1. <u>MICROSOFT ACCOUNT</u>

1.1 Microsoft Azure:

Microsoft Azure, or just Azure (/ˈæʒər, ˈeɪʒər/ AZH-ər, AY-zhər, UK also /ˈæzjʊər, ˈeɪzjʊər/ AZ-ure, AY-zure), [2][3][4] is the cloud computing platform developed by Microsoft. It offers management, access and development of applications and services to individuals, companies, and governments through its global infrastructure. It also provides a range of capabilities, including software as a service (SaaS), platform as a service (PaaS), and infrastructure as a service (IaaS). Microsoft Azure supports many programming languages, tools, and frameworks, including Microsoft-specific and third-party software and systems.

1.2 Microsoft account creation Via normal flow:

1.2.1: Access the Microsoft sign-up page:
Open any your web browser on your computer, and type "signup.live.com" on the address bar. You will be redirected to the Microsoft sign-up page.

1.2.2: Click on "Sign up now.":
This will be on the right of the sign-up page. You will be redirected to the form where you fill in the details for the account.

1.2.3: Enter your full name and then select a username:
First, it will ask for your first and last name, and then for a username. If you have a Gmail or Yahoo account, you can use that as a username for the Microsoft sign-in.

1.2.4: Create a password next:
Make sure your Microsoft account password is at least 8 characters long and contains at least two of the following: uppercase letters, lowercase letters, numbers, and symbols. Reenter the password for confirmation when you're done.

1.2.5: Enter your country, birthdate, and gender last:
The fields for these three pieces of information are drop-down options. Just click the down arrow to the right of the text boxes and select the country, date, and gender.

1.2.6: Verify the information given:
Select your country code from the drop-down option below Gender and enter your phone number in the box below that. You will receive a text verification code or an audio call to verify that you're a real person and not a bot.

- Check out the characters you see in the box below the phone number. This is a Captcha. Enter it in the "Enter the characters you see" field. This is also to ensure

that you are a real person.

1.2.7: Click "Create Account" at the bottom.

You have just set up your Microsoft account, but before you can use Microsoft services, you must verify the email address (username) you entered. Open the email sent to the email address you registered as username and click the link given to confirm. Your account has been created and verified. You can now use Microsoft services with the account.

1. 3 Microsoft Account via One Drive

1.3.1 Visit One Drive:

One Drive is the cloud service of Microsoft, which you can access on your mobile device or on the PC. Each One Drive user has 15GB free of cloud storage, so if you want to use OneDrive to store your files, you will need a Microsoft account first.

1.3.2: Open a new web browser tab or window and type "onedrive.live.com" on the address bar. Hit Enter and you will be taken to the One Drive website.

1.3.3: Rest all steps are similar as mentioned in above Microsoft Account creation steps.

1.4   Microsoft Account via xbox:

1.4.1: Access Xbox: Scroll down the home screen of your Windows phone until you find the green Xbox tile. Tap it to open the Xbox Game screen.

1.4.2: Rest all steps are similar as mentioned in above Microsoft Account creation steps.

2. Power BI

Microsoft Power BI is a complete reporting solution that offers data preparation, data visualization, distribution, and management through development tools and an online platform.

2.1 Components of Power bi :

There are three primary components to Power BI:

2.1.1 Power BI Desktop:

It is the development tool available to data analysts and other report creators. While the Power BI service allows you to organize, manage, and distribute your reports another Power BI items. Power BI Desktop is available to download for free either through the Windows store or directly online.

2.1.2 Power BI service:

You can access the Power BI service at app.powerbi.com with a school or work account. If your organization doesn't already use Power BI, you can still explore the service by getting a free trialor signing up for a free Microsoft 365 Developer account.

2.1.3 Power BI Mobile:

It allows consumers to view reports in a mobile-optimized format. You can create these optimized report views in Power BI Desktop.

2.2 Installation of Power BI :

2.2.1 Download Power BI Desktop:

You can download Power BI Desktop from the web or as an app from the Microsoft Store on the Windows tab.

2.2.2 Sign in to Power BI service:

Before you can sign in to Power BI, you will need an account. To get a free trial, go to app.powerbi.com and sign up with your email address.

2.2.3 Download sample data:

From any data repository and import into Power BI Desktop (Get data>Excel).

The idea of building and sharing reports is an abstract concept. It will make more sense if you explore Power BI Desktop hands-on. The first step is to launch and explore the user interface UI.

2.3 Flow of power bi:

The flow of Power BI is:

1. Connect to data with Power BI Desktop.

2. Transform and model data with Power BI Desktop.

3. Create visualizations and reports with Power BI Desktop.

4. Publish report to Power BI service.

5. Distribute and manage reports in the Power BI service.

2.4 Building blocks of Power BI:

The building blocks of Power BI are semantic models and visualizations. A semantic model consists of all connected data, transformations, relationships, and calculations.

To follow the flow of Power BI, you first connect to data, transform data, and createrelationships and calculations to create a semantic model.

In Power BI Desktop, when you create a visualization (also called visual), you add it to the canvas for a report page. Choose your visualizations to build pages in your report. It is ideal to keep each page simple with related data, so consumers can easily see the insights.

2.5 Dashboard:

In the Power BI service, you can also create dashboards after you've published a report. Dashboards consist of a single page made up of tiles. Add tiles to a dashboard by pinning a visual in a report to the dashboard. Tiles aren't interactive like visuals, so when a user interacts with the tile, they go to the underlying report for more information.

2.6 Workspace:

Workspaces are the foundation of the Power BI service. When publishing any report, you must choose a workspace. By default, every user has access to My workspace, which is ideal only for testing. When you want to share content with others, always create and use a shared workspace.

In a workspace, you can create an app, which provides consumers a simplified interface to access reports and dashboards. Template apps allow you to find an existing app that suits your needs and then you connect your data

These apps can be a great way to quickly share insights with minimal effort. Semantic models in the Power BI service. On-demand refreshes are also available.

