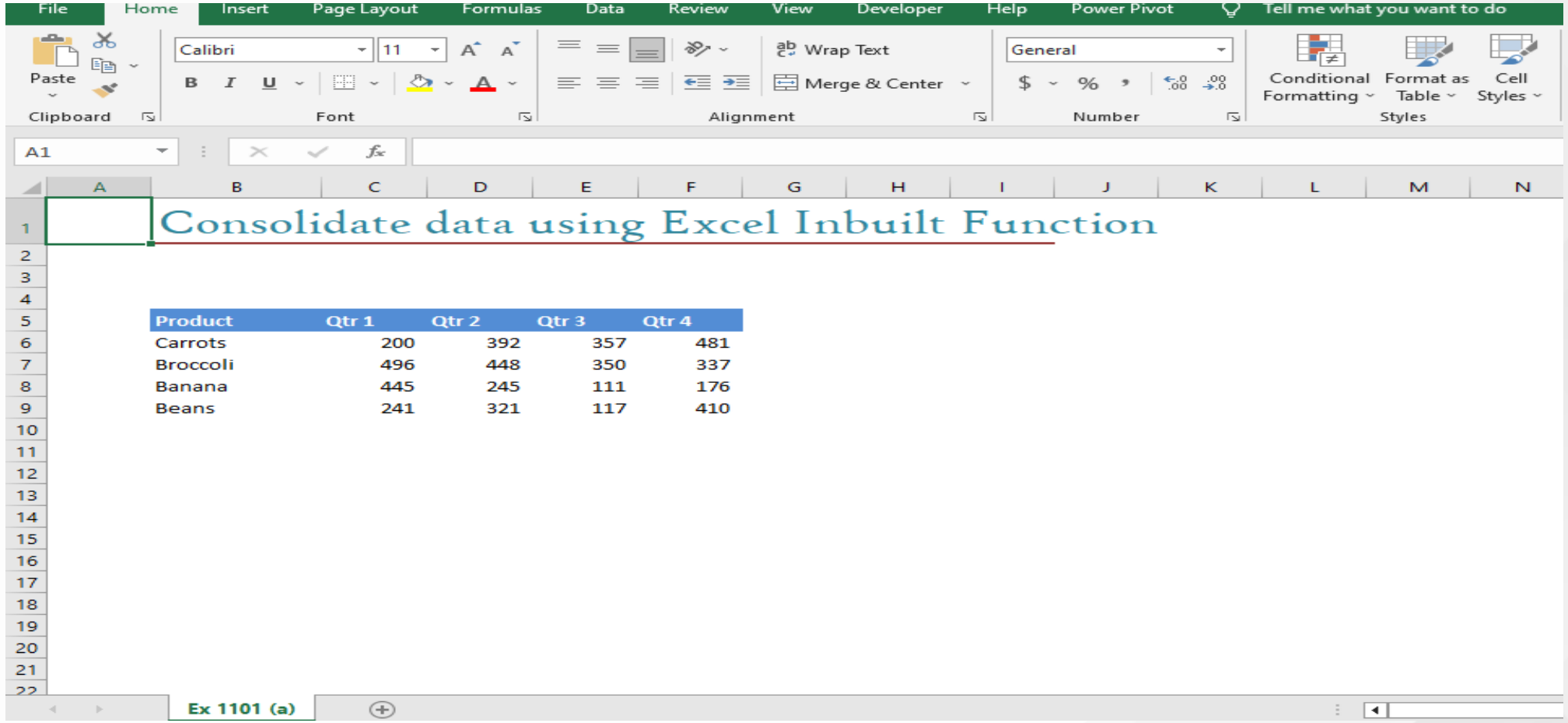
Date	Sales	Forecast(Sa	Lower Confidence Bound	Upper Confidence Bound
1/1/2017	$6,083			
2/1/2017	$5,564			
3/1/2017	$9,348			
4/1/2017	$5,561			
5/1/2017	$7,379			
6/1/2017	$7,447			
7/1/2017	$7,017			
8/1/2017	$6,851			
9/1/2017	$6,180			
10/1/2017	$7,223			
11/1/2017	$6,361			
12/1/2017	$6,991			
1/1/2018	$6,480			
2/1/2018	$6,160			
3/1/2018	$9,921			
4/1/2018	$8,132			
5/1/2018	$8,004			
6/1/2018	$8,637			
7/1/2018	$8,905			
8/1/2018	$9,652			
9/1/2018	$5,868			
10/1/2018	$5,397			
11/1/2018	$6,785			
12/1/2018	$5,564	$ 5,564	$ 5,564	$ [illegible]
1/1/2019		$ 6,612	$ 3,849	$ 9,375
2/1/2019		$ 6,889	$ 4,104	$ 9,674
3/1/2019		$ 7,981	$ 5,173	$ 10,788
4/1/2019		$ 6,654	$ 3,824	$ 9,485
5/1/2019		$ 6,931	$ 4,078	$ 9,784
6/1/2019		$ 8,023	$ 5,147	$ 10,899

Data Consolidation

- It refers to the collection and integration of data from multiple sources into a single destination.
- During this process, different data sources are put together, or consolidated, into a single data store.

Data Consolidation

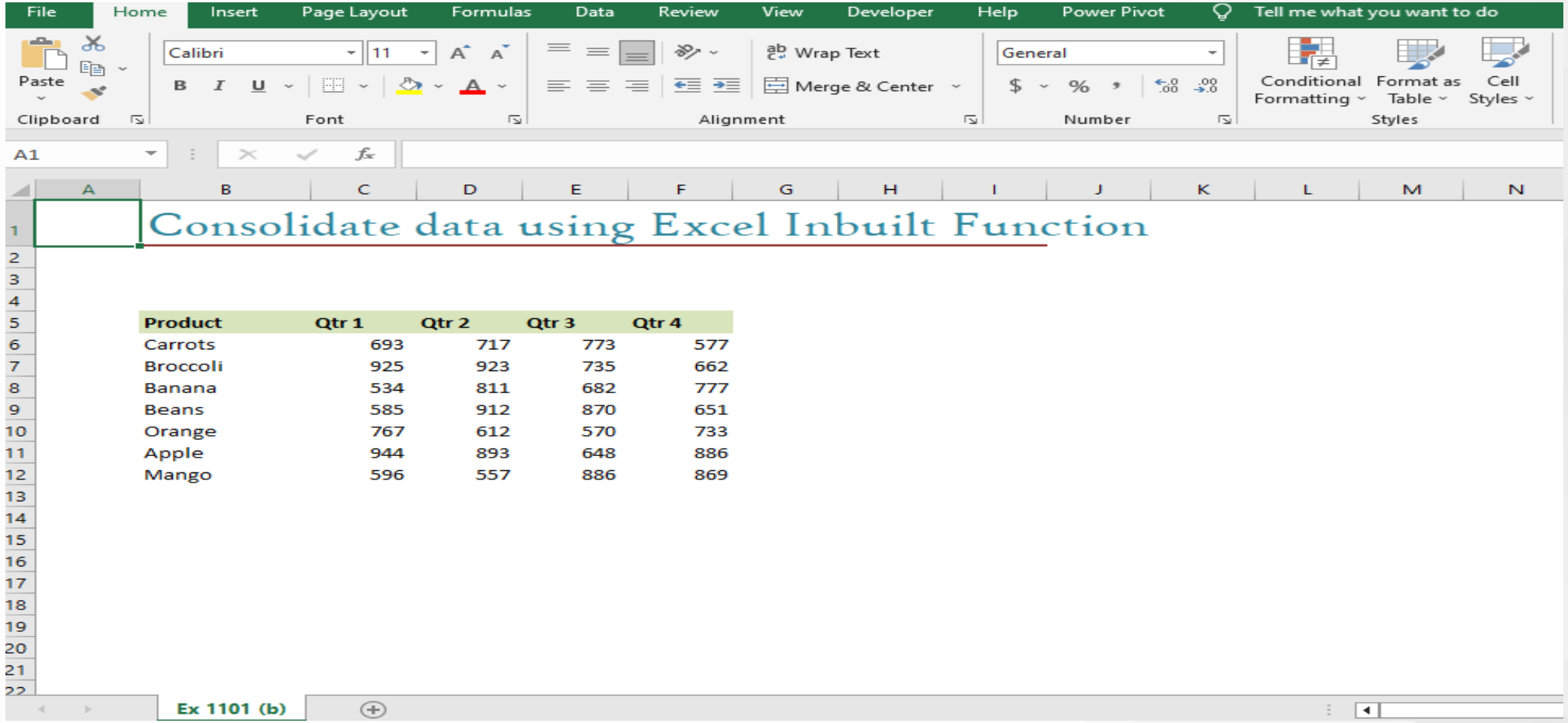
Sheet 1 to be consolidated



Product	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Carrots	200	392	357	481
Broccoli	496	448	350	337
Banana	445	245	111	176
Beans	241	321	117	410

Data Consolidation

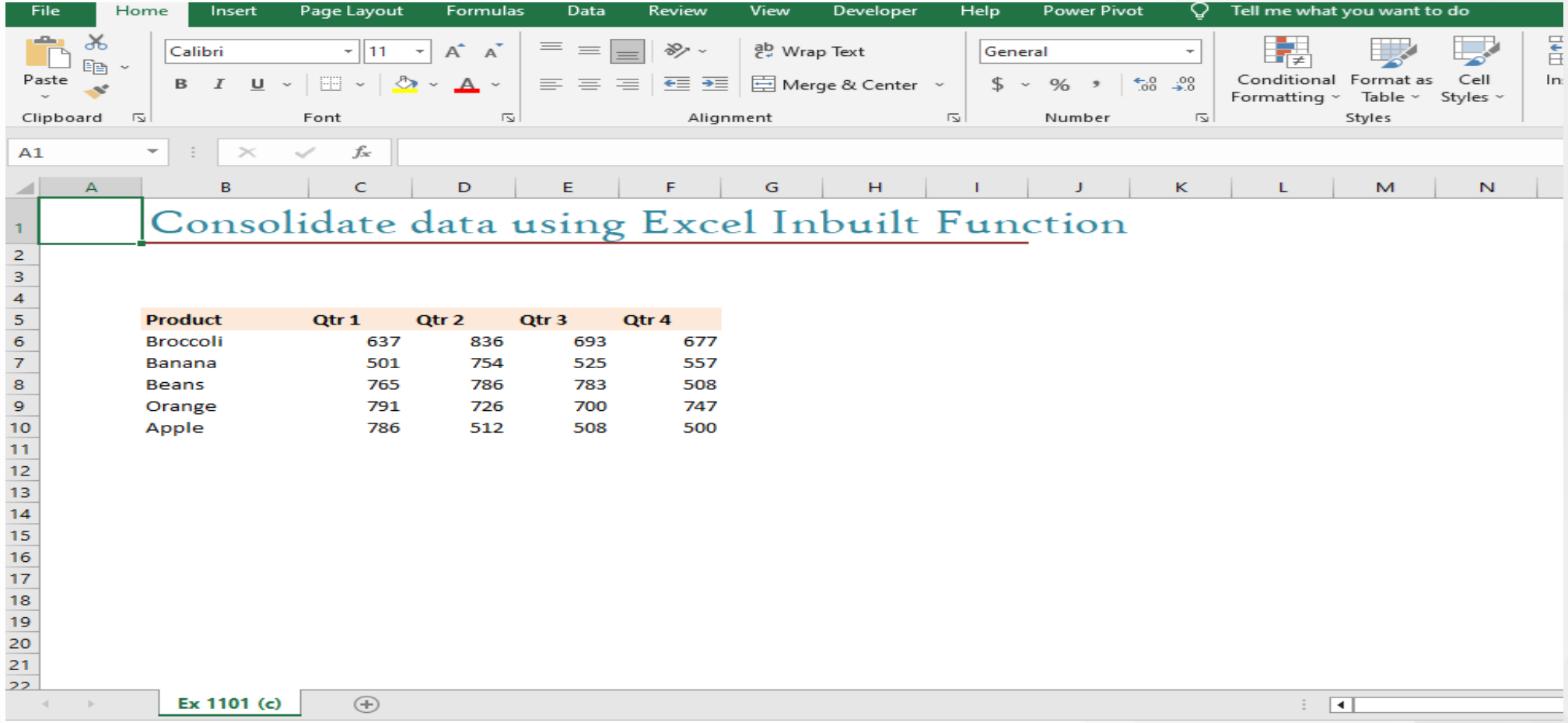
Sheet 2 to be consolidated



Product	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Carrots	693	717	773	577
Broccoli	925	923	735	662
Banana	534	811	682	777
Beans	585	912	870	651
Orange	767	612	570	733
Apple	944	893	648	886
Mango	596	557	886	869

Data Consolidation

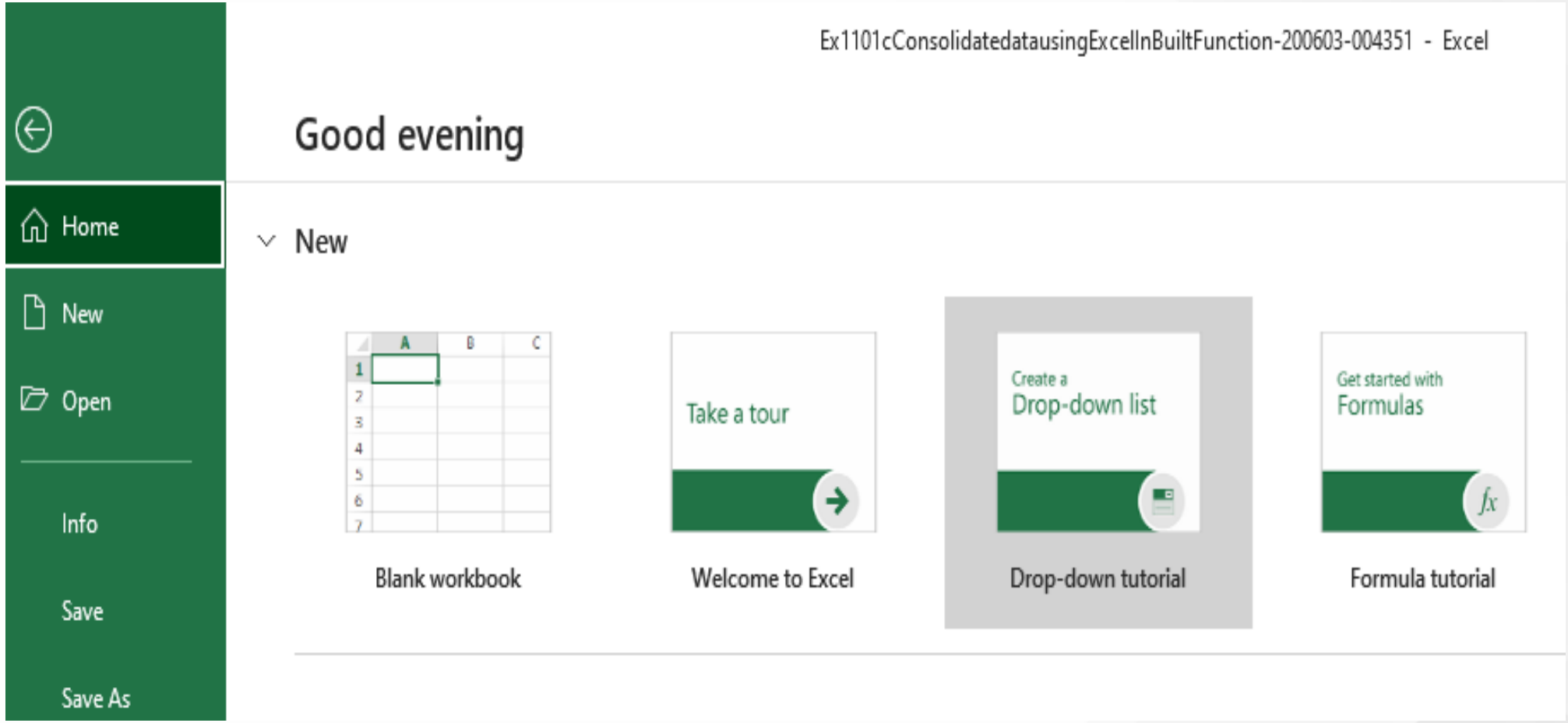
Sheet 3 to be consolidated



Product	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Broccoli	637	836	693	677
Banana	501	754	525	557
Beans	765	786	783	508
Orange	791	726	700	747
Apple	786	512	508	500

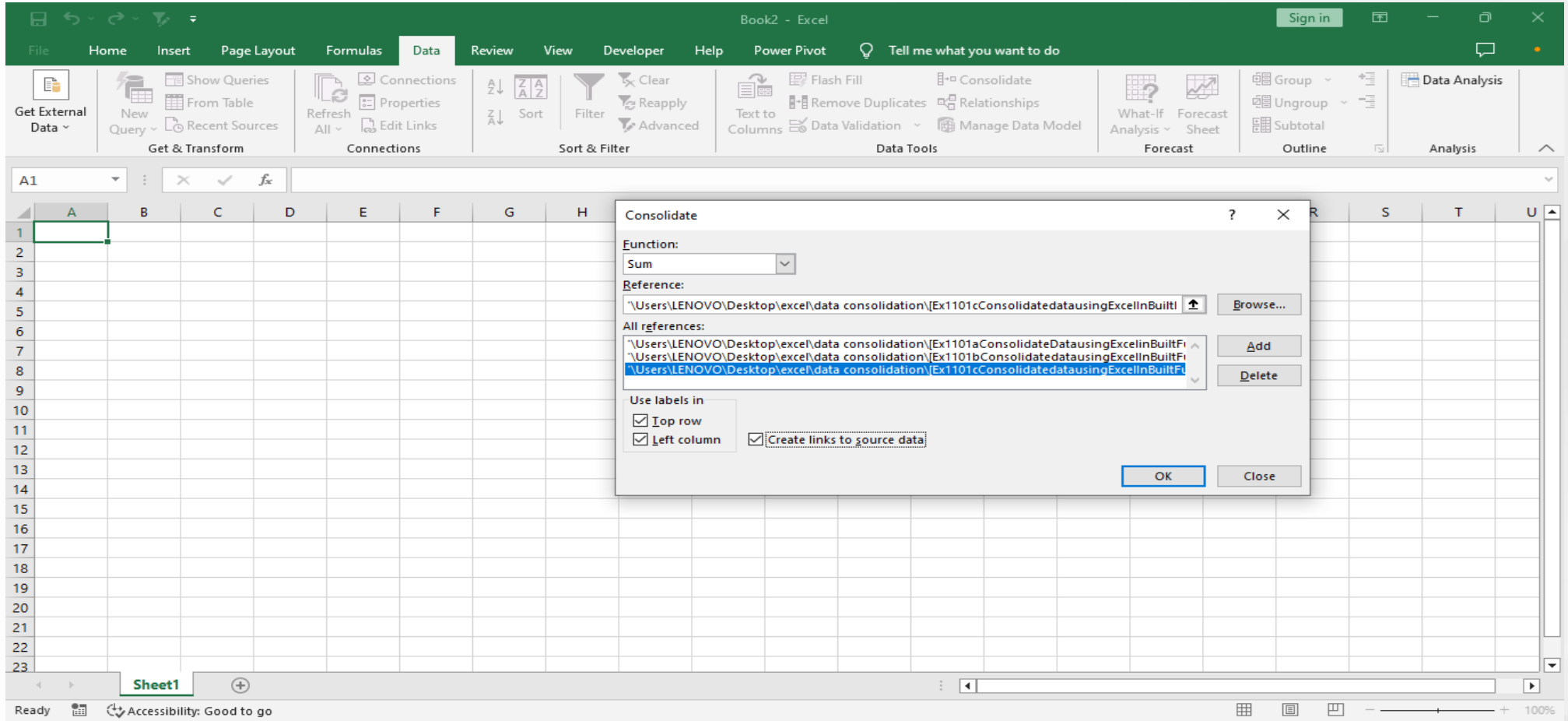
Data Consolidation

We will consolidate all the three sheets in a new sheet.



