1. What is the different type of transformation used in power query editor

   In this, upload data from varied sources be it the internet, any Excel file or SQL server, or any other source, generally the uploaded data is not in the desired format. So, in order to perform functions, we first need to transform the data by either deleting some unwanted rows and columns, by splitting the columns, by formatting, or by making certain required changes. Various options are:

   - Make First Row As the Header in Power BI
   - Change data types of a column
   - Format operation like to upper case, lower case, to remove white spaces(trim) etc
   - To replace values
   - To replace error
   - To split a column
   - Mering/combining of two columns
   - Pivot/unpivot of columns

2. What are the different views in Power BI

   There are mainly 3 views in Power BI. They are:
   - Report view – It is the default view
   - Table/Data view – To view data from data source
   - Model view – Model creation or relationship create are carried out here.

3. What are the different phases in Power BI

   - Data Collection and Preparation
   - Data modelling
   - Data visualization
   - Publishing and collaboration
   - Data refresh and scheduling
   - Security and compliance

4. Components of Power BI

   - Power Query
   - Power BI Desktop
   - Power BI Mobile
   - Power Pivot
   - Power View
   - Power Map
   - Power Q&A

5. Explain ETL in power BI

   ETL in Power BI stands for Extract Transform Load

   - Extract: Identify which data source should be extracted or processed. Main data sources are Excel file, CSV file, SQL server etc

- **Transform:** After data extraction, the data is loaded into the Power Query Editor for transformation and cleaning. This step is crucial to ensure the data is in the correct format and quality for analysis.
- **Load:** After transforming and shaping the data, it is loaded into the Power BI data model. Then we can create model according to that.

6. What are the different type of data source in Power BI

- Excel file
- Power BI semantic models
- Data Flows
- Dataverse
- SQL server
- Analysis services
- Text/CSV
- Blank Query

7. What is the difference between import mode and direct query include advantage and disadvantage

These are the two types of store modes.

- Import mode: In Power BI, import mode allows users to load data from various sources into the application's internal memory. This means that the data is stored within Power BI and can be manipulated as required using different visualizations and calculations.

Advantages of Import modes are:
- Faster
- Can pass datasets with limits
- It allows offline access to reports.

- Direct Query mode: It is a online connectivity mode. Here table view is not shown here. Here we can connect large storage tables.

8. What is fact and dimension table explain with example

Fact table: It contains data (often transactional) that you want to analyse.
- It contains measures and is used for analysis and decision making.
- Numeric and textual format
- A primary key for each dimension which is acts as a foreign key in the dimension table
- No hierarchy
- Less attributes
- More records
- Grows vertically
- Fewer fact tables in the data model
- Records added very frequently

Dimension table: It accompanies the fact table and stores information that describe records in the fact table