2.7 How to use Power BI:

In Power BI Desktop, you'll begin to build reports in the Report view. You'll be working in five main areas:

1. Ribbon - Displays common tasks that are associated with reports and visualizations.

2. Report view, or canvas - Where visualizations are created and arranged. You can switch between Report, Data, and Model views by selecting the icons in the left column.

3. Pages tab - Located along the bottom of the page, this area is where you would select or add a report page.

4.Visualizations pane - Where you can change visualizations, customize colours or axes, apply filters, drag fields, and more.

5. Fields pane - Where query elements and filters can be dragged onto the Report view or dragged to the Filters area of the Visualizations pane.

2.8 Power BI Views:

2.8.1 Create a visual:

To create a visual, drag a field from the Fields list onto the Report view. After creating a report with a few visuals, you're ready to publish to the Power BI service. On the Home ribbon on the Power BI Desktop, select Publish.

2.8.2 Pin a visual to a dashboard:

When you view a published report in the Power BI service, you can choose the Pin icon to pin that visual to a dashboard. Power BI Desktop connects to many types of data sources, including local databases, worksheets, and data on cloud services.

2.8.3 Connect to data:

When you start Power BI Desktop, you can choose Get Data from the ribbon on the Home tab.

2.8.4 Choose data to import:

After connecting, the first window that you'll see is the Navigator. The Navigator window displays the tables or entities of your data source, and selecting a table or entity gives you a preview of its contents. You can then import your selected tables or entities immediately by selecting Load, or you can select Transform Data to transform and clean your data before importing.

After you've selected the tables that you'd like to bring into Power BI Desktop, select

the Load button. You might want to make changes to those tables before you load them. For example, if you only want a subset of customers or a specific country or region, select the Transform Data button and filter data before loading.

2.8.5 Import from a local drive:

Wherever you keep your files, Power BI makes importing them simple. In Power BI, you can go Get Data > Files>Local File to select the Excel file that you want.

2.8.6 Create reports:

After your workbooks data has been imported, a dataset is created in Power BI and it will appear under Datasets.

Select the (...) icon next to the dataset and then select Create Report. A new blank report canvas appears. On the right-hand side, under Fields, are your tables and columns. Select the fields for which you want to create a new visualization on the canvas.

2.9 How to create visual in Power BI:

In Power BI Desktop, when you create a visualization (also called visual), you add it to the canvas for a report page. Choose your visualizations to build pages in your report. It's ideal to keep each page simple with related data, so consumers can easily see the insights.

2.10 Power Query Editor:

Sometimes, your data might contain extra data or have data in the wrong format. Power BI Desktop includes the Power Query Editor tool, which can help you shape and transform data so that it's ready for your models and visualizations.

To begin, select Transform data from the Navigator window to launch Power Query Editor. You can also launch Power Query Editor directly from Power BI Desktop by using the Transform data button on the Home ribbon.

1. In the ribbon, the active buttons enable you to interact with the data in the query.

2. On the left pane, queries (one for each table, or entity) are listed and available for selecting, viewing, and shaping.

3. On the centre pane, data from the selected query is displayed and available for shaping.

4. The Query Settings window lists the query's properties and applied steps

2.10.1 Transform data:

On the centre pane, right-clicking a column displays the available transformations. The Power Query Editor ribbon contains additional tools that can help you change the data type of columns, add scientific notation, or extract elements from dates, such as day of the week.

As you apply transformations, each step appears in the Applied Steps list on the Query Settings pane. You can use this list to undo or review specific changes, or even change the name of a step.To save your transformations, select Close & Apply on the Home tab.

2.10.2 Clean data:

Fortunately, Power Query Editor has tools to help you quickly transform multi-column tables into datasets that you can use.

2.10.3 Transpose data:

By using Transpose in Power Query Editor, you can swap rows into columns to better format the data.

2.10.4 Format data:

You might need to format data so that Power BI can properly categorize and identify that data.

3. Data Analytics

Data analysis is the process of identifying, cleaning, transforming, and modeling data to discover meaningful and useful information.

3.1 Types of Data Analytics

3.1.1Descriptive analytics: Descriptive analytics help answer questions about what has happened based on historical data.

3.1.2 Diagnostic analytics: Diagnostic analytics help answer questions about why events happened.

3.1.3 Predictive analytics: help answer questions about what will happen in the future.

3.1.4 Prescriptive analytics: help answer questions about which actions should be taken to achieve a goal or target.

3.1.5 Cognitive analytics: attempt to draw inferences from existing data and patterns, derive conclusions based on existing knowledge bases, and then add these findings back into the knowledge base for future inferences, a self-learning feedback loop.

3.2 Roles And Resposibility

Different roles in data and the specific responsibility in the overall spectrum of data discovery and understanding:

3.2.1 business analyst: business analyst is closer to the business and is a specialist in interpreting the data that comes from the visualization.

3.2.2 data analyst enables businesses to maximize the value of their data assets through visualization and reporting tools such as Microsoft Power BI.

3.2.3 Data engineers provision and set up data platform technologies that are on premises and on the cloud.

3.2.4 Data scientists perform advanced analytics to extract value from data. Their work can vary from descriptive analytics to predictive analytics.

3.2.5 Database administrator implements and manages the operational aspects of cloud-native and hybrid data platform solutions that are built on Microsoft Azure data services and Microsoft SQL Server.

3.3 Tasks that are performed on a near-daily bases:

- Before a report can be created, data must be prepared. Data preparation is the process of profiling, cleaning, and transforming your data to get it ready to model and visualize.

- When the data is in a proper state, it's ready to be modeled. Data modeling is the process of determining how your tables are related to each other. This process is done by defining and creating relationships between the tables.

- The visualization task is where you get to bring your data to life. The ultimate goal of the visualize task is to solve business problems. A well-designed report should tell a compelling story about that data, which will enable business decision makers to quickly gain needed insights.

- The analyze task is the important step of understanding and interpreting the information that is displayed on the report.

- Proper management can also help reduce data silos within your organization.

3.4 Data model:

Modeling is how to get your connected data ready for use.

3.4.1 Tasks in this module:

- Create relationships between your data sources.
- Create a new field with calculated columns.
- Optimize data by hiding fields and sorting visualization data.
- Create a measure to perform calculations on your data.
- Use a calculated table to create a relationship between two tables.
- Format time-based data so that you can drill down for more details.

