1. **OLTP**
2. **Table Creation Script**

| CREATE TABLE IF NOT EXISTS countries (  id SERIAL PRIMARY KEY,  location TEXT PRIMARY KEY,  iso\_code TEXT NOT NULL,  continent TEXT,  population FLOAT,  population\_density FLOAT,  median\_age FLOAT,  aged\_65\_older FLOAT,  aged\_70\_older FLOAT,  gdp\_per\_capita FLOAT,  extreme\_poverty FLOAT,  cardiovasc\_death\_rate FLOAT,  diabetes\_prevalence FLOAT,  female\_smokers FLOAT,  male\_smokers FLOAT,  handwashing\_facilities FLOAT,  hospital\_beds\_per\_thousand FLOAT,  life\_expectancy FLOAT,  human\_development\_index FLOAT  );  CREATE TABLE IF NOT EXISTS cases (  id SERIAL PRIMARY KEY,  location TEXT REFERENCES countries(location),  date TEXT NOT NULL,  total\_cases BIGINT,  new\_cases BIGINT,  new\_cases\_smoothed FLOAT,  total\_cases\_per\_million FLOAT,  new\_cases\_per\_million FLOAT,  new\_cases\_smoothed\_per\_million FLOAT  );  CREATE TABLE IF NOT EXISTS deaths (  id SERIAL PRIMARY KEY,  location TEXT REFERENCES countries(location),  date TEXT NOT NULL,  total\_deaths BIGINT,  new\_deaths BIGINT,  new\_deaths\_smoothed FLOAT,  total\_deaths\_per\_million FLOAT,  new\_deaths\_per\_million FLOAT,  new\_deaths\_smoothed\_per\_million FLOAT  );  CREATE TABLE IF NOT EXISTS hospitals (  id SERIAL PRIMARY KEY,  location TEXT REFERENCES countries(location),  date TEXT NOT NULL,  icu\_patients BIGINT,  icu\_patients\_per\_million FLOAT,  hosp\_patients BIGINT,  hosp\_patients\_per\_million FLOAT,  weekly\_icu\_admissions BIGINT,  weekly\_icu\_admissions\_per\_million FLOAT,  weekly\_hosp\_admissions BIGINT,  weekly\_hosp\_admissions\_per\_million FLOAT  );  CREATE TABLE IF NOT EXISTS tests (  id SERIAL PRIMARY KEY,  location TEXT REFERENCES countries(location),  date TEXT NOT NULL,  total\_tests BIGINT,  new\_tests BIGINT,  total\_tests\_per\_thousand FLOAT,  new\_tests\_per\_thousand FLOAT,  new\_tests\_smoothed FLOAT,  new\_tests\_smoothed\_per\_thousand FLOAT,  positive\_rate FLOAT,  tests\_per\_case FLOAT,  tests\_units TEXT  );  CREATE TABLE IF NOT EXISTS vaccinations (  id SERIAL PRIMARY KEY,  location TEXT REFERENCES countries(location),  date TEXT NOT NULL,  total\_vaccinations BIGINT,  people\_vaccinated BIGINT,  people\_fully\_vaccinated BIGINT,  total\_boosters BIGINT,  new\_vaccinations BIGINT,  new\_vaccinations\_smoothed FLOAT,  total\_vaccinations\_per\_hundred FLOAT,  people\_vaccinated\_per\_hundred FLOAT,  people\_fully\_vaccinated\_per\_hundred FLOAT,  total\_boosters\_per\_hundred FLOAT,  new\_vaccinations\_smoothed\_per\_million FLOAT,  new\_people\_vaccinated\_smoothed FLOAT,  new\_people\_vaccinated\_smoothed\_per\_hundred FLOAT  ); |
| --- |

1. **List of Tables**

Graphical user interface, text, application, email

Description automatically generated

1. **Schema for each table**

**Cases**

Graphical user interface

Description automatically generated

**Countries**

Table

Description automatically generated

**Deaths**

Graphical user interface

Description automatically generated with medium confidence

**Hospitals**

Graphical user interface

Description automatically generated with medium confidence

**Tests**

A picture containing graphical user interface

Description automatically generated

**Vaccinations**

Table

Description automatically generated

1. **Count of rows for each table**

Text

Description automatically generated with low confidence

1. **OLAP**
2. **Table Creation Script**

| CREATE TABLE IF NOT EXISTS dim\_locations (  id INT PRIMARY KEY UNIQUE,  location TEXT UNIQUE,  iso\_code TEXT NOT NULL,  continent TEXT,  population FLOAT,  population\_density FLOAT,  median\_age FLOAT,  aged\_65\_older FLOAT,  aged\_70\_older FLOAT,  gdp\_per\_capita FLOAT,  extreme\_poverty FLOAT,  cardiovasc\_death\_rate FLOAT,  diabetes\_prevalence FLOAT,  female\_smokers FLOAT,  male\_smokers FLOAT,  handwashing\_facilities FLOAT,  hospital\_beds\_per\_thousand FLOAT,  life\_expectancy FLOAT,  human\_development\_index FLOAT  );  CREATE TABLE IF NOT EXISTS dim\_dates (  date TEXT PRIMARY KEY,  year INT NOT NULL,  month INT NOT NULL,  day INT NOT NULL  );  CREATE TABLE IF NOT EXISTS fact\_cases (  location TEXT REFERENCES dim\_locations(location),  date TEXT REFERENCES dim\_dates(date),  total\_cases BIGINT,  new\_cases BIGINT,  new\_cases\_smoothed FLOAT,  total\_cases\_per\_million FLOAT,  new\_cases\_per\_million FLOAT,  new\_cases\_smoothed\_per\_million FLOAT,  primary key(location, date)    );  CREATE TABLE IF NOT EXISTS fact\_deaths (  location TEXT REFERENCES dim\_locations(location),  date TEXT REFERENCES dim\_dates(date),  total\_deaths BIGINT,  new\_deaths BIGINT,  new\_deaths\_smoothed FLOAT,  total\_deaths\_per\_million FLOAT,  new\_deaths\_per\_million FLOAT,  new\_deaths\_smoothed\_per\_million FLOAT,  primary key(location, date)  );  CREATE TABLE IF NOT EXISTS fact\_hospitals (  location TEXT REFERENCES dim\_locations(location),  date TEXT REFERENCES dim\_dates(date),  icu\_patients BIGINT,  icu\_patients\_per\_million FLOAT,  hosp\_patients BIGINT,  hosp\_patients\_per\_million FLOAT,  weekly\_icu\_admissions BIGINT,  weekly\_icu\_admissions\_per\_million FLOAT,  weekly\_hosp\_admissions BIGINT,  weekly\_hosp\_admissions\_per\_million FLOAT,  primary key(location, date)  );  CREATE TABLE IF NOT EXISTS fact\_tests (  location TEXT REFERENCES dim\_locations(location),  date TEXT REFERENCES dim\_dates(date),  total\_tests BIGINT,  new\_tests BIGINT,  total\_tests\_per\_thousand FLOAT,  new\_tests\_per\_thousand FLOAT,  new\_tests\_smoothed FLOAT,  new\_tests\_smoothed\_per\_thousand FLOAT,  positive\_rate FLOAT,  tests\_per\_case FLOAT,  tests\_units TEXT,  primary key(location, date)  );  CREATE TABLE IF NOT EXISTS fact\_vaccinations (  location TEXT REFERENCES dim\_locations(location),  date TEXT REFERENCES dim\_dates(date),  total\_vaccinations BIGINT,  people\_vaccinated BIGINT,  people\_fully\_vaccinated BIGINT,  total\_boosters BIGINT,  new\_vaccinations BIGINT,  new\_vaccinations\_smoothed FLOAT,  total\_vaccinations\_per\_hundred FLOAT,  people\_vaccinated\_per\_hundred FLOAT,  people\_fully\_vaccinated\_per\_hundred FLOAT,  total\_boosters\_per\_hundred FLOAT,  new\_vaccinations\_smoothed\_per\_million FLOAT,  new\_people\_vaccinated\_smoothed FLOAT,  new\_people\_vaccinated\_smoothed\_per\_hundred FLOAT,  primary key(location, date)  ); |
| --- |