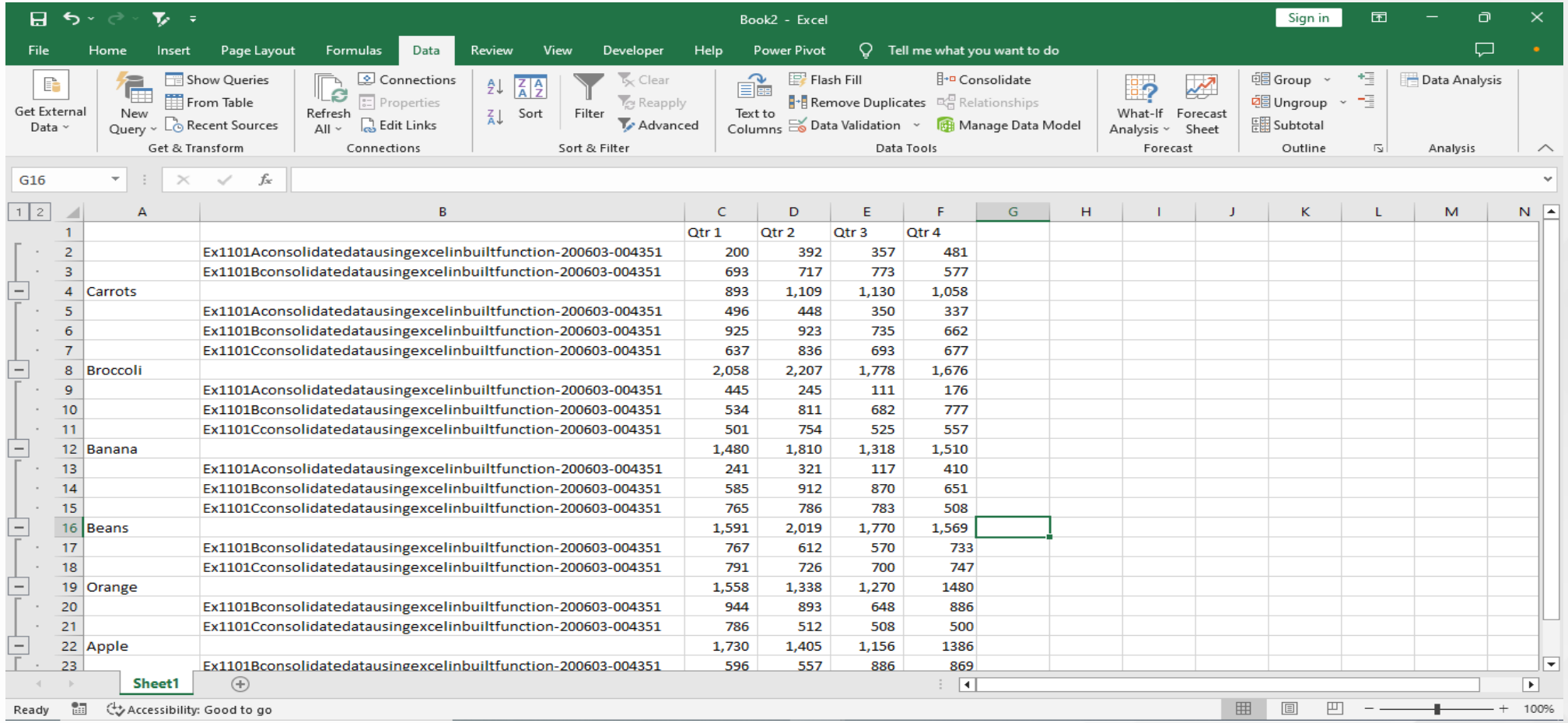
Data Consolidation

In the new sheet we will select “data” menu and select “consolidate” option



Data Consolidation

The data is consolidated



	A	B	C	D	E	F
1			Qtr 1	Qtr 2	Qtr 3	Qtr 4
2		Ex1101Aconsolidatedatausingexcelinbuiltfunction-200603-004351	200	392	357	481
3		Ex1101Bconsolidatedatausingexcelinbuiltfunction-200603-004351	693	717	773	577
4	Carrots		893	1,109	1,130	1,058
5		Ex1101Aconsolidatedatausingexcelinbuiltfunction-200603-004351	496	448	350	337
6		Ex1101Bconsolidatedatausingexcelinbuiltfunction-200603-004351	925	923	735	662
7		Ex1101Cconsolidatedatausingexcelinbuiltfunction-200603-004351	637	836	693	677
8	Broccoli		2,058	2,207	1,778	1,676
9		Ex1101Aconsolidatedatausingexcelinbuiltfunction-200603-004351	445	245	111	176
10		Ex1101Bconsolidatedatausingexcelinbuiltfunction-200603-004351	534	811	682	777
11		Ex1101Cconsolidatedatausingexcelinbuiltfunction-200603-004351	501	754	525	557
12	Banana		1,480	1,810	1,318	1,510
13		Ex1101Aconsolidatedatausingexcelinbuiltfunction-200603-004351	241	321	117	410
14		Ex1101Bconsolidatedatausingexcelinbuiltfunction-200603-004351	585	912	870	651
15		Ex1101Cconsolidatedatausingexcelinbuiltfunction-200603-004351	765	786	783	508
16	Beans		1,591	2,019	1,770	1,569
17		Ex1101Bconsolidatedatausingexcelinbuiltfunction-200603-004351	767	612	570	733
18		Ex1101Cconsolidatedatausingexcelinbuiltfunction-200603-004351	791	726	700	747
19	Orange		1,558	1,338	1,270	1480
20		Ex1101Bconsolidatedatausingexcelinbuiltfunction-200603-004351	944	893	648	886
21		Ex1101Cconsolidatedatausingexcelinbuiltfunction-200603-004351	786	512	508	500
22	Apple		1,730	1,405	1,156	1386
23		Ex1101Bconsolidatedatausingexcelinbuiltfunction-200603-004351	596	557	886	869

What-if Analysis

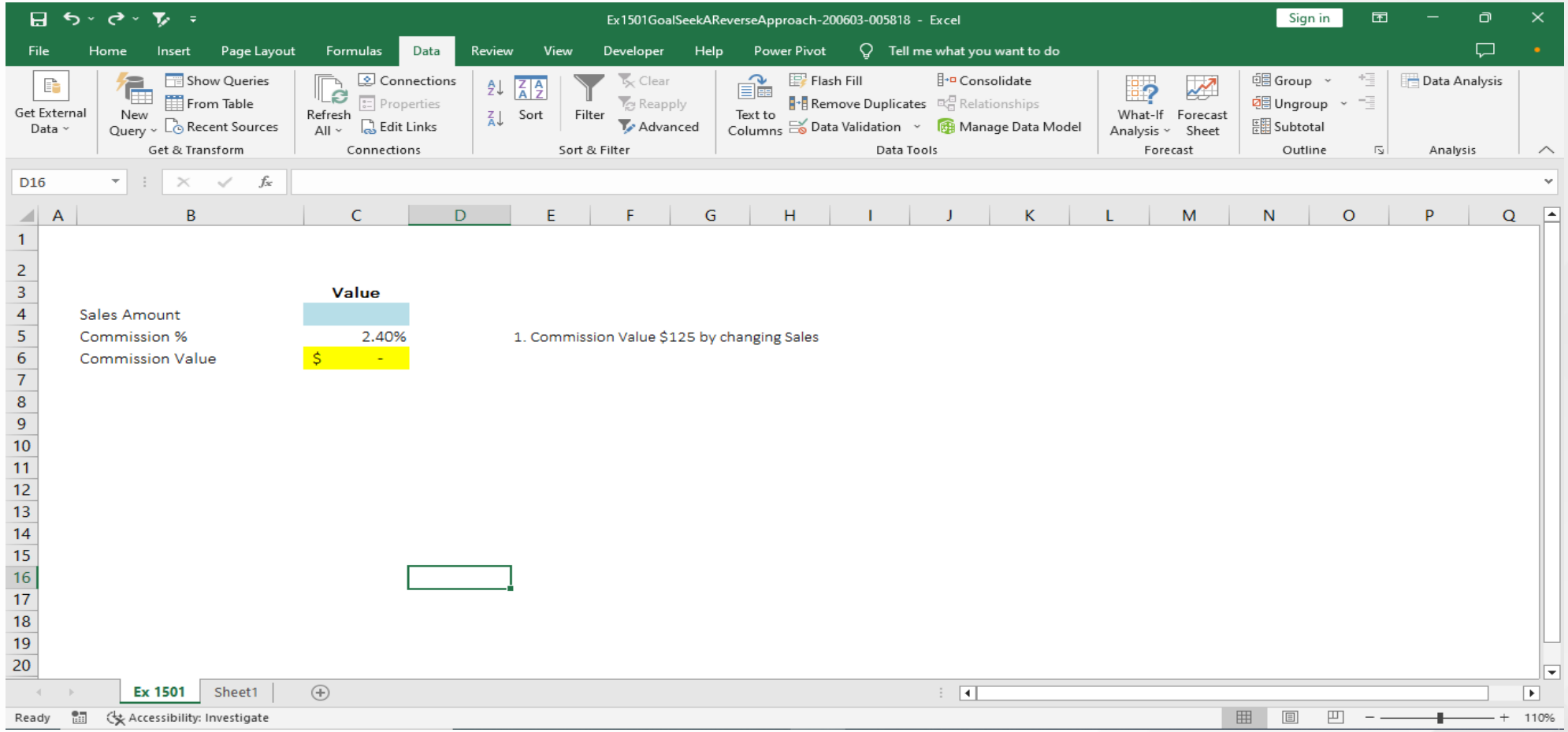
- It is the process of changing the values in cells to see how those changes will affect the outcome of formulas on the worksheet.
- We have three types of analysis under this: goal seek, data table, scenario manager

Goal Seek Analysis

- Goal seeking is the ability to calculate backward to obtain an input that would result in each output.
- This can also be called what-if analysis or back solving.

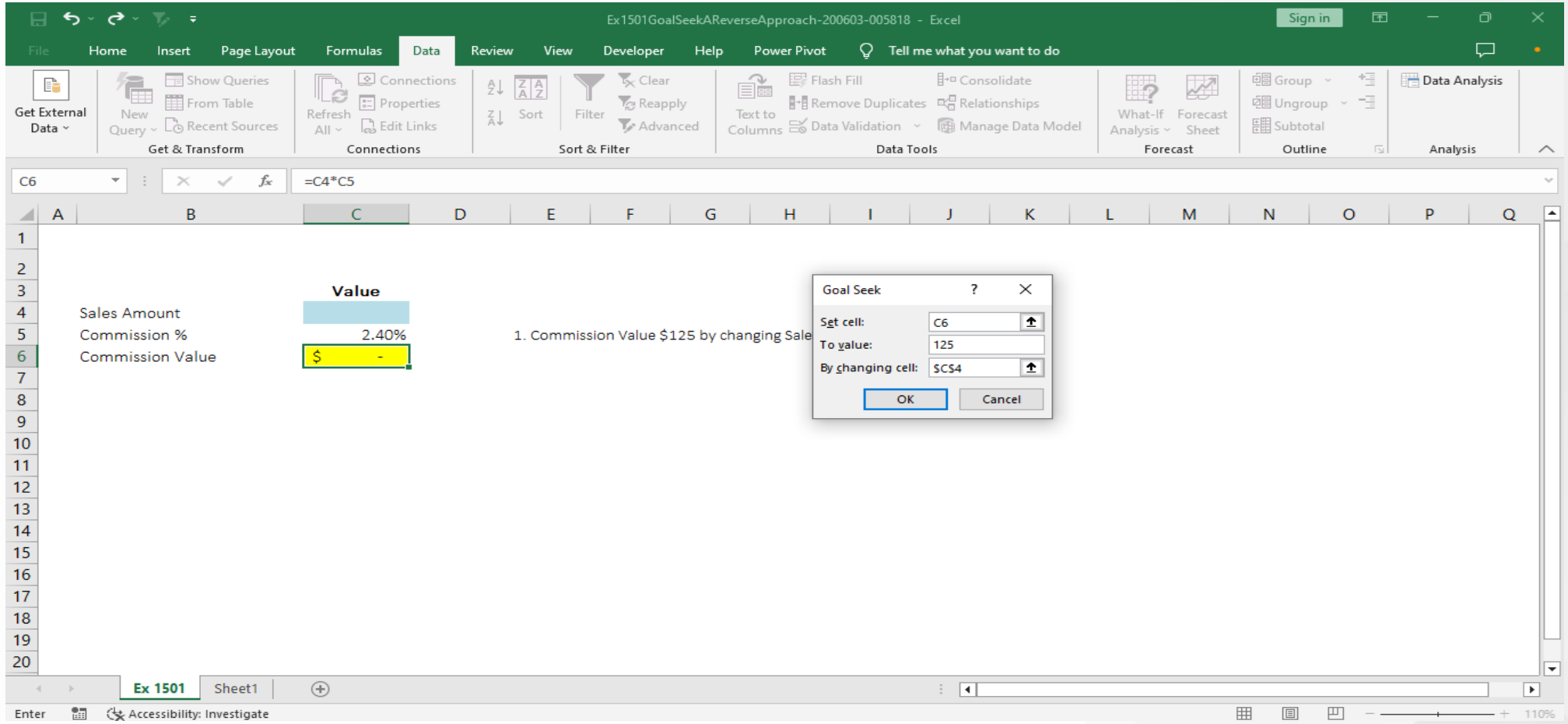
Goal Seek Analysis

The goal here is to get the commission value of $125 by setting the sales value.



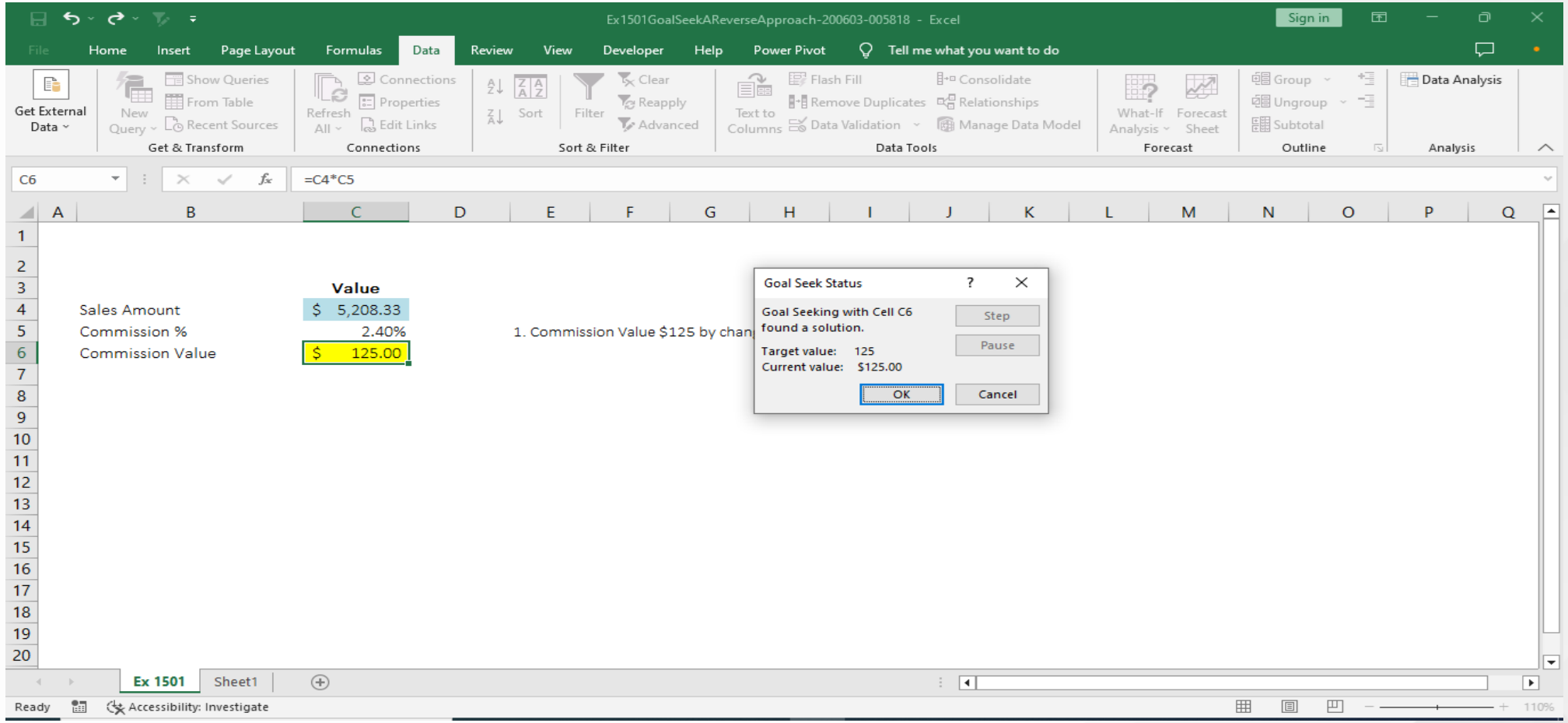
Goal Seek Analysis

In the data menu, we select “data” menu and select “what-if analysis” option.



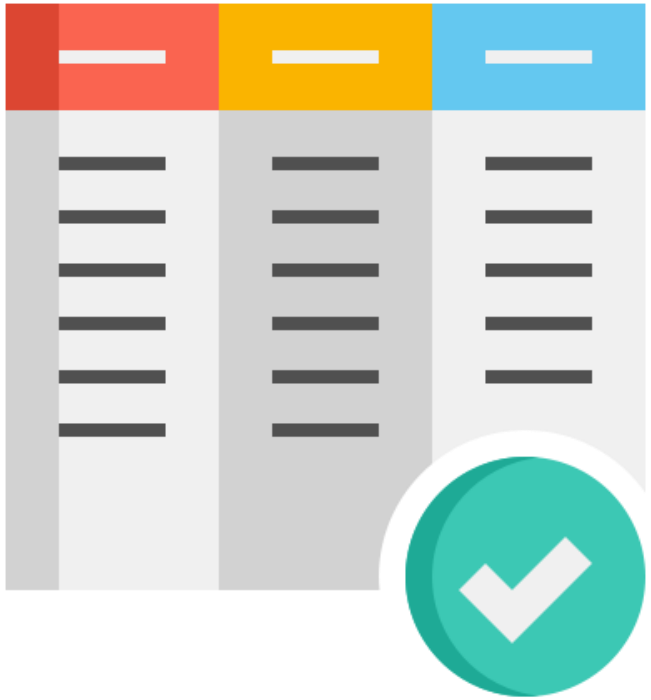
Goal Seek Analysis

The goal is achieved at $125 as the commission value.



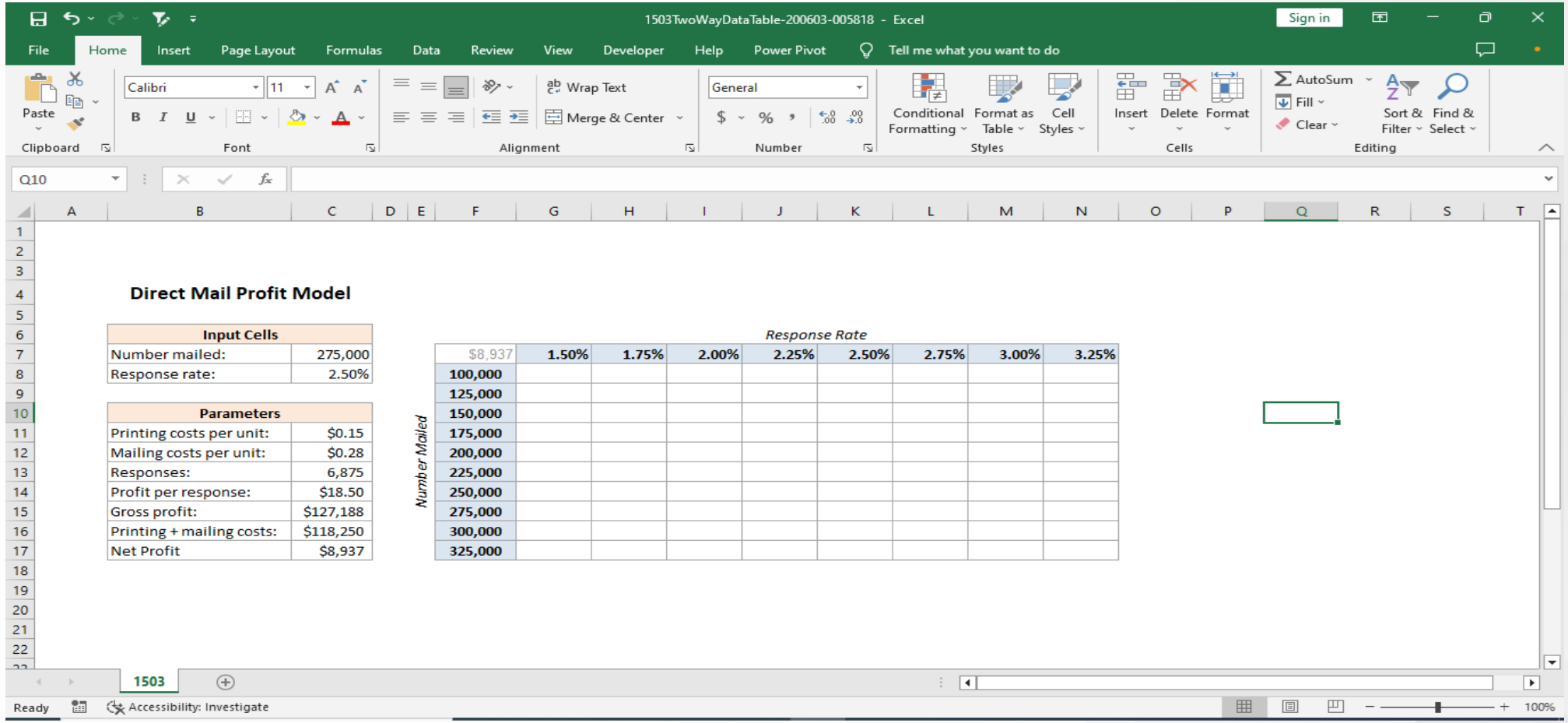
Data Table

A data table is a range of cells in which you can change the values in some of the cells and produce different answers to a problem.



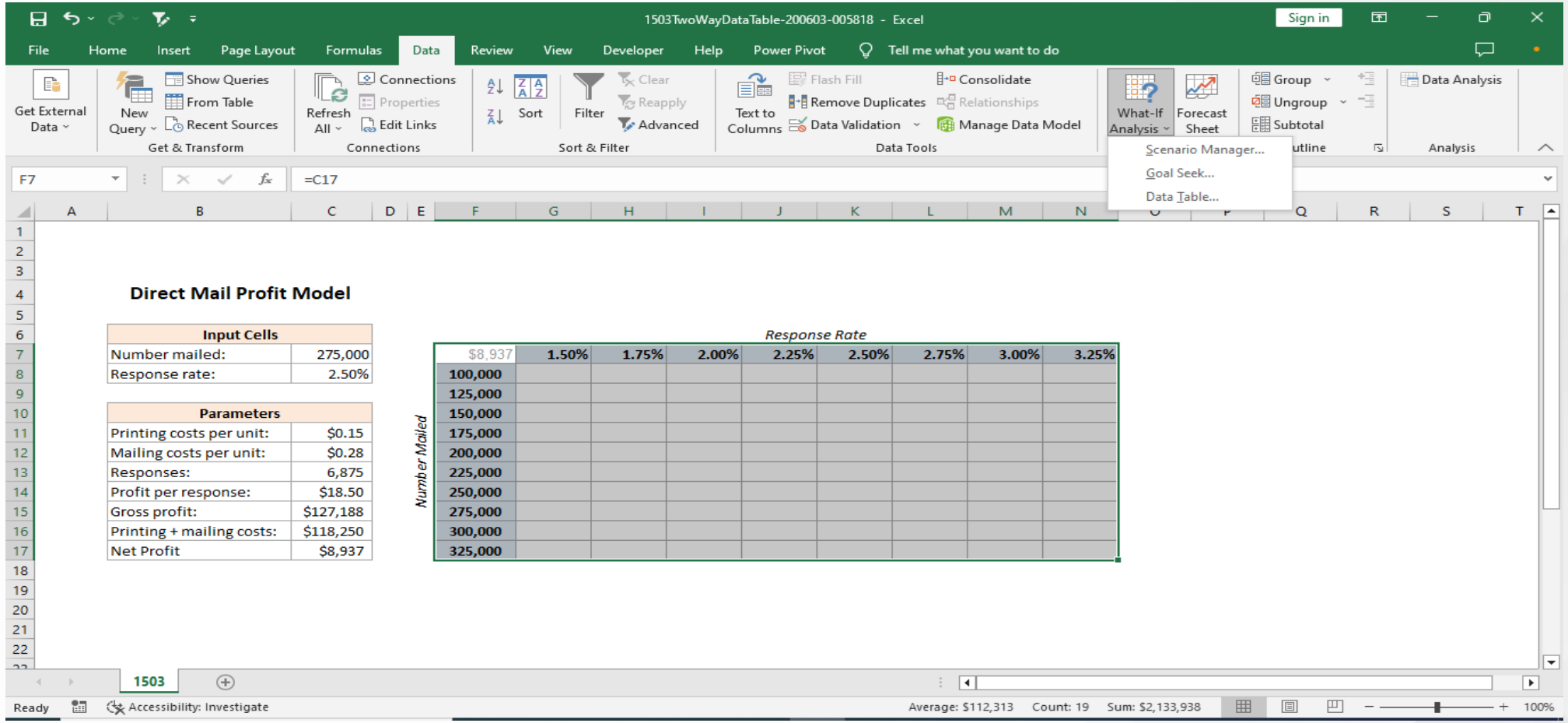
Data Table

We have a mail-profit model where we are going to calculate the profit earned by seeing the various number of mails: Response Rate Combinations.



