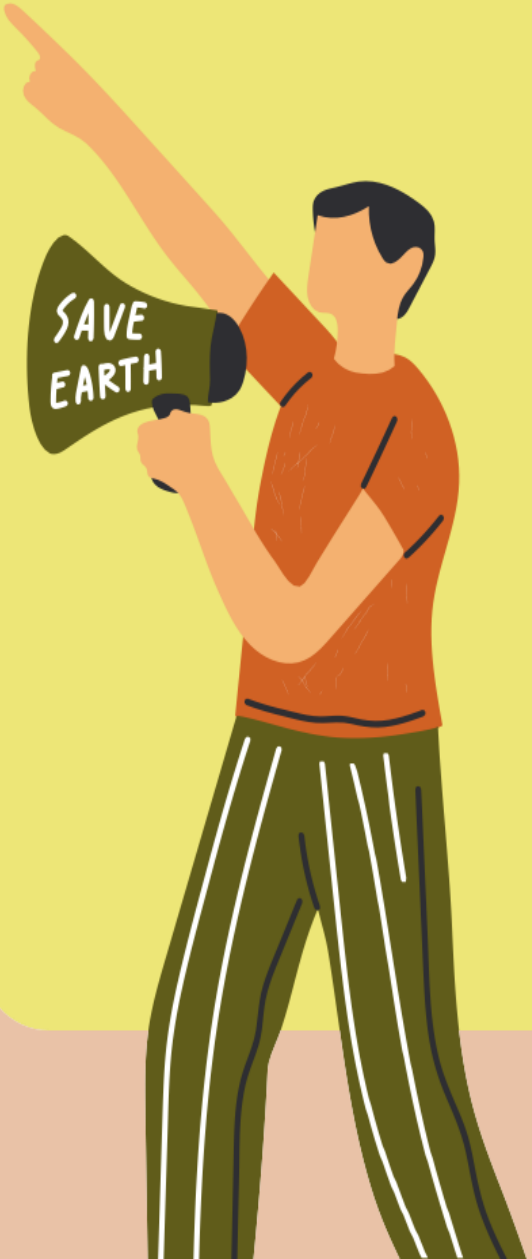
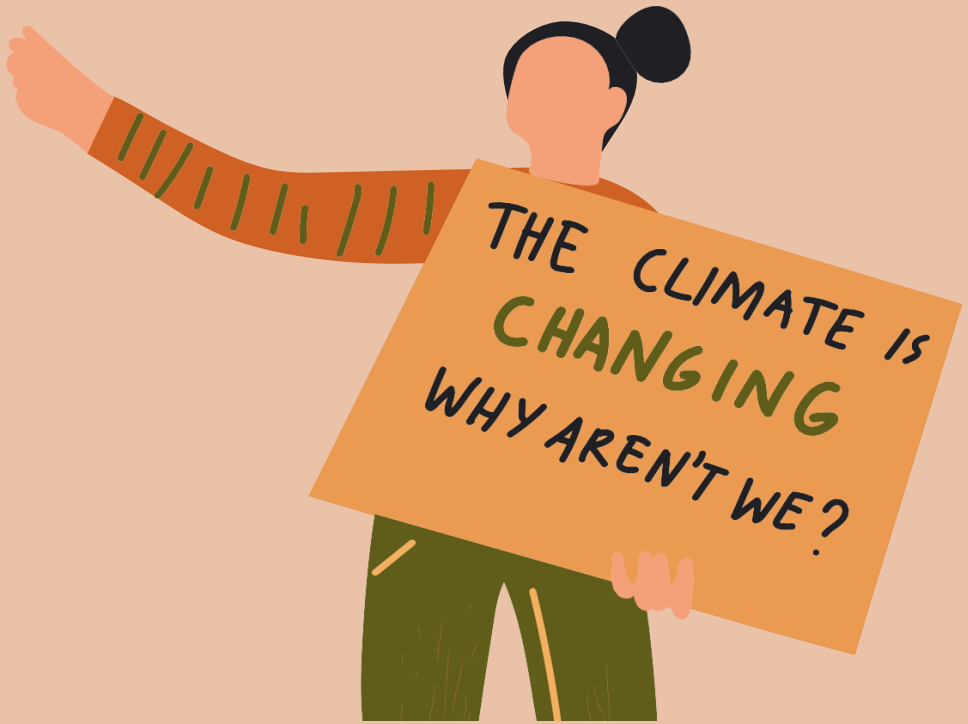
SRINIBAS RANA

