

**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

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|-----------------------------|------------------|
| 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.

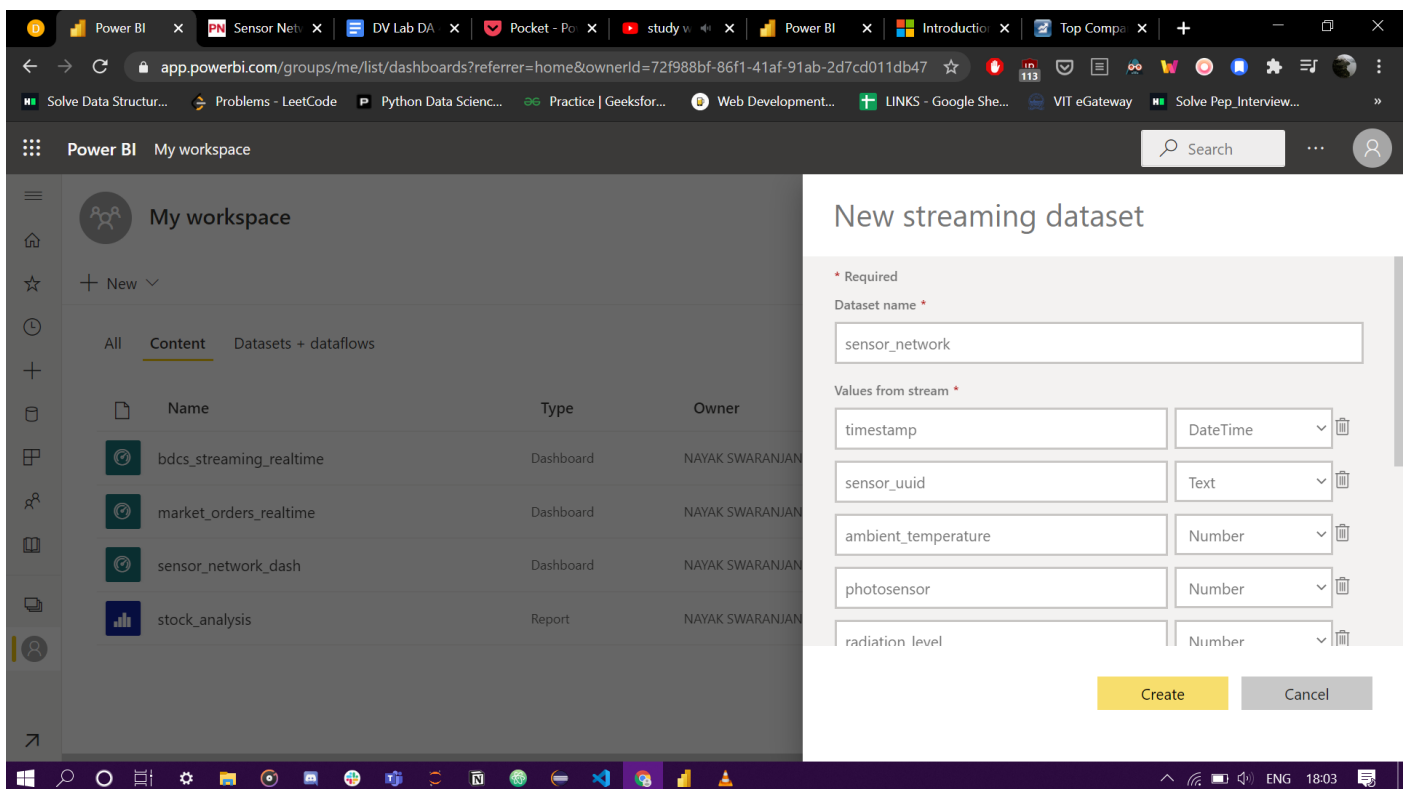
1. The first one is created using the Power BI web app and loading a real-time streaming dataset from PubNub. PubNub is a third-party data service (<http://pubnub.com>). It is designed with IoT in mind, but its powerful backend data stores can provide data for chat platforms, log readers, and more.
2. 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>)