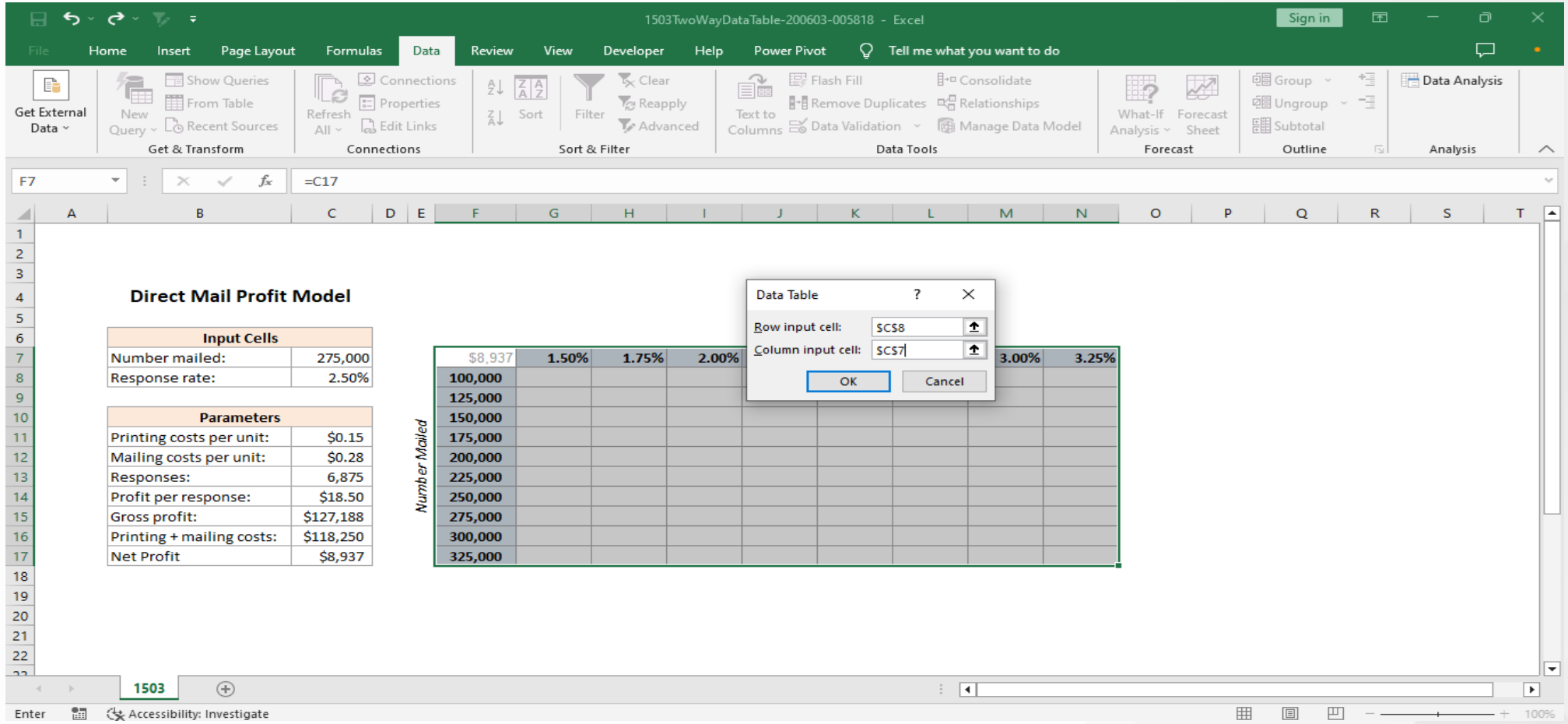
Data Table

Select the whole table -> data menu -> what-if analysis -> data table



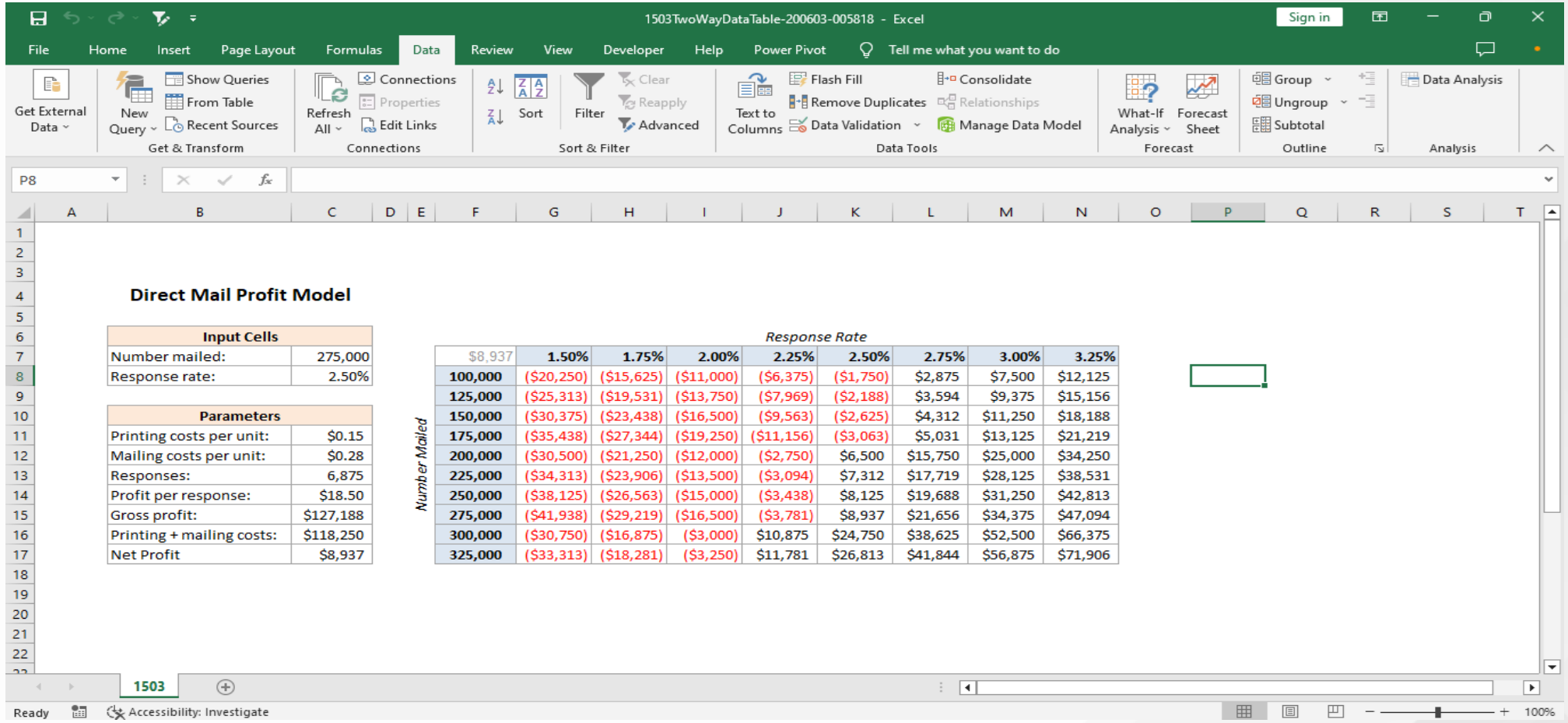
Data Table

By choosing the data table option in what-if analysis option, the data table dialog-box appears:



Data Table

We get the profits for different combinations of response rate and number mailed:



Direct Mail Profit Model

Input Cells	
Number mailed:	275,000
Response rate:	2.50%

Parameters	
Printing costs per unit:	$0.15
Mailing costs per unit:	$0.28
Responses:	6,875
Profit per response:	$18.50
Gross profit:	$127,188
Printing + mailing costs:	$118,250
Net Profit	$8,937

Response Rate

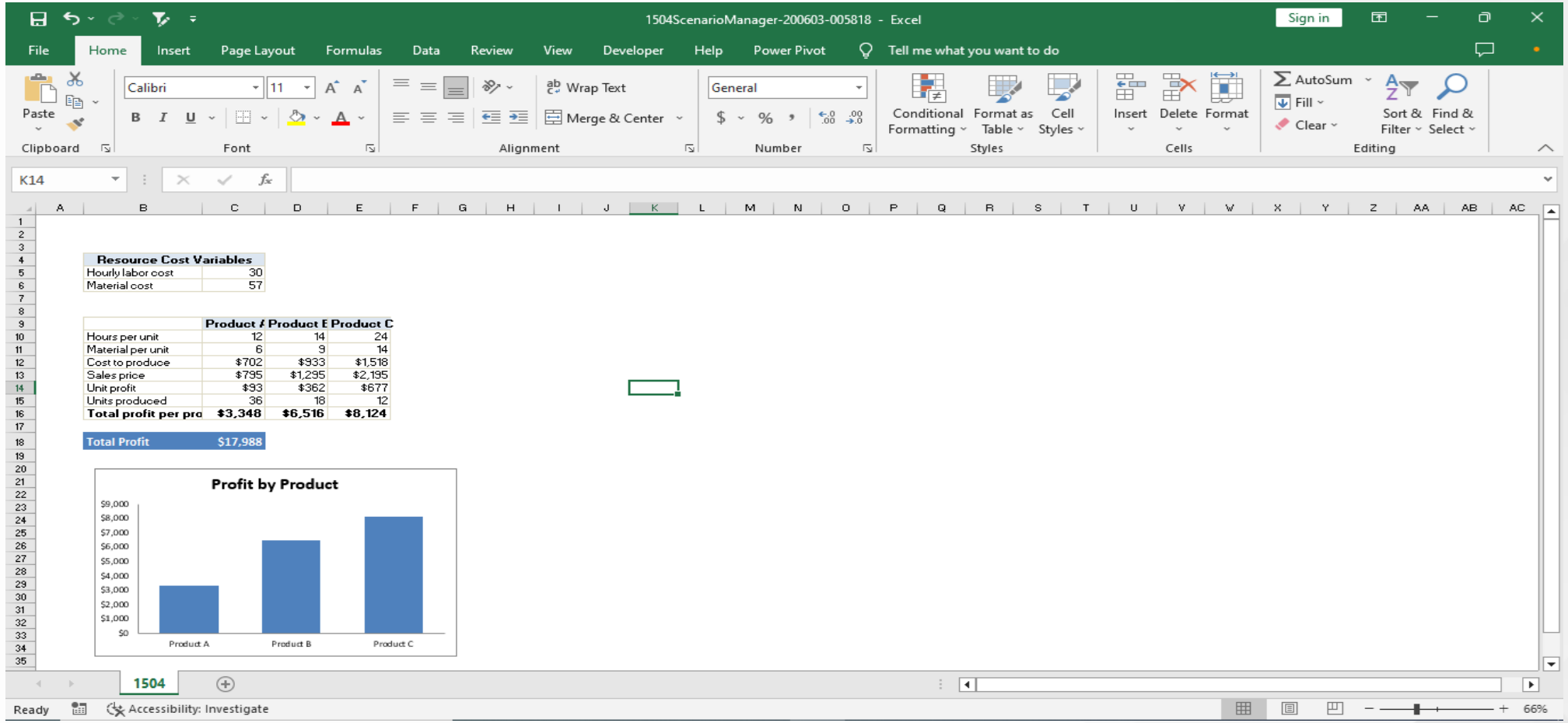
Number Mailed	$8,937	1.50%	1.75%	2.00%	2.25%	2.50%	2.75%	3.00%	3.25%
100,000	($20,250)	($15,625)	($11,000)	($6,375)	($1,750)	$2,875	$7,500	$12,125
125,000	($25,313)	($19,531)	($13,750)	($7,969)	($2,188)	$3,594	$9,375	$15,156
150,000	($30,375)	($23,438)	($16,500)	($9,563)	($2,625)	$4,312	$11,250	$18,188
175,000	($35,438)	($27,344)	($19,250)	($11,156)	($3,063)	$5,031	$13,125	$21,219
200,000	($30,500)	($21,250)	($12,000)	($2,750)	$6,500	$15,750	$25,000	$34,250
225,000	($34,313)	($23,906)	($13,500)	($3,094)	$7,312	$17,719	$28,125	$38,531
250,000	($38,125)	($26,563)	($15,000)	($3,438)	$8,125	$19,688	$31,250	$42,813
275,000	($41,938)	($29,219)	($16,500)	($3,781)	$8,937	$21,656	$34,375	$47,094
300,000	($30,750)	($16,875)	($3,000)	$10,875	$24,750	$38,625	$52,500	$66,375
325,000	($33,313)	($18,281)	($3,250)	$11,781	$26,813	$41,844	$56,875	$71,906

Scenario Manager

It is a collection of digital tools that allow a user to create, analyse and compare data results in different business situations.

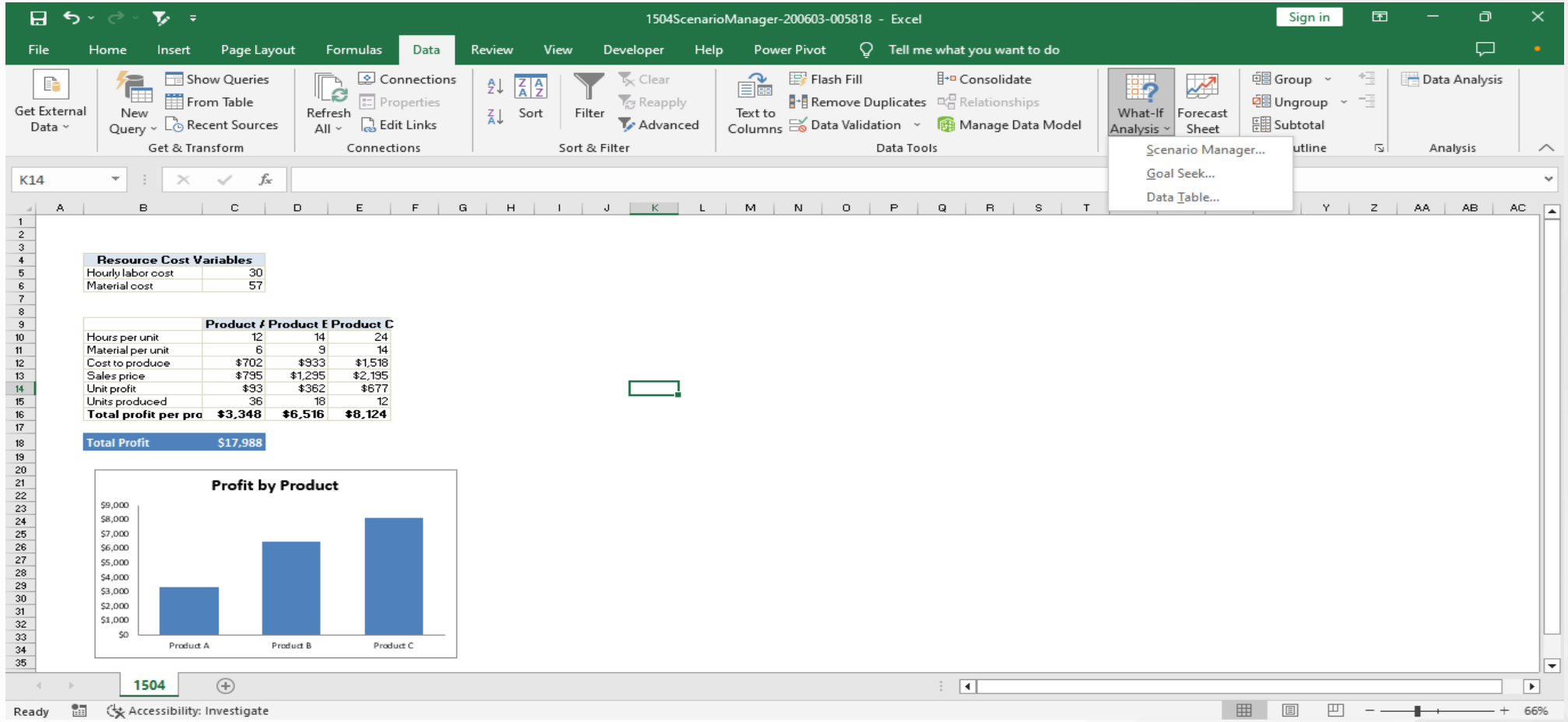
Scenario Manager

We have a situation for a manufacturing company.



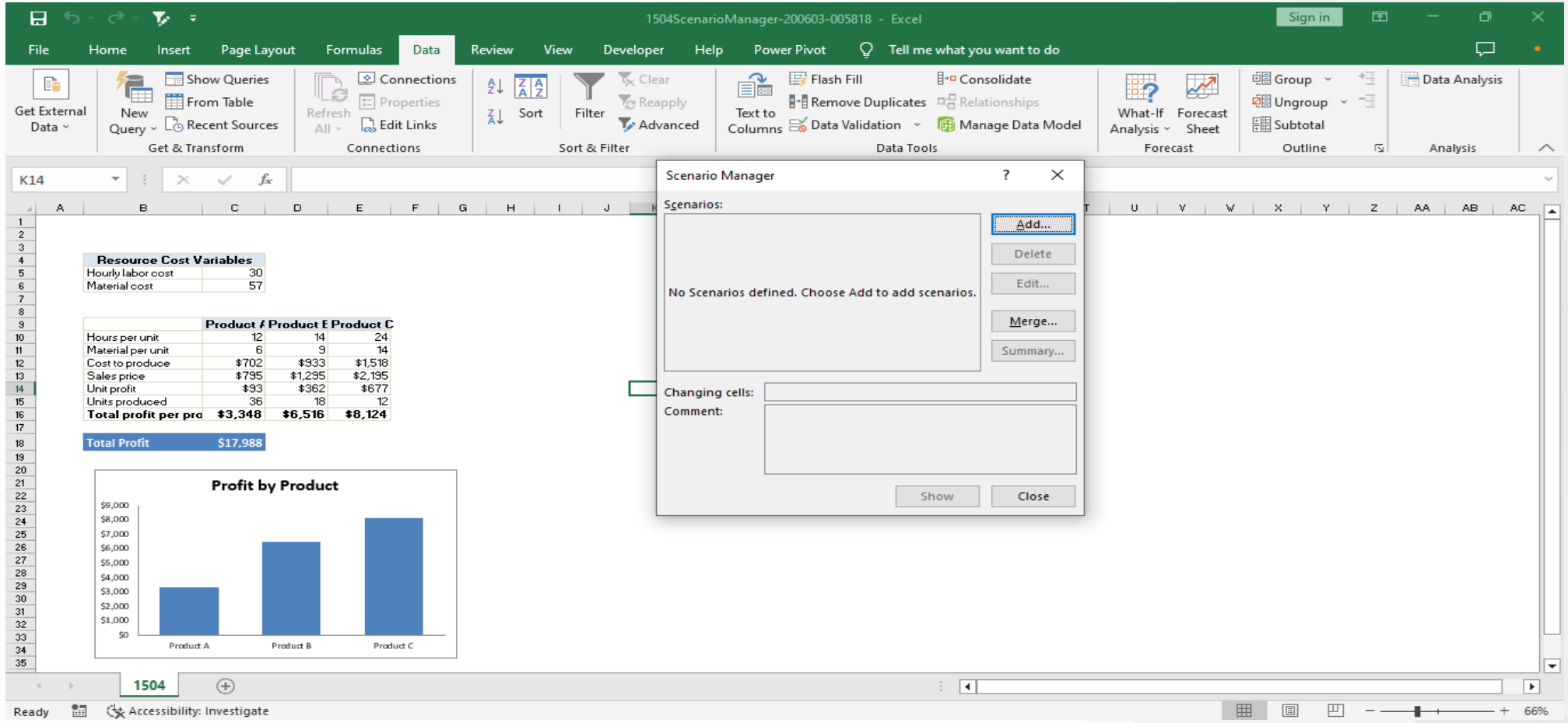
Scenario Manager

Data menu -> what-if analysis -> scenario manager



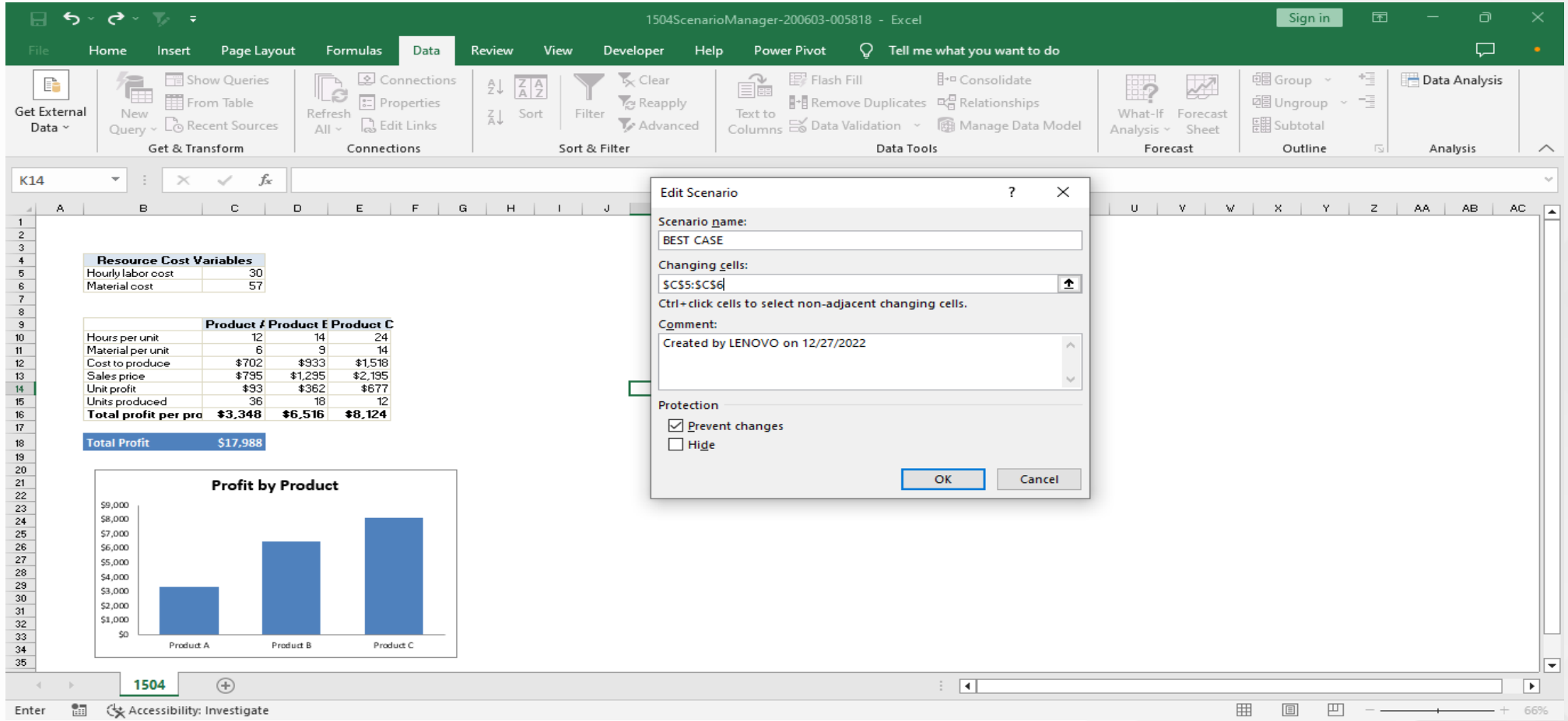
Scenario Manager

The Scenario Manager dialog box appears:



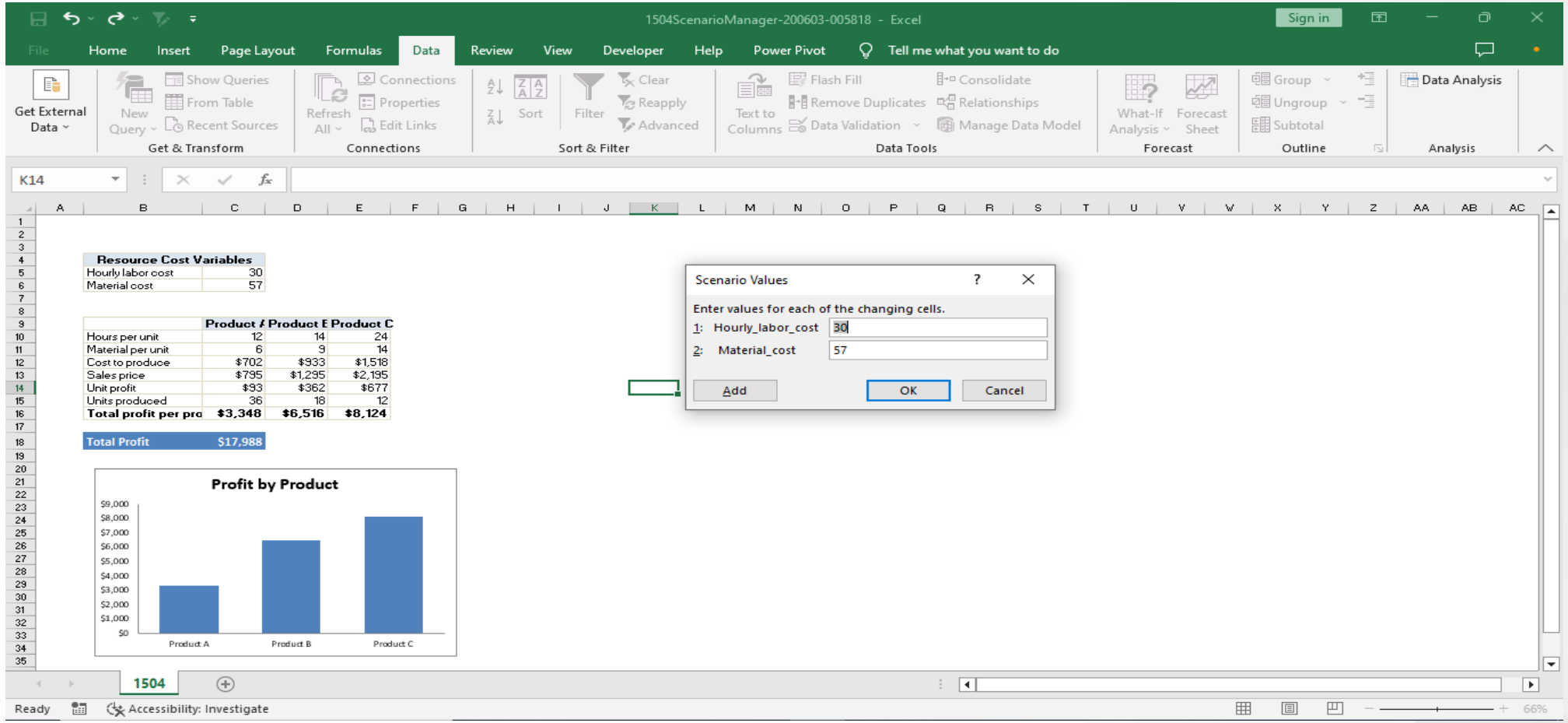
Scenario Manager

Rename the first scenario in the “**scenario name**” box.



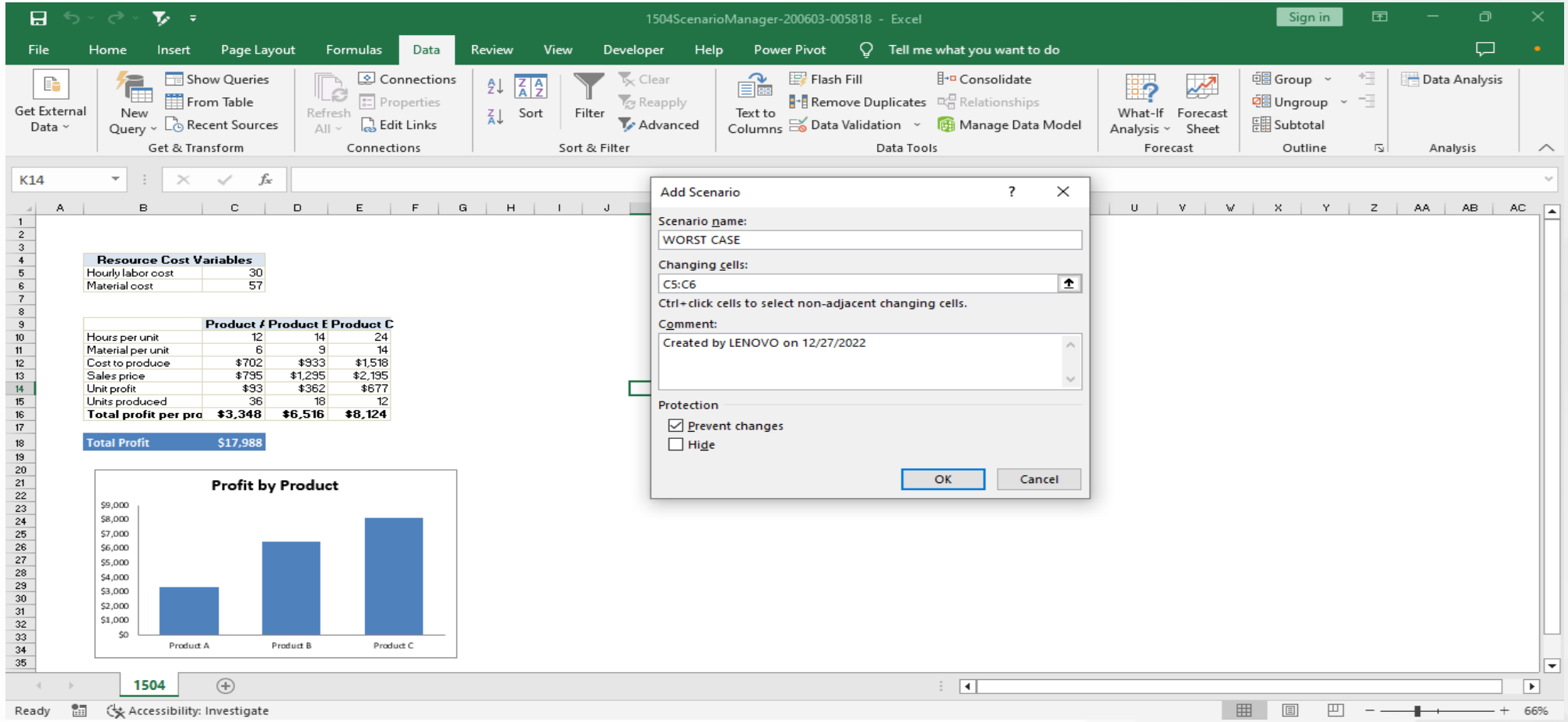
Scenario Manager

We change the values of the two parameters to create the scenario.



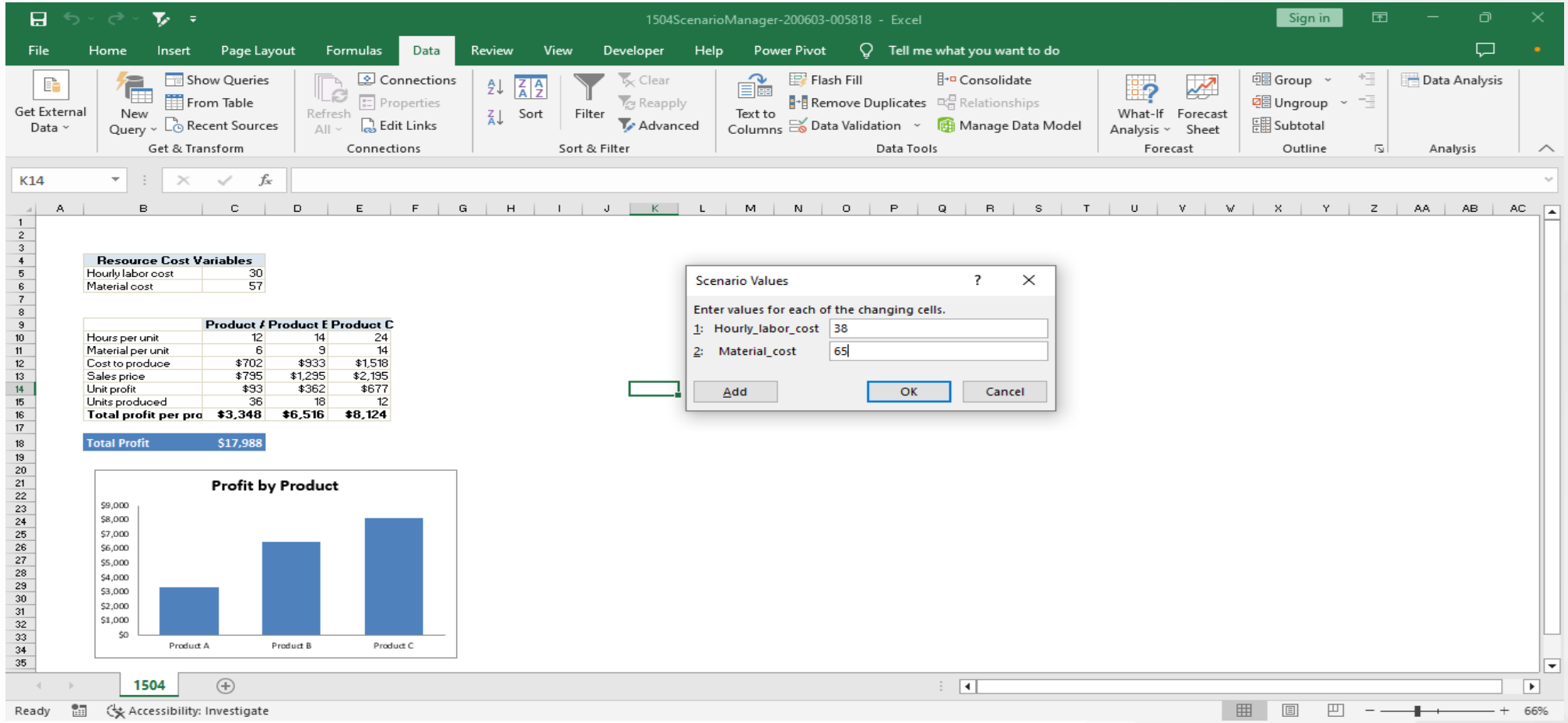
Scenario Manager

We create another scenario as “**worst case**”.



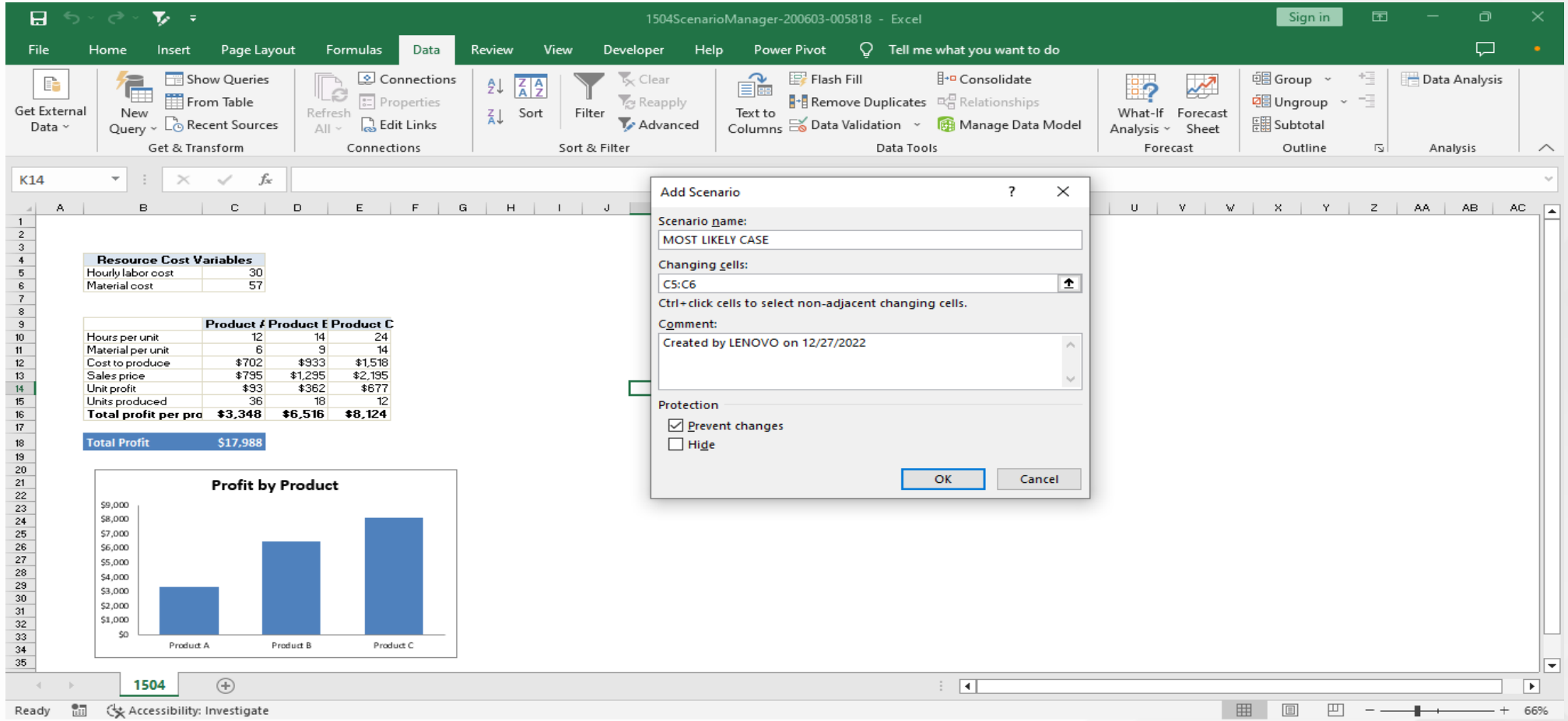
Scenario Manager

We increase the values of both the parameters.



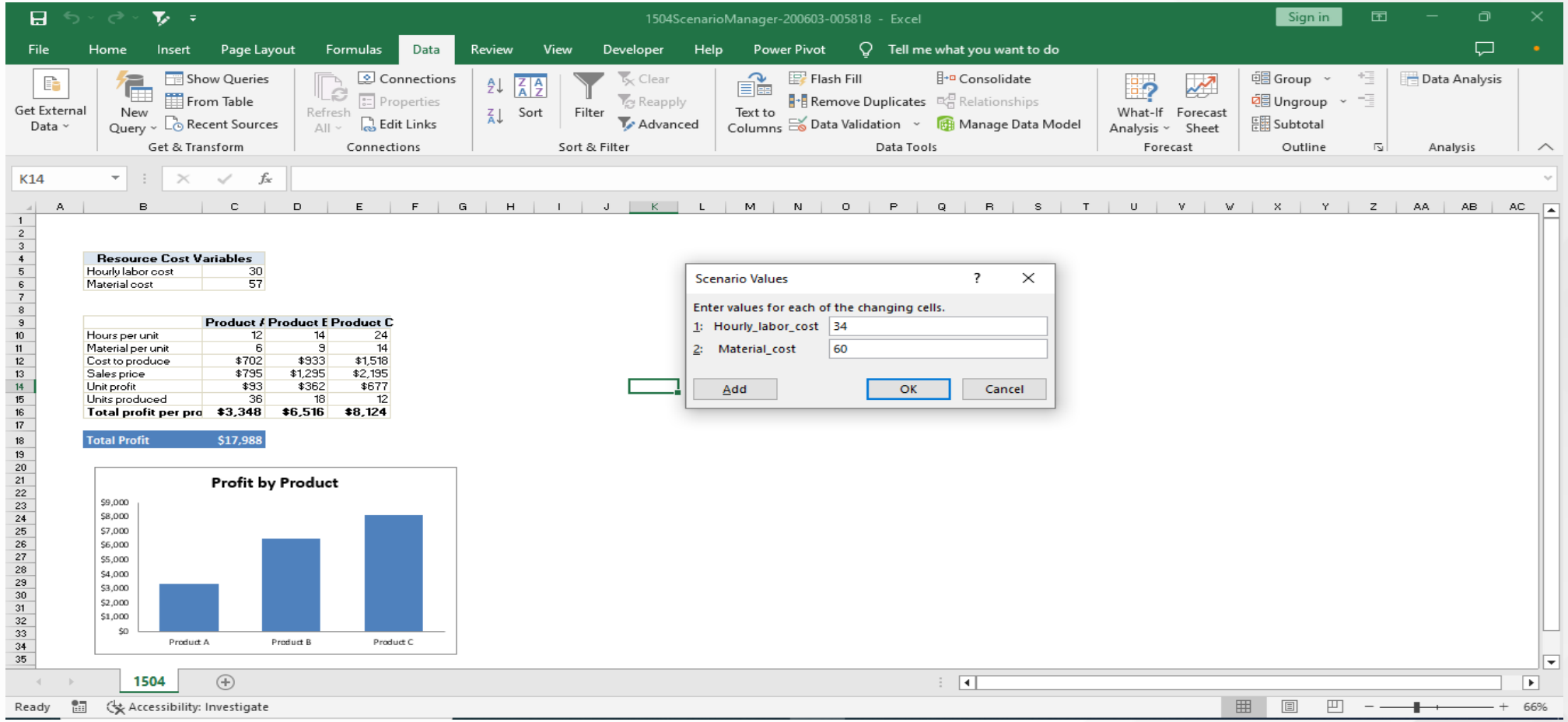
Scenario Manager

We create the third scenario as “**most likely case**”.



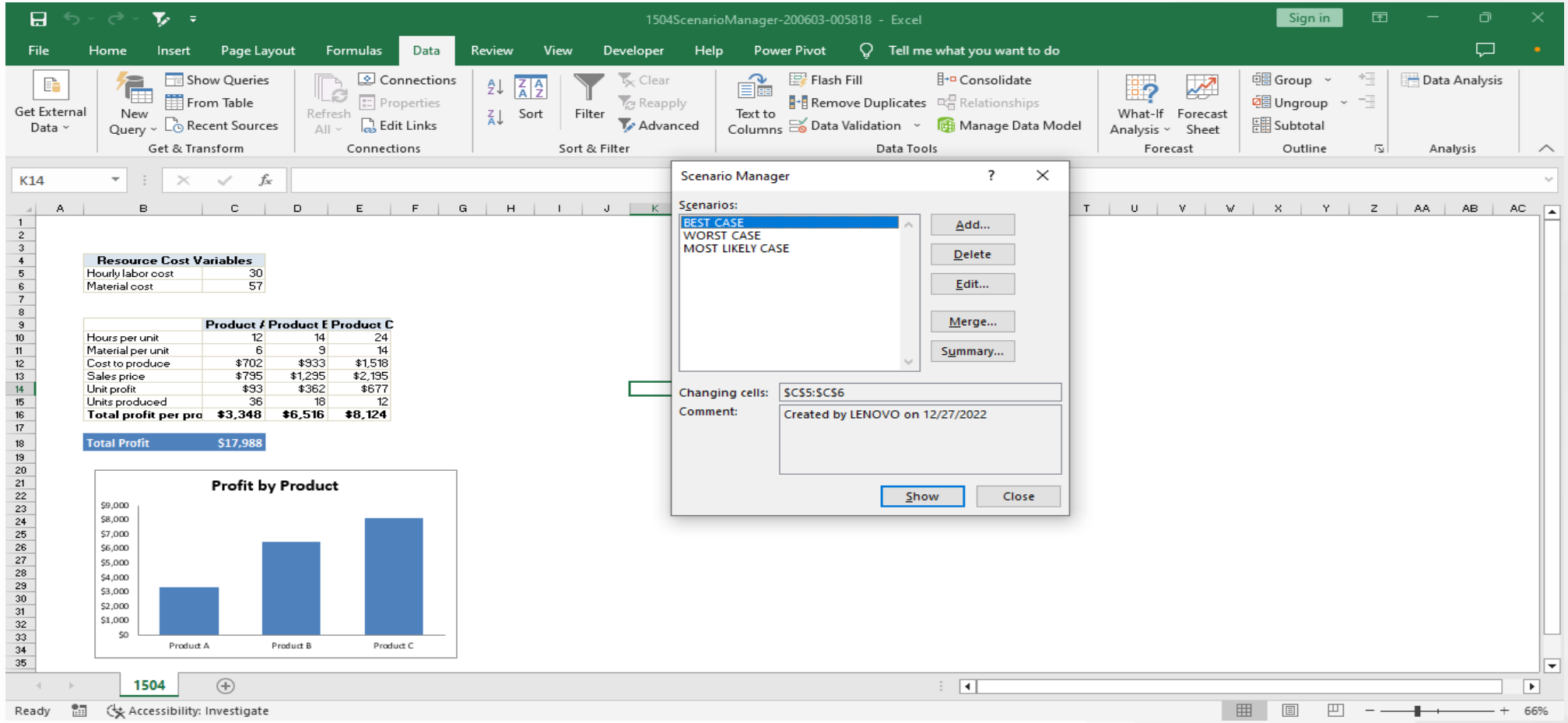
Scenario Manager

We set the values of both the parameters.