1. **List of Tables**

Graphical user interface, text, application, email

Description automatically generated

1. **Schema for Each Table**

**dim\_dates**

Graphical user interface, text, application

Description automatically generated with medium confidence

**dim\_locations**

Table

Description automatically generated

**fact\_cases**

Graphical user interface

Description automatically generated with low confidence

**fact\_deaths**

Graphical user interface

Description automatically generated with medium confidence

**fact\_hospitals**

Table

Description automatically generated

**fact\_tests**

Table

Description automatically generated

**fact\_vaccinations**

Table

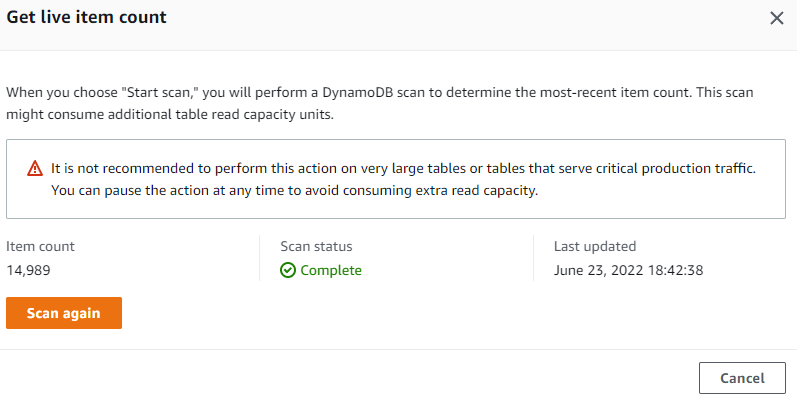
Description automatically generated

1. **NoSQL**
2. **Python code for adding the items (See tweet\_data.py)**

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1. **Output of the contents of the table**

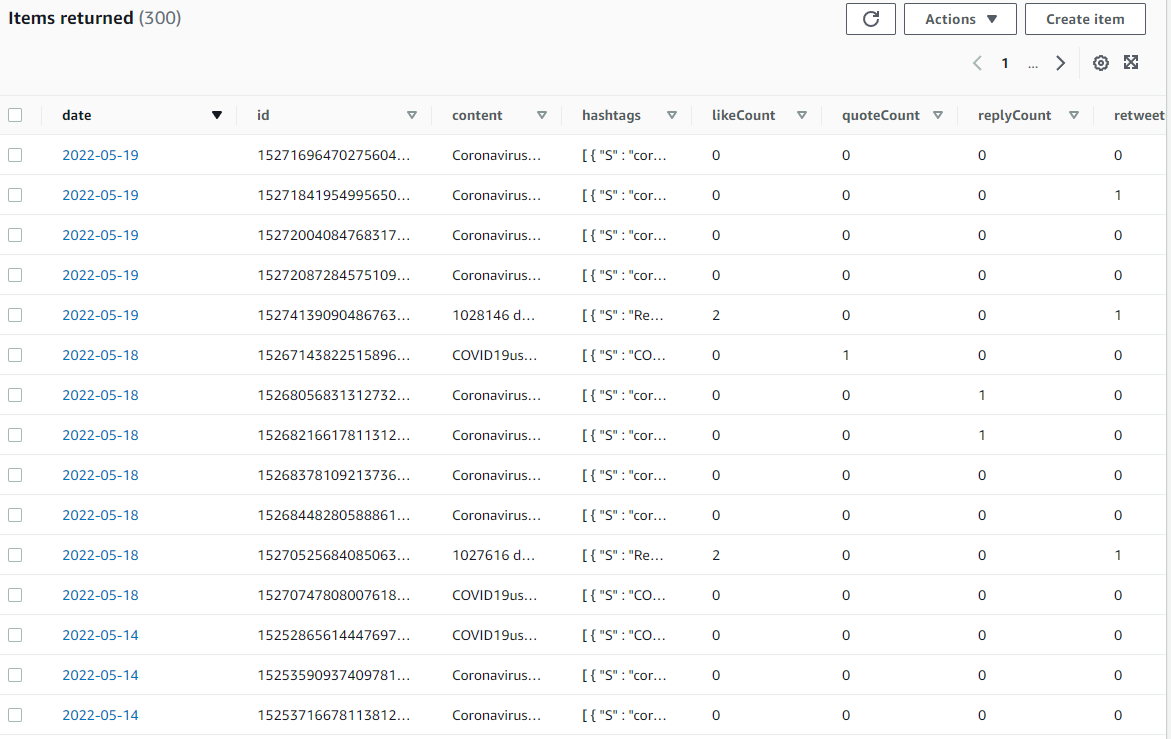
**Count**: 14989

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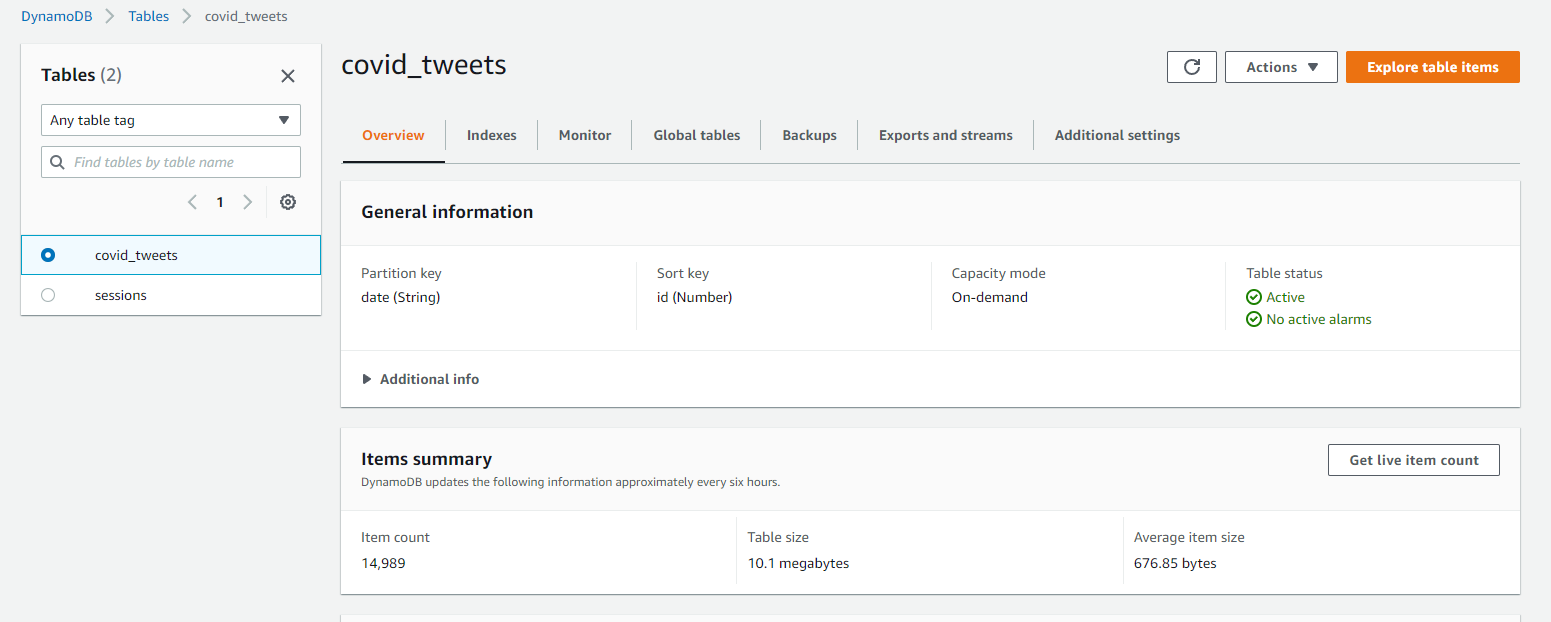
**Columns**

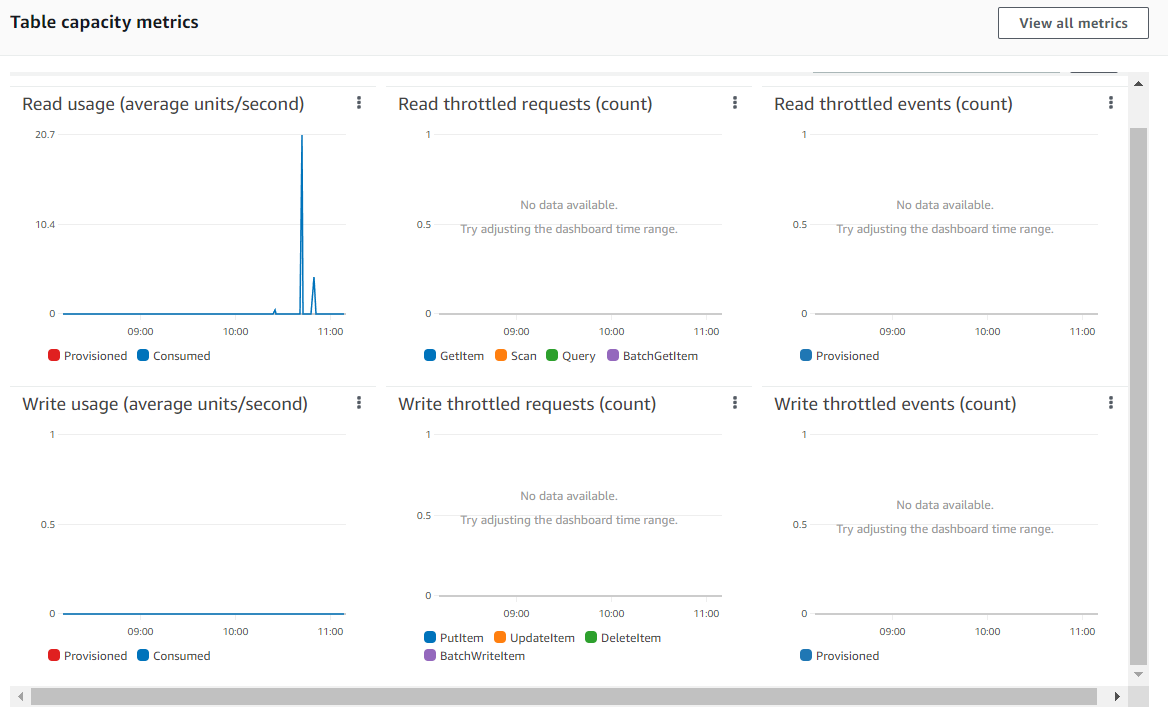
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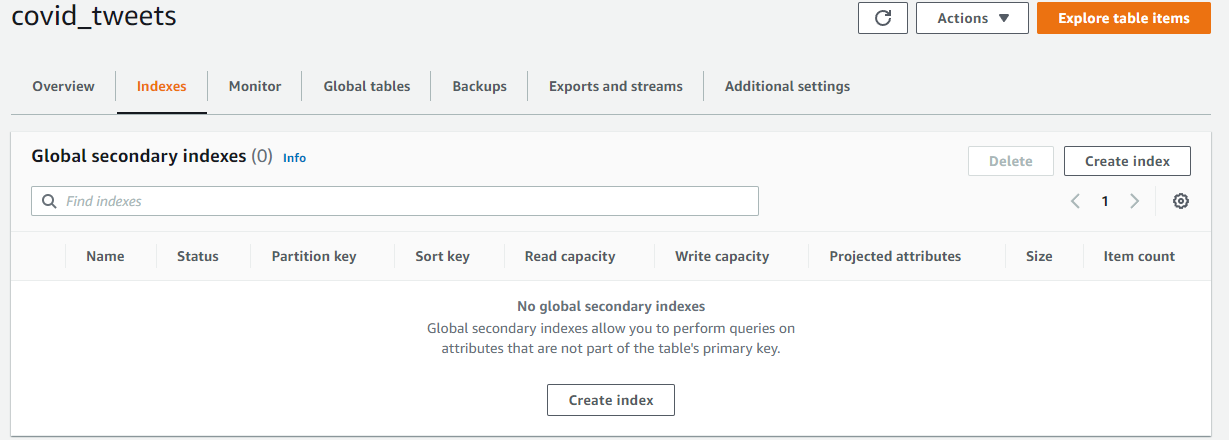
**covid\_tweets sample table items**