The Model view in Power BI Desktop allows you to visually set the relationship between tables or elements. A relationship is where two or more tables are linked together because they contain related data. This enables users to run queries for related data across multiple tables. Use the Model view to see a diagrammatic view of your data.

3.4.2 Cardinality ratio:

Many to One	The most common default relationship. The column in one table can have more than one instance of a value. The related table (or lookup table) has only one instance of value**.**
One to One	The column in one table has only one instance of a particular value, and the other related table has only one instance of a particular value.

3.4.3 Optimize data models:

Imported data often contains fields that you don't need for your reporting and visualization tasks. Data might contain unnecessary information or it might be available in another column. Power BI Desktop has tools to optimize your data and make it more usable for building reports and visuals.

3.4.3.1 Tasks in the module:

Hide fields:

To hide a field in the Fields pane of Power BI Desktop, right-click the column and select Hide

Sort visualization data by another field:

The Sort by Column tool, available on the Column tools tab, is useful to help ensure your data is displayed in the order that you intended.

In Power BI, measures are defined calculations on your data that are performed at the time of your query. Measures are calculated as you interact with your reports and aren't stored in your database.

3.4.4 Explore time-based data:

Analyzing time-based data with Power BI is a simple process. The modeling tools in Power BI Desktop automatically generate fields that let you drill down through time periods.

3.5 Query Selector:

The common query tasks demonstrated here are:

- Connect to data
- Shape and combine data
- Group rows
- Pivot columns
- Create custom columns
- Query formulas

3.5.1 Connect to data:

To connect to data in Power BI Desktop, select Home and then choose Get data. Power BI Desktop presents a menu with the most common data sources.

3.5.2 Shape and combine data:

You can easily shape and combine data with Power Query Editor. This section includes a few examples of how you can shape data.

3.5.3 Group rows:

In Power Query Editor, you can group the values from many rows into a single value. This feature can be useful when summarizing the number of products offered, the total sales, or the count of students.

3.5.4 Pivot columns:

You can pivot columns and create a table that contains aggregated values for each unique value in a column.

3.5.5 Create custom columns:

In Power Query Editor, you can create custom formulas that operate on multiple columns in your table. Then you can place the results of such formulas into a new (custom) column. Power Query Editor makes it easy to create custom columns.

3.5.6 Query formulas:

You can edit the steps that Power Query Editor generates. You can also create custom formulas, which let you connect to and shape your data more precisely. Whenever Power Query Editor does an action on data, the formula associated with the action is displayed in the formula bar.

With Power Query, you can connect to many different data sources and transform the data into the shape you want.

In this article, you learn how to create queries with Power Query by discovering:

- How the "Get Data" experience works in Power Query.

- How to use and take advantage of the Power Query user interface.
- How to perform common transformations like grouping and merging data.

3.6 O Data

To start, locate the O Data feed connector from the "Get Data" experience. You can search for O Data in the search bar in the top-right corner.

Once you select this connector, the screen displays the connection settings and credentials.

- For URL, enter the URL to the North wind O Data feed shown in the previous section.
- For On-premises data gateway, leave as none.
- For Authentication kind, leave as anonymous.

Select the **Next** button.

The **Navigator** now opens, where you select the tables you want to connect to from the data source. Select the Customers table to load a preview of the data, and then select Transform data. The Power Query editor user experience.

The Power Query editor represents the Power Query user interface. In this user interface, you can add or modify queries, manage queries by grouping or adding descriptions to query steps, or visualize your queries and their structure with different views. The Power Query user interface has five distinct components.

1. **Ribbon:** the ribbon navigation experience, which provides multiple tabs to add transforms, select options for your query, and access different ribbon buttons to complete various tasks.

2. **Queries pane:** a view of all your available queries.

3. **Current view:** your main working view, which by default, displays a preview of the data for your query. You can also enable the diagram view along with the data preview view. You can also switch between the schema view and the data preview view while maintaining the diagram view.

4. **Query settings:** a view of the currently selected query with relevant information, such as query name, query steps, and various indicators.

5. **Status bar:** a bar displaying relevant important information about your query, such as execution time, total columns and rows, and processing status. This bar also contains buttons to change your current view.

3.5.7 Using the Power Query editor:

In this section, you begin transforming your data using Power Query. But before you start working on transforming the data, we discuss some of the UI panes that can be expanded or collapsed depending on their context.

3.5.7.1 The ribbon:

The ribbon is the component where you find most of the transforms and actions that you can do in the Power Query editor. It has multiple tabs, whose values depend on the product integration. Each of the tabs provides specific buttons and options, some of which might be redundant across the whole Power Query experience. These buttons and options provide you with easy access to the transforms and actions that you might need.

3.5.7.2 Expand and collapse panes:

You might notice that throughout the Power Query user interface, there are icons that help you collapse or expand certain views or sections.

3.5.7.3 Switch between views:

Apart from being able to collapse certain panes and sections in the Power Query user interface, you can also switch what views are displayed. To switch views, go to the View tab in the ribbon where you find the Preview and Layout groups, which control how the Power Query user interface looks.

3.5.7.4 What is schema view:

The schema view offers you a quick and straightforward way to interact only with the components of the schema for your table, such as the column names and data types. We recommend the schema view when you want to do schema-related actions. These actions could be removing columns, renaming columns, changing column data types, reordering columns, or duplicating columns.

3.5.7.5 What is diagram view:

You can now switch back to the data preview view and enable the diagram view to use a more visual perspective of your data and query.

3.5.7.6 Begin transforming your data:

With diagram view enabled, select the plus sign. You can search for a new transform to add to your query. Search for Group by and select the transform.

3.5.7.7 Adding a new query:

Now that you have a query that provides the number of customers per country, you can add context to this data by finding the total number of suppliers for each territory.

3.5.7.8 Referencing queries:

Now that you have a query for customers and a query for suppliers, your next goal is to combine these queries into one. There are many ways to accomplish this, including using the Merge option in the Customers table, duplicating a query, or referencing a query.