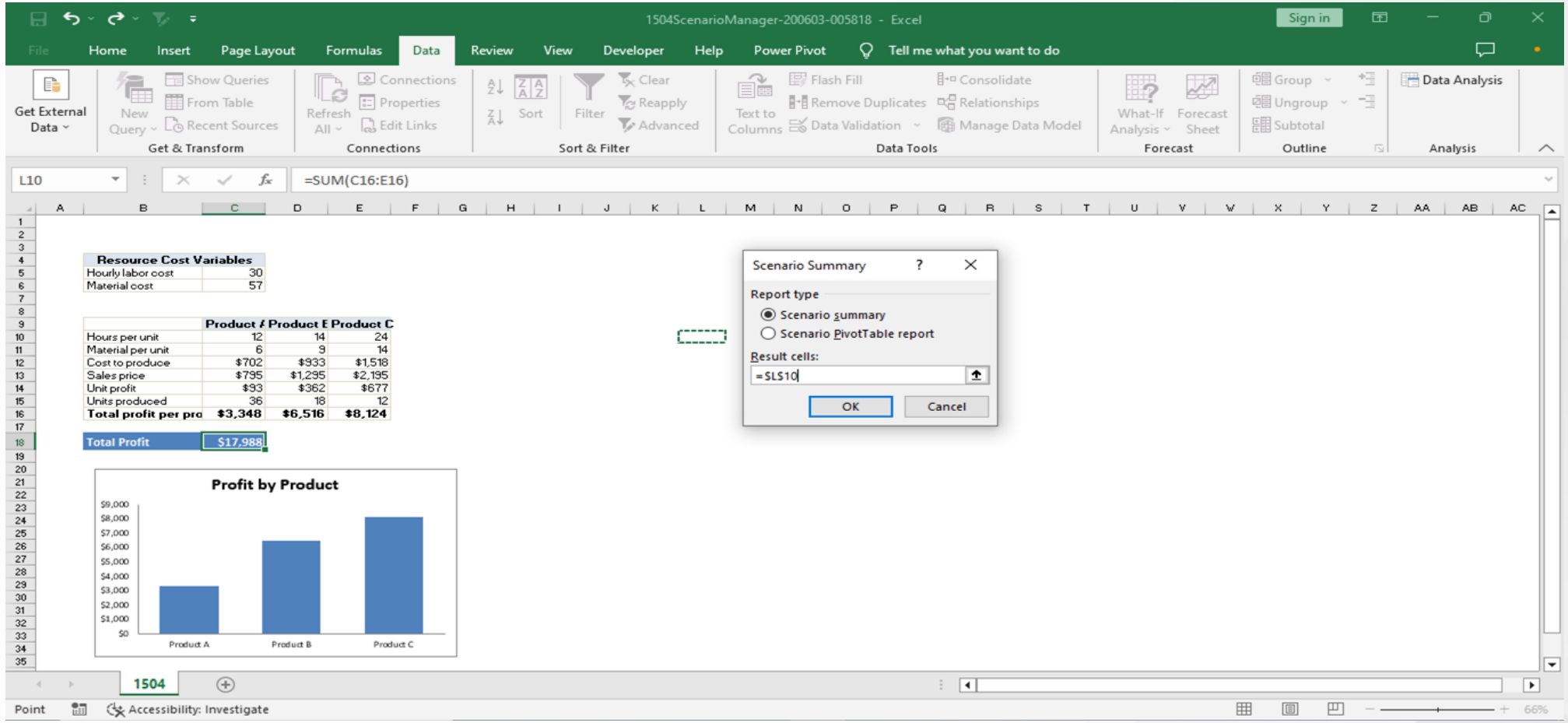
Scenario Manager

We finally have created the three scenarios shown in the scenario manager dialog box:



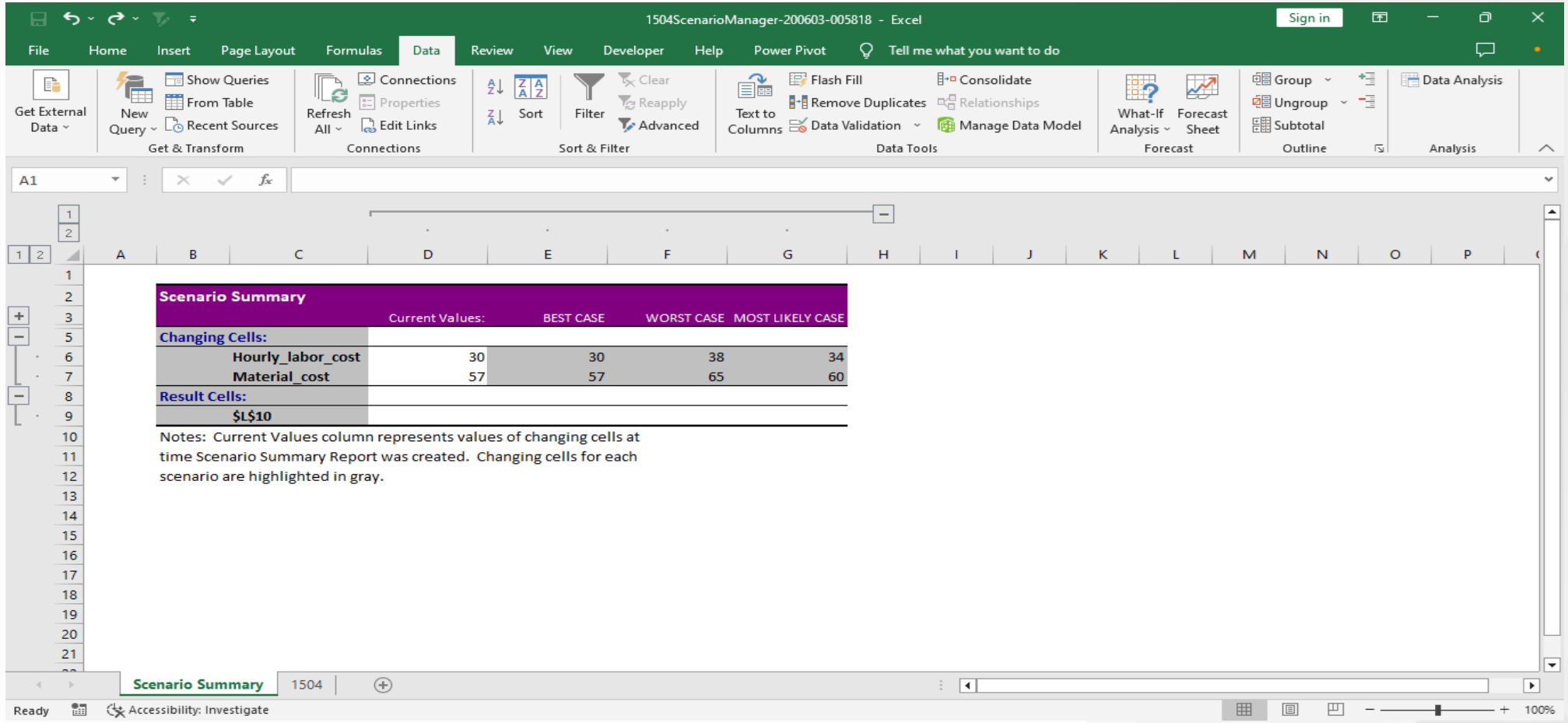
Scenario Manager

We select the cell in the worksheet where we want to see the summary.



Scenario Manager

A new sheet is created, and we can see the overall summary of all the scenarios.

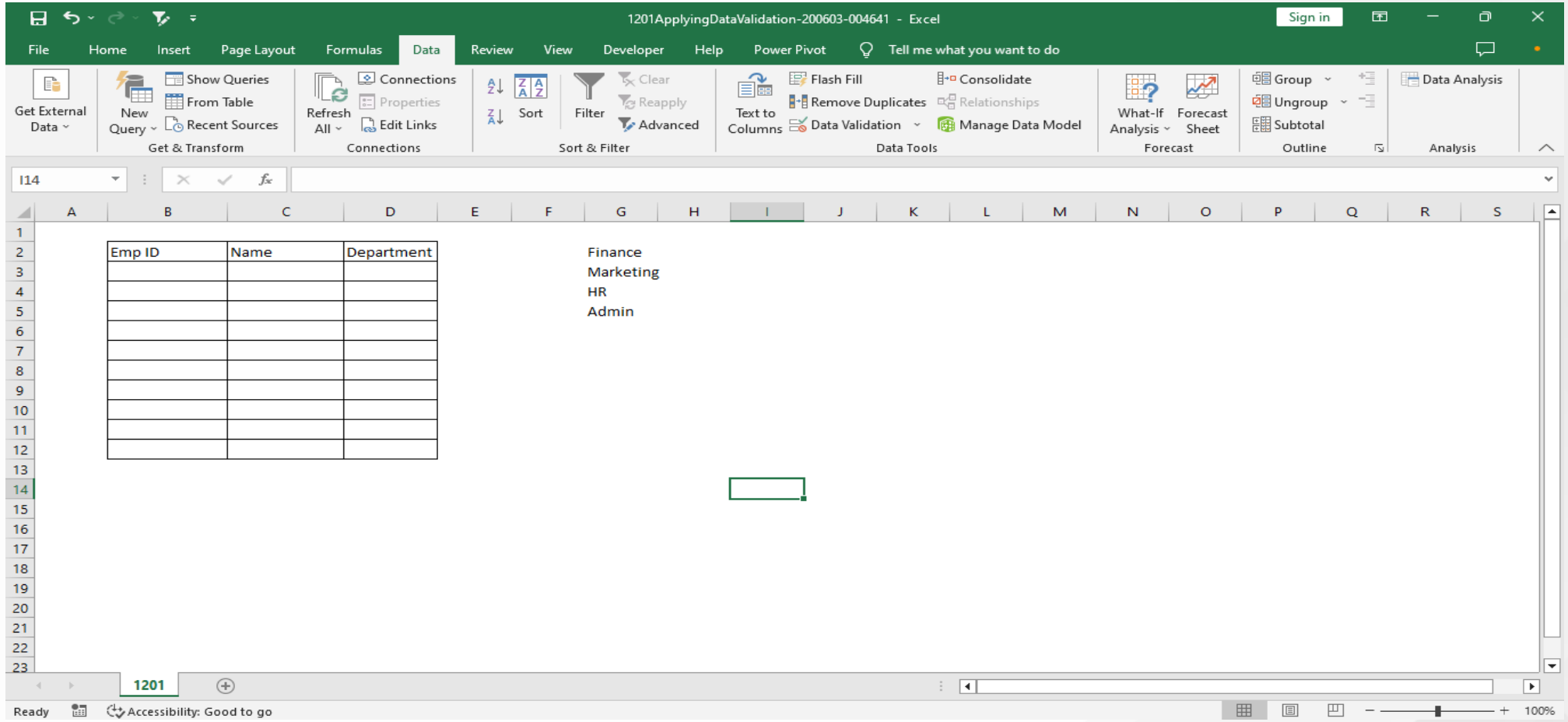


Data Validation

- It checks for the validity of the data.
- Using a set of rules, it checks whether the data is within the acceptable values defined for the field or not.
- The system ensures the inputs stick to the set rules. For instance, the type, uniqueness, format, or consistency of the data.

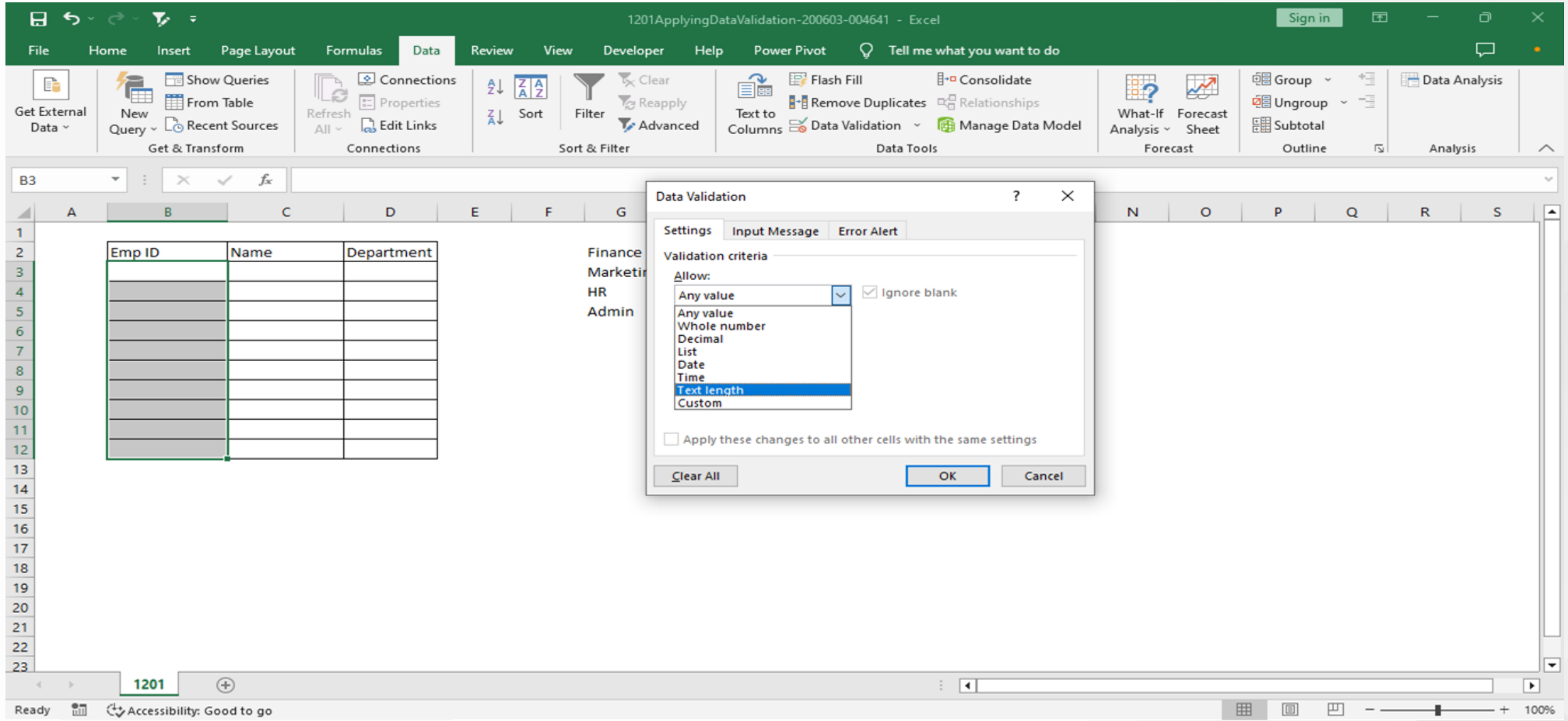
Data Validation

The sheet consists of three columns - Emp ID, Name, Department, and a list of department names.



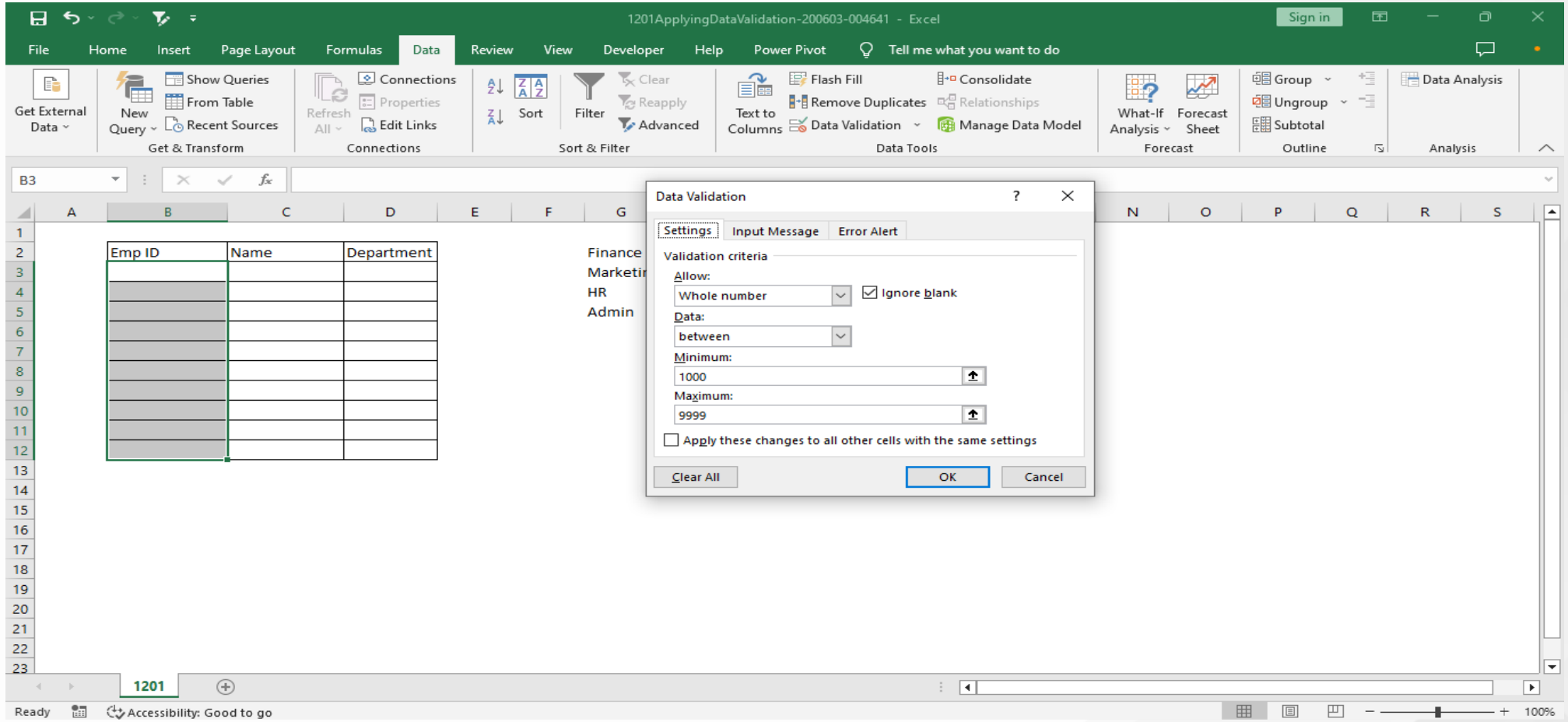
Data Validation

We will apply data validation on Emp ID column.



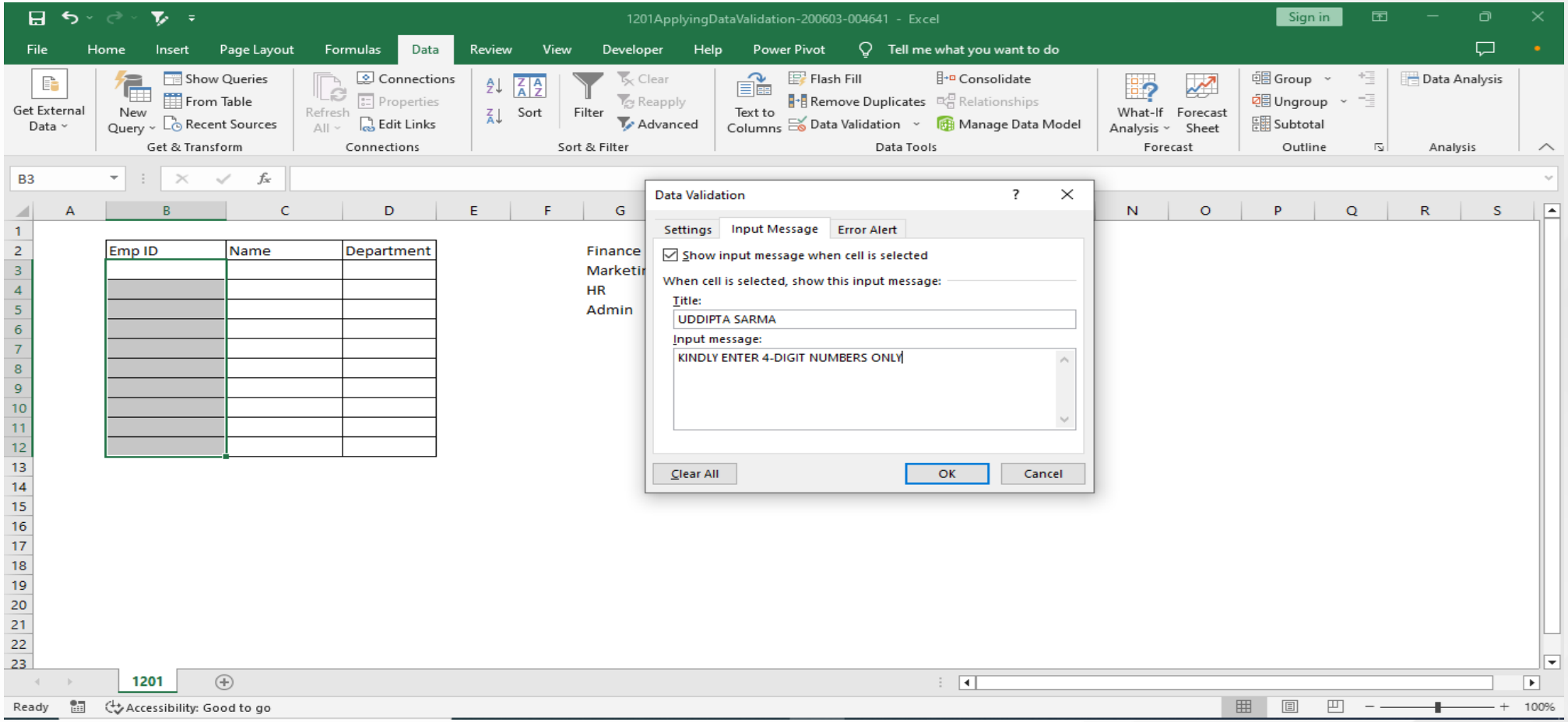
Data Validation

We will restrict the numbers inside the column.