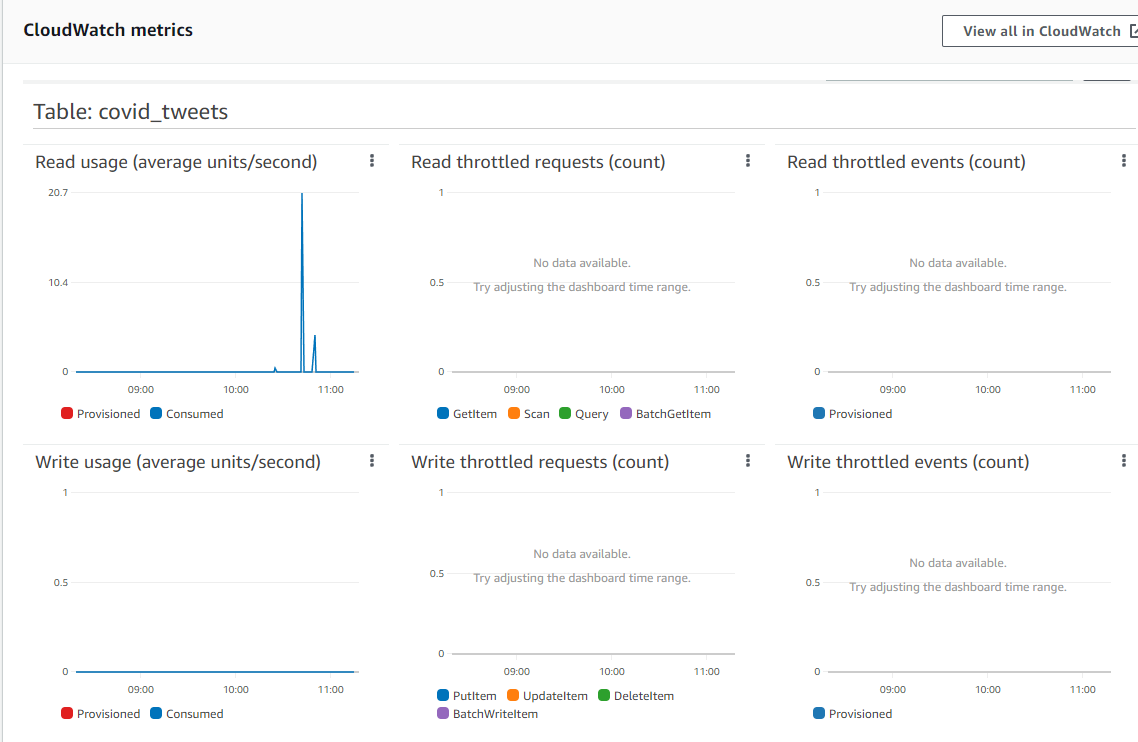
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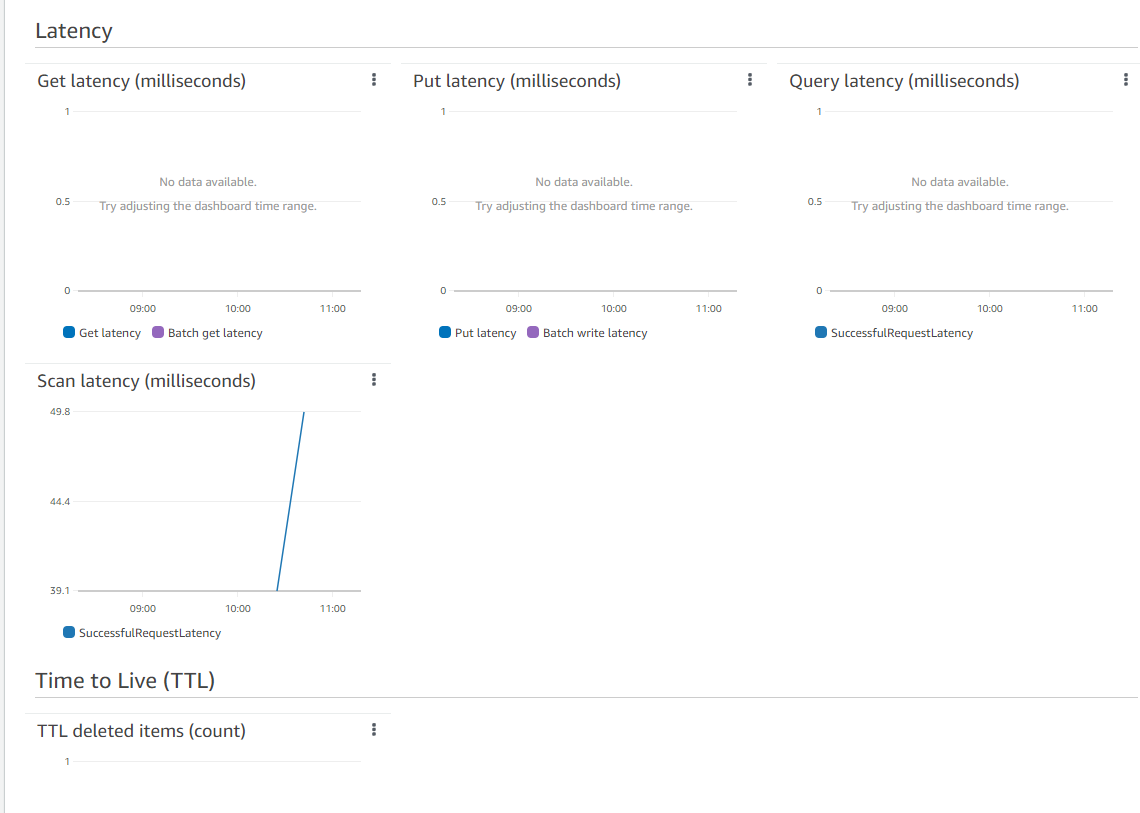
1. **Screenshot of each tab of the console of the DynamoDB table**