- It contains information about a business and its process
- Textual format
- A foreign key associated with the primary key of the fact table
- Contains a hierarchy
- More attributes
- Less records
- Grows horizontally
- More dimension table in data model
- Records not added frequently
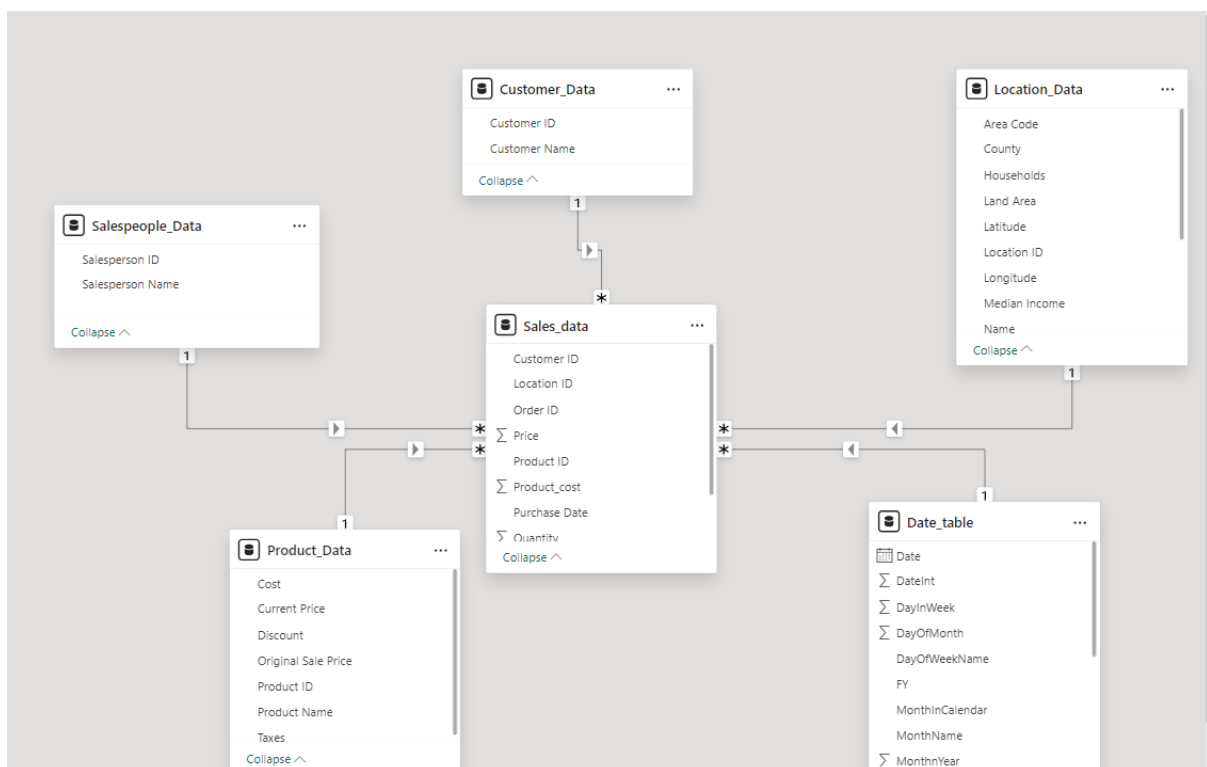


Here sales_data is the fact table and rest of them are dimension table. We can retrieve values according to the keys such as foreign key and primary keys.
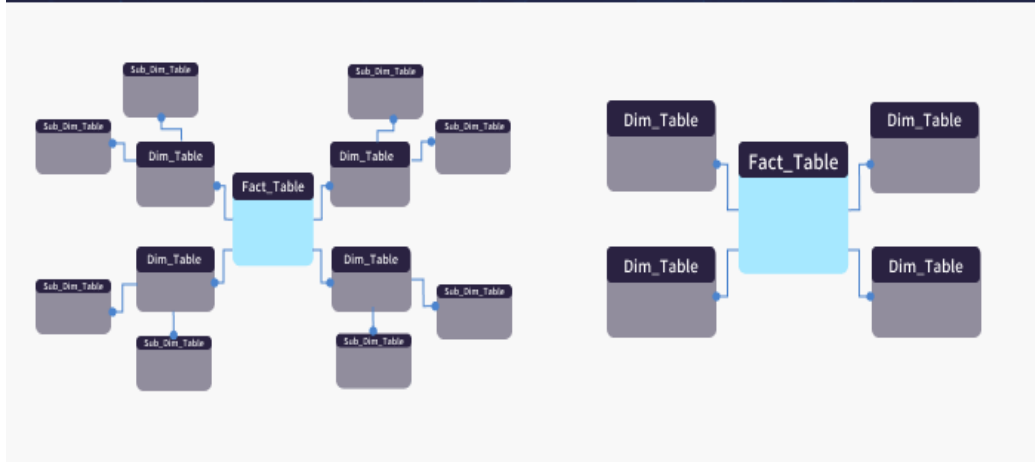
9. Difference between star schema and snowflake schema data modelling , Draw diagram