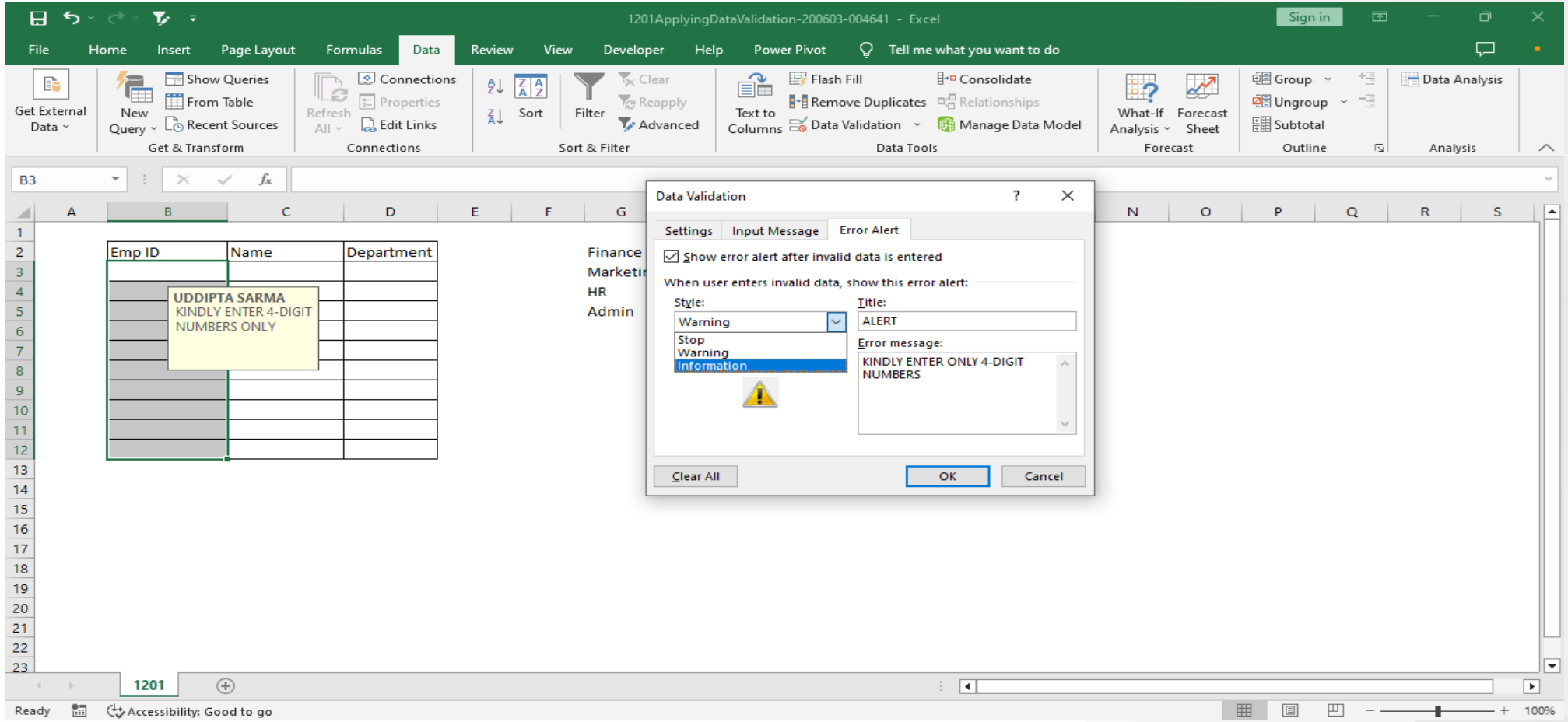
Data Validation

We will add input message in the cell to get the information of entering the right numbers in the cells.



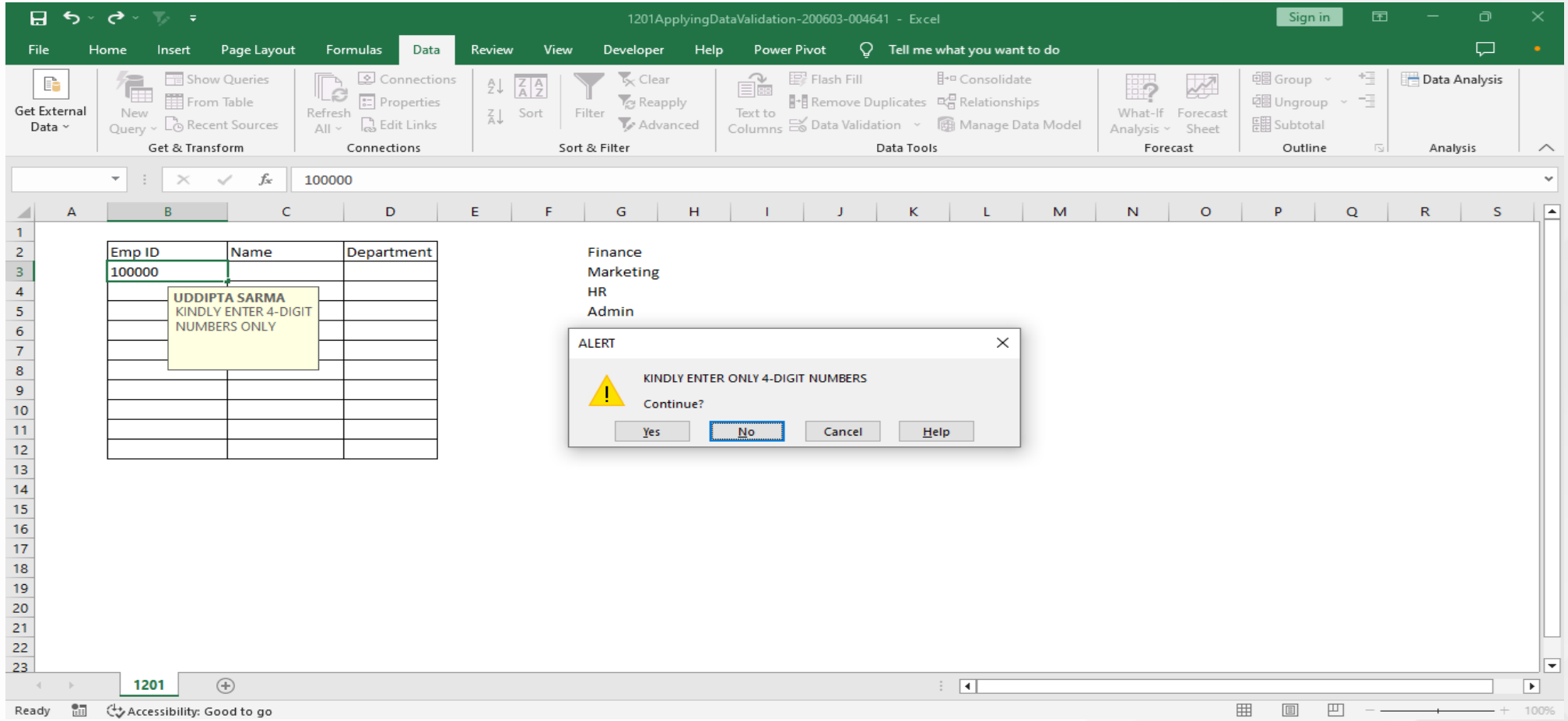
Data Validation

We will add an **alert message** if we enter any wrong input in the cells.



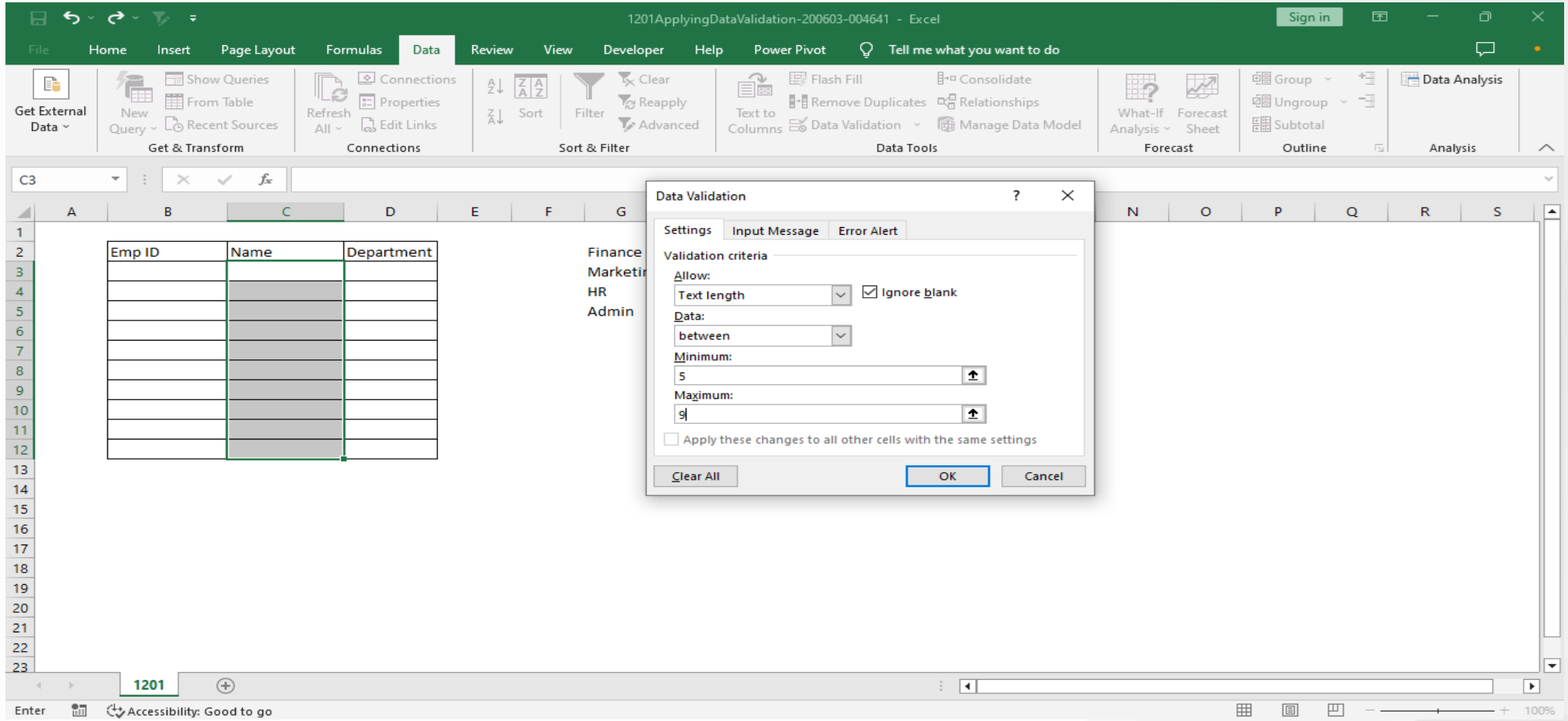
Data Validation

We can see the input and error message.



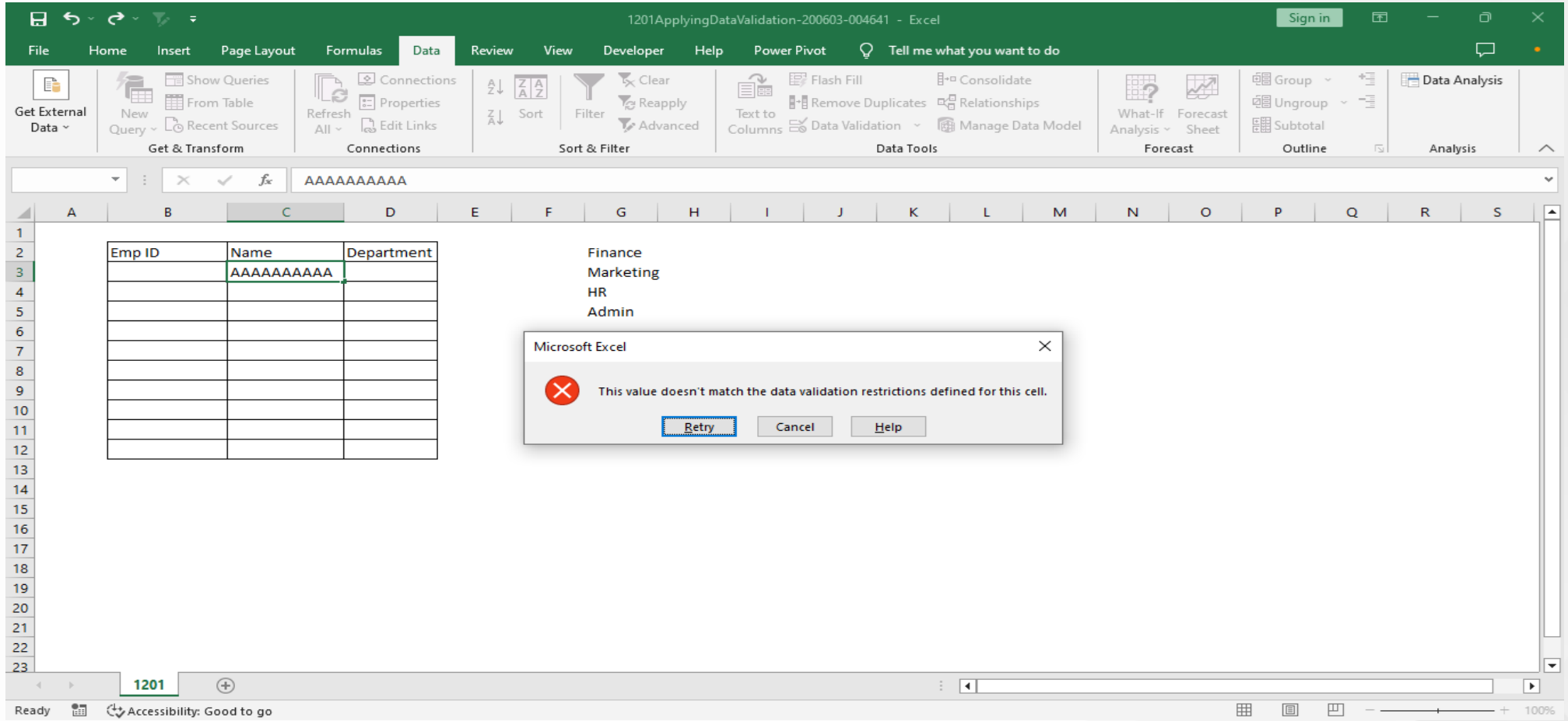
Data Validation

We apply data validation on name column.



Data Validation

We enter the wrong data in the name column.

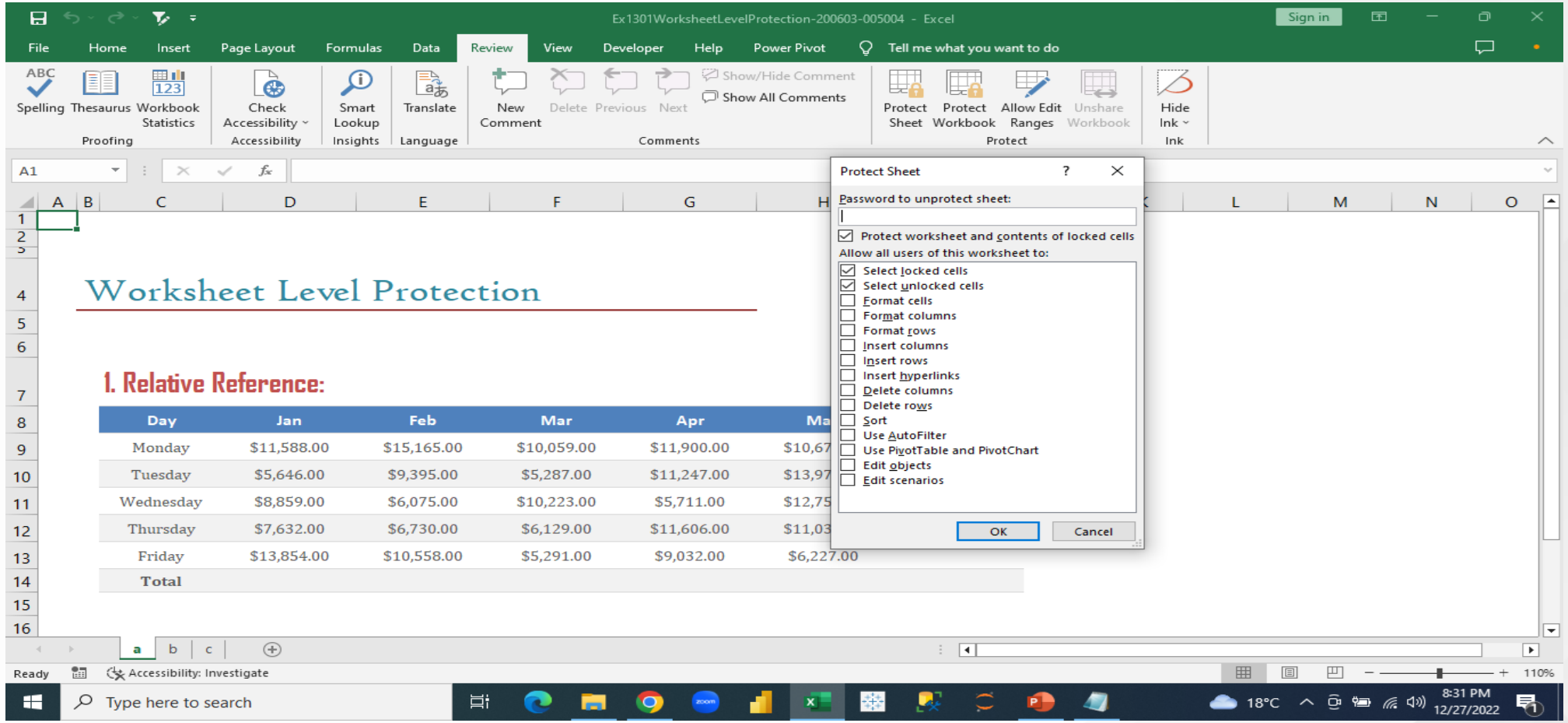


Data Security

- Data in worksheets can be protected, for instance, to prevent accidental erasure or modification of key values or complex formulas, or even to prevent users from entering data anywhere else in the worksheet or workbook other than specific input cells.
- Protection is most often applied to worksheets that are used frequently or by multiple users, such as timesheets or expense reports.

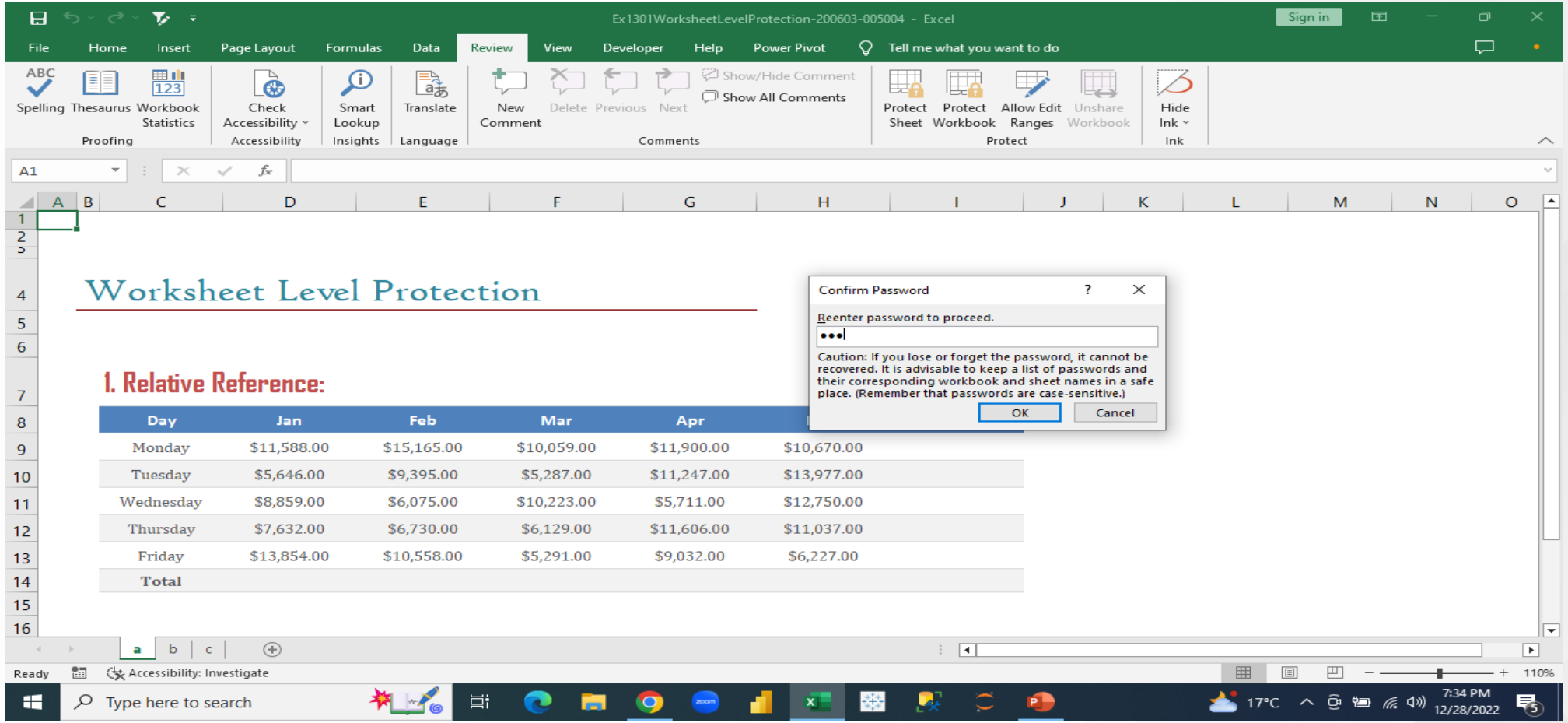
Worksheet Security

We will secure worksheets in a workbook.



Worksheet Security

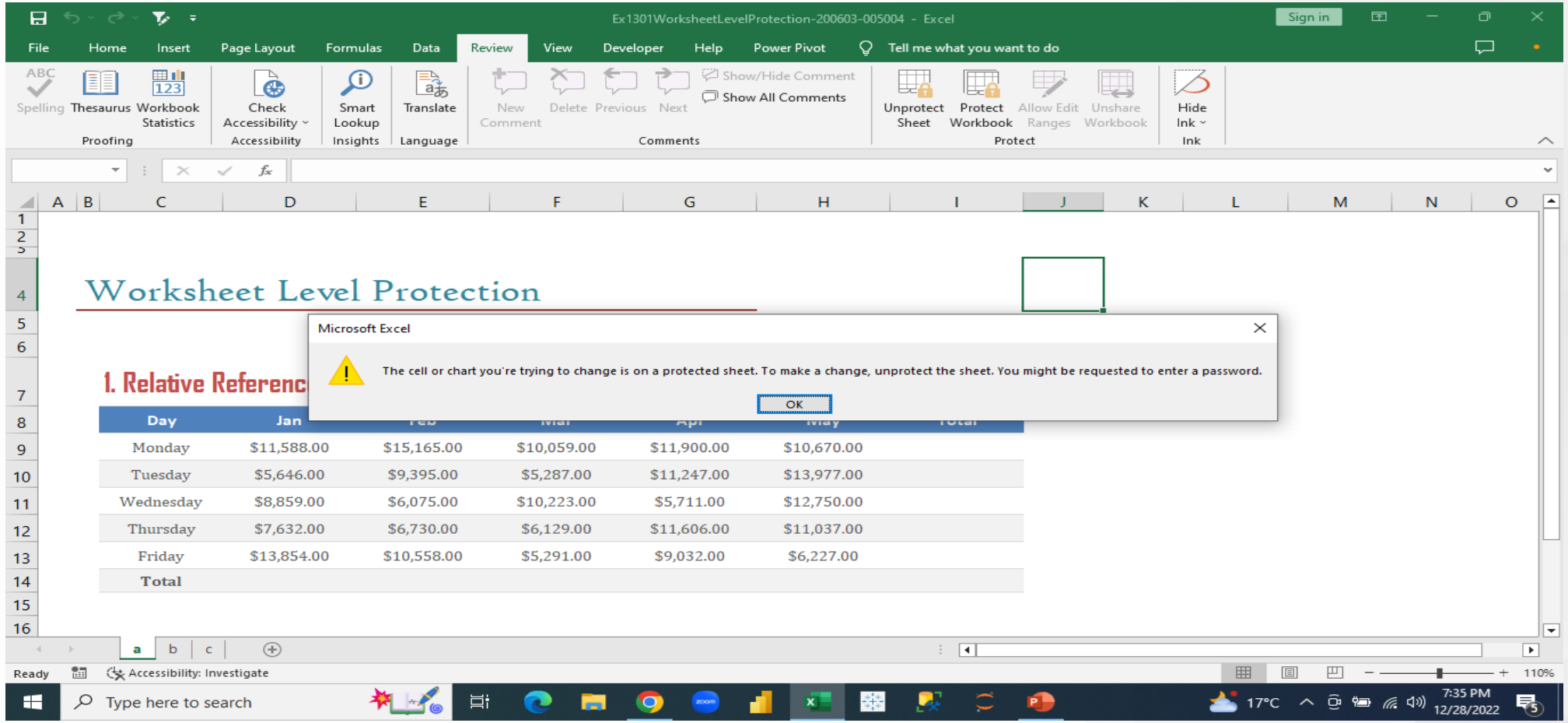
Ensure the protection of the sheet again.