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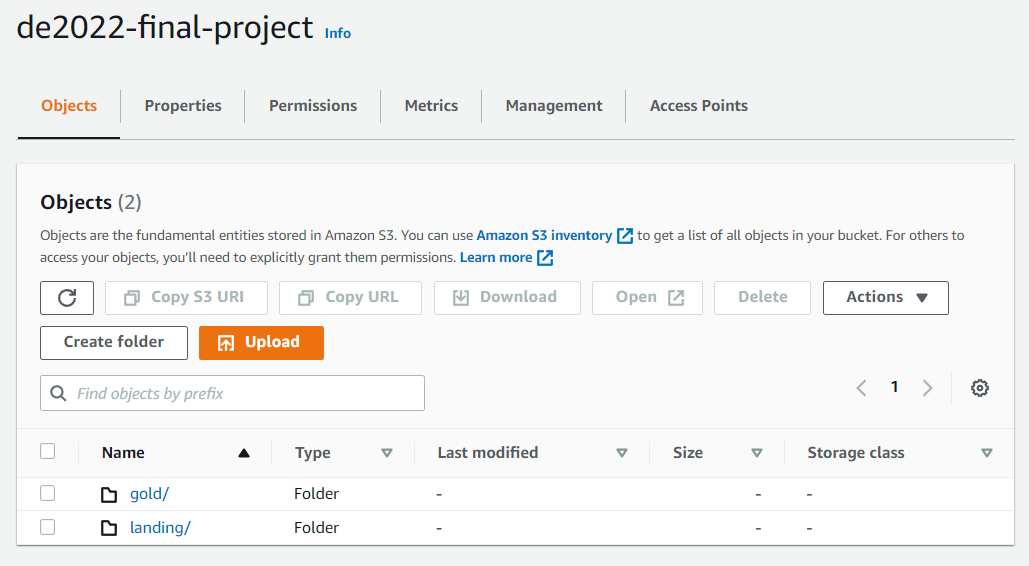
****

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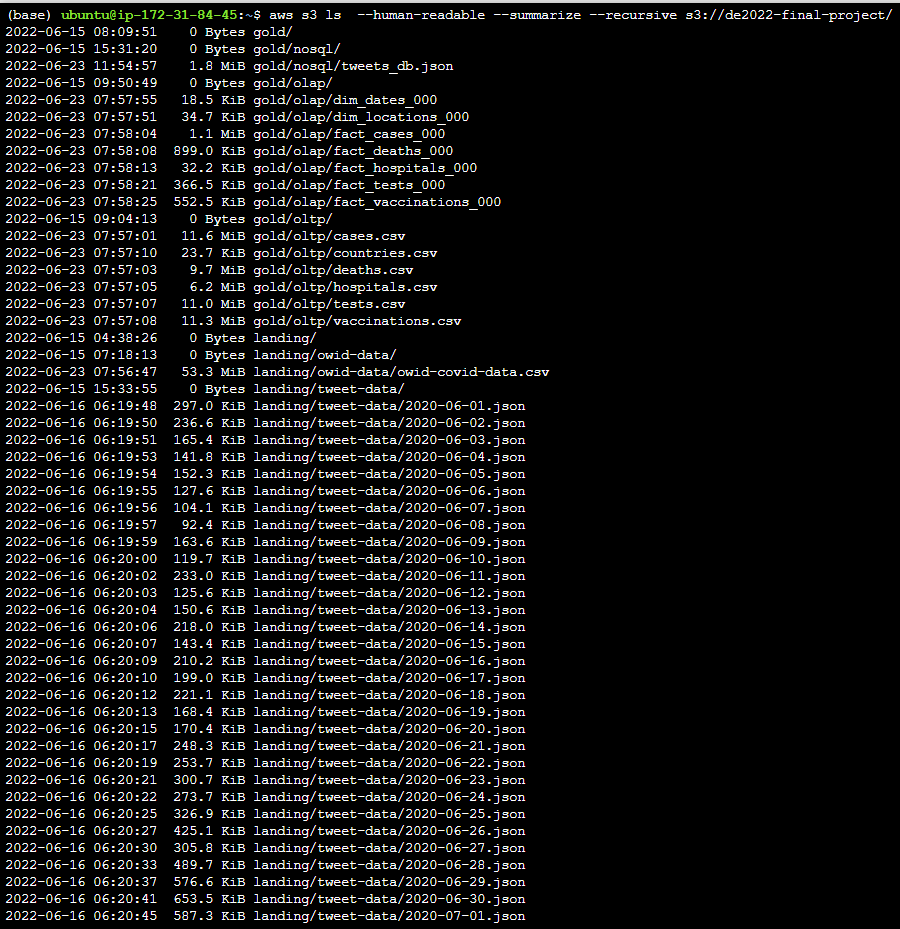
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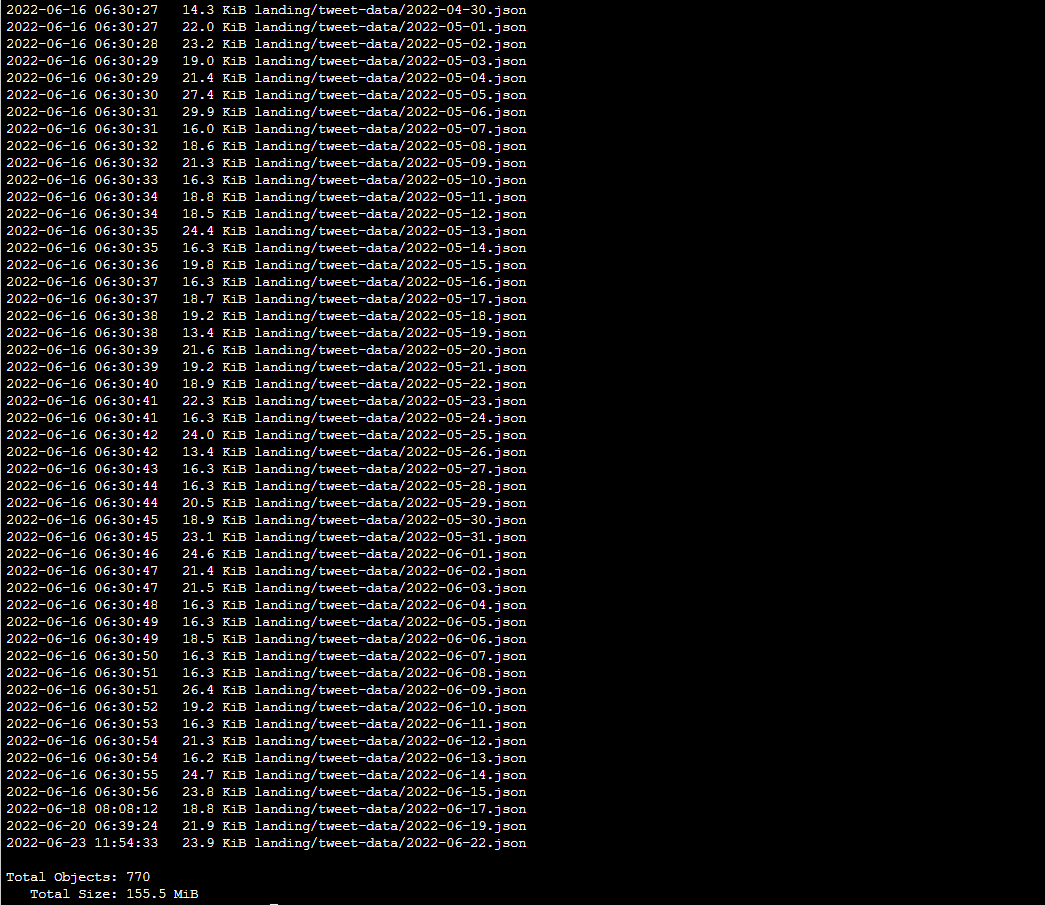
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1. **Data Lake**
2. **Document detailing the S3 buckets**