Data modelling is used to load multiple tables from a excel. Two types of data modelling. They are:
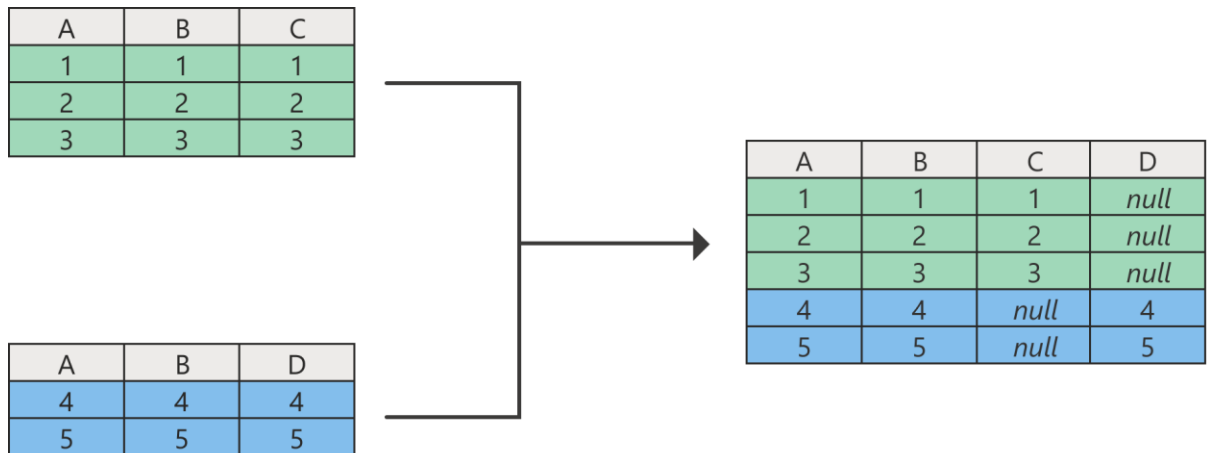
1. Star Schema
2. Snow flake schema

Star Schema:  A star schema is a database schema used to store data in a star format. This schema consists of a central table, called the "fact table," and a number of directly connected other tables, called "dimension tables." The fact table contains information about metrics or measures, while the dimension tables contain information about descriptive attributes. The star schema is very simple and easy to understand, making it ideal for cloud data warehousing and business intelligence applications.

Snow flake Schema: A snowflake schema is a type of database schema that is used to store data in a more complex format than the star schema. The snowflake schema consists of a central table, which is called the "fact table," and a number of other tables, which are called "dimension tables." As with other schemas, the fact table contains information about events or facts, while the dimension tables contain information about the dimensions of those events or facts.

In star schema:

- Foreign Key: Less
- Normalization: Less
- Query Performance: High
- Duplicates: High
    10. What is merge and append queries in power query editor explain with example

| A | B | C |
|---|---|---|
| 1 | 1 | 1 |
| 2 | 2 | 2 |
| 3 | 3 | 3 |

| A | B | C | D |
|---|---|---|---|
| 1 | 1 | 1 | null |
| 2 | 2 | 2 | null |
| 3 | 3 | 3 | null |
| 4 | 4 | null | 4 |
| 5 | 5 | null | 5 |

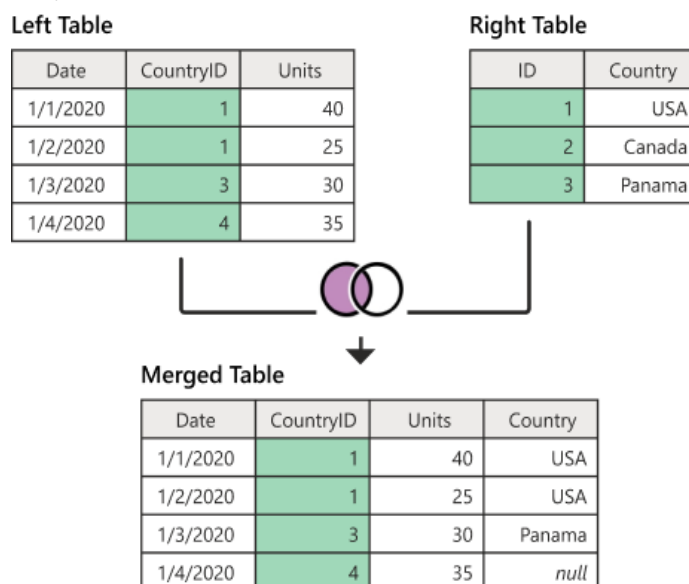| A | B | D |
|---|---|---|
| 4 | 4 | 4 |
| 5 | 5 | 5 |

The append operation creates a single table by adding the contents of one or more tables to another, and aggregates the column headers from the tables to create the schema for the new table.