Day	Jan	Feb	Mar	Apr	
Monday	$11,588.00	$15,165.00	$10,059.00	$11,900.00	$10,670.00
Tuesday	$5,646.00	$9,395.00	$5,287.00	$11,247.00	$13,977.00
Wednesday	$8,859.00	$6,075.00	$10,223.00	$5,711.00	$12,750.00
Thursday	$7,632.00	$6,730.00	$6,129.00	$11,606.00	$11,037.00
Friday	$13,854.00	$10,558.00	$5,291.00	$9,032.00	$6,227.00
Total					

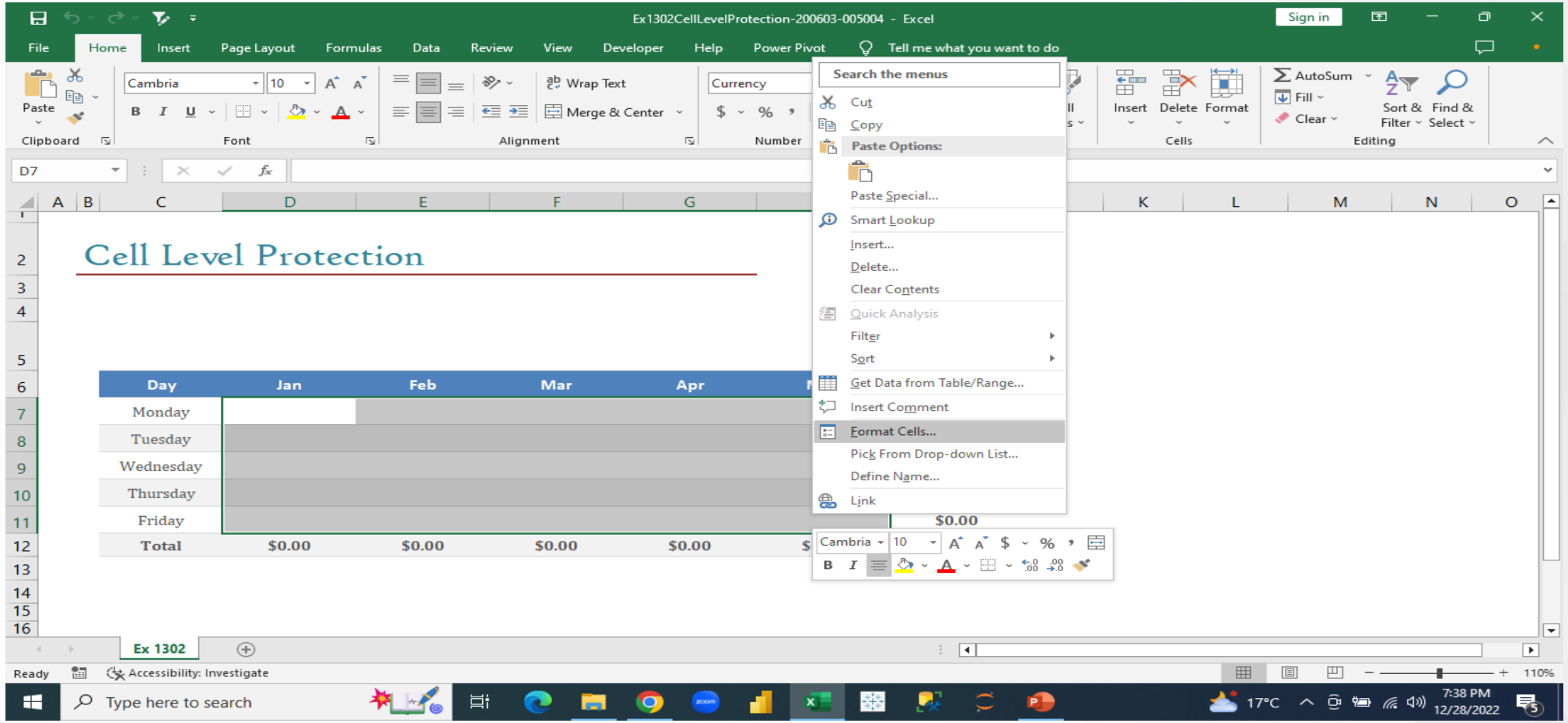
Worksheet Security

We try to enter any data and it prevents to enter the data anywhere in the sheet.



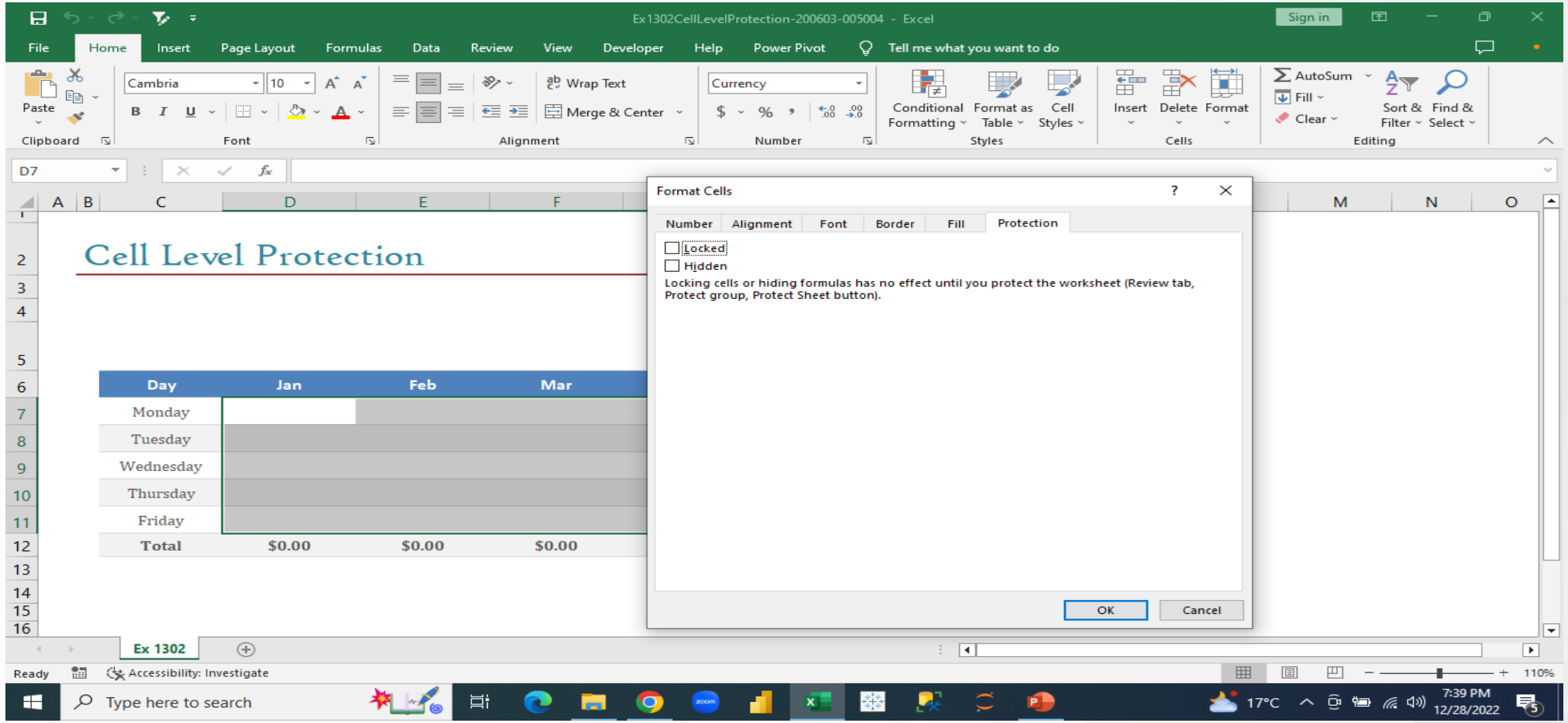
Cell Level Security

We will protect some cells in a worksheet.



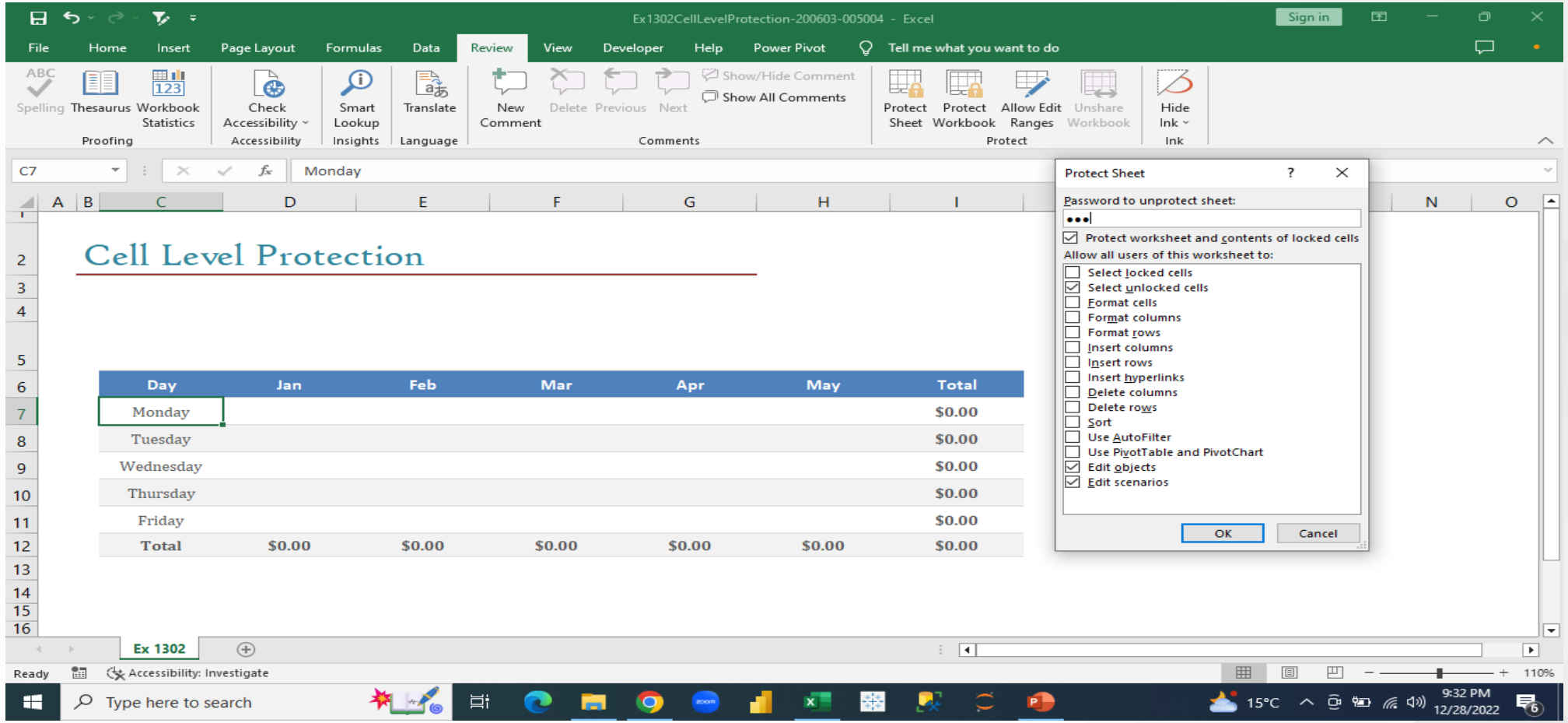
Cell Level Security

In the “**format cells**” dialog box, we go to the “**protection**” pane.



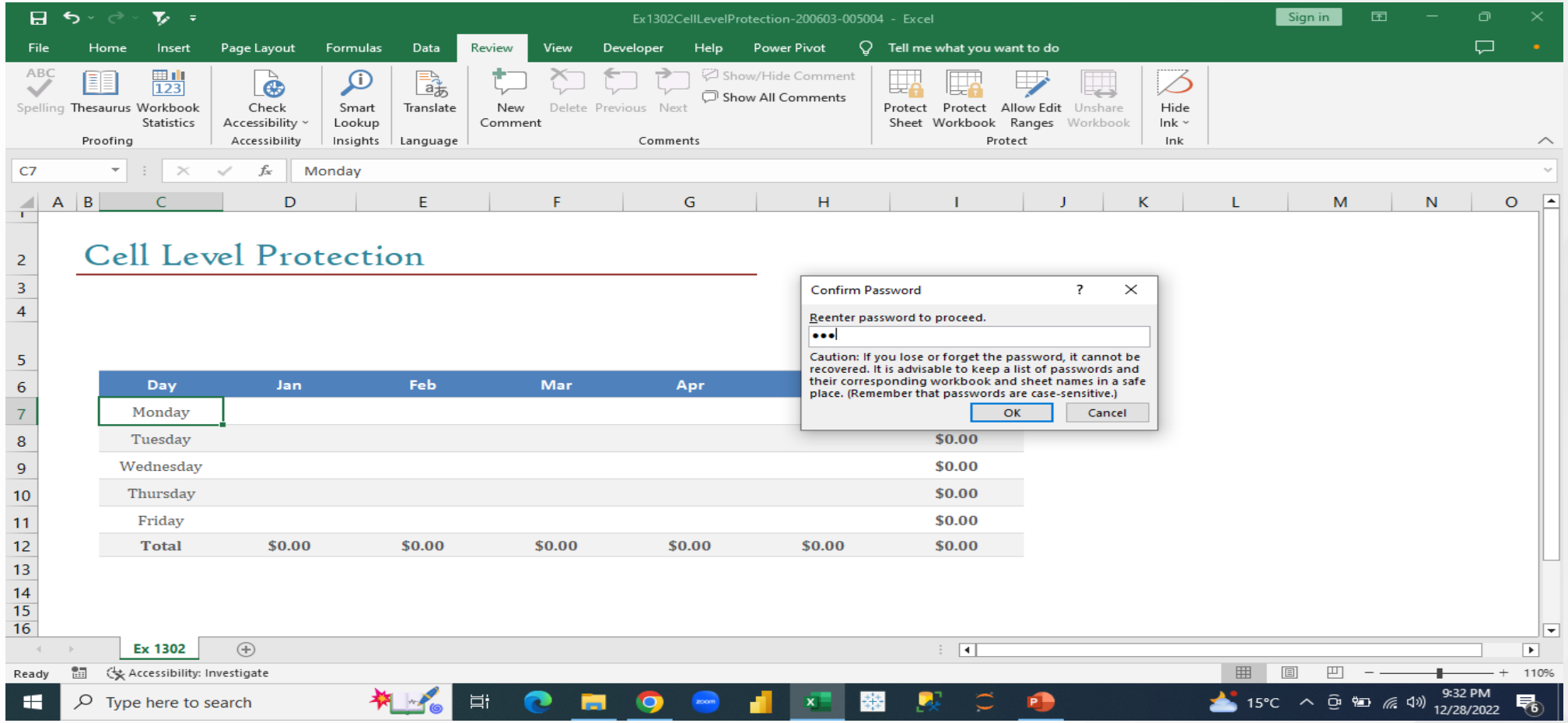
Cell Level Security

Review Menu -> Protect Sheet -> Dialog Box Appears



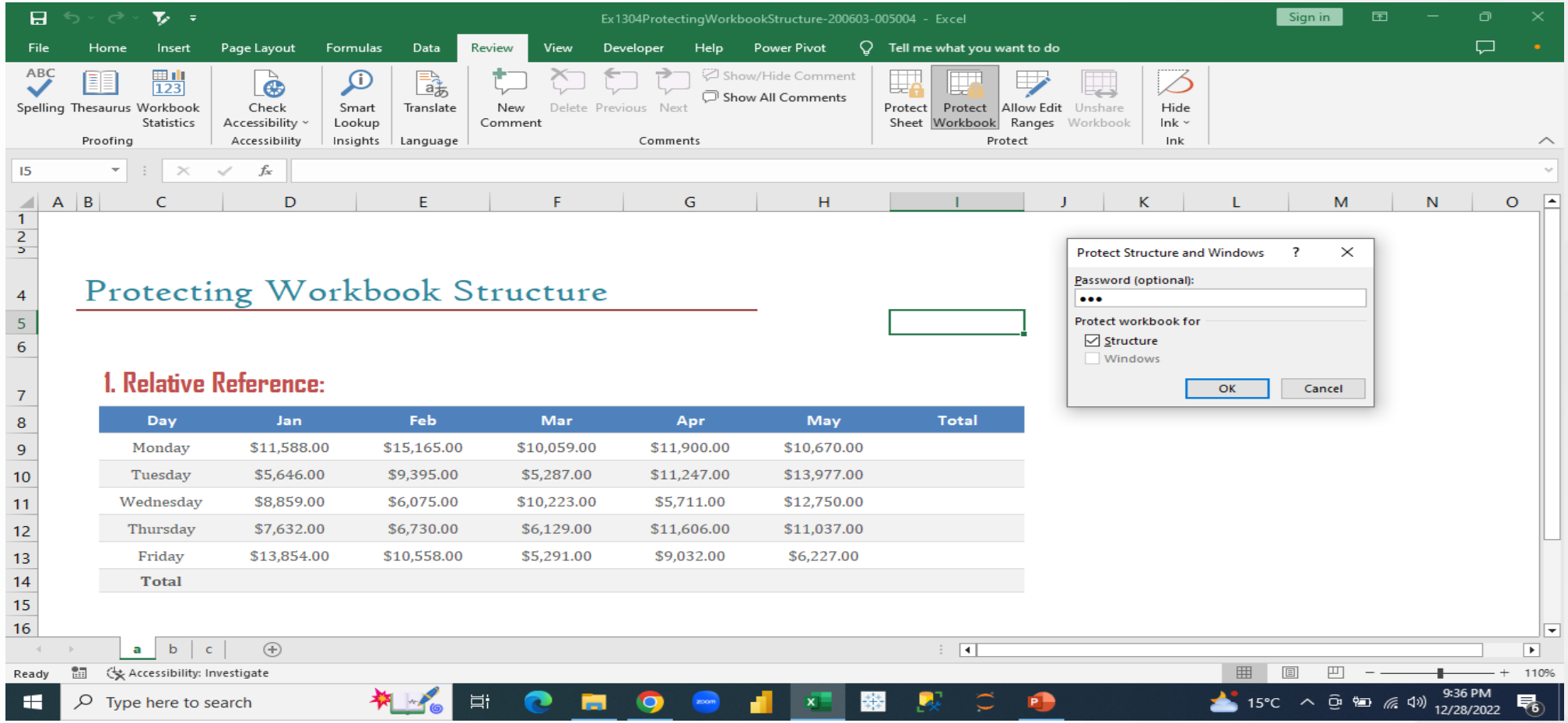
Cell Level Security

Re-enter the password and click “**OK.**”



Workbook Structure Level Security

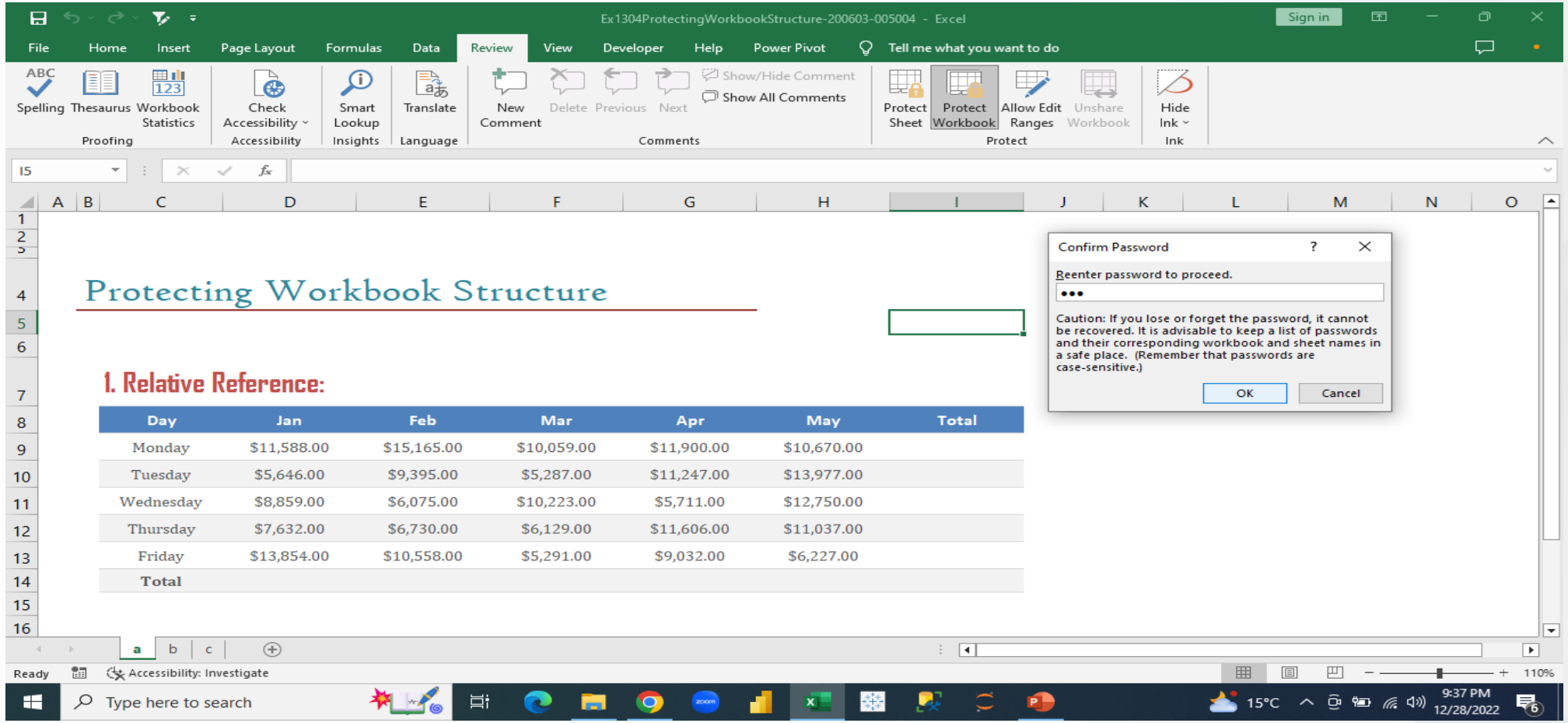
In the Review Menu -> Protect Workbook Option