India Air Quality Index Analysis - Real Time Air Pollution Level



Project Overview

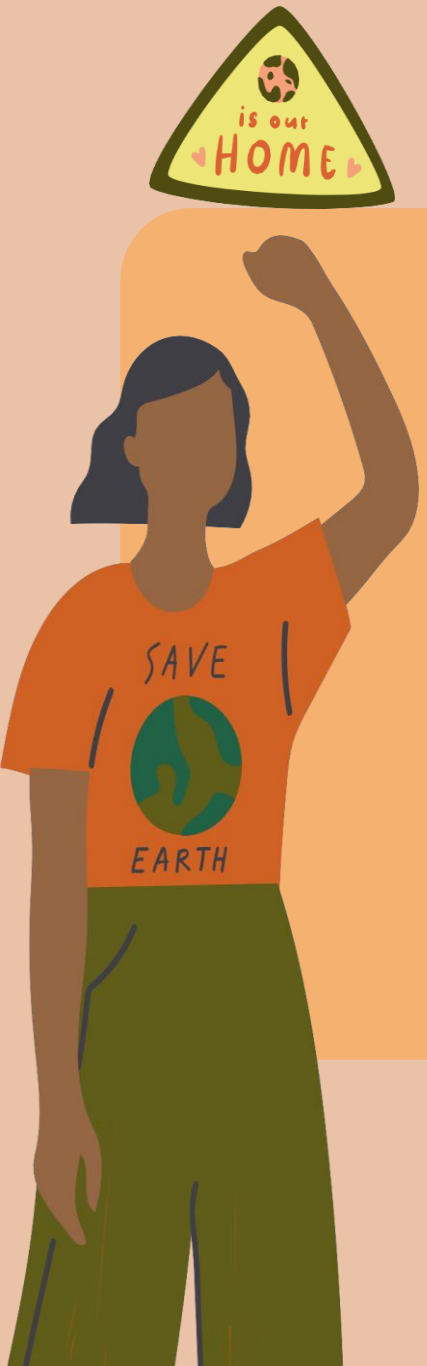


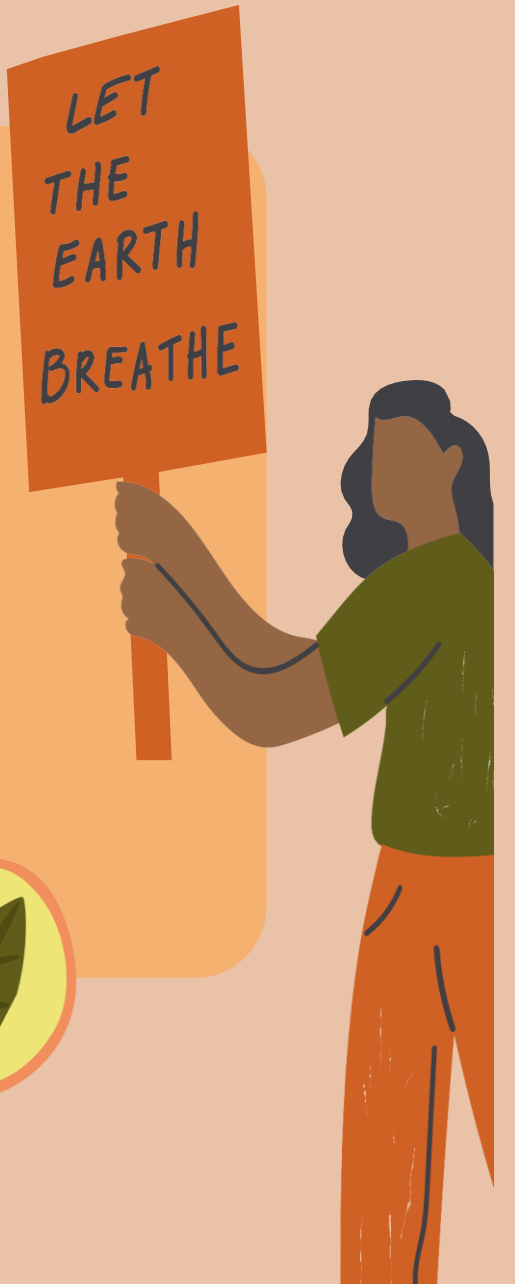
The Air Quality Monitoring System is a comprehensive solution designed to collect, store, and analyze air quality data from various monitoring stations across different states and cities.

The system aims to provide valuable insights into the air quality of different regions, aiding environmentalists, policymakers, and the general public in making informed decisions regarding health and environmental concerns.