We can append two tables using append queries. It available on home tab. Select the first table is primary table, Select home→ Append queries then select the table to append. It will show combining of two tables. We can rename the new table.

11. Explain different type of joints with example
There are mainly 6 joins. They are:

1. Left Join: Returns all rows from left table and matching rows from right table if case of null, no match values.
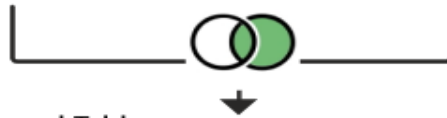
**Left Table**

| Date | CountryID | Units |
|---|---|---|
| 1/1/2020 | 1 | 40 |
| 1/2/2020 | 1 | 25 |
| 1/3/2020 | 3 | 30 |
| 1/4/2020 | 4 | 35 |

**Right Table**

| ID | Country |
|---|---|
| 1 | USA |
| 2 | Canada |
| 3 | Panama |

**Merged Table**

| Date | CountryID | Units | Country |
|---|---|---|---|
| 1/1/2020 | 1 | 40 | USA |
| 1/2/2020 | 1 | 25 | USA |
| 1/3/2020 | 3 | 30 | Panama |
| 1/4/2020 | 4 | 35 | null |

2. Right join: Return all from right table. Matching rows from left table. Null : In case of no match

**Left Table**

| Date | CountryID | Units |
|------|-----------|-------|
| 1/1/2020 | 1 | 40 |
| 1/2/2020 | 1 | 25 |
| 1/3/2020 | 3 | 30 |
| 1/4/2020 | 4 | 35 |

**Right Table**

| ID | Country |
|----|---------|
| 3 | Panama |



**Merged Table**

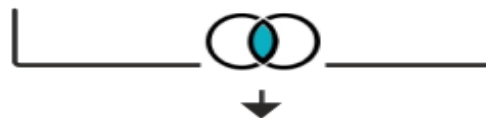| Date | CountryID | Units | Country |
|------|-----------|-------|---------|
| 1/3/2020 | 3 | 30 | Panama |

3. Inner Join: which brings in only matching rows from both the left and right tables.

**Left Table**

| Date | CountryID | Units |
|------|-----------|-------|
| 1/1/2020 | 1 | 40 |
| 1/2/2020 | 1 | 25 |
| 1/3/2020 | 3 | 30 |
| 1/4/2020 | 2 | 35 |

**Right Table**

| ID | Country |
|----|---------|
| 3 | Panama |
| 4 | Spain |



**Merged Table**

| Date | CountryID | Units | Country |
|------|-----------|-------|---------|
| 1/3/2020 | 3 | 30 | Panama |

4. Full outer join: which brings in all the rows from both the left and right tables.

**Left Table**

| Date | CountryID | Units |
|------|-----------|-------|
| 1/1/2020 | 1 | 40 |
| 1/2/2020 | 1 | 25 |
| 1/3/2020 | 3 | 30 |
| 1/4/2020 | 2 | 35 |

**Right Table**

| ID | Country |
|----|---------|
| 1 | USA |
| 2 | Canada |
| 3 | Panama |
| 4 | Spain |



**Merged Table**

| Date | CountryID | Units | Country |
|------|-----------|-------|---------|
| 1/1/2020 | 1 | 40 | USA |
| 1/2/2020 | 1 | 25 | USA |
| 1/4/2020 | 2 | 35 | Canada |
| 1/3/2020 | 3 | 30 | Panama |
| null | null | null | Spain |

5. Left anti join: which brings in only rows from the left table that don't have any matching rows from the right table.

**Left Table**

| Date | CountryID | Units |
|------|-----------|-------|
| 1/1/2020 | 1 | 40 |
| 1/2/2020 | 1 | 25 |
| 1/3/2020 | 3 | 30 |
| 1/4/2020 | 2 | 35 |

**Right Table**

| ID | Country |
|----|---------|
| 3 | Panama |
| 4 | Spain |

**Merged Table**

| Date | CountryID | Units | Country |
|------|-----------|-------|---------|
| 1/1/2020 | 1 | 40 | null |
| 1/2/2020 | 1 | 25 | null |
| 1/4/2020 | 2 | 35 | null |
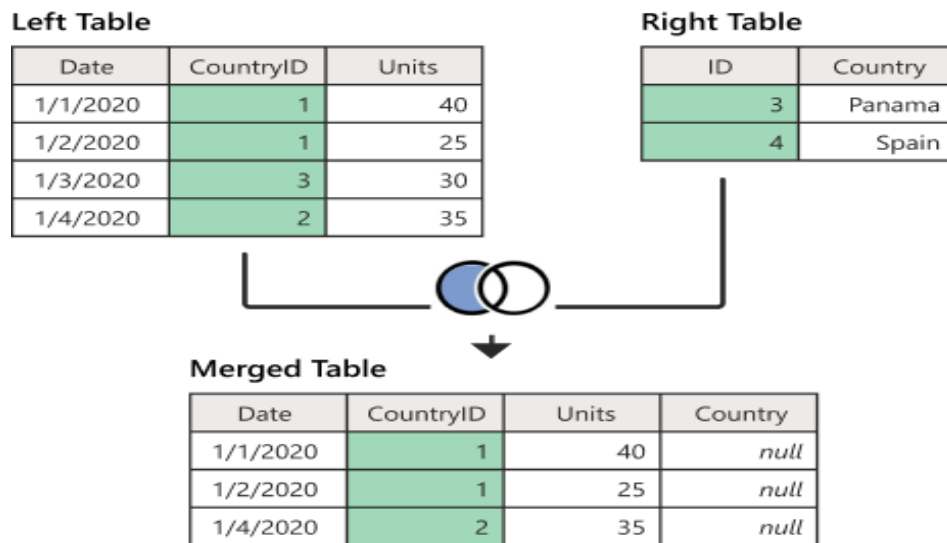
6. Right anti join: which brings in only rows from the right table that don't have any matching rows from the left table.

**Left Table**

| Date | CountryID | Units |
|------|-----------|-------|
| 1/1/2020 | 1 | 40 |
| 1/2/2020 | 1 | 25 |
| 1/3/2020 | 3 | 30 |
| 1/4/2020 | 2 | 35 |

**Right Table**

| ID | Country |
|----|---------|
| 3 | Panama |
| 4 | Spain |

**Merged Table**

| Date | CountryID | Units | Country |
|------|-----------|-------|---------|
| null | null | null | Spain |
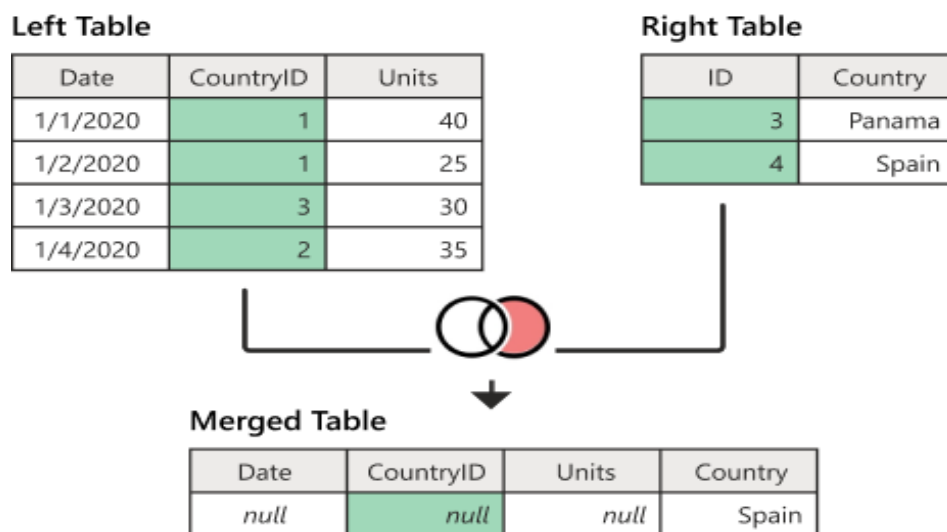
12. Explain filters in power BI with examples

