VIT®
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Lab Digital Assignment 4

STREAMING DATASET AND BI DASHBOARD

B.Tech in Computer Science and Engineering **(CSE)**, **Winter** Semester **2020-21**

Name:	Swaranjana Nayak
Registration Number:	19BCE0977
Slot:	L55 + L56
Date:	29.03.2021

Aim:
To analyze a real-time streaming dataset and create a dashboard from the visualizations.

For the purpose of this experiment, Microsoft's Power BI is used. Streaming datasets have limited or no history and just look at the most current values for each field. There are few special-purpose tiles on the dashboard, which visualizes various attributes of the streaming dataset. And these tiles are such that if our data changes every second, so will the information displayed on the tiles.

Two dashboards are created, using two ways of acquiring data.

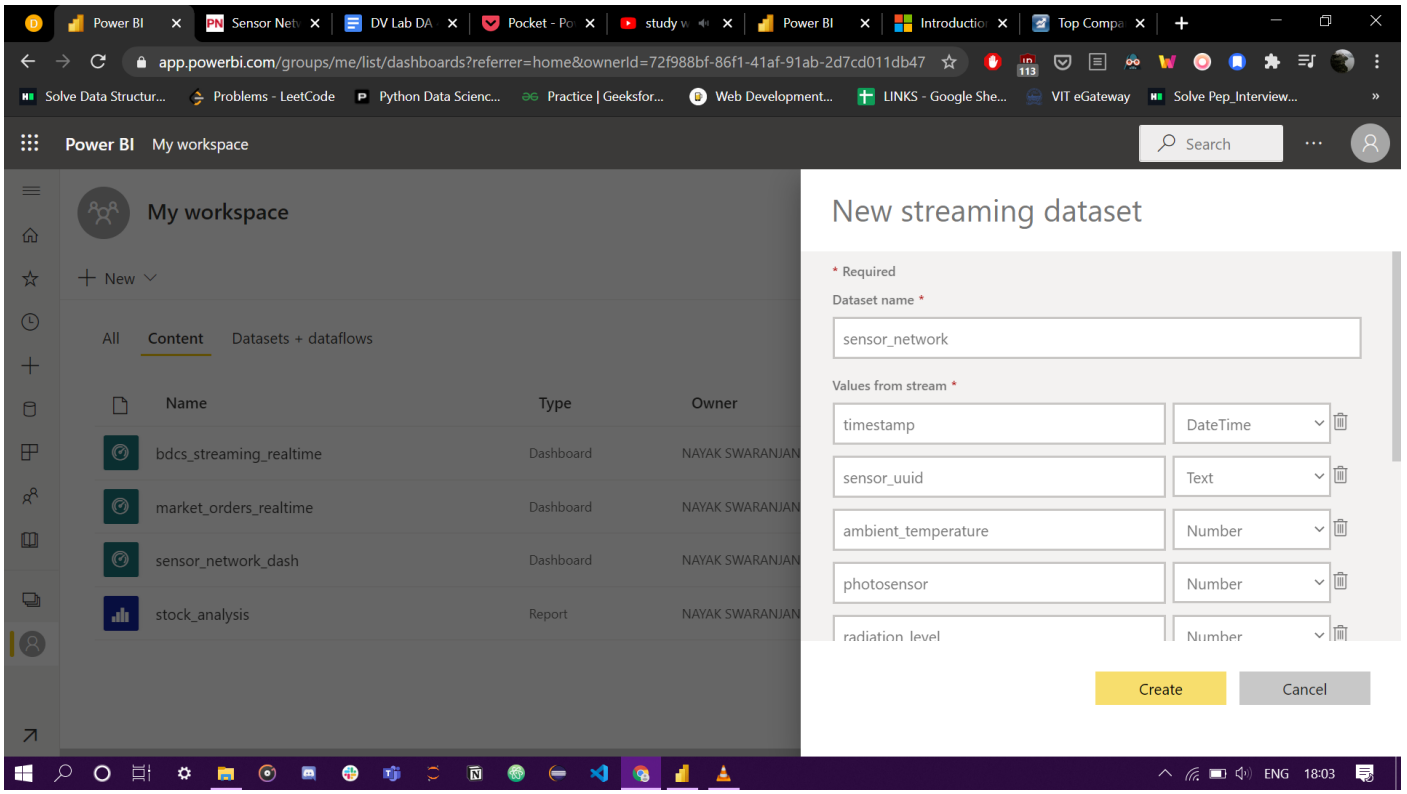
1. The first one is created using the Power BI web app and loading a real-time streaming dataset from PubNub. PubNub is a third-party data service (http://pubnub.com). It is designed with IoT in mind, but its powerful backend data stores can provide data for chat platforms, log readers, and more.
2. The second one is created using the Power BI desktop application (which has many more features) and extracts data from a URL and a report is made from it. The URL data updates every day at 4 pm and the report too (https://www.moneycontrol.com/stocks/marketinfo/marketcap/bse/index.html)