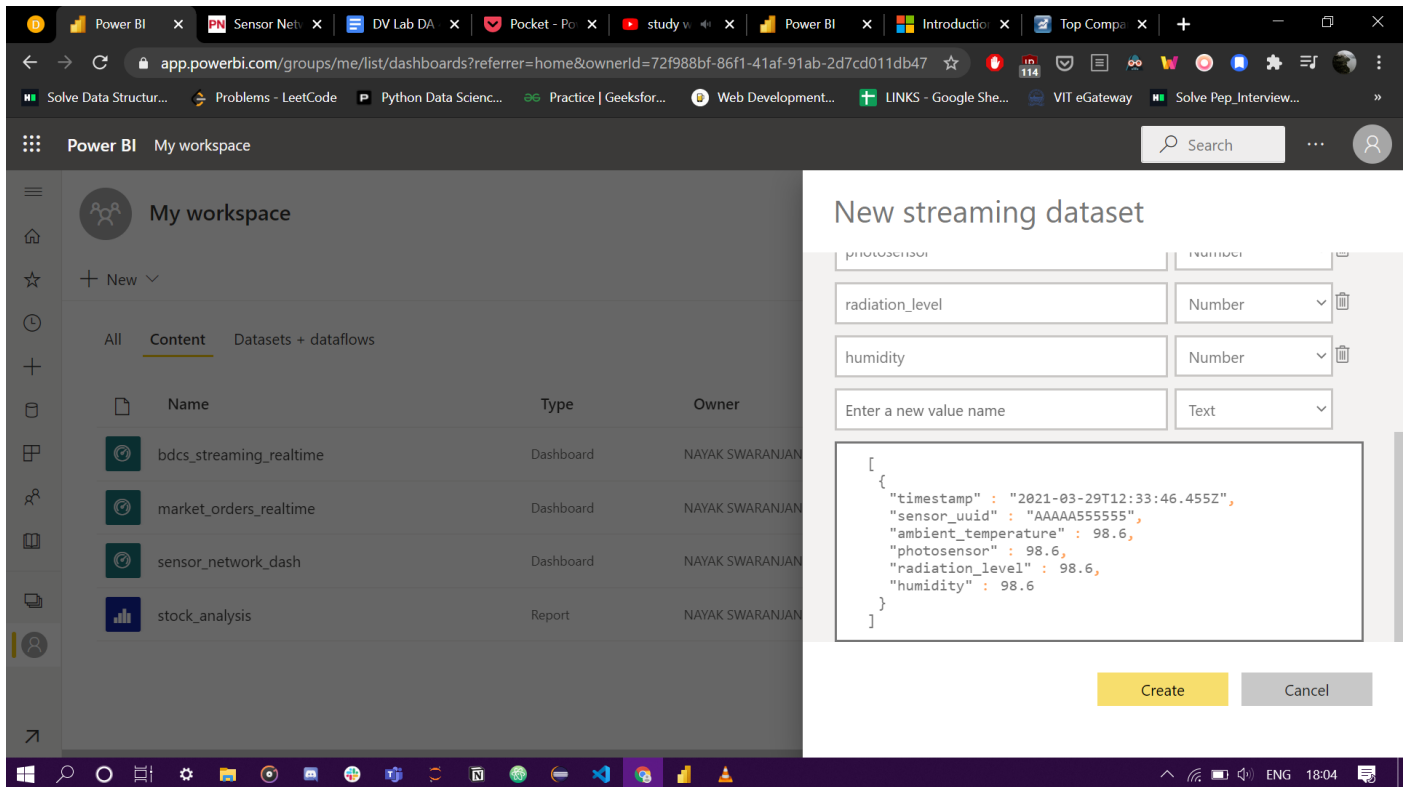
Realtime Dashboard using PubNub Streaming Dataset

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.

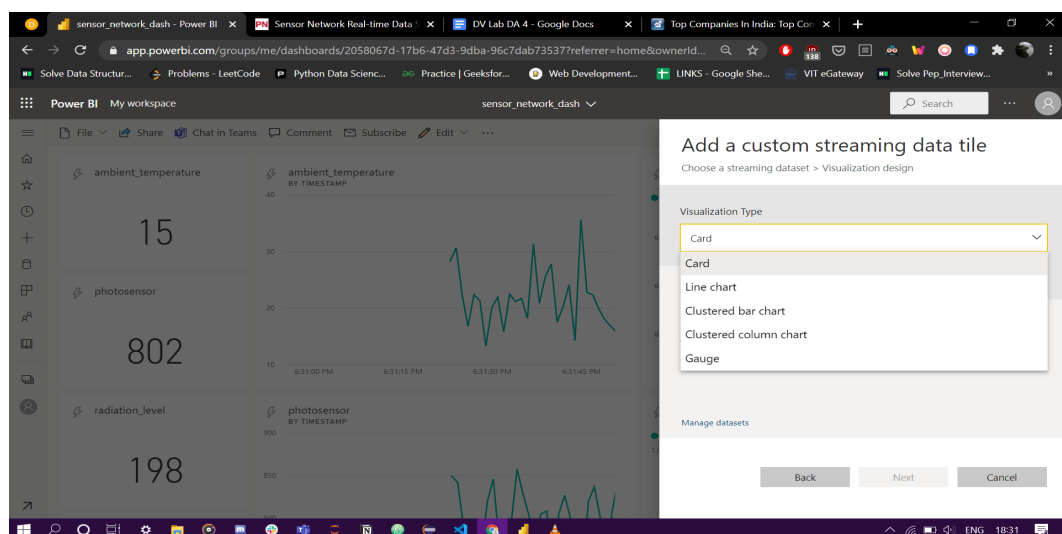




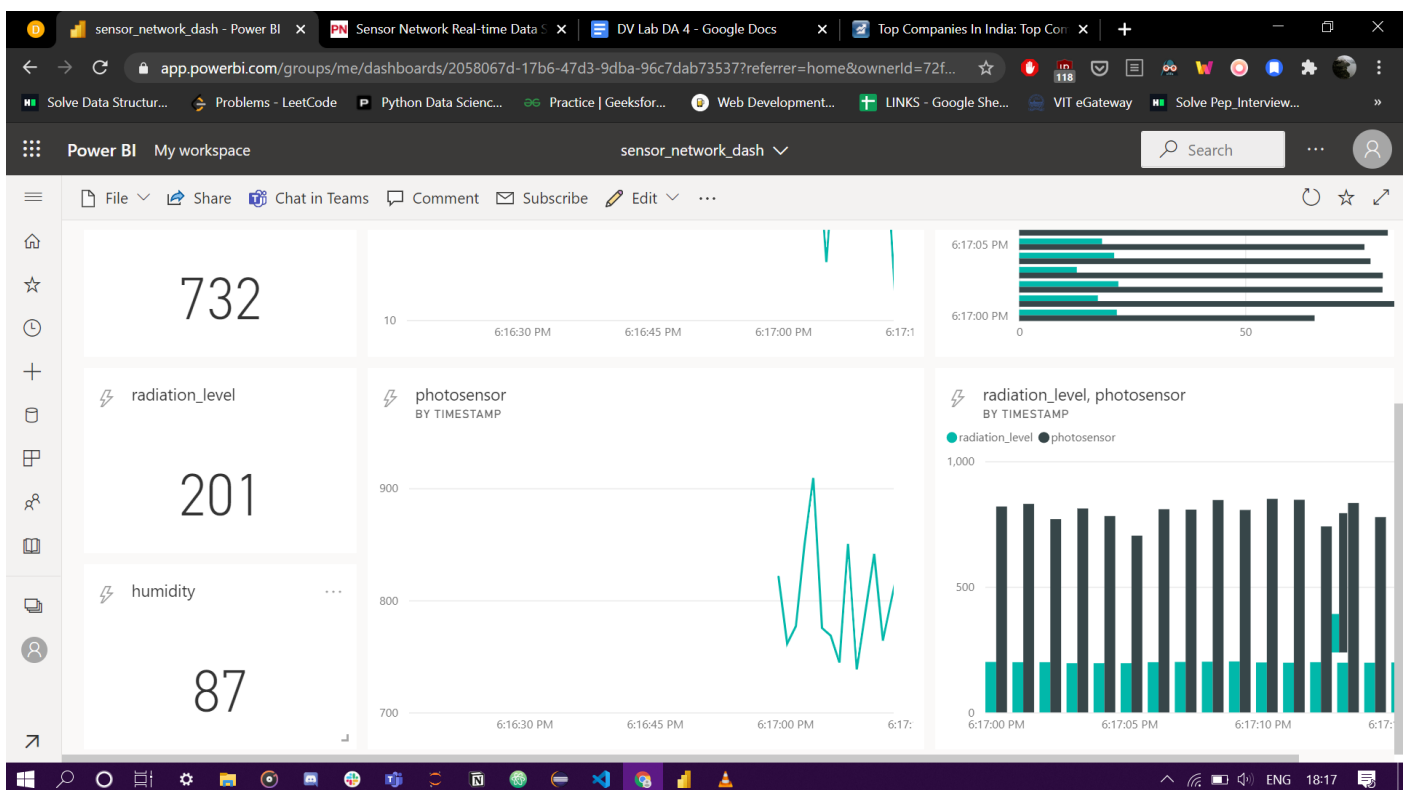
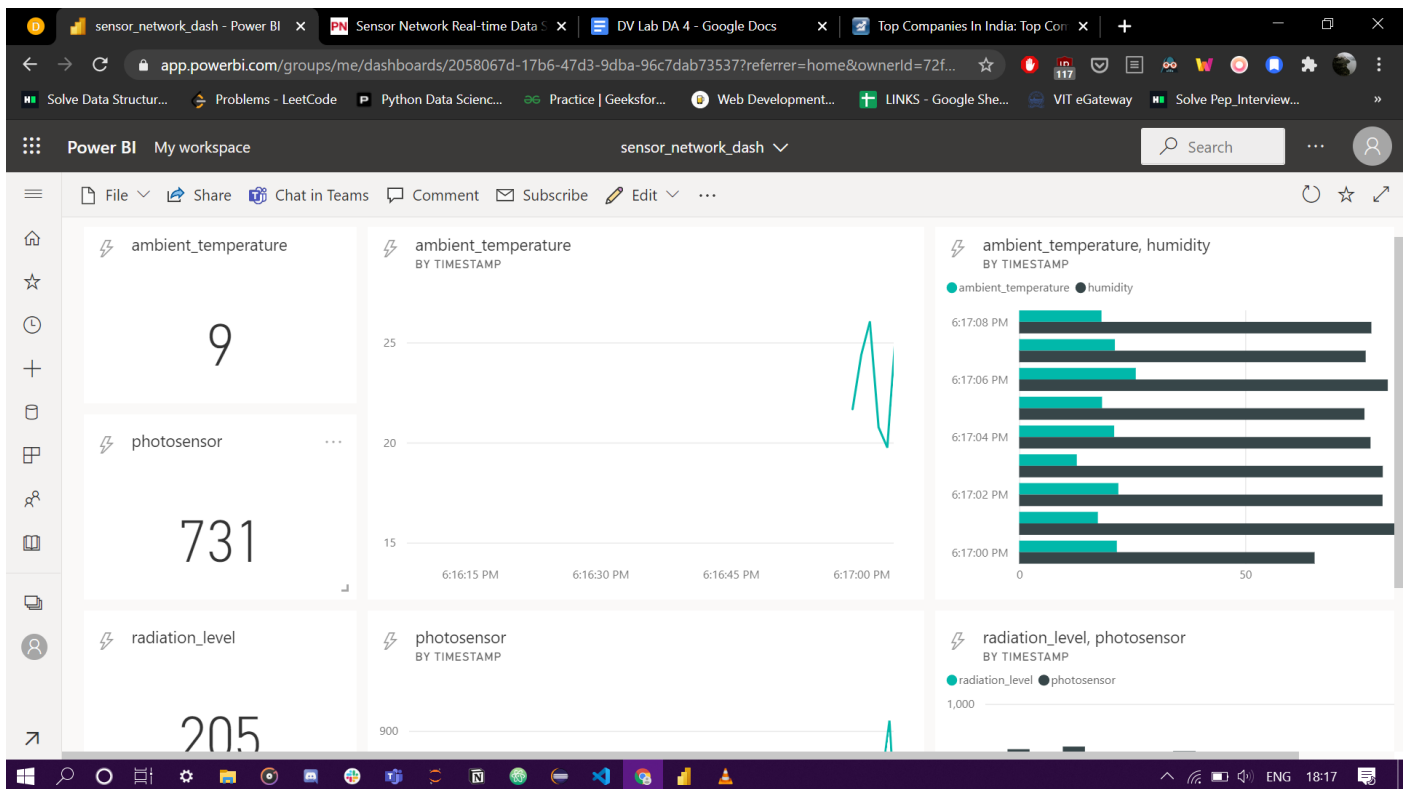
Once this dataset is created, we just need to create a dashboard and add tiles with visualizations in it. This data is updating every second.

- 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 chart 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



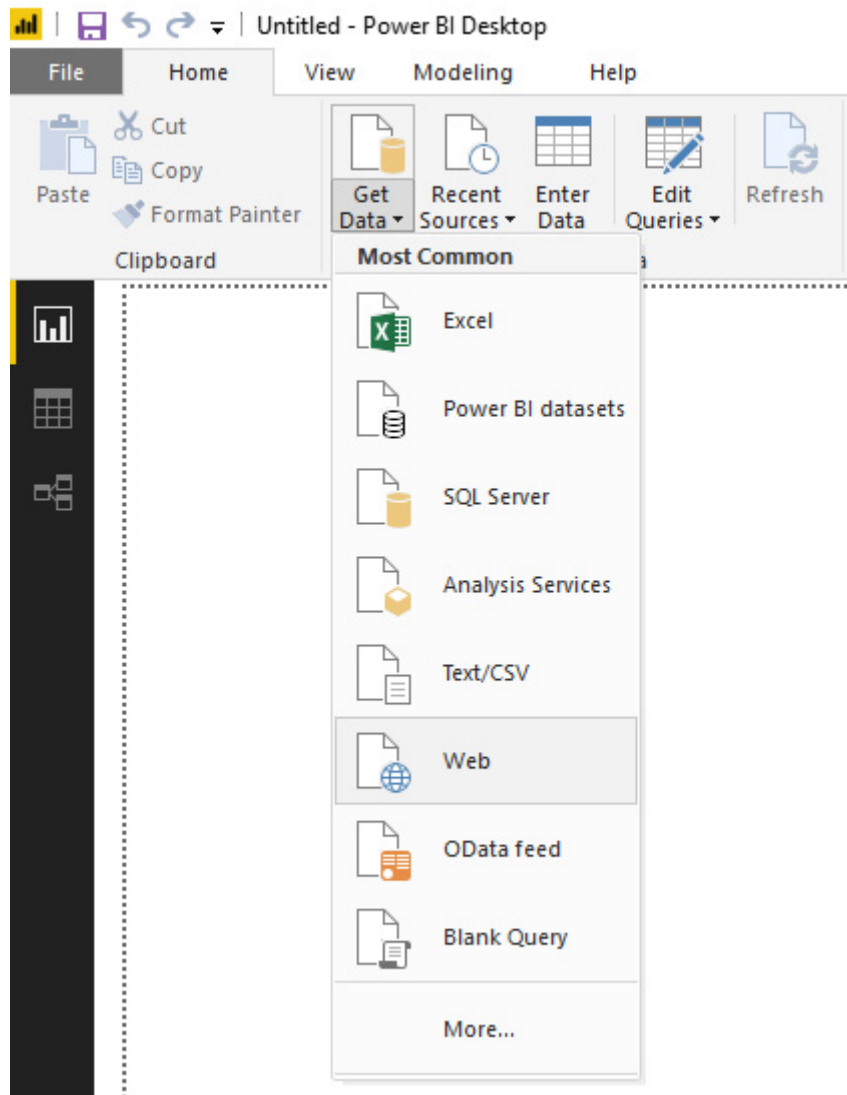
Output:



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.

stock_analysis - Power BI Desktop

NAYAK SWARANJANA SUBODHAKUMAR 19BCE0977

File Home Help Table tools Column tools

Name Market Cap(Rs. ... Decimal number % General \$ % , .00 Auto Σ Sum

| Company Name | Last Price | % Chg | 52 wkHigh | 52 wkLow | Market Cap(Rs. cr) |
|-------------------------------------|------------|-------|-----------|----------|--------------------|
| Reliance Add to Watchlist | 1994.25 | 0.08 | 2368.8 | 942.04 | 1285313.8 |
| TCS Add to Watchlist | 3068.15 | 0 | 3345.25 | 1650 | 1151287.91 |
| HDFC Bank Add to Watchlist | 1492.2 | 1.88 | 1650 | 738.9 | 822616.51 |
| Infosys Add to Watchlist | 1336.3 | 0.19 | 1406.25 | 566 | 569352.11 |
| HUL Add to Watchlist | 2315 | 3.45 | 2614 | 1902.3 | 543924.95 |
| HDFC Add to Watchlist | 2531.9 | 2.4 | 2895.35 | 1473.1 | 456741.2 |
| ICICI Bank Add to Watchlist | 578.55 | 1.25 | 679.3 | 269 | 400114.53 |
| Kotak Mahindra Add to Watchlist | 1772.65 | 0.5 | 2048.95 | 1040.85 | 351272.18 |
| SBI Add to Watchlist | 357.1 | 0.55 | 426.45 | 149.55 | 318697.88 |
| Bajaj Finance Add to Watchlist | 5183.1 | 1.2 | 5921.75 | 1783.1 | 312327.04 |
| Bharti Airtel Add to Watchlist | 522.3 | 2.81 | 623 | 394.05 | 286848.58 |
| HCL Tech Add to Watchlist | 958.85 | 0.17 | 1073.55 | 399.65 | 260199.78 |
| ITC Add to Watchlist | 210.9 | -0.17 | 239.15 | 139 | 259593.52 |
| Asian Paints Add to Watchlist | 2504.55 | 4.28 | 2871.4 | 1450 | 240235.88 |
| Wipro Add to Watchlist | 403.85 | 1.01 | 467.2 | 170.4 | 221275.01 |
| Axis Bank Add to Watchlist | 697.95 | 0.47 | 800 | 285 | 213823.66 |
| Maruti Suzuki Add to Watchlist | 6785.25 | -0.01 | 8400 | 4002 | 204968.87 |
| Larsen Add to Watchlist | 1397.55 | 1.9 | 1593 | 661.05 | 196293.63 |
| UltraTechCement Add to Watchlist | 6735.9 | 0.99 | 6959.15 | 2913.15 | 194434.04 |
| Adani Green Energy Add to Watchlist | 1211.55 | -1.34 | 1341.6 | 112.7 | 189488.15 |
| Avenue Supermart Add to Watchlist | 2854.8 | 2.13 | 3328 | 1735.65 | 184926.72 |
| Nestle Add to Watchlist | 16568.3 | 2.44 | 18821.45 | 13000 | 159744.45 |
| Bajaj Finserv Add to Watchlist | 9466.65 | 4.49 | 10586.4 | 3985.6 | 150649.85 |
| Adani Ports Add to Watchlist | 702.75 | 2.12 | 768.4 | 220.25 | 142781.36 |

Table: Table 1 (100 rows) Column: Market Cap(Rs. cr) (100 distinct values)

Fields

- Σ % Chg
- Σ 52 wkHigh
- Σ 52 wkLow
- Company Name
- Σ Last Price
- Σ Market Cap(Rs. cr)

Table 2

Table 3

Table 4

Table 5

Table 6

Table 8

Column3

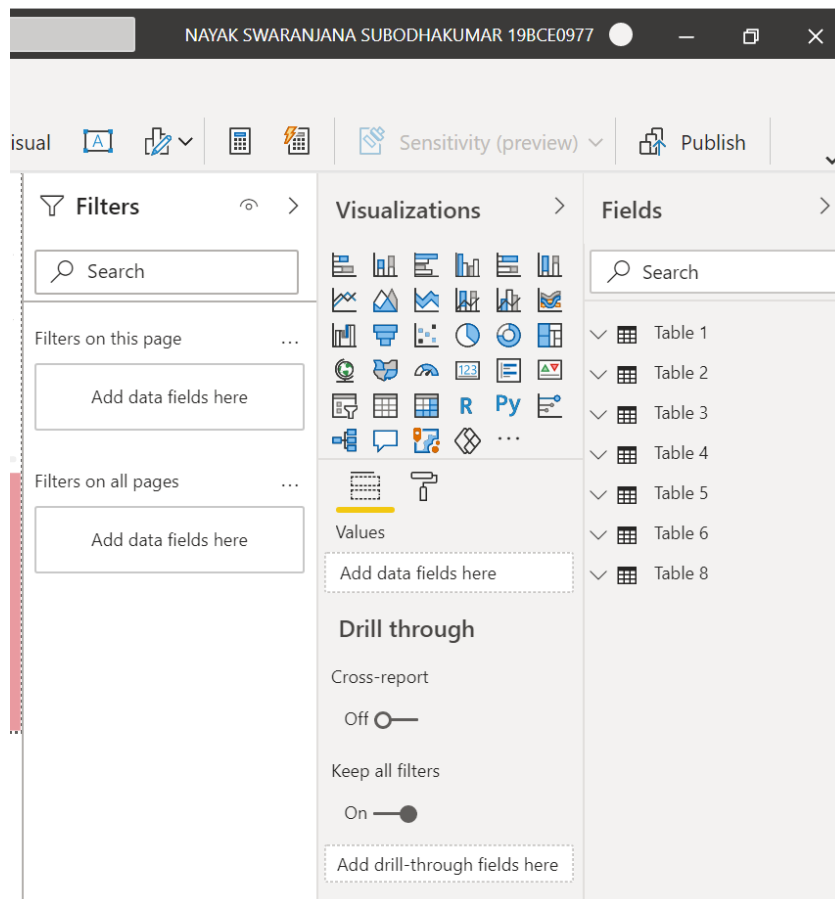
Column4

Column5

Column6

Company Name

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:

