AIR QUALITY ASSESSMENT-TAMILNADU

TEAM MEMBER

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Phase-3 (DEVELOPMENT)

INTRODUCTION:

In this phase we will begin our project by loading and preprocessing the air quality dataset. Dataset will be loaded in python and the preprocessing will be done as follows (data manipulation libraries will be installed).

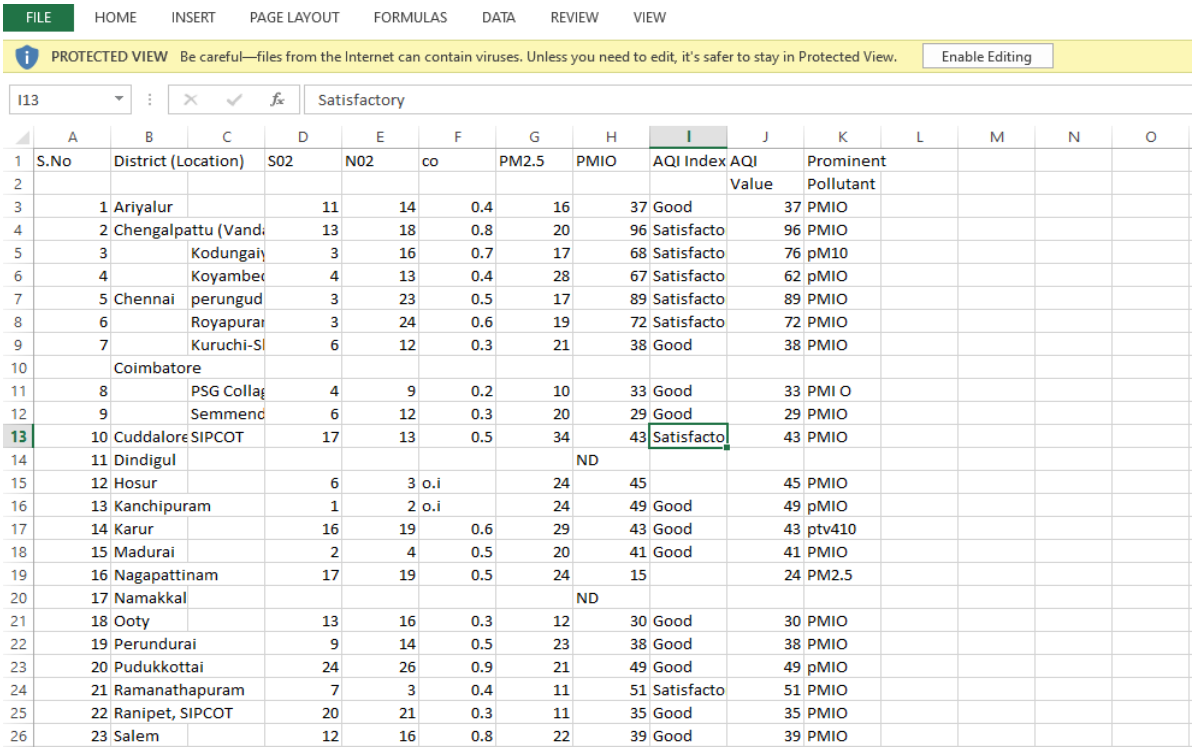
LIBRARIES USED FOR PREPROCESSING:

NumPy: **NumPy stands for Numerical Python.It is a fundamental package for numerical computations in Python.It provides support for arrays and matrices, as well as a large collection of high-level mathematical functions to operate on these data structures.NumPy is widely used in scientific and engineering applications for tasks involving numerical operations.**

Pandas: **Pandas is a data manipulation and analysis library. It provides data structures like Series (1-dimensional) and DataFrame (2-dimensional), which are highly efficient and designed for working with structured data.Pandas allows for easy data ingestion, cleaning, transformation, and analysis.**

Seaborn: **Seaborn is a statistical data visualization library based on Matplotlib.It provides a high-level interface for creating informative and attractive statistical graphics.Seaborn simplifies the process of creating complex visualizations and is especially useful for exploring relationships between variables in datasets.**

DATASET COLLECTED: Recent data(5th august 2023)



FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW

PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing

I13 Satisfactory

	S.No	District (Location)	S02	N02	co	PM2.5	PMIO	AQI Index	AQI Value	Prominent Pollutant
3	1	Ariyalur	11	14	0.4	16	37	Good	37	PMIO
4	2	Chengalpattu (Vand	13	18	0.8	20	96	Satisfacto	96	PMIO
5	3	Kodungaiy	3	16	0.7	17	68	Satisfacto	76	pM10
6	4	Koyambe	4	13	0.4	28	67	Satisfacto	62	pMIO
7	5	Chennai perungud	3	23	0.5	17	89	Satisfacto	89	PMIO
8	6	Royapura	3	24	0.6	19	72	Satisfacto	72	PMIO
9	7	Kuruchi-S	6	12	0.3	21	38	Good	38	PMIO
10		Coimbatore								
11	8	PSG Colla	4	9	0.2	10	33	Good	33	PMI O
12	9	Semmend	6	12	0.3	20	29	Good	29	PMIO
13	10	Cuddalore SIPCOT	17	13	0.5	34	43	Satisfacto	43	PMIO
14	11	Dindigul					ND			
15	12	Hosur	6	3	o.i	24	45		45	PMIO
16	13	Kanchipuram	1	2	o.i	24	49	Good	49	pMIO
17	14	Karur	16	19	0.6	29	43	Good	43	ptv410
18	15	Madurai	2	4	0.5	20	41	Good	41	PMIO
19	16	Nagapattinam	17	19	0.5	24	15		24	PM2.5
20	17	Namakkal					ND			
21	18	Ooty	13	16	0.3	12	30	Good	30	PMIO
22	19	Perundurai	9	14	0.5	23	38	Good	38	PMIO
23	20	Pudukkottai	24	26	0.9	21	49	Good	49	pMIO
24	21	Ramanathapuram	7	3	0.4	11	51	Satisfacto	51	PMIO
25	22	Ranipet, SIPCOT	20	21	0.3	11	35	Good	35	PMIO
26	23	Salem	12	16	0.8	22	39	Good	39	PMIO

Loading of data in python and preprocessing:

```
In [1]: #import required libraries
```

```
In [2]: import pandas as pd
```

```
In [3]: import numpy as np
```

```
In [4]: import seaborn as sns
```

```
In [11]: data = pd.read_excel("C:\\Users\\pc\Pictures\\New folder\\airquality.xlsx")
```

```
In [12]: data.head()
```

Out[12]:

	S.No	District (Location)	Unnamed: 2	S02	N02	co	PM2.5	PMIO	AQI Index	AQI	Prominent
0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	Value	Pollutant
1	1.0	Ariyalur	NaN	11.0	14	0.4	16	37	Good	37	PMIO
2	2.0	Chengalpattu (Vandalur)	NaN	13.0	18	0.8	20	96	Satisfactory	96	PMIO
3	3.0	NaN	Kodungaiyur	3.0	16	0.7	17	68	Satisfactory	76	pM10

```
In [13]: pd.read_excel("C:\\Users\\pc\\Pictures\\New folder\\airquality.xlsx")
```

Out[13]:

	S.No	District (Location)	Unnamed: 2	S02	N02	co	PM2.5	PMIO	AQI Index	AQI	Prominent
0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	Value	Pollutant
1	1.0	Ariyalur	NaN	11.0	14	0.4	16	37	Good	37	PMIO
2	2.0	Chengalpattu (Vandalur)	NaN	13.0	18	0.8	20	96	Satisfactory	96	PMIO
3	3.0	NaN	Kodungaiyur	3.0	16	0.7	17	68	Satisfactory	76	pM10
4	4.0	NaN	Koyambedu	4.0	13	0.4	28	67	Satisfactory	62	pMIO
5	5.0	Chennai	perungudi	3.0	23	0.5	17	89	Satisfactory	89	PMIO
6	6.0	NaN	Royapuram	3.0	24	0.6	19	72	Satisfactory	72	PMIO
7	7.0	NaN	Kuruchi-SIDCO	6.0	12	0.3	21	38	Good	38	PMIO
8	NaN	Coimbatore	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
9	8.0	NaN	PSG Collage	4.0	9	0.2	10	33	Good	33	PMI O
10	9.0	NaN	Semmendalam	6.0	12	0.3	20	29	Good	29	PMIO
11	10.0	Cuddalore	SIPCOT	17.0	13	0.5	34	43	Satisfactory	43	PMIO
12	11.0	Dindigul	NaN	NaN	NaN	NaN	NaN	ND	NaN	NaN	NaN

Basic info from preprocessing our data:

```
In [14]: data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 36 entries, 0 to 35
Data columns (total 11 columns):
 #   Column               Non-Null Count  Dtype
---  ------               --------------  -----
 0   S.No                 34 non-null     float64
 1   District (Location)  26 non-null     object
 2   Unnamed: 2           13 non-null     object
 3   S02                  31 non-null     float64
 4   N02                  30 non-null     object
 5   co                   31 non-null     object
 6   PM2.5                31 non-null     object
 7   PMIO                 34 non-null     object
 8   AQI Index            28 non-null     object
 9   AQI                  32 non-null     object
 10  Prominent            32 non-null     object
dtypes: float64(2), object(9)
memory usage: 3.2+ KB
```

Conclusion:

In this phase we have loaded our collected data in the python and the preprocessing importations such as pandas,numpy and seaborn are done.let us make our analysis in the upcoming phases.