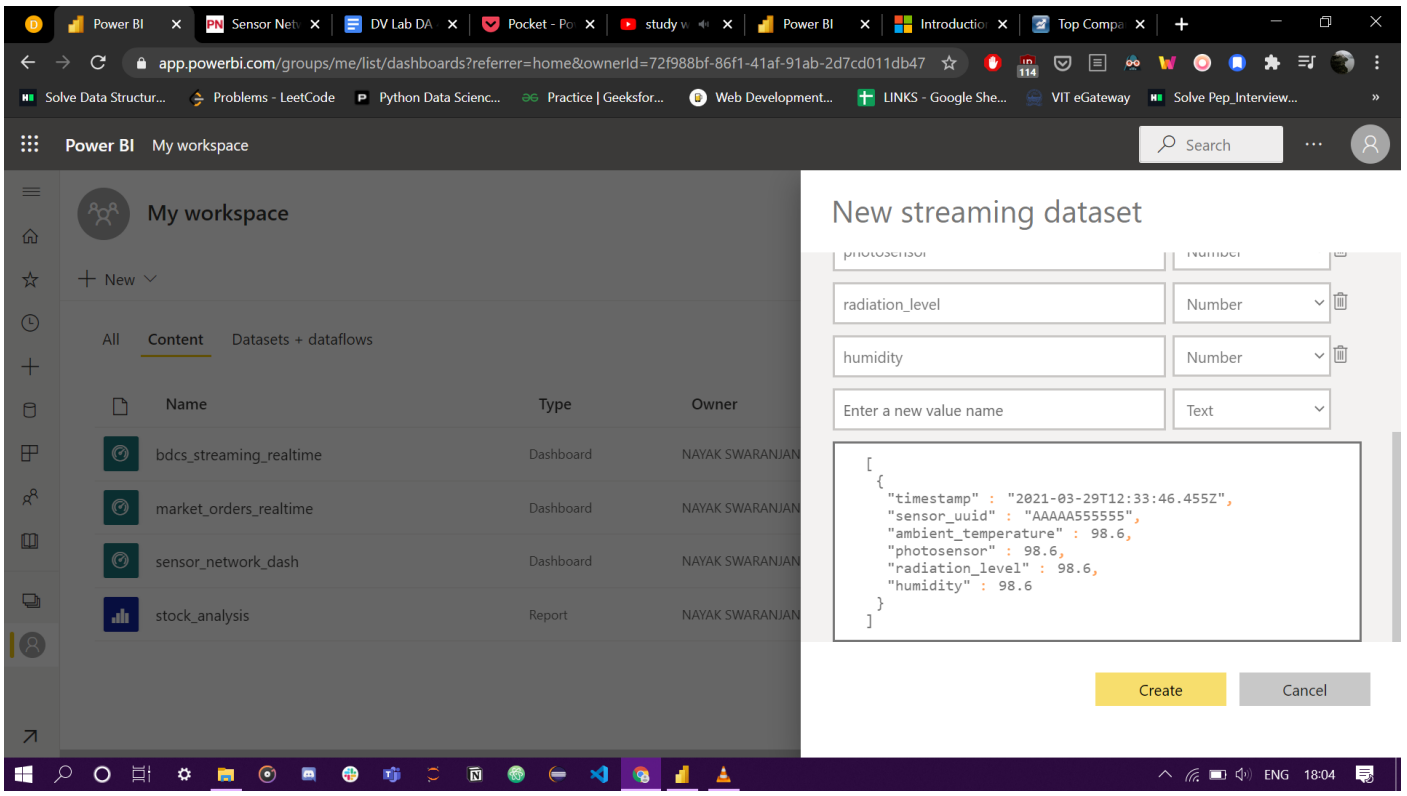
Realtime Dashboard using PubNub Streaming Dataset