3.5.7.9 Merging queries:

A merge queries operation joins two existing tables together based on matching values from one or multiple columns.

3.5.7.10 Applied steps:

Every transformation that is applied to your query is saved as a step in the Applied steps section of the query settings pane. If you ever need to check how your query is transformed from step to step, you can select a step and preview how your query resolves at that specific point.

3.5.7.11 Data profiling:

Another Power Query feature that can help you better understand your data is Data Profiling. By enabling the data profiling features, you get feedback about the data inside your query fields, such as value distribution, column quality, and more.

The options in the help tab include links to:

- Power Query documentation: Links to the Power Query documentation
- Keyboard shortcuts: Links to the keyboard shortcuts article in the Power Query documentation.
- Support: Links to the support website of the Microsoft product that Power Query is currently running in.
- Power Query website: Links to the Power Query website.
- Power Query blog: Links to the Power Query blog
- Power Query community: Links to the Power Query community.
- Submit an idea: Links to the ideas website of the Microsoft product that Power Query is currently running in.
- Send feedback: Opens a window in Power Query. The window asks you to rate your experience with Power Query and to provide any additional information you would like to supply.

4. DAX

This learning path introduces Data Analysis Expressions (DAX) and provides you with foundational skills required to enhance semantic models with calculations.

4.1 Task with DAX:

- Connect to data
- Transform and prepare data
- Define business logic by adding Data Analysis Expressions (DAX) calculations
- Publish the model to Power BI

Star schema refers to a design approach that's commonly used by relational data warehouse designers because it presents a user-friendly structure and it supports high performance analytic queries.

4.2 Fact Tables:

The role of a fact table is to store an accumulation of rows that represent observations or events that record a specific business activity.

4.3 Dimension Tables:

Dimension tables describe your business entities, which commonly represent people, places, products, or concepts. A date dimension table, which contains one row for each date, is a common example of a concept dimension table.

4.4 Analytic Query:

An analytic query is a query that produces a result from a semantic model. Each Power BI visual, in the background, submits an analytic query to Power BI to query the model. The analytic query is written as a Data Analysis Expressions (DAX) query statement.

An analytic query has three phases that are implemented in the following order:

1. Filter
2. Group
3. Summarize

4.4.1 Filtering:

Filtering, or slicing, targets the data of relevance. In Power BI reports, filters can be applied to

three different scopes: the entire report, a specific page, or a specific visual. Filtering is also applied in the background when row-level security (RLS) is enforced. Each report visual can inherit filters or have filters directly applied to it.

4.4.2Grouping:

Grouping, or dicing, divides query results into groups.

4.4.3 Summarizing:

Summarizing produces a single value result. Typically, numeric columns are summarized by using summarization methods (sum, count, and many others). These methods are simple summarizations. More complex summarizations, like a percent of grand total, can be achieved by defining measures that are written in DAX.

4.5 Methodology index:

At design time, adding and configuring a report visual involves the following methodology:

1. Select a visual type, like a bar chart.

2. Map semantic model fields, which are displayed in the Fields pane, to the visual field wells. For a bar chart, the wells are Y-axis, X-axis, Legend, Small multiples, and Tooltips.

3. Configure mapped fields. It's possible to rename mapped fields or toggle the field to summarize or not summarize. If the field summarizes, you can select the summarization method.

4. Apply format options, like axis properties, data labels, and many others.

4.6 Fields:

Fields is a collective term that is used to describe a model resource that can be used to configure a visual.

The three different model resources that are fields include:

- Columns
- Hierarchy levels
- Measures
- **3.6.1 Columns:**

  Use columns to filter, group, and summarize column values. Summarizing numeric columns is common, and it can be done by using sum, count, distinct count, minimum, maximum, average, median, standard deviation, or variance.

- **3.6.2 Hierarchy levels:**

  While hierarchy levels are based on columns, they can be used to filter and group but not to summarize.

5. Dashboard

Microsoft Power BI dashboards are different than Power BI reports. Dashboards are made up of visuals from different reports and allow report consumers to create a single page of targeted data insights, with the option to explore more in a report**.**

Dashboards are created by pinning report visuals, and are then called tiles within reports. When you make changes to the visuals in the report, and then republish to Power BI Service, changes are reflected on the dashboard.

5.1 Pin a tile from a different report:

One of biggest benefits of a dashboard is being able to pin a visual that is sourced from a different semantic model. In the following image, we show two separate tiles pinned from different reports.

Configuring data alerts is a simple process to complete for a dashboard in Power BI. Data alerts can notify you or a user that a specific data point is above, below, or at a specific threshold that you can set.

Power BI dashboards are about having a user-friendly experience. When users first interact with data, they often have additional questions and reach out to you. A few questions might be manageable to answer, but this isn't sustainable.

The Q&A visual consists of three main elements:

- **Question box**: Use natural language to ask questions about the data.

Example: What were the average sales amount by category?

- **Pre-populated suggestion tiles**: Questions to help users consider how to

phrase their questions. Example, top product category names by march

sales tile results as a bar chart with category name and March sales.

- **Pin visual**: Pin the visual created with Q&A to a new or existing dashboard.

The **Quick insights** feature in Power BI uses machine learning algorithms to go over your entire semantic model and produce insights (results) for you quickly. This feature is A great way to build dashboards when you don't know where to start.

5.2 Add a dashboard theme:

When building dashboards, you can create a cohesive picture by applying the same theme as in your reports. Or apply a specific theme to reports and dashboards so that all report elements or tiles are uniform.

Power BI allows you to pin live report pages to dashboards, ensuring that your visuals reflect real-time changes. The iterative process of building reports and dashboards as business requirements evolve becomes easier with this feature.

5.3 Stream in Power BI:

Streaming data can come from various sources, including from social media, factory sensors, service-usage metrics, and other sources that contain a constant stream of data points.

5.4 Set mobile view:

Power BI reports are built in Power BI Desktop and then deployed to Power BI service, where they can be viewed and shared. However, if you're building dashboards for your organization and need reports and dashboards viewable on mobile devices, Power BI offers a mobile layout configuration to meet your needs.