TABLE USED

Air Quality





1. **Retrieve all records for a specific city**

e.g: Mumbai.

```
SELECT * FROM AIRQUALITY
WHERE CITY = 'Mumbai';
```

Output

serialnumber	state	city	stationname	currentaqivalue
108	Maharashtra	Mumbai	BKC, Mumbai - MPCB	151
291	Maharashtra	Mumbai	Bandra, Mumbai - MPCB	212
413	Maharashtra	Mumbai	Worli, Mumbai - MPCB	196

2. Find the average AQI value for each state?

```
SELECT state, avg(currentaqivalue) as avg_aqi_vale
FROM AIRQUALITY
GROUP BY state
ORDER BY 2 ASC;
```

Output

state	avg_aqi_vale
Andaman and Nicobar Islands	29.5
Lakshadweep	29.9
Meghalaya	35.33333333
Mizoram	37
Sikkim	38.66666667
Kerala	41.27777778
Goa	41.66666667
Puducherry	41.66666667
Tripura	42.33333333
Manipur	45
Nagaland	45.5
Dadra and Nagar Haveli	52
Himachal Pradesh	56.21052632
Daman and Diu	57
Arunachal Pradesh	64
Jammu and Kashmir	66.5
Chandigarh	68.66666667
Karnataka	68.81481481
Dadra and Nagar Haveli and Daman and Diu	69
Tamil Nadu	73.76666667
Andhra Pradesh	76.47058824
Uttarakhand	77.41666667
Odisha	78.71428571
Chhattisgarh	92
Assam	94.5
Telangana	96.35294118
Jharkhand	97.6
West Bengal	102.4210526
Madhya Pradesh	114.45
Rajasthan	118.037037
Maharashtra	121.787234
Gujarat	122
Punjab	123.875
Bihar	124
Haryana	147.8076923
Uttar Pradesh	165.9189189
Delhi	290

3. Identify cities where AQI is above a certain threshold (e.g., AQI > 200)?

```
SELECT city, currentaqivalue
FROM airquality
WHERE currentaqivalue> 200
ORDER BY 2 asc;
```

Output

city	currentaqivalue
Lucknow	203
Faridabad	204
Kanpur	207
Mumbai	212
Ghaziabad	213
Kalyan	215
Thane	218
Noida	239
Surat	241
Delhi	262
Noida	264
Greater Noida	264
Noida	264
Faridabad	272
Gurugram	277
Ghaziabad	289
Ahmedabad	292
Ghaziabad	315
Delhi	318

4. Find the highest AQI value along with the corresponding city and state?

```
SELECT state, city, currentaqivalue
FROM airquality
ORDER BY currentvalue DESC
LIMIT 1;
```

Output

state	city	currentaqivalue
Delhi	Delhi	318

5. Calculate the overall average AQI for the entire dataset?

```
SELECT AVG (currentaqivalue) AS Avg_Value
FROM airquality;
```

Output

avg_value
96.05208333

6. Retrieve records for states with more than five cities?

```
SELECT state, COUNT (*) No_Of_City
FROM airquality
GROUP BY state
HAVING COUNT (*) > 5;
```

Output

state	no_of_city
Uttarakhand	12
Rajasthan	27
Jharkhand	10
Maharashtra	47
Lakshadweep	30
Gujarat	22
Punjab	24
Himachal Pradesh	19
Karnataka	27
Kerala	18
West Bengal	19
Andhra Pradesh	17
Haryana	26
Telangana	17
Madhya Pradesh	20
Tamil Nadu	30
Odisha	21
Uttar Pradesh	37

7. Find the cities in a specific state with AQI less than 50?

```
SELECT state, city, currentaqivalue
FROM airquality
WHERE currentaqivalue < 50
ORDER BY currentaqivalue ASC;
```

Output

state	city	currentaqivalue
Kerala	Alappuzha	20
Mizoram	Aizawl	21
Andhra Pradesh	Vizianagaram	23
Lakshadweep	Chetlat	27
Lakshadweep	Chetlat	27
Andaman and Nicobar Islands	Port Blair	27
Lakshadweep	Androtт	27
Lakshadweep	Chetlat	27
Lakshadweep	Androtт	27
Meghalaya	Shillong	27
Lakshadweep	Androtт	27
Lakshadweep	Kavaratti	28
Lakshadweep	Kavaratti	28
Odisha	Balasore	28
Lakshadweep	Kavaratti	28
Lakshadweep	Kiltan	29
Lakshadweep	Amini	29
Kerala	Kozhikode	29
Lakshadweep	Agatti	29
Lakshadweep	Kiltan	29
Lakshadweep	Kiltan	29
Lakshadweep	Amini	29

8. Categorize AQI values into different pollution levels?

```
SELECT city, currentaqivalue,
CASE WHEN currentaqivalue <= 50 THEN 'Good'
        WHEN currentaqivalue <= 100 THEN
'Moderate'
        WHEN currentaqivalue <= 150 THEN
'Unhealthy for Sensitive Groups'
        WHEN currentaqivalue <= 200 THEN
'Uhealthy'
        WHEN currentaqivalue <= 300 THEN 'Very
Unhealthy'
        ELSE 'Hazardous'
        END AS Pollution_Level
        FROM airquality
        WHERE currentaqivalue is NOT NULL;
```

Output

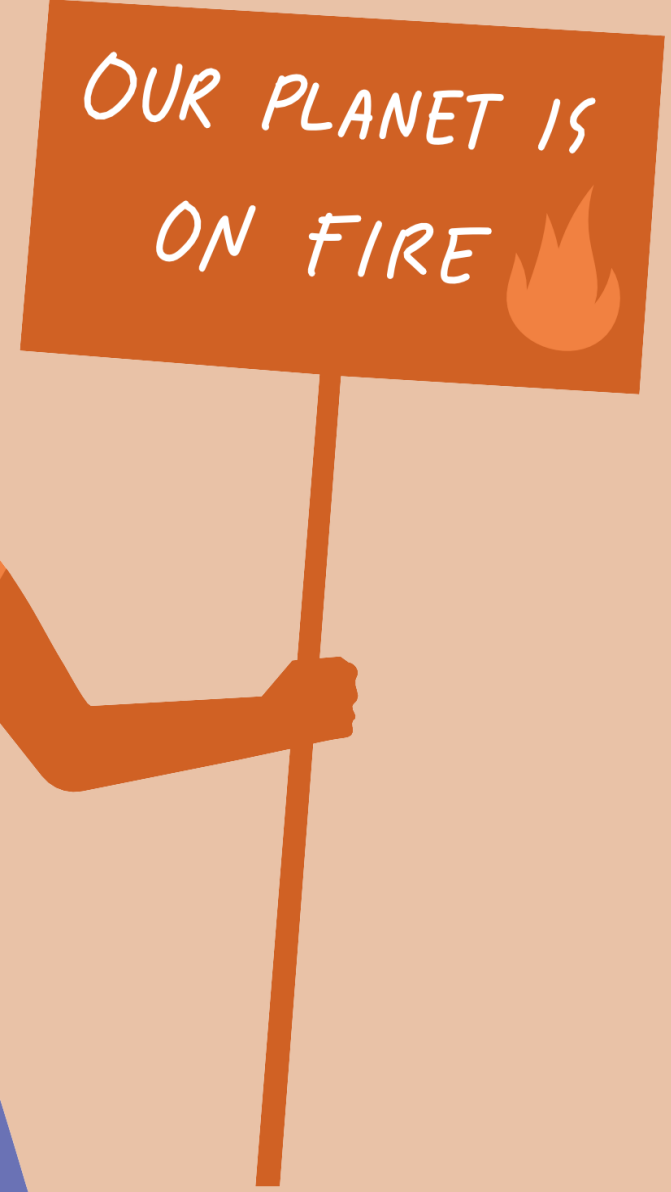
city	currentaqivalue	pollution_level
Amaravati	135	Unhealthy for Sensitive Groups
Anantapur	62	Moderate
Chittoor	30	Good
Eluru	95	Moderate
Guntur	84	Moderate
Kadapa	102	Unhealthy for Sensitive Groups
Kakinada	54	Moderate
Kurnool	44	Good
Nellore	72	Moderate
Ongole	88	Moderate
Rajamahendravaram	73	Moderate
Srikakulam	45	Good
Tirupati	107	Unhealthy for Sensitive Groups
Vijayawada	97	Moderate
Visakhapatnam	106	Unhealthy for Sensitive Groups
Vizianagaram	23	Good
Yemmiganur	83	Moderate
Itanagar	64	Moderate
Guwahati	92	Moderate
Nagaon	112	Unhealthy for Sensitive Groups
Nalbari	99	Moderate
Sivasagar	75	Moderate

9. find cities with the Lowest AQI values in each state and rank top 1?

```
WITH Lowest_AQI AS (
SELECT DISTINCT city, currentaqivalue, state,
RANK() OVER(PARTITION BY state ORDER BY
currentaqivalue ASC) AS Lowest_AQI_Value
            FROM airquality
)
SELECT state, city,
currentaqivalue, Lowest_AQI_Value
FROM Lowest_AQI
WHERE Lowest_AQI_Value = 1
LIMIT 1;
```

Output

state	city	currentaqivalue	lowest_aqi_value
Karnataka	Bagalkot	33	1



THANK YOU

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