Link for the dataset: https://www.pubnub.com/developers/realtime-data-streams/sensor-network/

This feed of data provides sensor information from artificial sensors.

To import this dataset into Power BI, all we have to do is click on create a new streaming dataset in "My Workspace" and choose the PubNub option. There we enter the subscribe key and channel name and name our dataset. Power BI will recognize the columns and data types of the columns and create a schema.

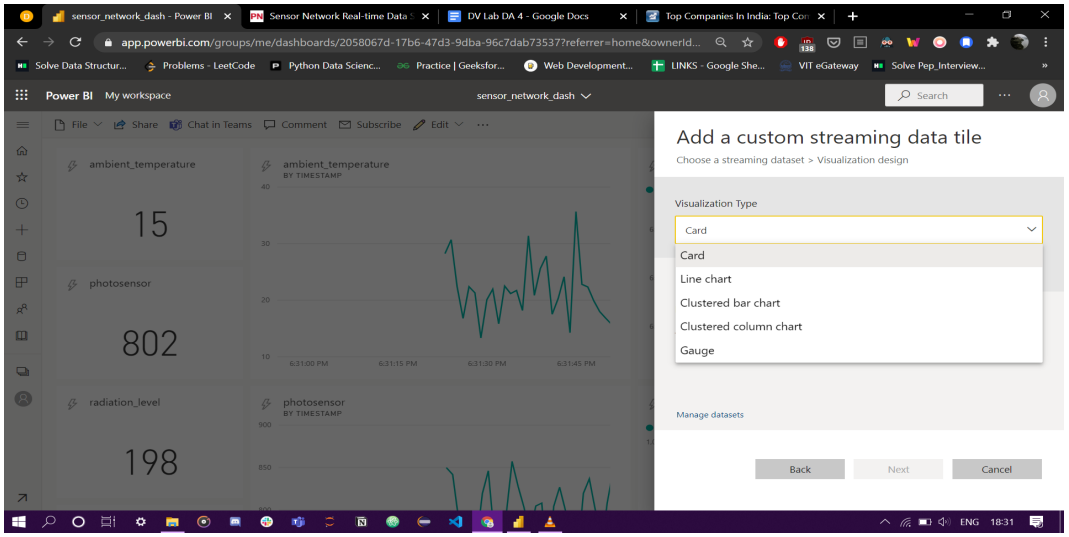




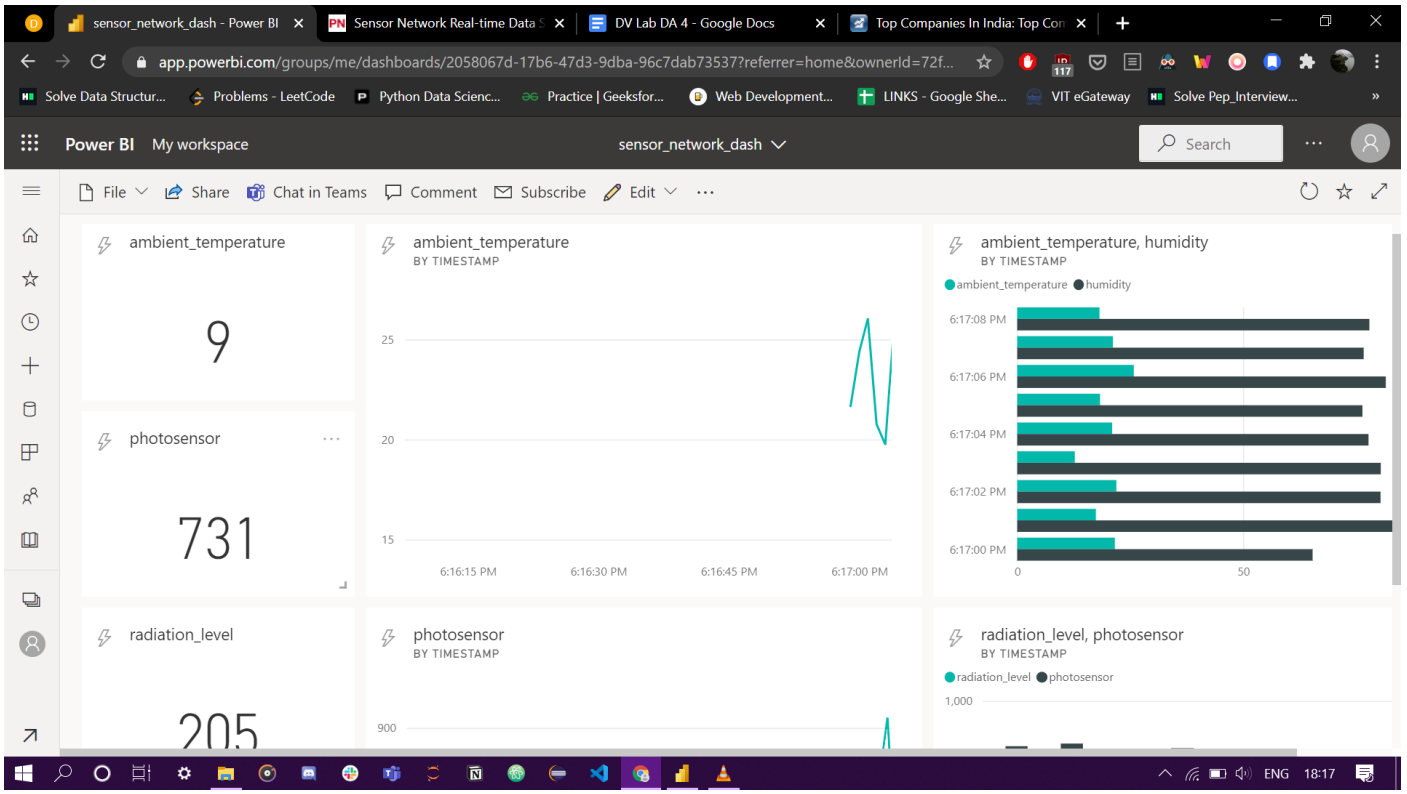
Once this dataset is created, we just need to create a dashboard and add tiles with visualizations in it. This data is updating every second.