6. Datasets

Fortunately, the Internet is awash with these, most of which are completely free to download (thanks to the open data initiative). In this post, we'll highlight a few first-rate repositories where you can find data on everything from business to finance, planetary science and crime.

6.1 MAVEN:

- **Data compiled by:** Maven

- **Access:** Free, No Registration Required.

- **Sample dataset:** Hospital Patients record

- Explore and download sample datasets hand-picked by Maven instructors. Practice applying your data analysis and visualization skills to real-world data, from flight delays and movie ratings to shark attacks and UFO sightings.

6.2 Data.Gov:

- **Type of data**: Government

  Data compiled by: US Federal Government

  Access: Free, no registration required

  Sample dataset: Lobster Report for Transshipment and Sales

- In 2015, the US Government made all its data publicly available. With over 200,000 datasets covering everything from climate change to crime, you can lose yourself in the database for hours...

6.3 Kaggle:

- **Type of data:** Miscellaneous

  Data compiled by: Kaggle

  Access: Free, but registration required

  Sample dataset: Daily temperature of major cities.

- Like Google Dataset Search, Kaggle offers aggregated datasets, but it's a community hub rather than a search engine. Kaggle launched in 2010 with a number of machine learning competitions, which subsequently solved problemsfor the likes of NASA and Ford.

6.4 Google Dataset Search:

- **Type of data:** Miscellaneous

Data compiled by: Google

Access: Free to search, but does include some fee-based search results

Sample dataset: Global price of coffee, 1990-present.

- It seems we turn to Google for everything these days, and data is no exception. Launched in 2018, Google Dataset Search is like Google's standard search engine, but strictly for data.

6.5 Datahub.io:

- **Type of data:** Mostly business and finance

  Data compiled by: Data hub

  Access: Mostly free, no registration required

  Sample dataset: Average mass of glaciers since 1945

- The goal of many data analysts is to help drive savvy business decisions. A such, using economic or business datasets for your portfolio project might be worth considering.

7. DATA ANALYSIS REPORT ON

Airline Passenger Satisfaction

1. Download data from https://mavenanalytics.io/data-playground
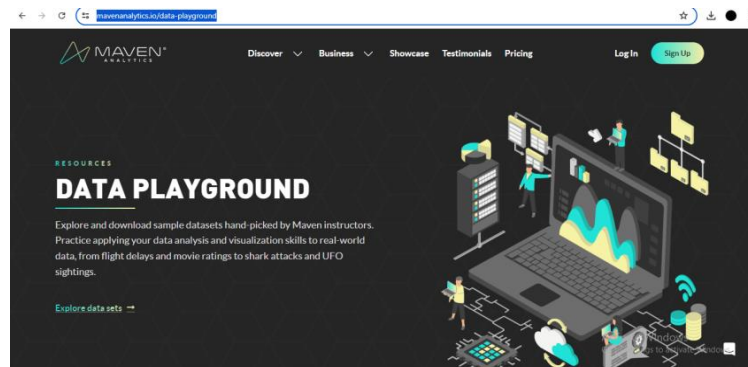
Figure 7.1: Download data from data.gov.in

2. Open Power BI Desktop
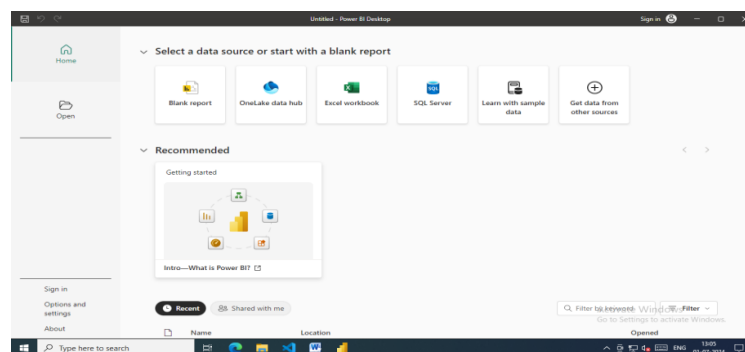
Figure 7.2: Power BI Desktop

3. Click on Blank Report.
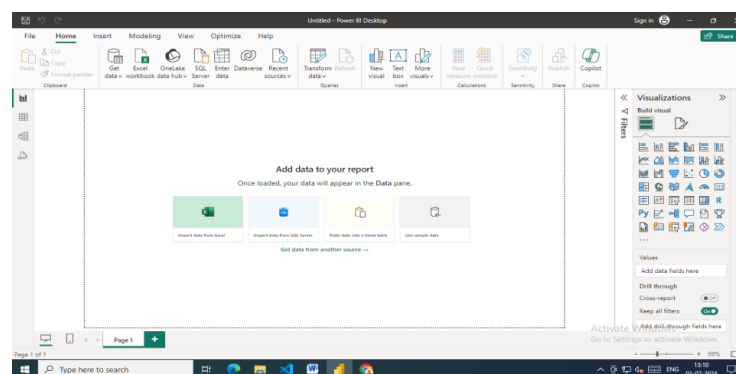
Figure 7.3: Power BI blank report

4. Click on Get Data Select Excel workbook and select the data file.
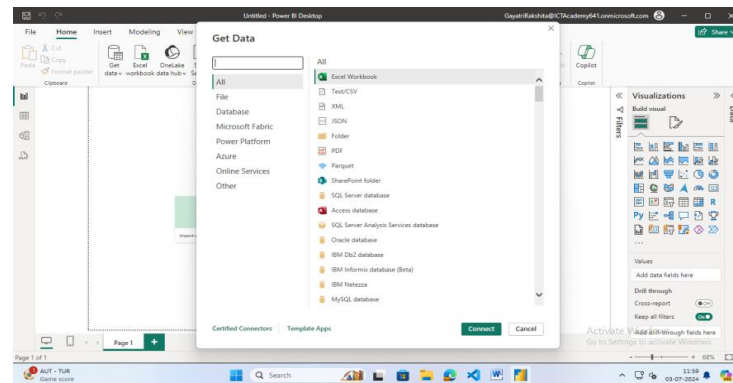
Figure 7.4: Data extraction from Excel Sheet