Day	Jan	Feb	Mar	Apr	May	Total
Monday	$11,588.00	$15,165.00	$10,059.00	$11,900.00	$10,670.00	
Tuesday	$5,646.00	$9,395.00	$5,287.00	$11,247.00	$13,977.00	
Wednesday	$8,859.00	$6,075.00	$10,223.00	$5,711.00	$12,750.00	
Thursday	$7,632.00	$6,730.00	$6,129.00	$11,606.00	$11,037.00	
Friday	$13,854.00	$10,558.00	$5,291.00	$9,032.00	$6,227.00	
Total						

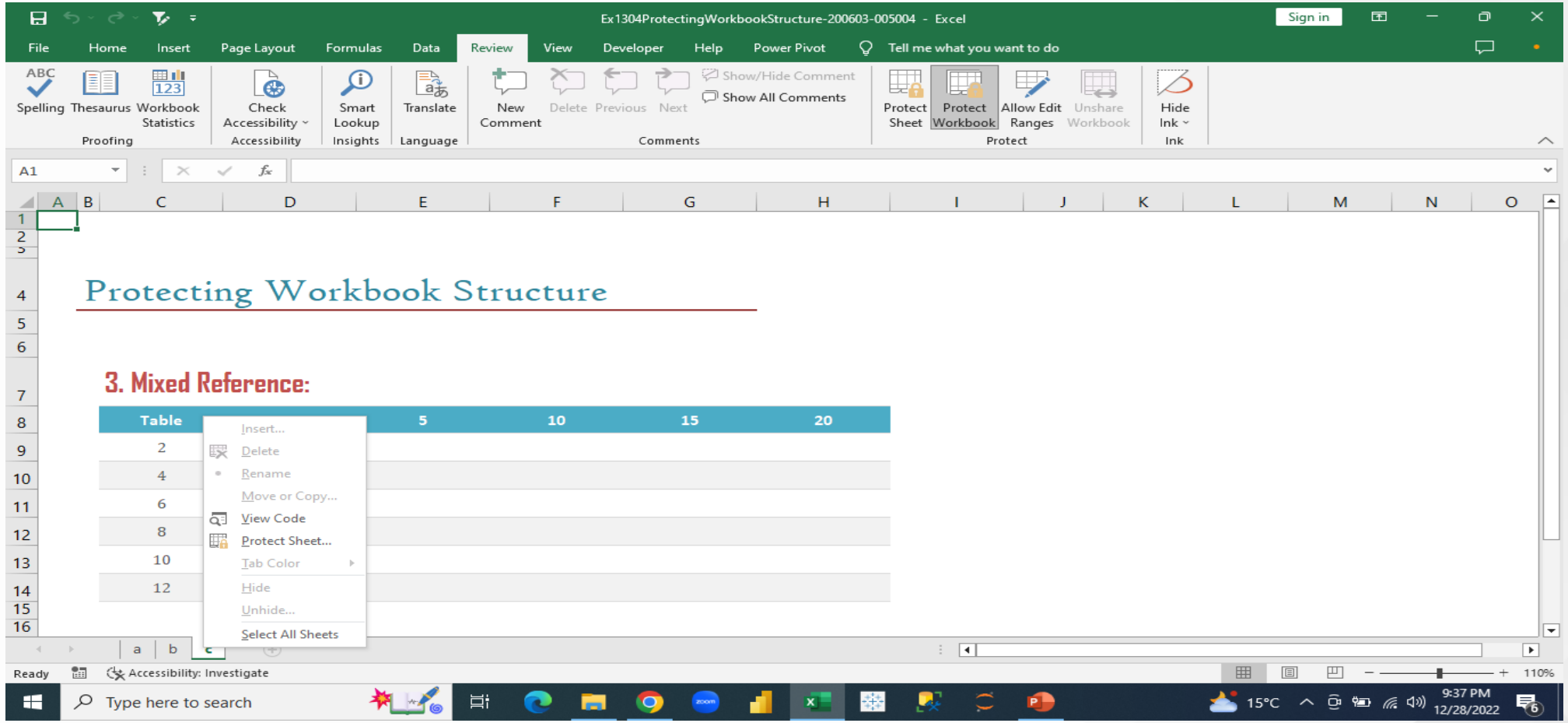
Workbook Structure Level Security

We re-enter the password and click “**OK.**”



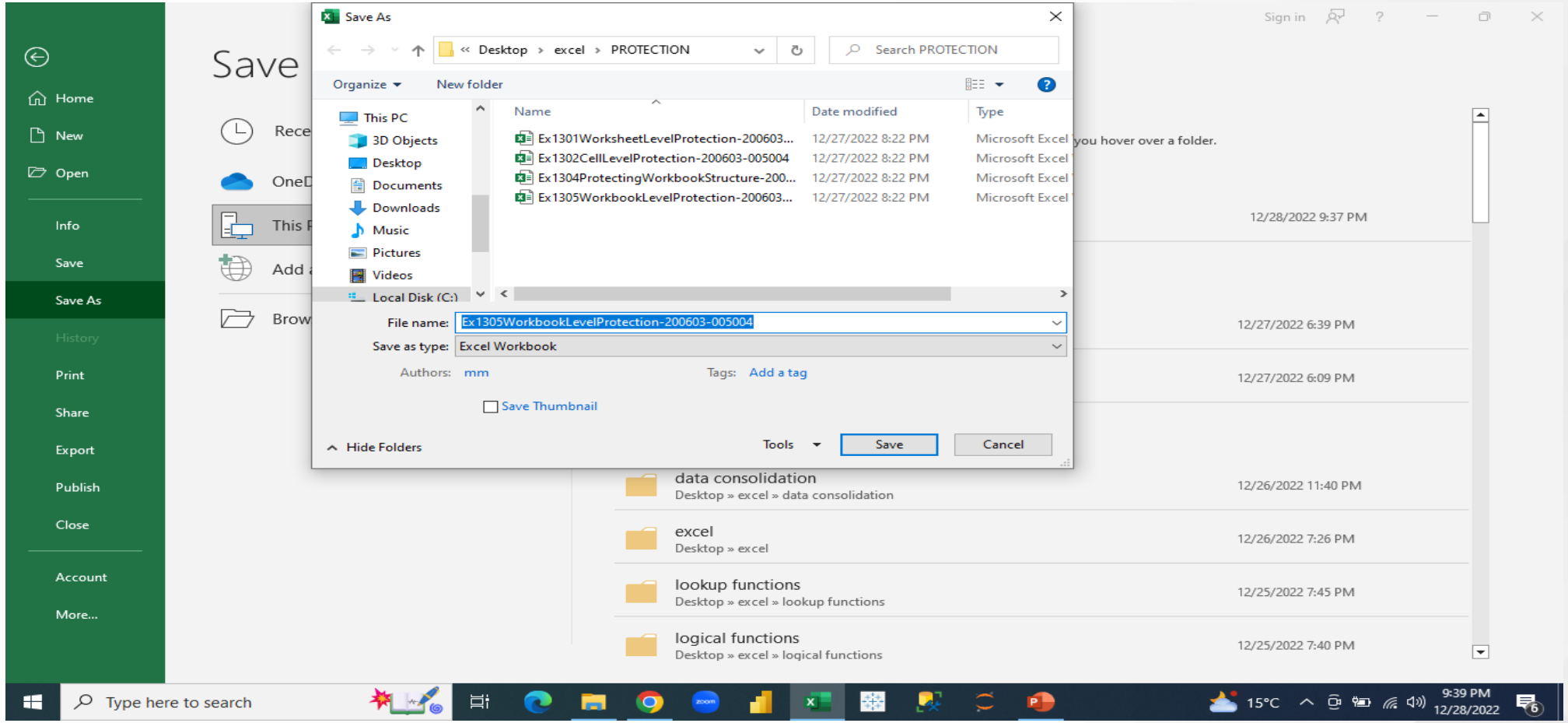
Workbook Structure Level Security

Right-click on any sheet name and we see the delete and insert options are deactivated.



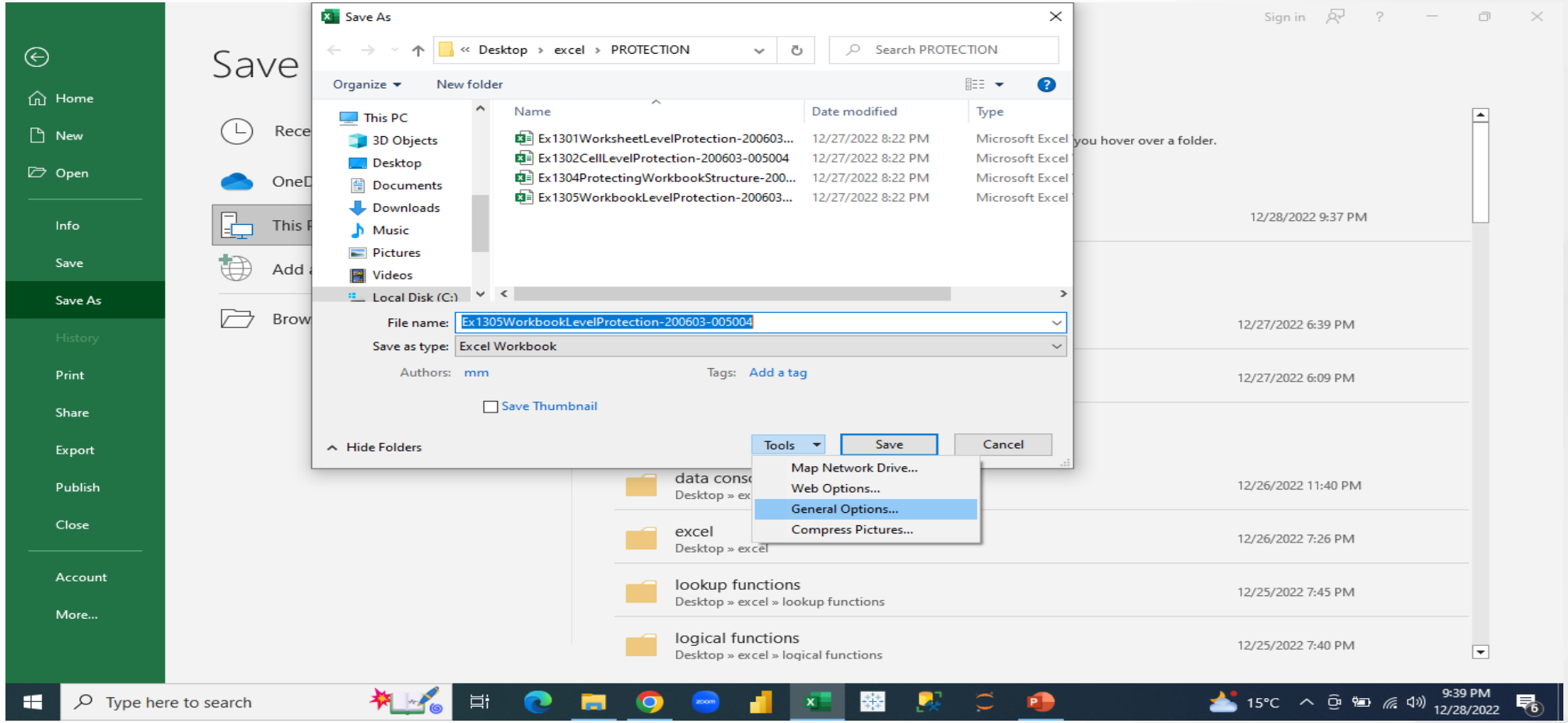
Workbook Level Security

In the workbook, we go to file menu and click “**Save as.**”



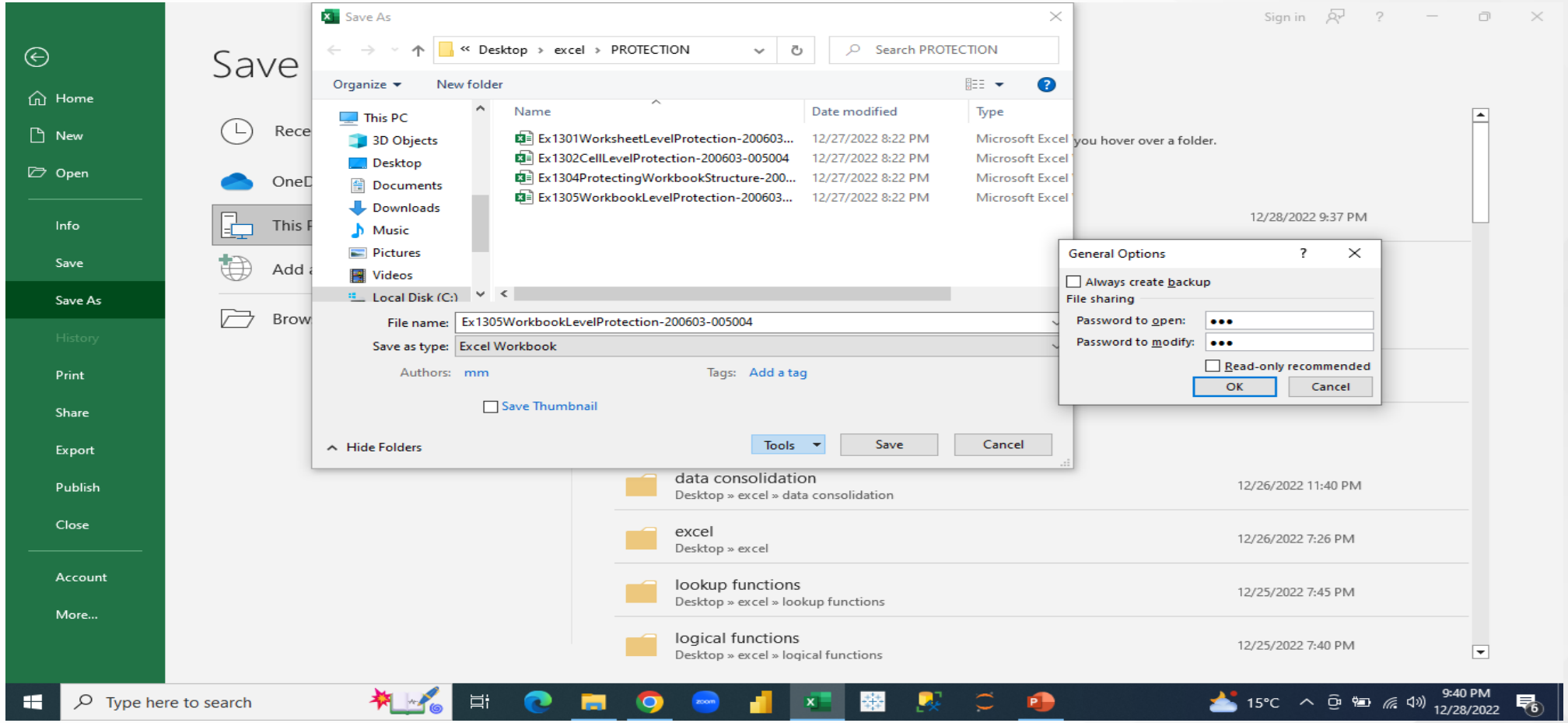
Workbook Level Security

Under the “**Tools**” option, we click on the drop-down menu and choose “**General Options**.”



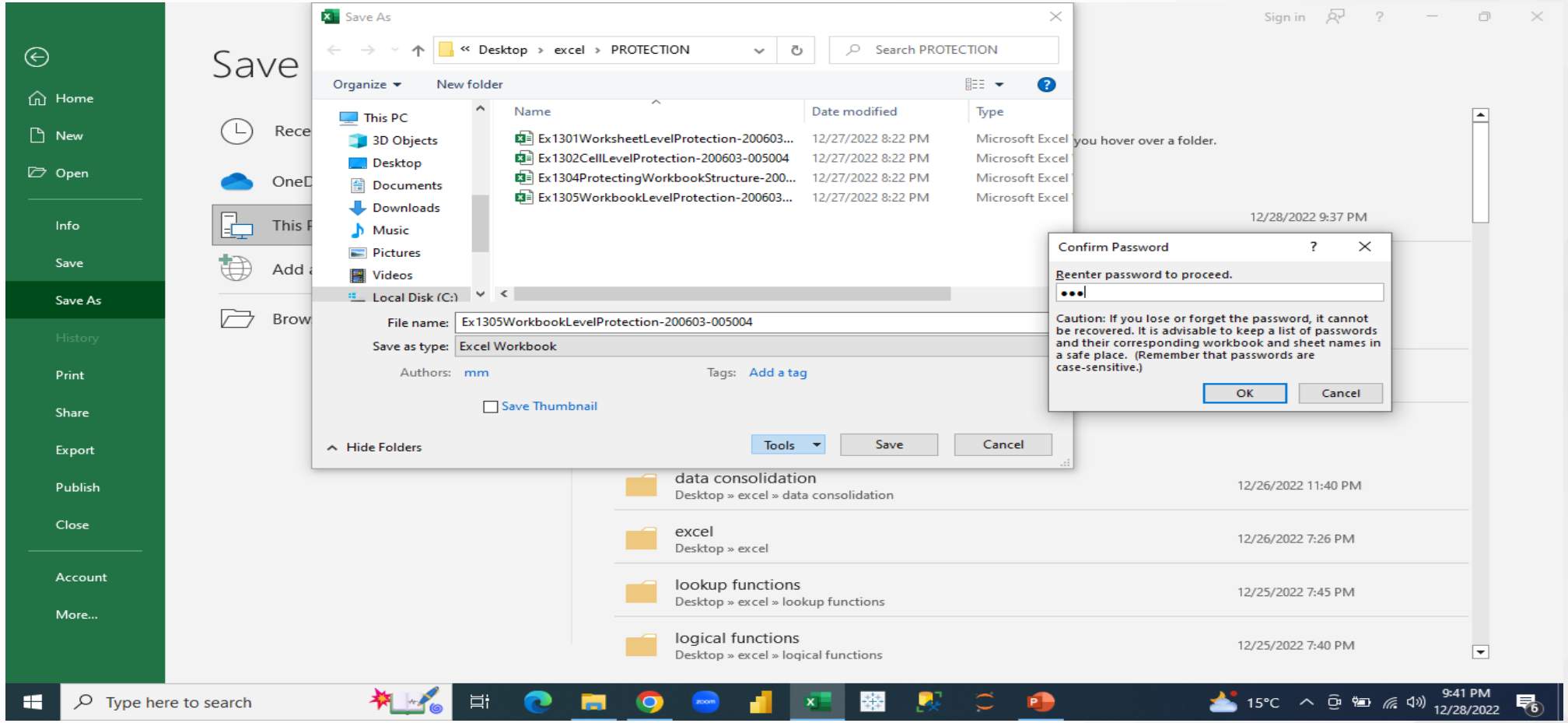
Workbook Level Security

We set password for opening and modifying workbook.



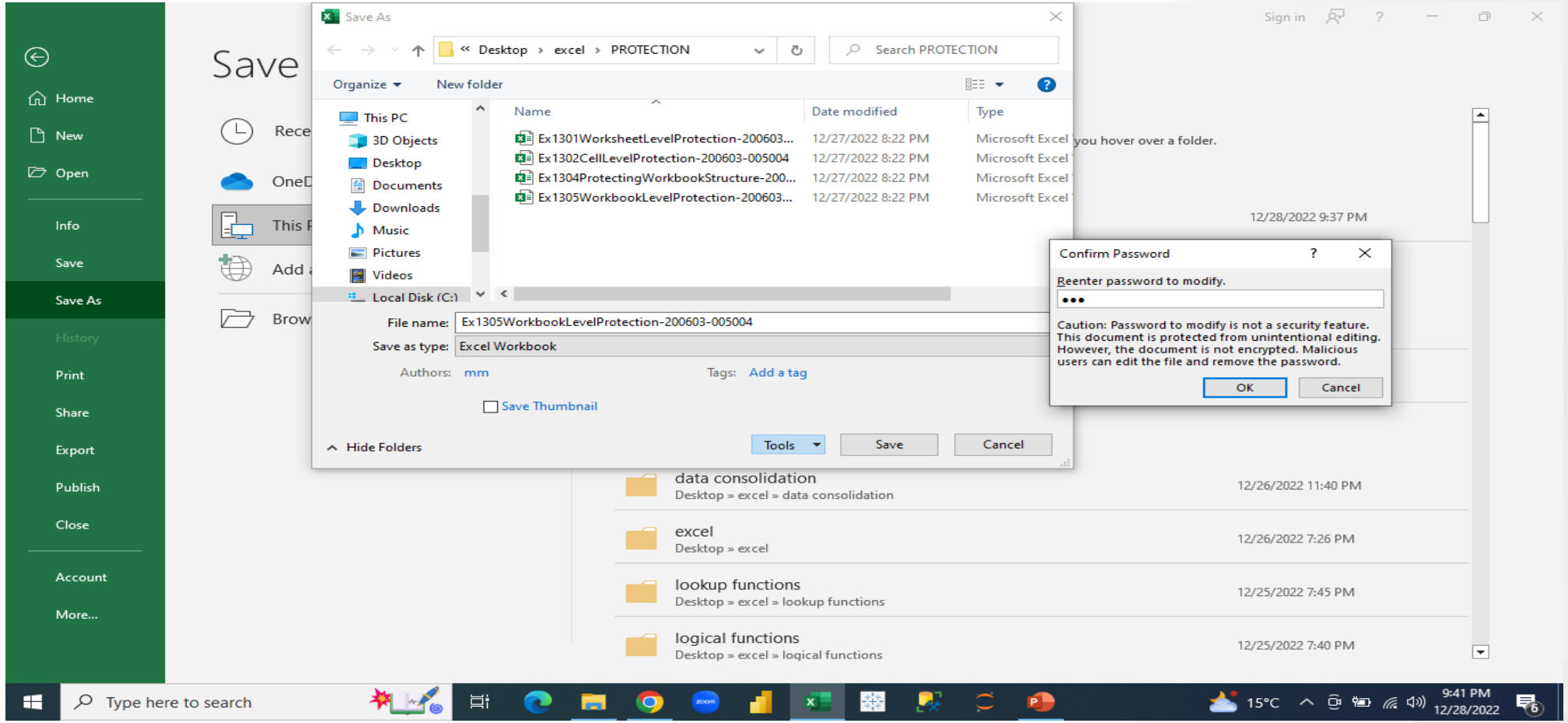
Workbook Level Security

We re-enter the passwords again for opening the workbook.



Workbook Level Security

We re-enter the passwords again for modifying the workbook.



Conclusion

Advanced Excel

In this session, we explored the various ways of leveraging the use of Excel special features to be used for different scenarios to make the work simpler and faster.

Thank You!

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