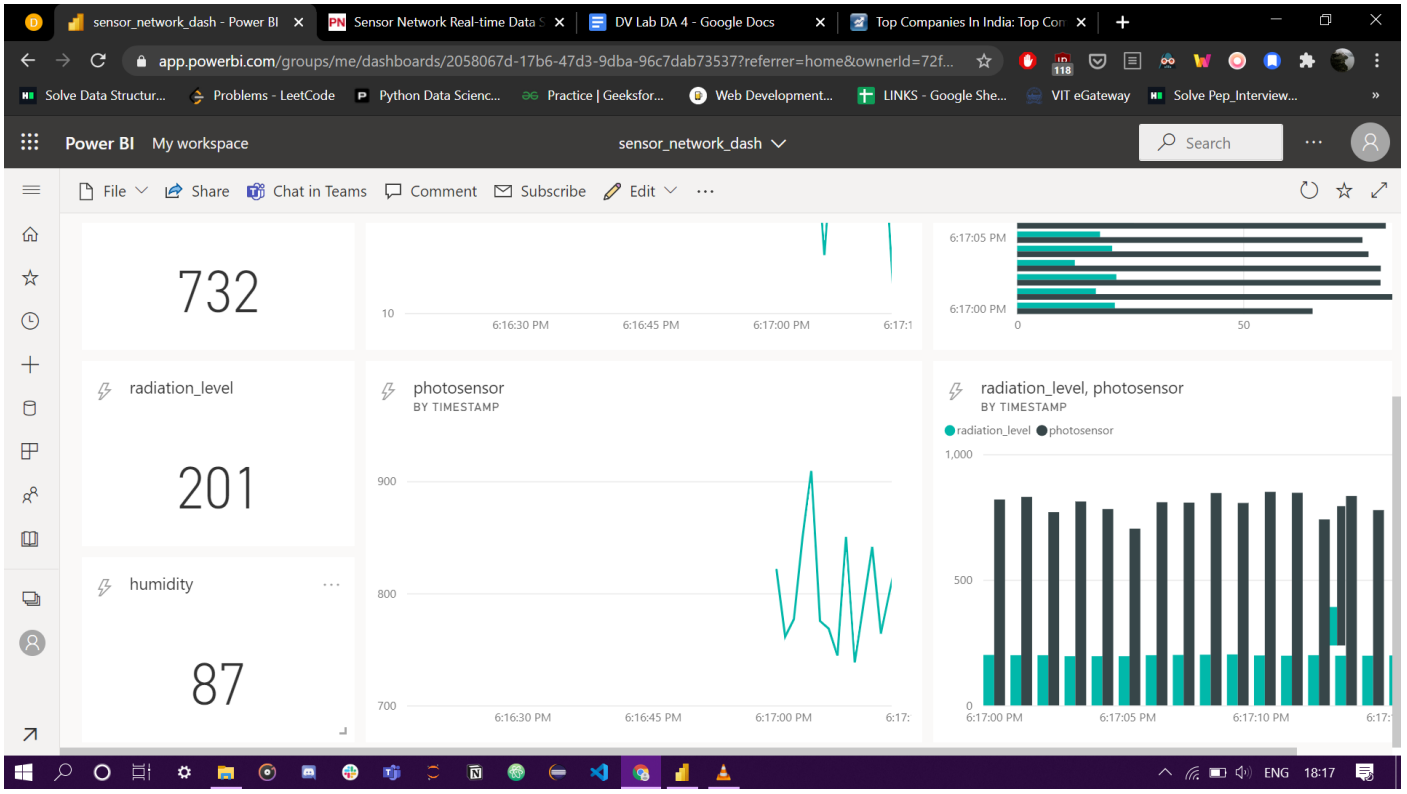
- The leftmost column has "Cards" that display actual values of ambient temperature, radiation, photosensor, and humidity attributes (they are the numerical attributes).
- The first graph is an ambient temperature by timestamp line chart visualization.
- The second graph is ambient temperature and humidity v/s timestamp clustered bar char visualization. As temperature increases, how does humidity vary?
- The third graph is a photosensor reading v/s timestamp line chart visualization.
- The fourth graph is radiation level, photosensor v/s timestamp clustered column chart visualization.