Filters in Power BI sorts information and data based on a bunch of parameters. Users can pick and choose particular fields or values within fields to only see the information that pertains to them.
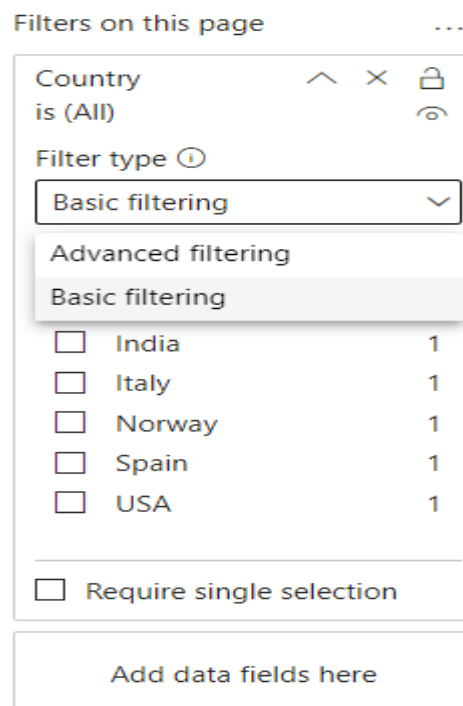
3 types:

1. Visual level filter
2. Page level filter
3. Report level filter

1. Visual level filter: Apply filter for that visual.
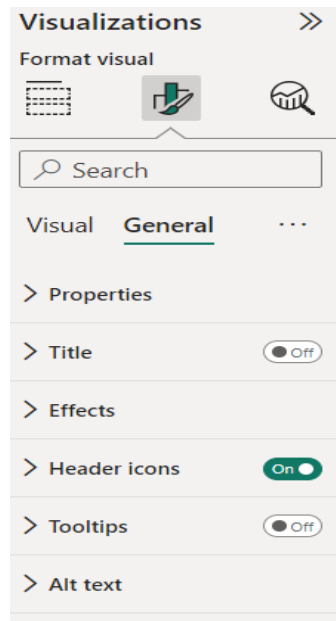


2. Page level filter: Apply filter for that page.



Here we can select filter type. Two types:

1. Advanced filtering
2. Basic filtering

3. Report level filter: Apply for whole report. Here also advance filtering and basic filtering available
13. Explain grouping or summarizing rows with example

In Power Query, you can group values in various rows into a single value by grouping the rows according to the values in one or more columns. You can choose from two types of grouping operations:

1. Column groupings
2. Row groupings

We can select from Transform tab→ Group by

For an example:

| | ABC Year | ABC Country | ABC Product | ABC Sales Channel | ABC Units |
|---|---|---|---|---|---|
| 1 | 2020 | USA | Shirt | Online | 5000 |
| 2 | 2020 | USA | Shorts | Online | 4000 |
| 3 | 2020 | USA | Shirt | Reseller | 7500 |
| 4 | 2020 | USA | Shorts | Reseller | 4500 |
| 5 | 2020 | Panama | Shirt | Online | 55 |
| 6 | 2020 | Panama | Shorts | Online | 70 |
| 7 | 2020 | Panama | Shirt | Reseller | 200 |
| 8 | 2020 | Panama | Shorts | Reseller | 150 |
| 9 | 2020 | Canada | Shirt | Online | 1200 |
| 10 | 2020 | Canada | Shorts | Online | 1450 |
| 11 | 2020 | Canada | Shirt | Reseller | 700 |
| 12 | 2020 | Canada | Shorts | Reseller | 800 |

We want to total units of each country, so first select country and unit sales columns apply Group by option,

Here select Advanced Group by option, enter new column, select operation and enter ok. It will return a new calculation table with values. The main operations are:

1. SUM
2. AVERAGE
3. MIN
4. MAX
5. MEDIAN
6. ALL ROWS