5. Load the data.
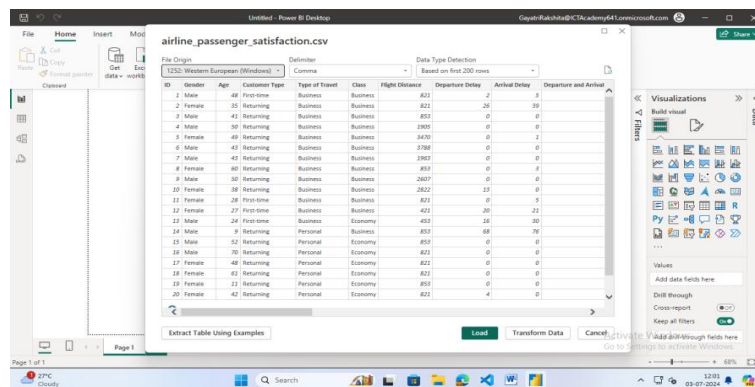
Figure 7.5: Load data

6. Click on **Transform data**, it opens **Power Query Editor.**
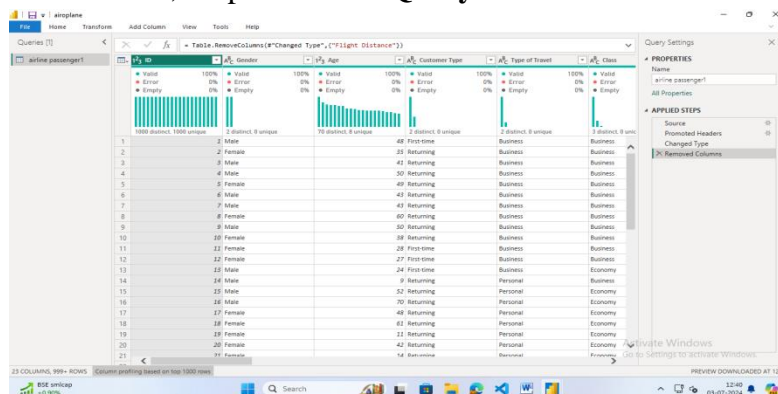
Figure 7.6: Power query editor 1

7. To locate the specific column, on the **Home** ribbon button, select the **manage columns** down-arrow, select the **choose columns** down-arrow, and then select **Go To column.**
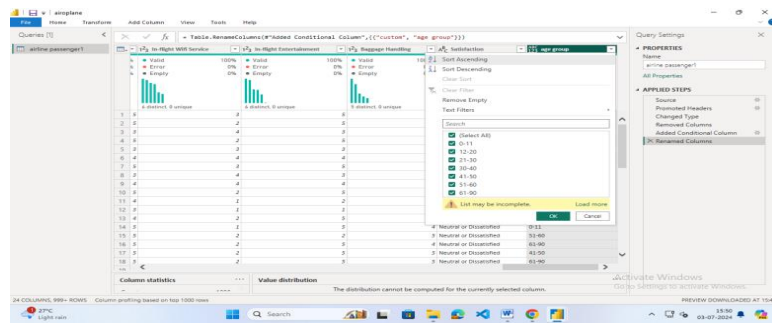
Figure 7.7: Arranging data in A-Z format

8. In Power Query Editor , filter the rows and columns using various editors(to shape, clean and transform data). For example, renaming tables and columns, finding null columns,finding number of rows and columns, etc.
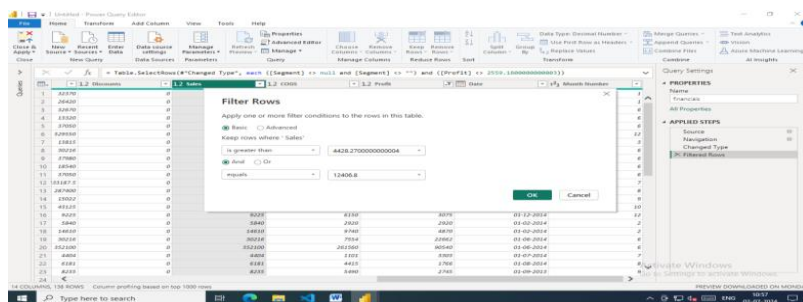
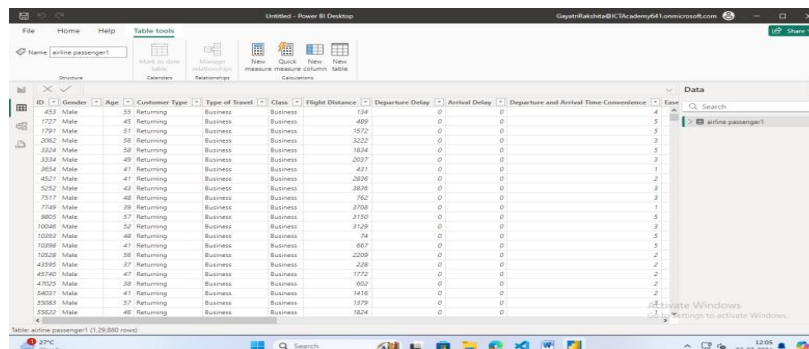
Figure 7.8.1: Filter the rows by using Filter Rows editor

Figure 7.8.2: Filtered data

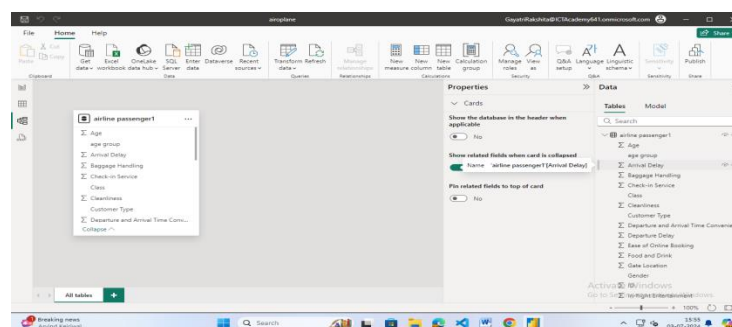9. Designing data models in Power BI. We have only one table , so we can't build relationships.