All the following charts can be implemented from Edit -> Add tile -> Streaming dataset -> sensor_network



Output:

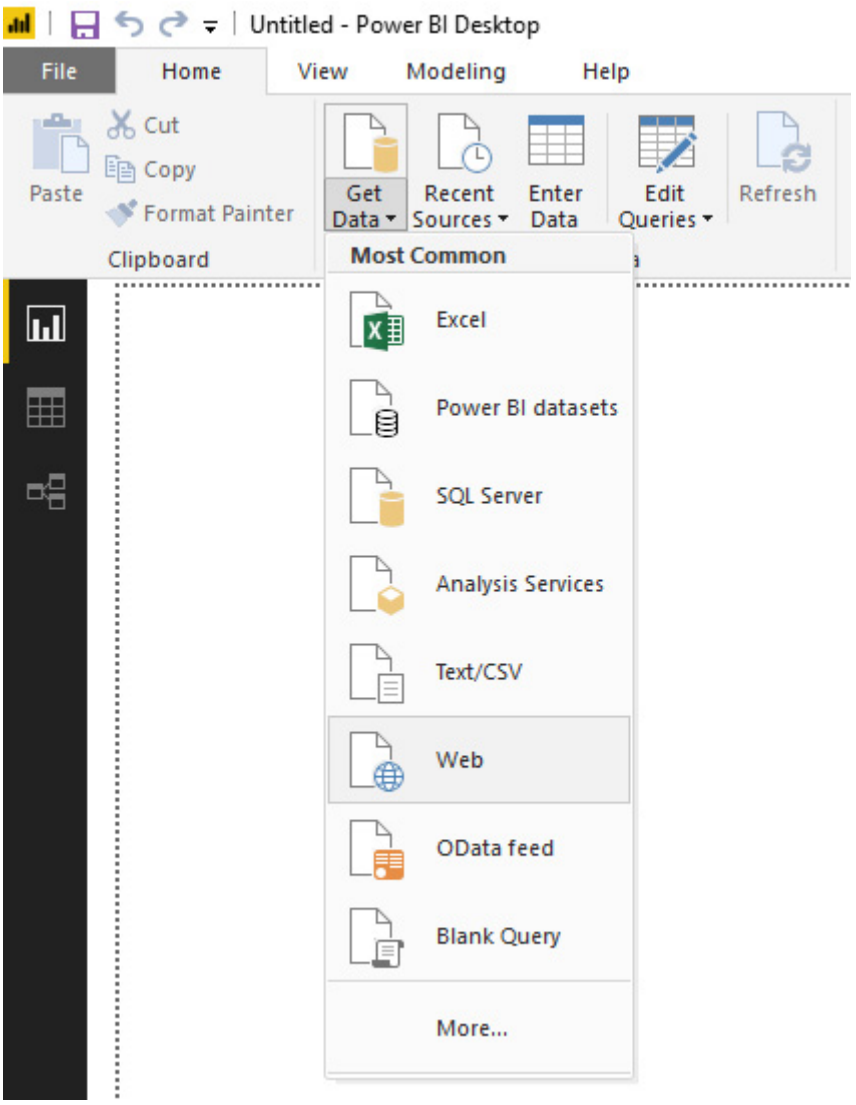

sensor_network_dash - Power BI
Sensor Network Real-time Data
DV Lab DA 4 - Google Docs
Top Companies In India: Top Com
app.powerbi.com/groups/me/dashboards/2058067d-17b6-47d3-9dba-96c7dab73537?referrer=home&ownerId=72f...
Power BI
My workspace
sensor_network_dash
Search
File
Share
Chat in Teams
Comment
Subscribe
Edit
ambient_temperature
9
ambient_temperature
BY TIMESTAMP
ambient_temperature, humidity
BY TIMESTAMP
ambient_temperature
humidity
photosensor
731
radiation_level
205
photosensor
BY TIMESTAMP
radiation_level, photosensor
BY TIMESTAMP
radiation_level
photosensor
ENG
18:17


sensor_network_dash - Power BI
Sensor Network Real-time Data
DV Lab DA 4 - Google Docs
Top Companies In India: Top Com
app.powerbi.com/groups/me/dashboards/2058067d-17b6-47d3-9dba-96c7dab73537?referrer=home&ownerId=72f...
Power BI
My workspace
sensor_network_dash
Search
File
Share
Chat in Teams
Comment
Subscribe
Edit
732
radiation_level
201
humidity
87
photosensor
BY TIMESTAMP
radiation_level, photosensor
BY TIMESTAMP
radiation_level
photosensor
ENG
18:17

