**Program 1:** Getting started with Excel: Creation of spread sheets, Insertion of rows and columns, Drag & Fill, use of Aggregate functions.

Creation of spread sheets

- A spreadsheet is a configuration of rows and columns. Rows are horizontal vectors while columns are vertical vectors.
- A spreadsheet is also known as a worksheet. It is used to record, Calculate and compare numerical or financial data.
- Spreadsheet application is a computer program that allows us to add and process data. We shall understand spreadsheet with the help of MS-Excel, which is one of the Microsoft Office Suite of software.
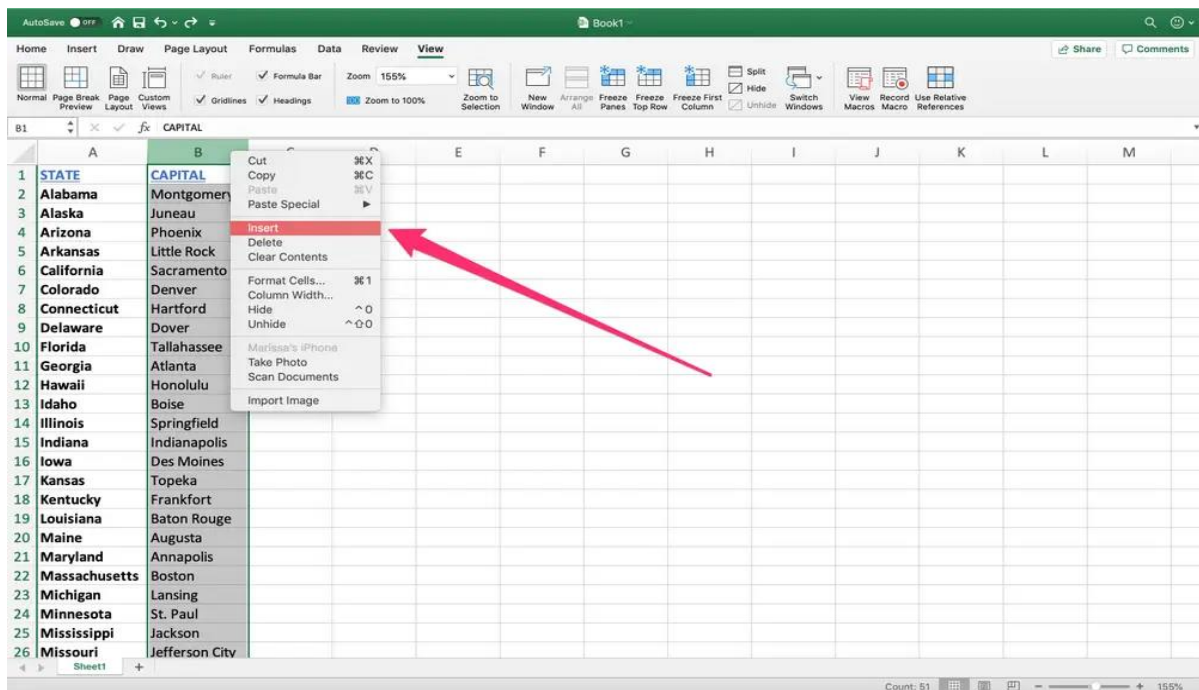
Step 1: Open MS Excel.

Step 2: Go to Menu and select New >> Click on the Blank workbook to create a simple worksheet.
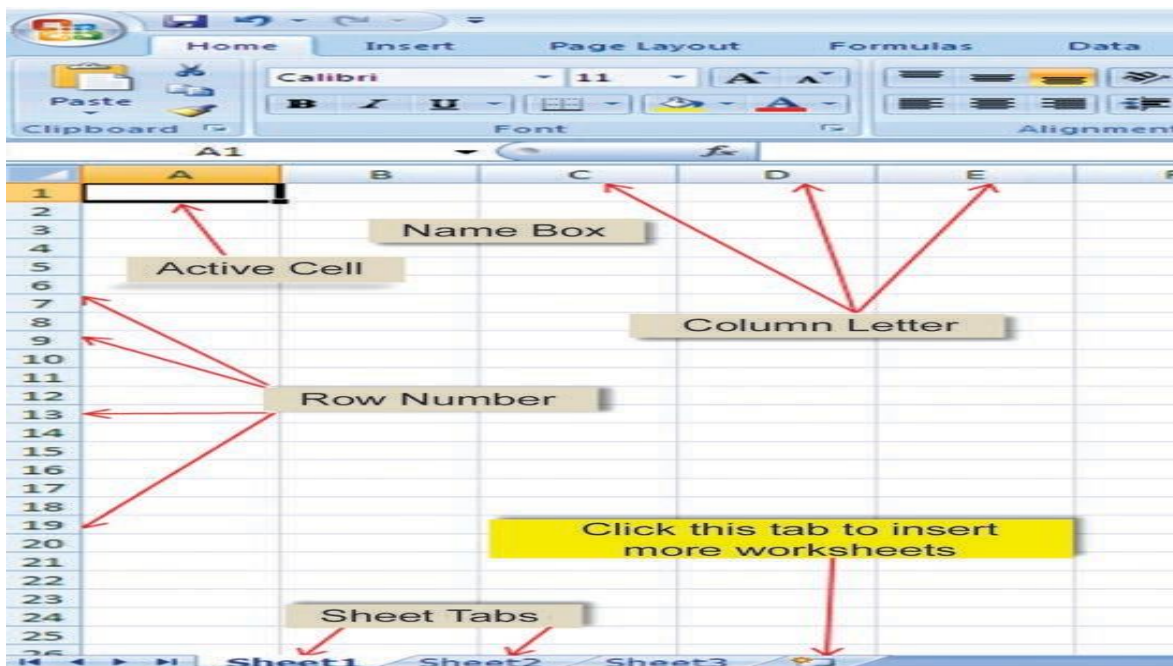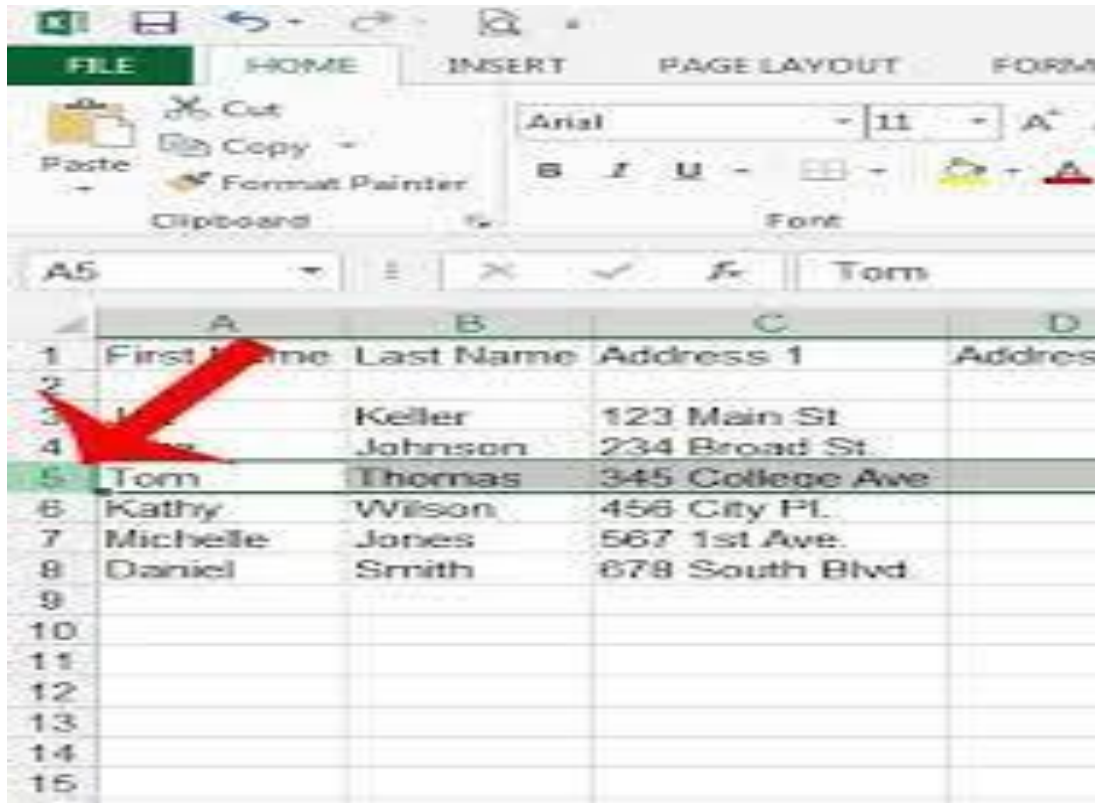
Step 3:

Insertion of columns

1) Select any cell within the column, then go to Home> Insert> Insert sheet Columns.
2) Alternatively, right –click the top of the column and then select insert.

Insertion of row

1) Select any cell within the row, then go to Home> Insert> Insert sheet rows.
2) Alternatively, right –click the top of the row number and then select insert.

Step 4:

Drag and Fill

We want to enter data in cell 1 to cell 10 [A1:A10] starting value from 10 and in step of 10 we will get 10, 20…..100 by using drag option.

1) Select the cells that contain the data that we want to fill [A1:A2] into adjacent cells [A3:A10].
2) Drag the fill handle across the cells that we want to fill.
3) To choose how we want to fill the selection, click auto fill options, and then click the option that we want.

Drag the pointer over the cells to fill.

Step5:

Use of Aggregate function.

The AGGREGATE function in Excel allows applying different aggregate functions like AVERAGE, SUM, PRODUCT, COUNT, MAX, or MIN to a list of data.

- An aggregate function performs a calculation on a set of values, and returns a single value.
- Aggregate functions ignore null values.

SL.NO	NAME	USN	DOB	SUB1	SUB2	SUB3	TOTAL	Percentage
1	JOHN	4RA17CS001	03/01/2000	55	61	78	194	64.7
2	JANE	4RA17CS002	04/01/2000	78	71	56	205	68.3
3	ALEX	4RA17CS003	05/01/2000	91	81	78	250	83.3
4	EMILY	4RA17CS004	06/01/2000	69	91	66	226	75.3
5	MICHAEL	4RA17CS005	07/01/2000	45	89	78	212	70.7
6	OLIVIA	4RA17CS006	08/01/2000	56	99	90	245	81.7
7	ETHAN	4RA17CS007	09/01/2000	78	89	34	201	67.0
8	SOPHIA	4RA17CS008	10/01/2000	85	45	67	197	65.7
9	LIAM	4RA17CS009	11/01/2000	96	55	58	209	69.7
10	AVA	4RA17CS010	12/01/2000	56	67	67	190	63.3
							MAX	83.3
							MIN	63.3

Program 2: Working with Data: Importing data, Data entry & Manipulation, Sorting & filtering

DATA: data is information that has been translated into a form that is efficient for movement or processing

There are at least three key concepts when starting a data project:

- Data requests should begin with a list of questions we want to answer.
- Data often is messy and needs to be cleaned.
- Data may have undocumented features

Step 1:

Importing data

One more method for data entry for any application we can use the following easiest method which will transfer data into required cells by copying or importing to Excel worksheet. These data files may be either in text files or non-text files format.

1) Create data file using Notepad program of MS Windows (to get Notepad screen on desktop; click on Start button -> All Programs -> Accessories -> Notepad).

2) A comma-separated data values in one line of this text file is a row in a spreadsheet and each entry, separated by a comma, is a column entry for that row.

3) In the first line provides names for the columns of the spreadsheet
.
4) In the next line onward start entering the data separate by comma as per the names given in first line.

5) It may possible that every data may not be of similar length but each data (even a blank data) should be separated by comma as per the names of the column.

6) Open a new Excel worksheet from the Office Button.

7) Select Data Tab on the Ribbon.

8) On Data tab; an option Get External Data having From Text option.

9) Click on "From Text" which will allow selecting a Notepad file saved as .cvm into Excel format directly and data will be copied into respective columns and rows.

10) Each and every data from Notepad file can be saved as an Excel data file.

empdata - Notepad

File Edit Format View Help

EC No.,Name,Designation,Salary,Date of Birth,Date of Joining
05805,Ramesh Bahel, GM,40000.00,24-11-1952,16-01-1981
04724,Kanu Patel, GM,46000.00,23-02-1953,19-03-1978
06104,Shashikant, AVP, 52000.00, 16-01-1953, 16-01-1983
05555,Kamini, Typist, 15000.00,16-04-1980,20-05-1999
15805,Ramesh Patel, Cashier,18000.00,24-11-1988,16-01-2008
24724,Kanu Sharma, Peon,6000.00,23-02-1980,19-03-2006
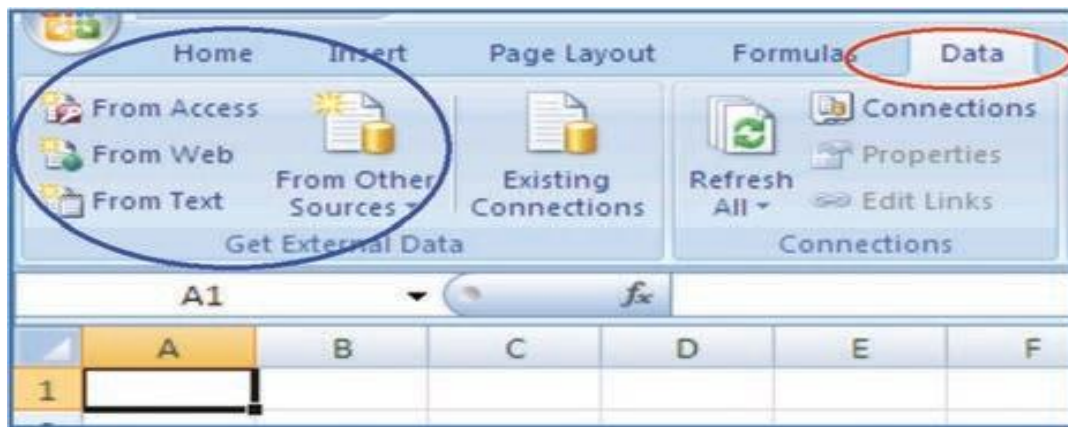
	A	B	C	D	E	F
1	EC No.	Name	Designation	Salary	Date of Birth	Date of Joining
2	5805	Ramesh Bahel	GM	40000	24-11-1952	16-01-1981
3	4724	Kanu Patel	GM	46000	23-02-1953	19-03-1978
4	6104	Shashikant	AVP	52000	16-01-1953	16-01-1983
5	5555	Kamini	Typist	15000	16-04-1980	20-05-1999
6	15805	Ramesh Patel	Cashier	18000	24-11-1988	16-01-2008
7	24724	Kanu Sharma	Peon	6000	23-02-1980	19-03-2006

Step 2:

Data Entry & Manipulation

- Data manipulation is the modification of information to make easier to read or more structured.
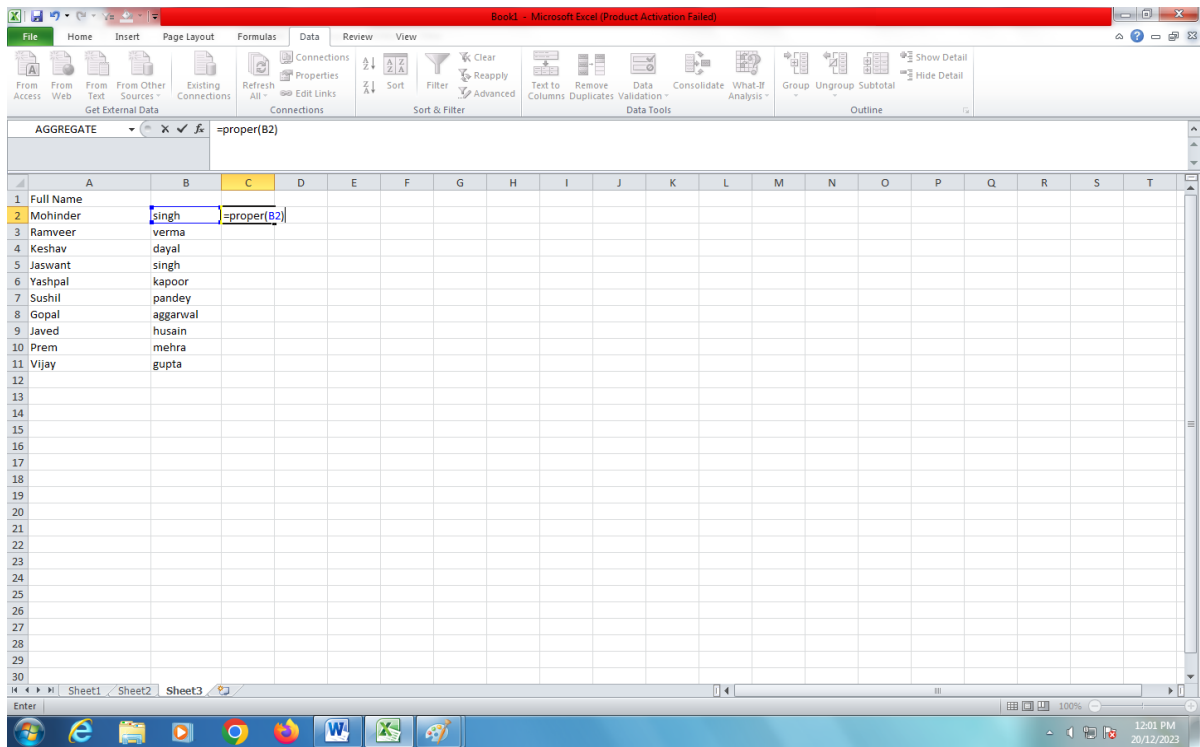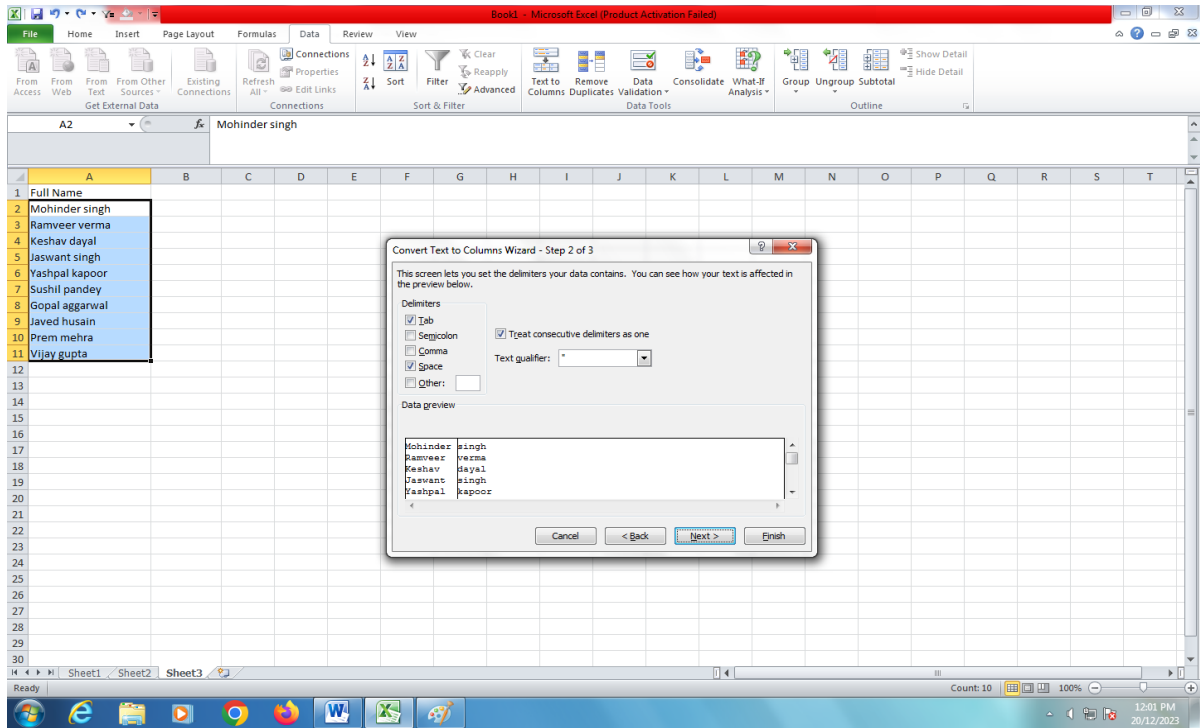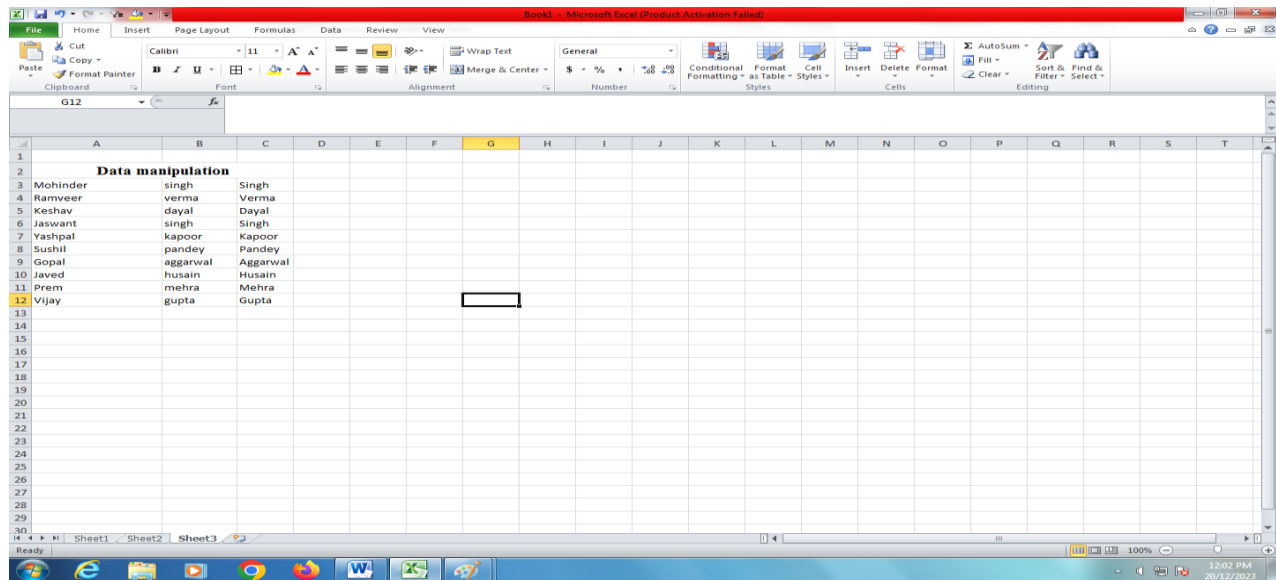
Step 3:

Sorting

1. Sort quickly and easily

1. Select a single cell in the column we want to sort.

2. On the **Data** tab, in the **Sort & Filter** group, click ⬚ to perform an ascending sort (from A to Z, or smallest number to largest).

3.Click ⬚ to perform a descending sort (from Z to A, or largest number to smallest).

Step 4:
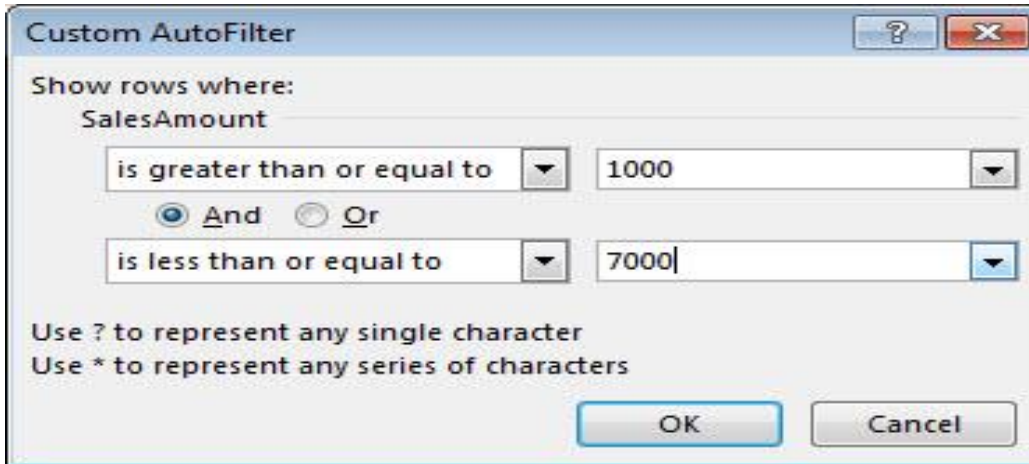
Filter

1. Filter a range of data

1. Select any cell within the range.
2. Select **Data** > **Filter**.

3. Select the column header arrow ⬚

4. Select **Text Filters** or **Number Filters**, and then select a comparison, like **Between**.
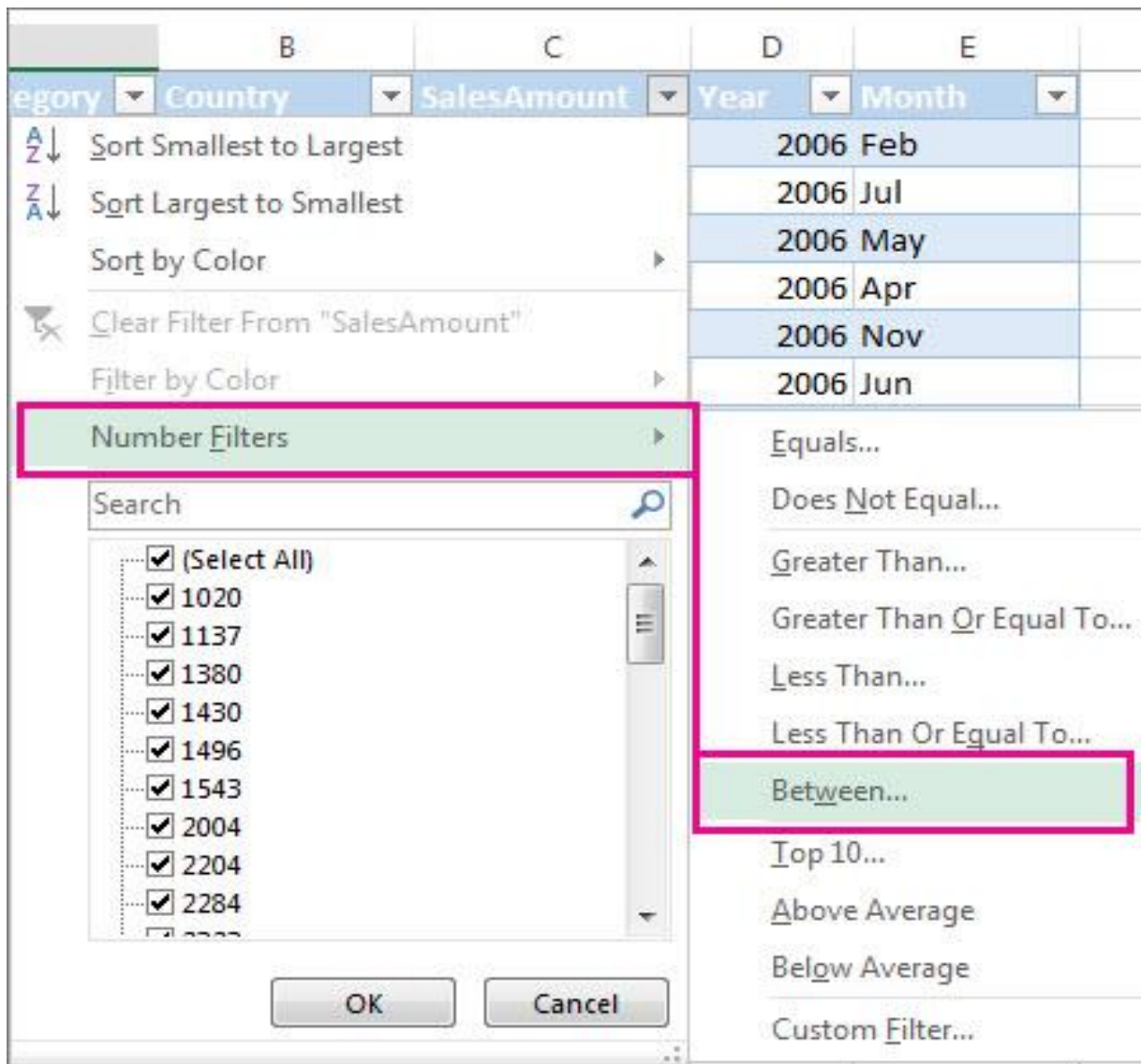
5.Enter the filter criteria and select **OK**.

2. Filter data in a table

When we create and format tables, filter controls are automatically added to the table headers.

1. Select the column header arrow [▼] for the column we want to filter.
2. Uncheck **(Select All)** and select the boxes we want to show.
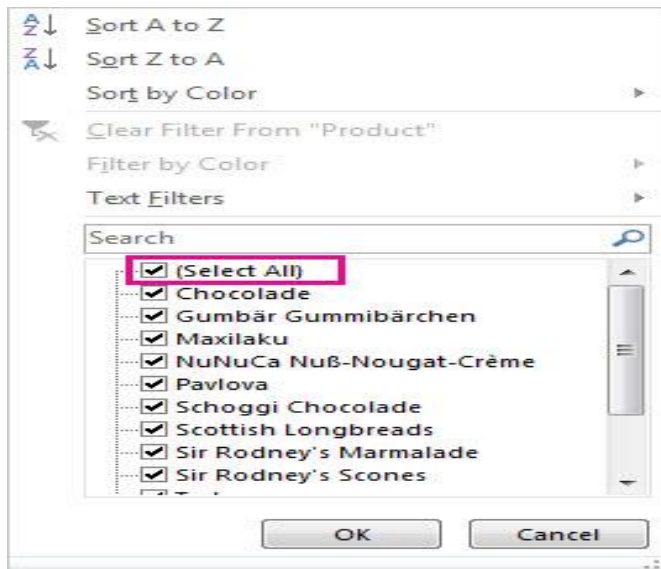
3. Click **OK**. The column header arrow changes to a **Filter** icon. Select this icon to change or clear the filter.

Program 3: Working with data: Data validation, Pivot table & Pivot Chart

Step 1:

Data Validation

- Data validation is a feature to define restrictions on type of data entered into a cell. We can configure data validation rules for cells data that will not allow users to enter invalid data, There may be warning messages when users tries to type wrong data in the cell. The messages also guide users to what input is expected for the cell, and instructions to correct any errors.
- Data validation is invaluable because it is necessary that data must be accurate and consistent.

1. Select the cell(s) you want to create a rule for.

2. Select **Data >Data Validation**.
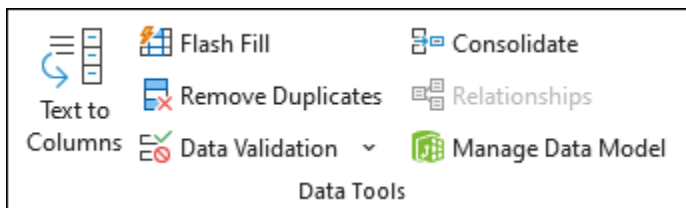
3. On the **Settings** tab, under **Allow**, select an option:

- **Whole Number** - to restrict the cell to accept only whole numbers.
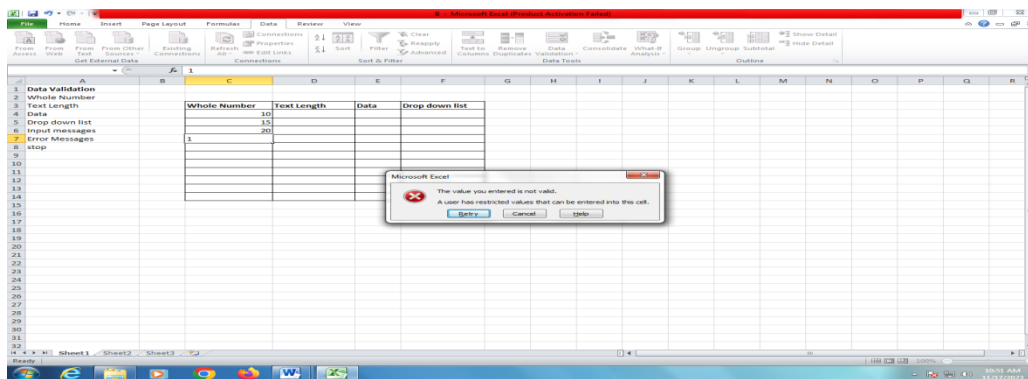
- **Text Length** - to restrict the length of the text.
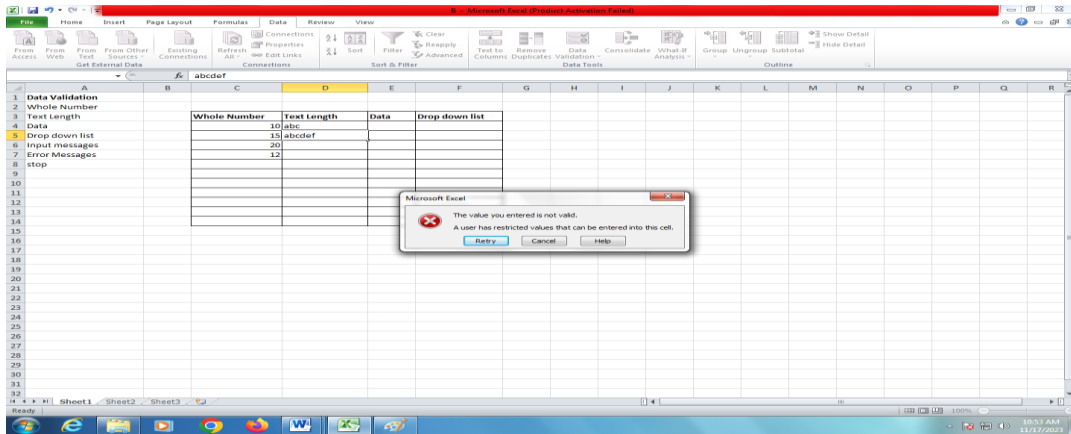
- **Date** - to restrict the cell to accept only date.
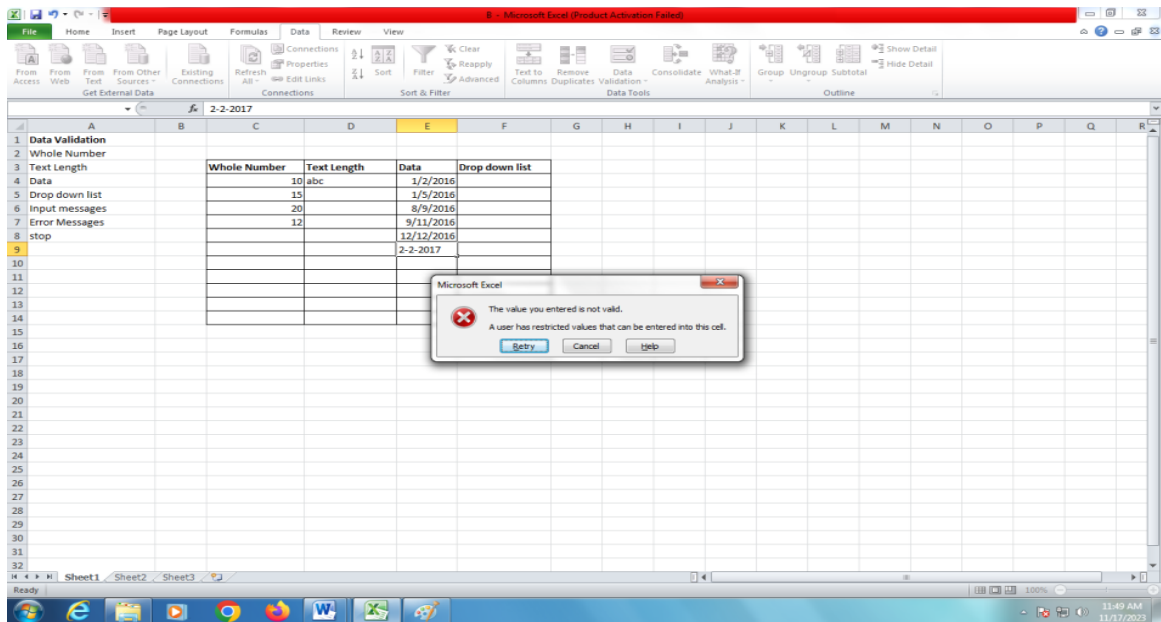
Drop down List: By this option pre-defined items names list is referred and restrict the users to select accordingly.
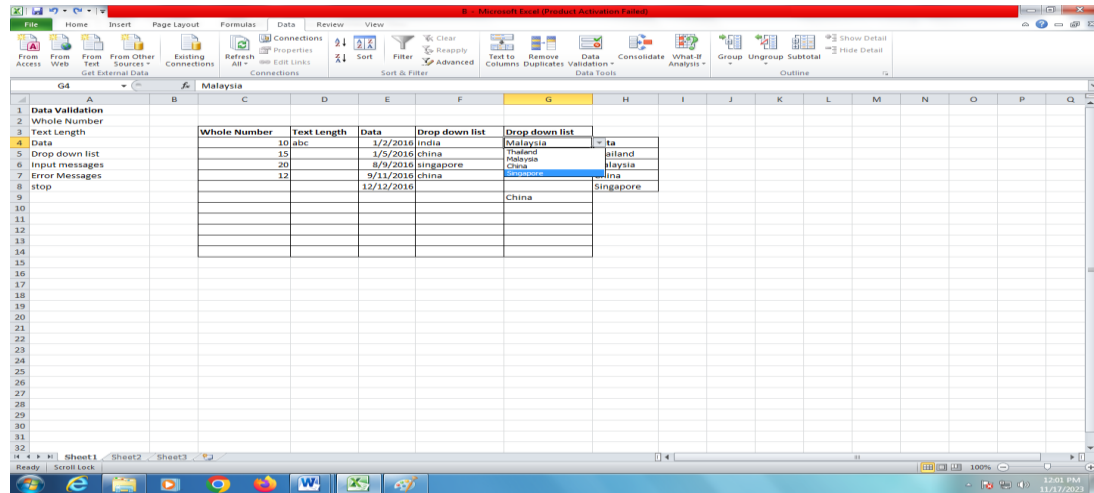
4. Under **Data**, select a condition.

5. Set the other required values based on what we chose for **Allow** and **Data**.

6. Select the **Input Message** tab and customize a message users will see when entering data.

7. Select the **Show input message when cell is selected** checkbox to display the message when the user selects or over the selected cell(s).
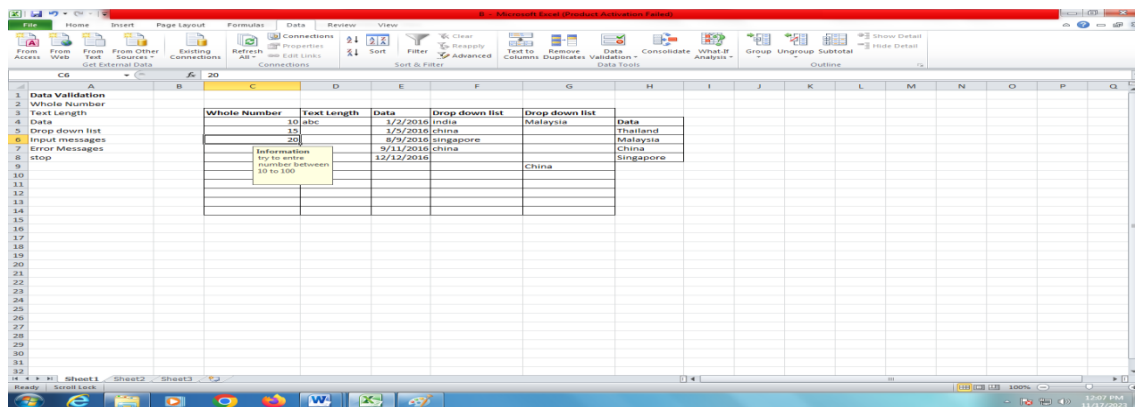
8. Select the **Error Alert** tab to customize the error message and to choose a **Style**.

9. Select **OK**.

Now, if the user tries to enter a value that is not valid, an **Error Alert** appears with your customized message.
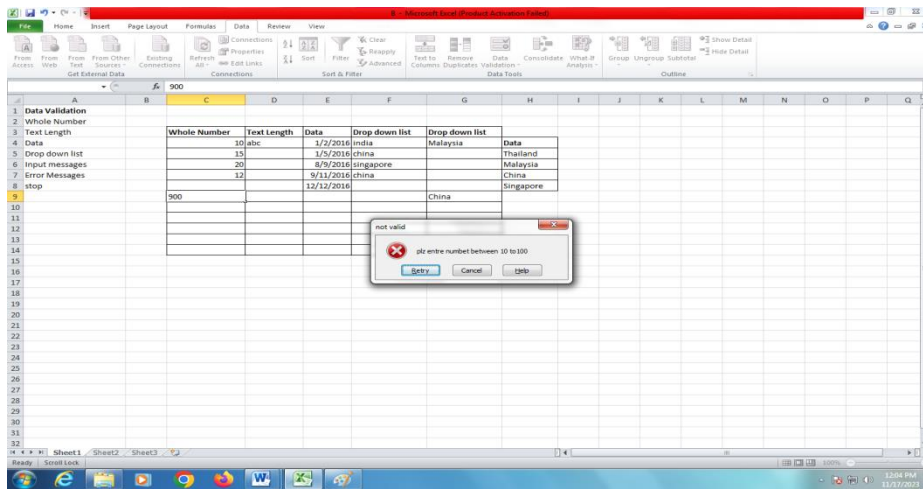
Step 2

Pivot Table

A PivotTable is a powerful tool to calculate, summarize, and analyze data. PivotTables work a little bit differently depending on what platform we are using to run Excel.

1. Select the cells you want to create a PivotTable from. ...
2. Select Insert > PivotTable.
3. This creates a PivotTable based on an existing table or range. ...
4. Choose where we want the PivotTable report to be placed. ...
5. Select OK.

Data Table

Date	Product	Region	Name	Units	Sales	COGS
7/19/2016	Chair	East	John	16	$200.00	$232.99
7/20/2016	Table	South	Rita	24	$250.00	$240.35
7/21/2016	Board	West	Neeta	30	$810.71	$435.64
7/22/2016	Marker	West	Joseph	19	$418.54	$190.05
7/23/2016	Laptop	East	Robert	38	$722.22	$304.00
7/24/2016	Projector	Midwest	Nick	20	$460.28	$220.63
7/25/2016	Switch	South	Rayan	23	$483.58	$213.57
7/26/2016	Lights	South	Harry	6	$114.53	$48.26
7/27/2016	Camera	Midwest	Luke	29	$609.12	$269.16
7/28/2016	PenDrive	South	Simon	57	$1,197.90	$527.98
7/29/2016	Chair	West	John	12	$228.89	$96.02
7/30/2016	Table	West	Rita	60	$1,380.07	$660.40
7/31/2016	Board	East	Neeta	54	$1,026.96	$432.75
8/1/2016	Marker	South	Joseph	40	$760.24	$320.20
8/2/2016	Laptop	West	Robert	18	$414.11	$198.71
8/3/2016	Projector	West	Nick	64	$1,728.81	$928.38

Pivot Table (first screenshot)

Product (All)

Sum of Sales	Column Labels	
Row Labels	Midwest	Grand Total
Luke	609.12	609.12
Nick	460.28	460.28
Grand Total	1069.4	1069.4

Pivot Table (second screenshot)

Product (All)

	Column Labels			
	Midwest		Total Sum of Sales	Total Sum of COGS
Row Labels	Sum of Sales	Sum of COGS		
Luke	609.12	269.16	609.12	269.16
Nick	460.28	220.63	460.28	220.63
Grand Total	1069.4	489.79	1069.4	489.79

Step 3

Pivot chart

1. Select a cell in our table.
2. Select Insert > PivotChart.
3. Select where we want the PivotChart to appear.
4. Select OK.
5. Select the fields to display in the menu.

	Product	Region	Name	Units	Sales	COGS
1	Product	Region	Name	Units	Sales	COGS
2	Chair	East	John	16	$200.00	$232.99
3	Table	South	Rita	24	$250.00	$240.35
4	Board	West	Neeta	30	$810.71	$435.64
5	Marker	West	Joseph	19	$418.54	$190.05
6	Laptop	East	Robert	38	$722.22	$304.00
7	Projector	Midwest	Nick	20	$460.28	$220.63
8	Switch	South	Rayan	23	$483.58	$213.57
9	Lights	South	Harry	6	$114.53	$48.26
10	Camera	Midwest	Luke	29	$609.12	$269.16
11	PenDrive	South	Simon	57	$1,197.90	$527.98
12	Chair	West	John	12	$228.89	$96.02
13	Table	West	Rita	60	$1,380.07	$660.40
14	Board	East	Neeta	54	$1,026.96	$432.75
15	Marker	South	Joseph	40	$760.24	$320.20
16	Laptop	West	Robert	18	$414.11	$198.71
17	Projector	West	Nick	64	$1,728.81	$928.38

Region (All)

Sum of Sales | Column Labels
Row Labels | Lights

6 Total | 12 Total | 16 Total | 29 Total | Grand Total

Harry | 114.53 | 114.53
609.12 | 609.12
609.12 | 609.12 | 115

Region
Sum of Sales
700
600
500
400
300
200
100
0
Harry   John   Luke

Units
Product
■ 6 - Lights
■ 12 - Chair
■ 16 - Chair
■ 29 - Camera

Name

PivotTable Field List

Choose fields to add to report:
☑ Product
☑ Region
☑ Name
☑ Units
☑ Sales
☐ COGS

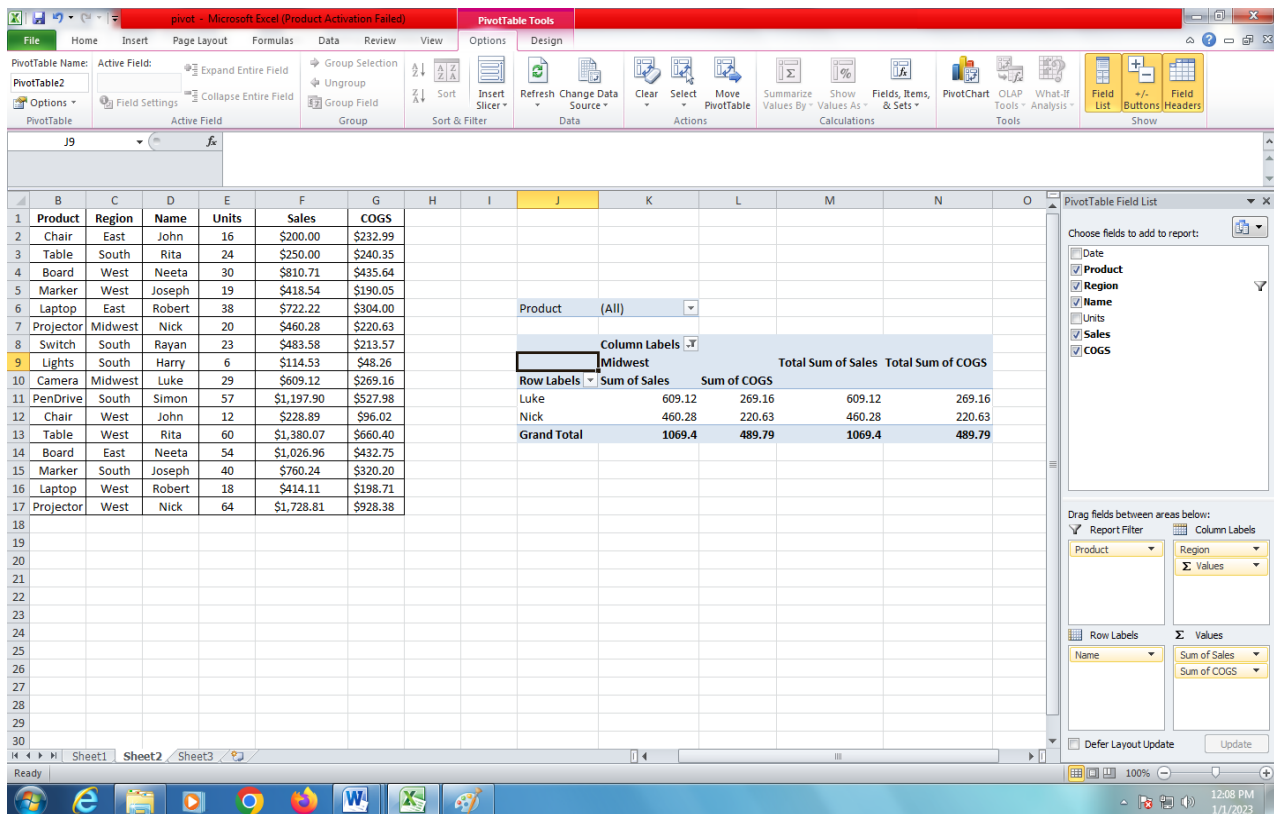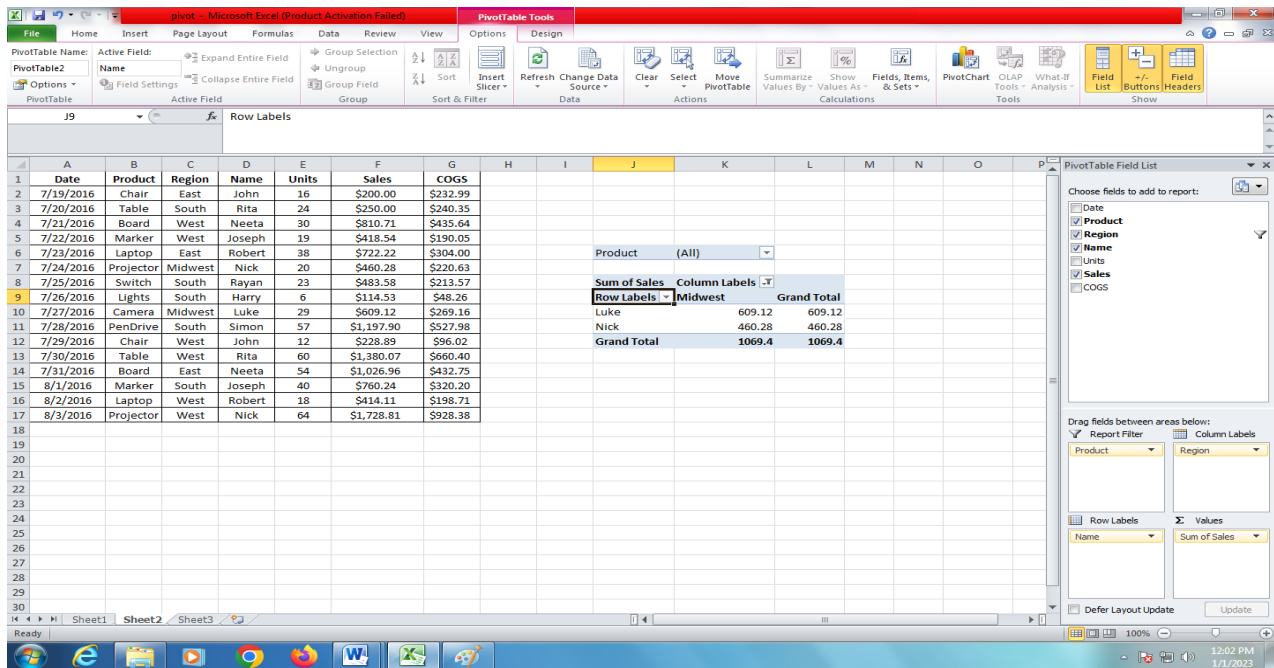Drag fields between areas below:
Report Filter | Legend Fields ...
Region | Units
| Product

Axis Fields (Ca... | Σ Values
Name | Sum of Sales

☐ Defer Layout Update | Update

Sheet1 / Sheet2 / Sheet3