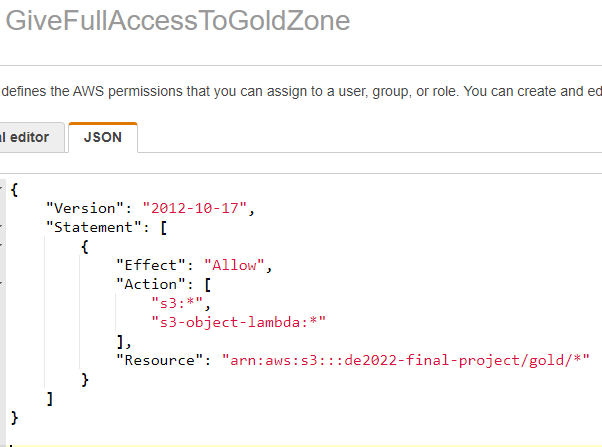
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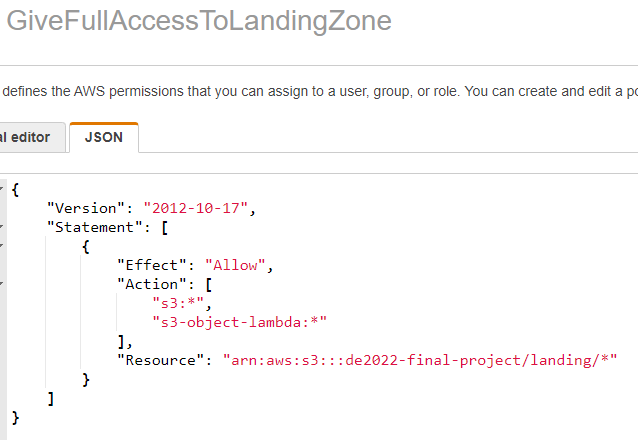
1. **Directory Hierarchy**

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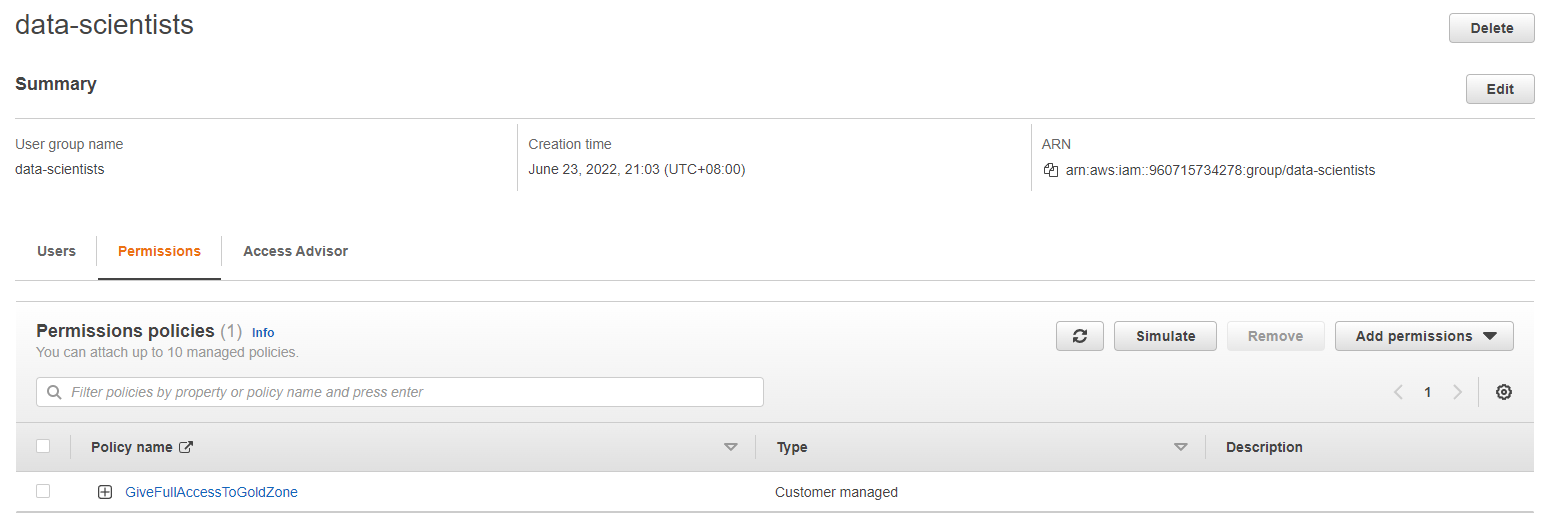
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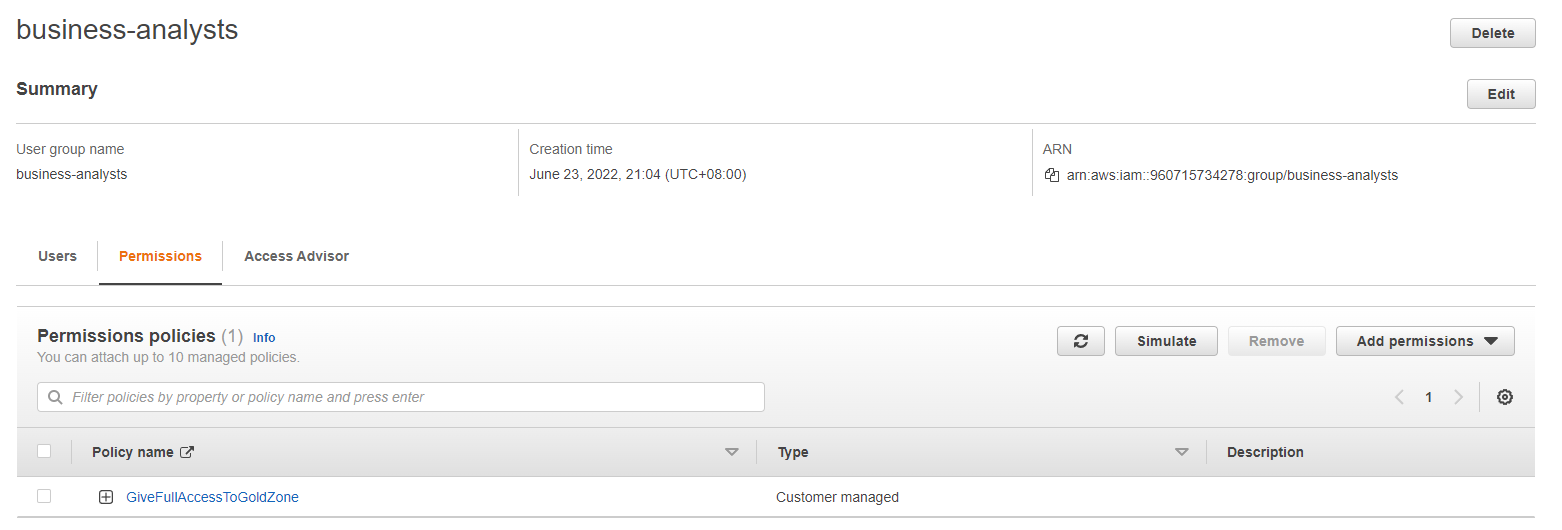
1. **Policies**

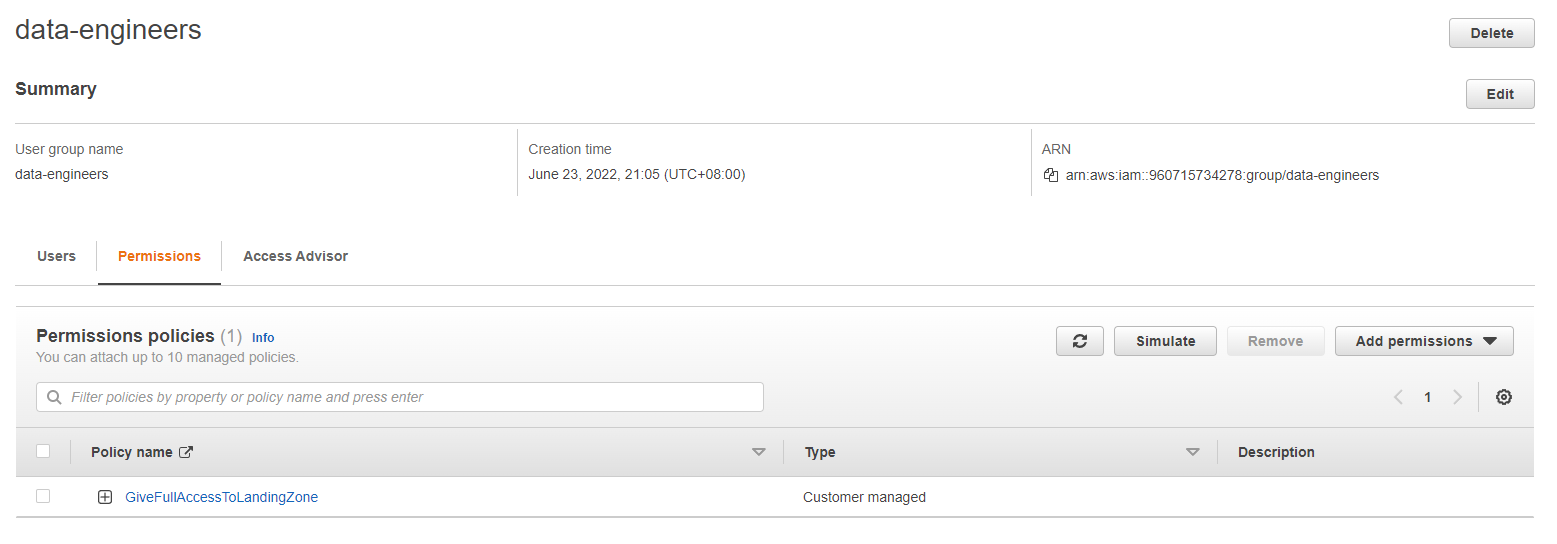


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1. **User Groups**

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1. **ETL Jobs**
2. **Dag for extracting COVID data and updating the OLTP and OLAP databases**
3. **Airflow Script**

Please see attached file extract\_covid\_data.py

1. **DAG Details Screenshots**

A picture containing text

Description automatically generated

Graphical user interface, text, application, email, website

Description automatically generated

Graphical user interface, text, application

Description automatically generated

1. **Success Runs**

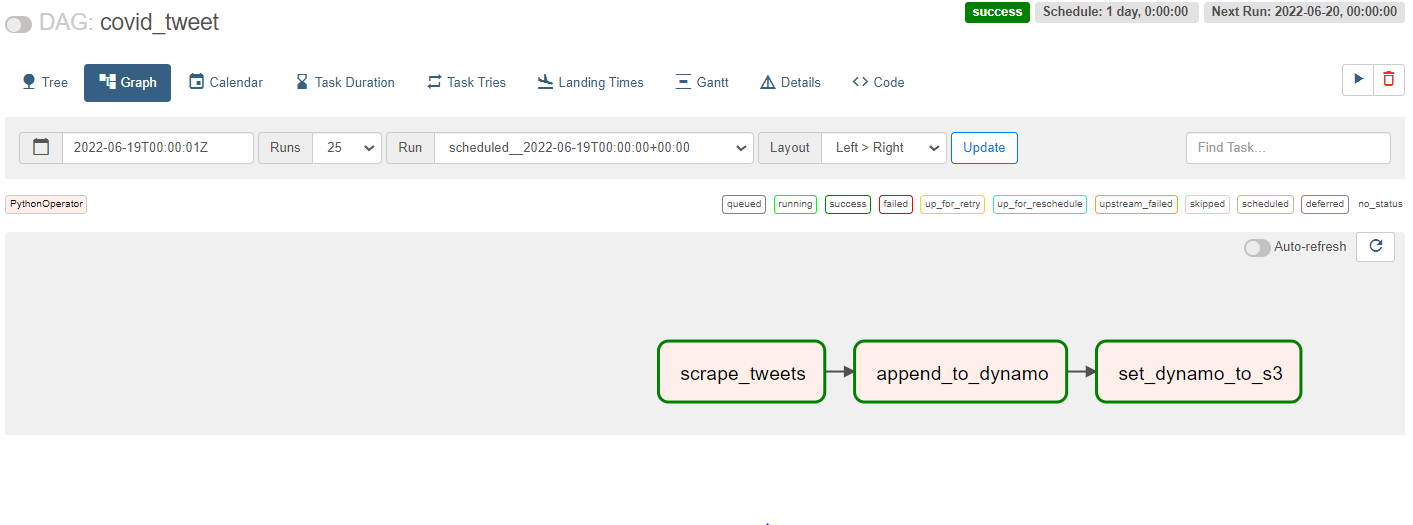
Graphical user interface, text, application

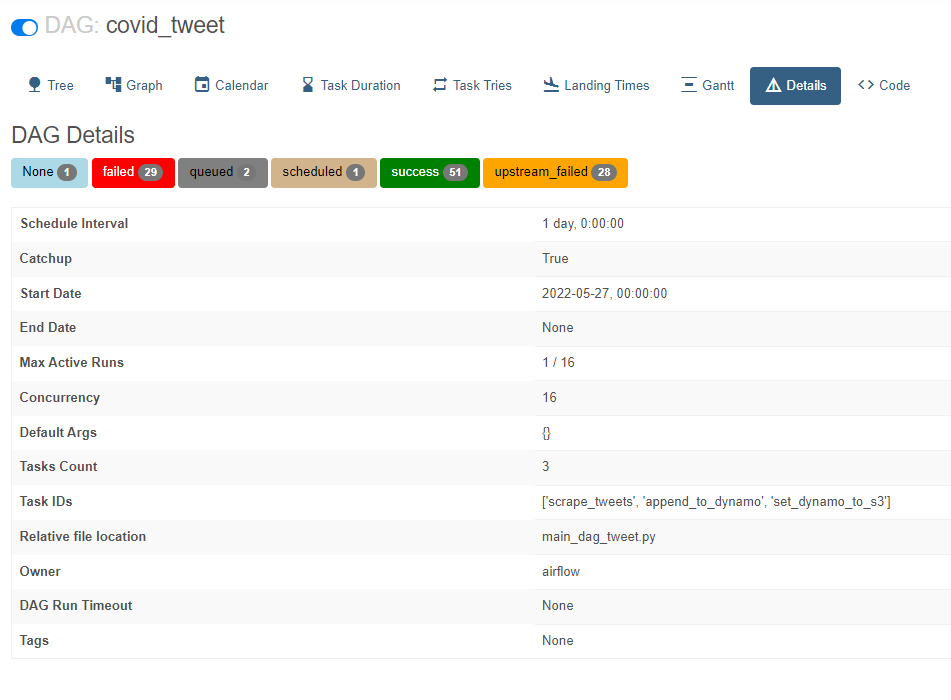
Description automatically generated

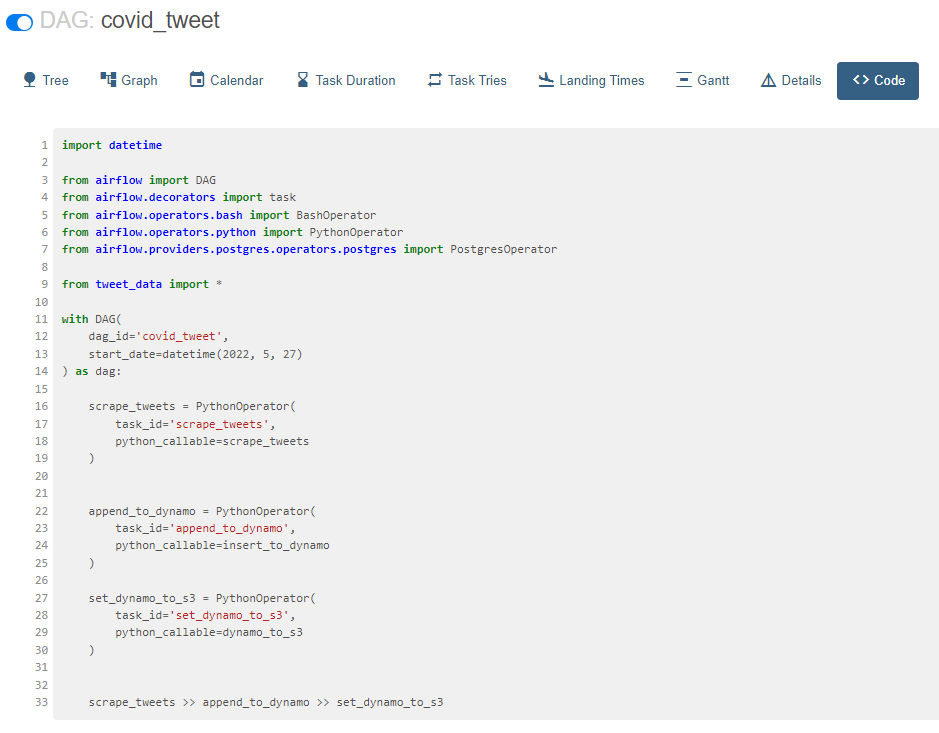
1. **Dag for scraping tweets and inserting them into a DynamoDB table**
2. **Airflow Script**

Please see attached file tweet\_data.py and main\_dag\_tweet.py.

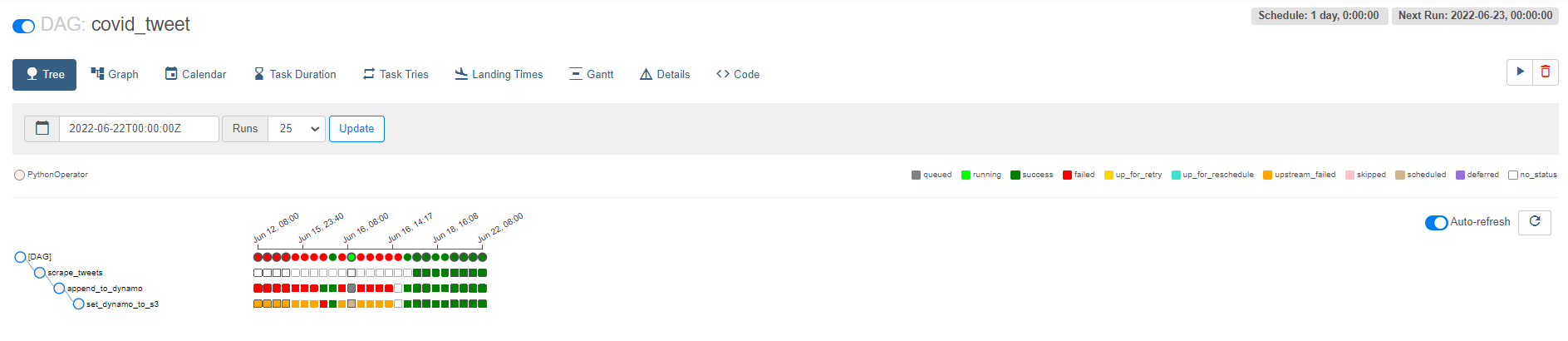
1. **DAG Details Screenshots**

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1. **Success Runs**

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