Realtime Streaming Dataset from Money Control Dataset

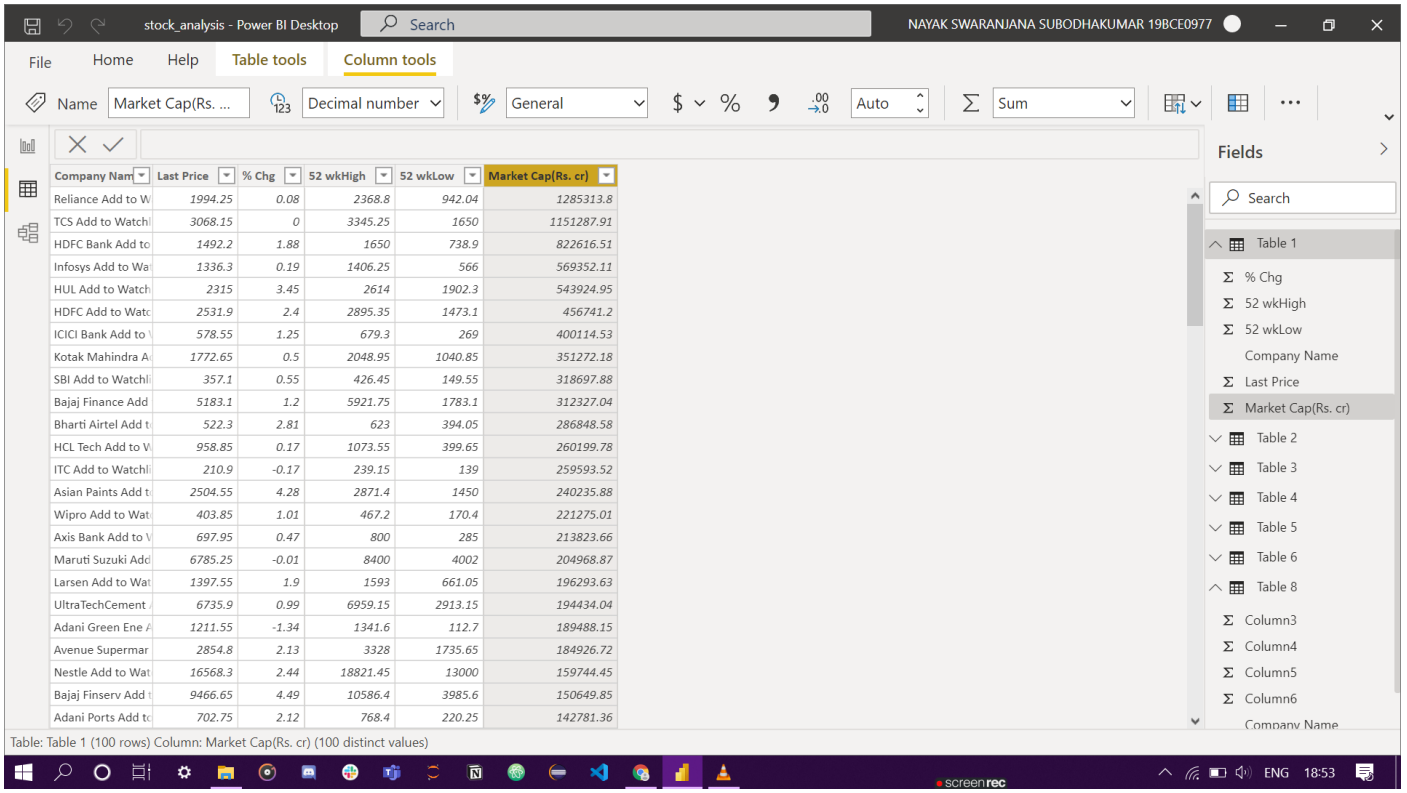
Link: https://www.moneycontrol.com/stocks/marketinfo/marketcap/bse/index.html