Figure 7.9: Data models 1
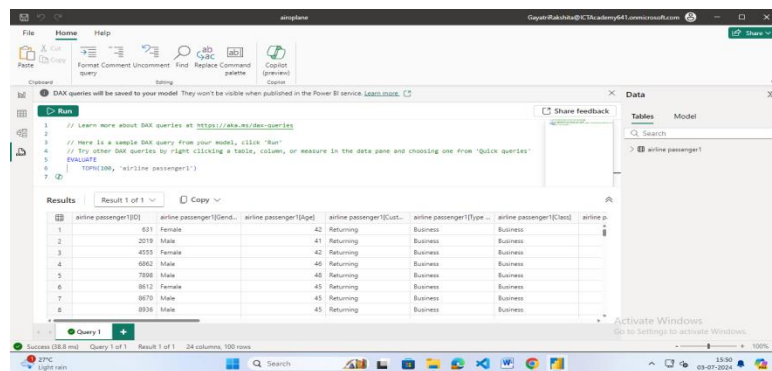
10. DAX in Power BI

Figure 7.10: DAX in Power BI 1

The TOPN function in Power BI is a table function that returns the top rows of a table based on a specified condition.

The function takes three parameters as input:

- Top N value: The number of top rows to return, such as top 5, top 10, or top 20

- Table name: The name of the table to use

- Expression: A measure that determines which rows to return

Creating Report :

(1) ANALYSIS BY ID

In this tab, we will know the satisfaction of the passenger.

1. Image

   To add an image, on the Insert ribbon tab, from inside the Elements group, select Image**.**

2. Total customers

   Select the **Multi row card** in the Visualizations pane. In the **Query** pane **write the query** [Total customers = COUNTROWS('airline passenger1')].It will show the total number of customers in the Multi row card field in the visualization pane.

3. Average of Arrival delay :

   Select the Multi row card in the Visualizations pane. In the Data pane drag the **Arrival delay** into the Multi row card field in the visualization pane.

4. Average of Departure delay :

   Select the Multi row card in the Visualizations pane. In the Data pane drag the **Departure delay** into the Multi row card field in the visualization pane.

5. Customer Type

   Select the Pie chart in the Visualizations pane. In the Data pane drag the

Customer Type and ID into the pie chart field in the visualization pane.

6. Gender :

   Select the Funnel in the Visualizations pane. In the Data pane drag the **Gender and ID** into the Funnel field in the visualization pane.

7. Type of Travel :

   Select the Stacked Column Chart in the Visualizations pane. In the Data pane drag the **Type of Travel and ID** into the Stacked Column Chart field in the visualization pane.

8. Satisfaction :

   Select the Pie Chart in the Visualizations pane. In the Data pane drag the **Satisfaction and ID** into the Pie Chart field in the visualization pane.
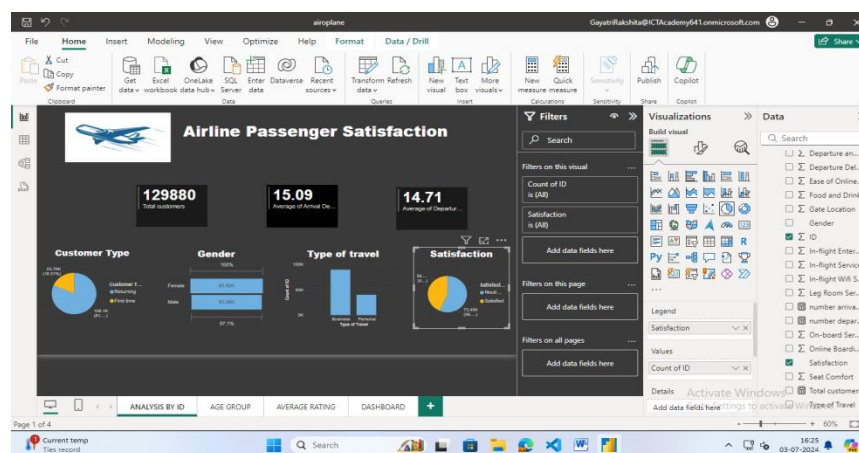

Figure 7.11: ANALYSIS BY ID TAB

(2)   AGE GROUP

1. Age Group :

   Select the Clustered Column Chart in the Visualization pane.

   Add the Following fields to the visual wells / areas :
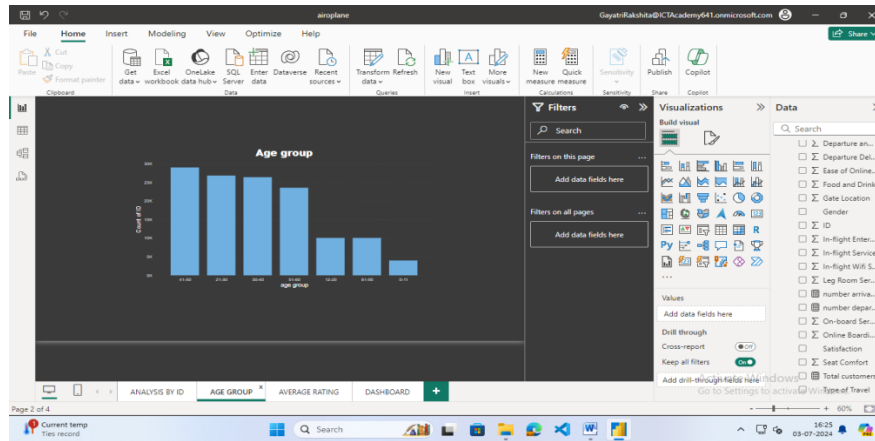
   X-Axis : age group

   Y-Axis : count of ID

Figure 7.12:AGE GROUP TAB

(3)   AVERAGE RATING

1. Average Rating :

   Select the Clustered Column Chart in the Visualization Pane.

   Add the Following fields to the visual wells / areas :

   Y-Axis : Average of Baggage handling

   Average of Seat Comfort

   Average of Check-in Service

   Average of Cleanliness

   Average of Ease of Online Booking

   Average of Food and Drink

   Average of Online Boarding

   Average of Gate Location

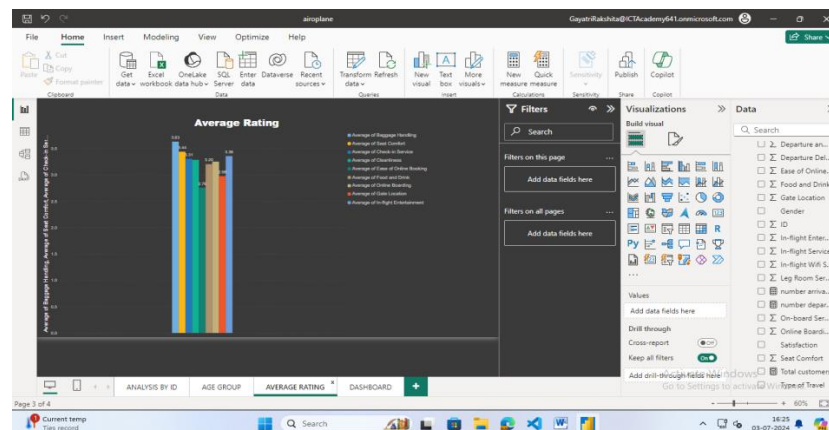   **Average of In-flight Entertainment**

Figure 7.13: AVERAGE RATING TAB

(4) DASHBOARD

1. ANALYSIS BY ID

In this tab, we will know the satisfaction of the passenger.

1.Image

To add an image, on the Insert ribbon tab, from inside the Elements group,

select Image**.**

2.Total customers

Select the **Multi row card** in the Visualizations pane. In the **Query** pane **write the query** [Total customers = COUNTROWS('airline passenger1')].It will show the total number of customers in the Multi row card field in the visualization pane.

3.Average of Arrival delay :

Select the Multi row card in the Visualizations pane. In the Data pane drag the **Arrival delay** into the Multi row card field in the visualization pane.

4.Average of Departure delay :

Select the Multi row card in the Visualizations pane. In the Data pane drag the **Departure delay** into the Multi row card field in the visualization pane.

5.Customer Type

Select the Pie chart in the Visualizations pane. In the Data pane drag the **Customer Type and ID** into the pie chart field in the visualization pane.

6. Gender :

Select the Funnel in the Visualizations pane. In the Data pane drag the Gender and ID into the Funnel field in the visualization pane

7. Type of Travel :

Select the Stacked Column Chart in the Visualizations pane. In the Data pane drag the **Type of Travel and ID** into the Stacked Column Chart field in the visualization pane.

8.Satisfaction :

Select the Pie Chart in the Visualizations pane. In the Data pane drag the Satisfaction and ID into the Pie Chart field in the visualization pane

2. AGE GROUP

1.Age Group:

Select the Clustered Column Chart in the Visualization pane.

Add the Following fields to the visual wells / areas :

X-Axis : age group

Y-Axis : count of ID

3. AVERAGE RATING

1. Average Rating**:**

Select the Clustered Column Chart in the Visualization Pane.

Add the Following fields to the visual wells / areas :

Y-Axis : Average of Baggage handling

     Average of Seat Comfort

     Average of Check-in Service

     Average of Cleanliness
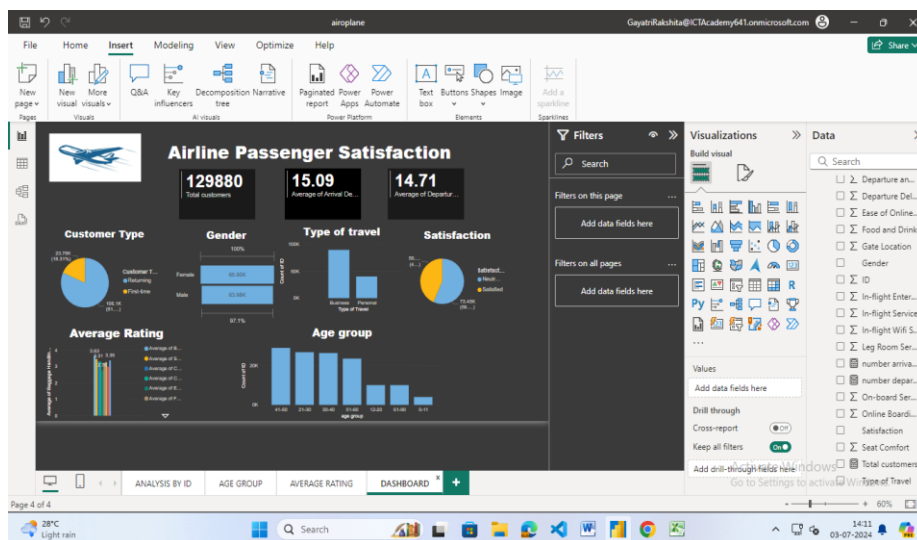
     Average of Ease of Online Booking

     Average of Food and Drink

     Average of Online Boarding

     Average of Gate Location

     Average of In-flight Entertainment

Figure 7.14: Dashboard

8. Conclusion

PayPal's partnership with ICT Academy, a not-for-profit initiative of the Government of India, to launch the student Enablement Program represents a strategic commitment to equip students with the skills essential for success in the digital age, Skills becomes essential for employment opportunities. It is crucial for institutions to realize that helping students be future-ready is advancement just about technology.

Power Bi is a Data Visualization and Business Intelligence tool that converts data from different data sources to interactive dashboards and BI reports. Data Visualization is the practice of translating information into a visual context, such as a map or graph, to make data easier for the human brain to understand and pull insights from.

The Airline Passenger Satisfaction data set provides many insights into the factors that contribute to passenger satisfaction and dissatisfaction in air travel, which can be used by airlines to improve their services and enhance their customers' travel experience. Our analysis of the data set has revealed several important findings. We found that there were many relationships between overall passenger satisfaction and the variables tested. Throughout this report we used multiple visualization techniques.