We import the dataset into our file by the get data option

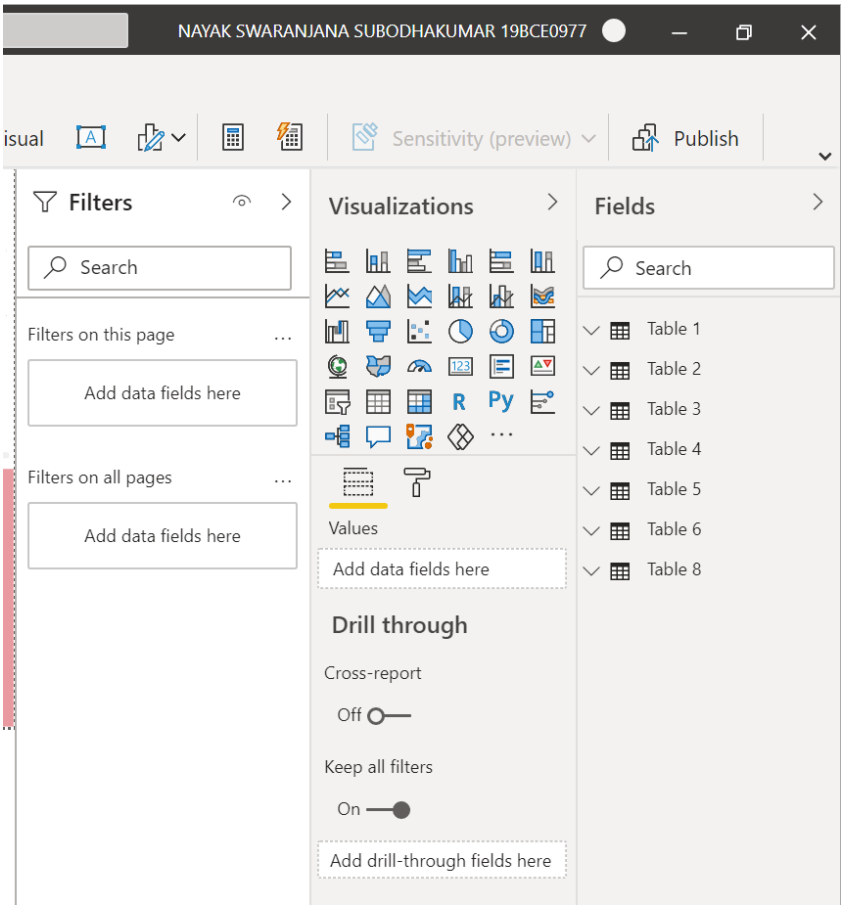


We can paste the site's URL, and Power BI will import the data for us in tables (that can be edited using the query editor). The data is loaded into our workspace and we can start working on the visualizations.

There are 8 tables that are imported from the scraping Power BI performs. The data analysis is performed on only one of them as it is the most comprehensive of all. It is the top 100 companies evaluated by market capitalization - BSE. It has 5 numerical columns and one text column. The text column holds the company names.



We can then move on to creating our report. The right-hand side of our report screen provides us with all the tools we need to create immersive visualizations.



This data is updated every day.

- The first graph is a bar chart visualization of market capital in Rs. Crore vs. Company name. Two additional metrics named Average (Black dotted line) and Maximum (Blue dotted line) have been added.
- The second graph is the % change since the last update in the market capital of each company v/s the company name. It's a line chart visualization.
- The third graph is an area chart visualization of the lowest and highest value is last 52 weeks v/s company name.
- The fourth part consists of two tiles - a sliced list of company names and a card which displays the value of the Last Price attribute corresponding to the company name-checked in the list.

Output: