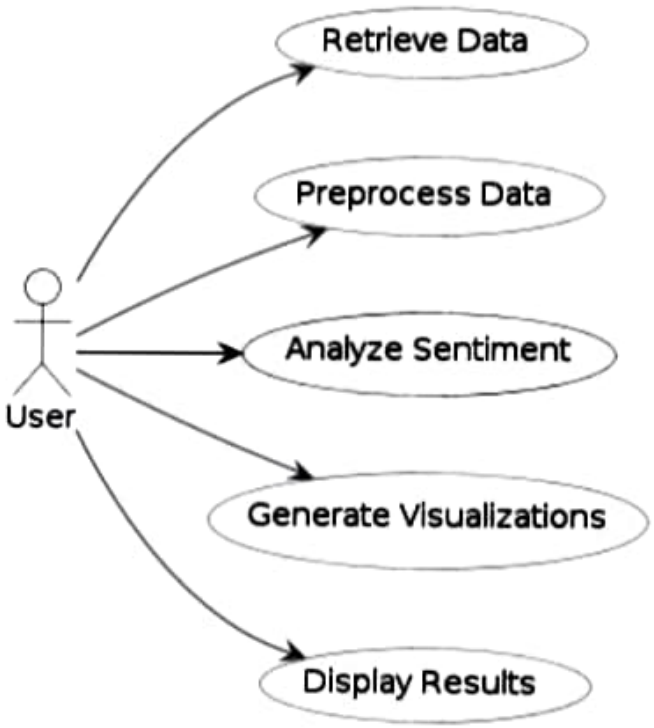
3.1 UML DIAGRAMS

USE CASE DIAGRAM:



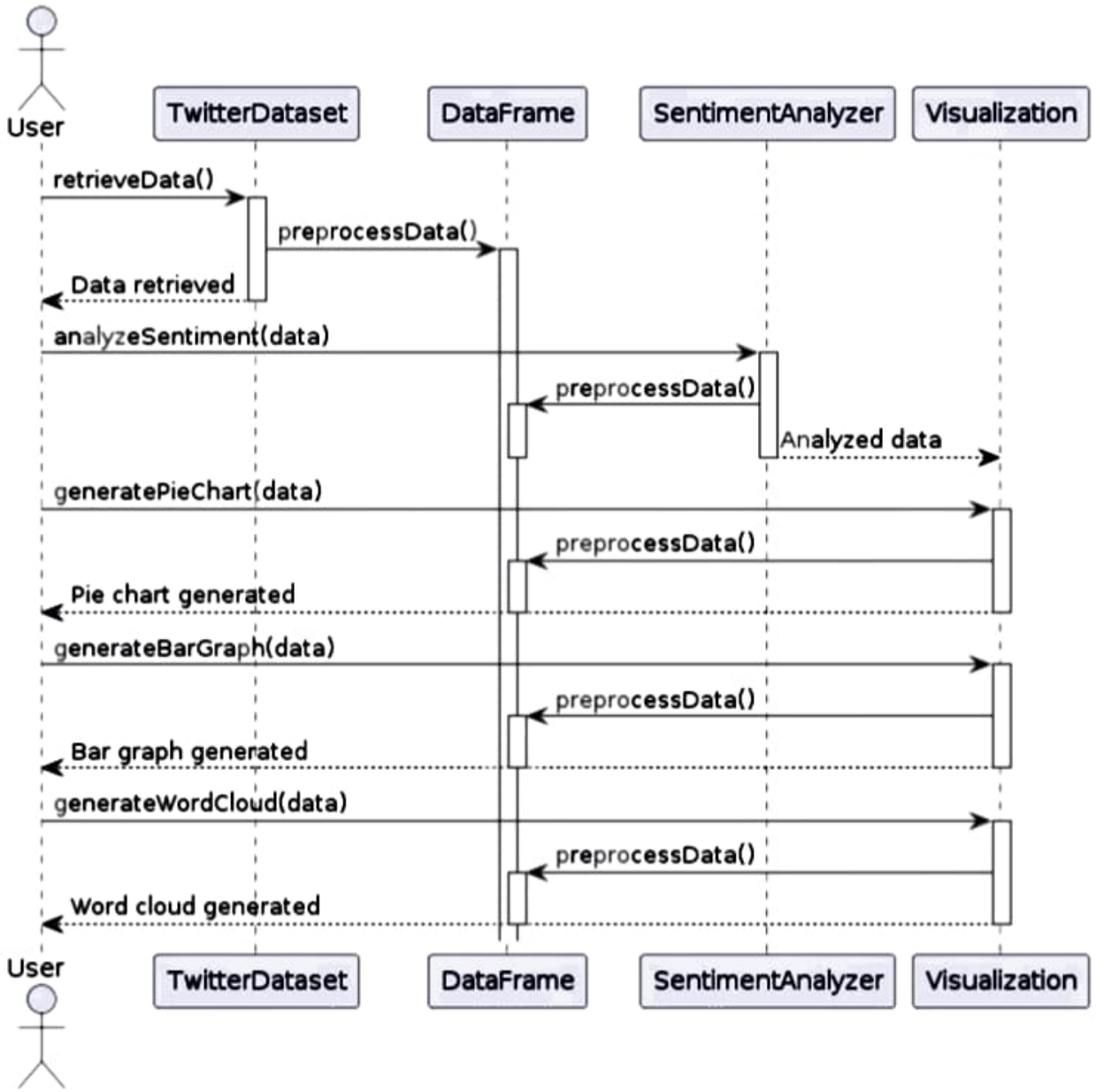
Use Case diagram depicts the actors (or users, in the case of software documentation), certain use cases, and associations, or connections, between the users and use cases.

The above is the use case diagram of Twitter sentiment analysis. It illustrates the interaction between the user and the system's main functionalities.

The user initiates the process by performing actions such as retrieving data, preprocessing data, analysing sentiment, generating visualizations, and displaying results.

This diagram visually communicates the system's functionality and user interactions in a concise and structured manner.

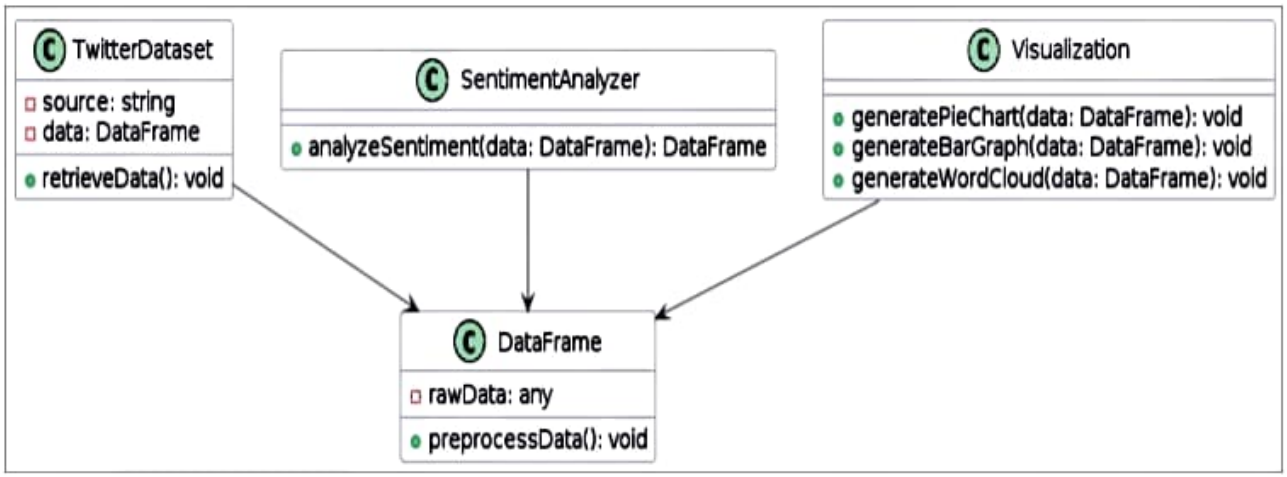
SEQUENCE DIAGRAM:



Sequence diagram show interactions in a particular scenario in chronological order. The above Sequence diagram illustrates the sequential flow in a Twitter sentiment analysis. Users retrieve data from the Twitter dataset, preprocess it, and pass it to the SentimentAnalyzer for sentiment analysis.

Following sentiment analysis, users can generate visualizations like pie charts, bar graphs, and word clouds.

CLASS DIAGRAM:



A class usually has three fields—class name at the top, class attributes below the name, and class attributions or behaviors at the bottom.

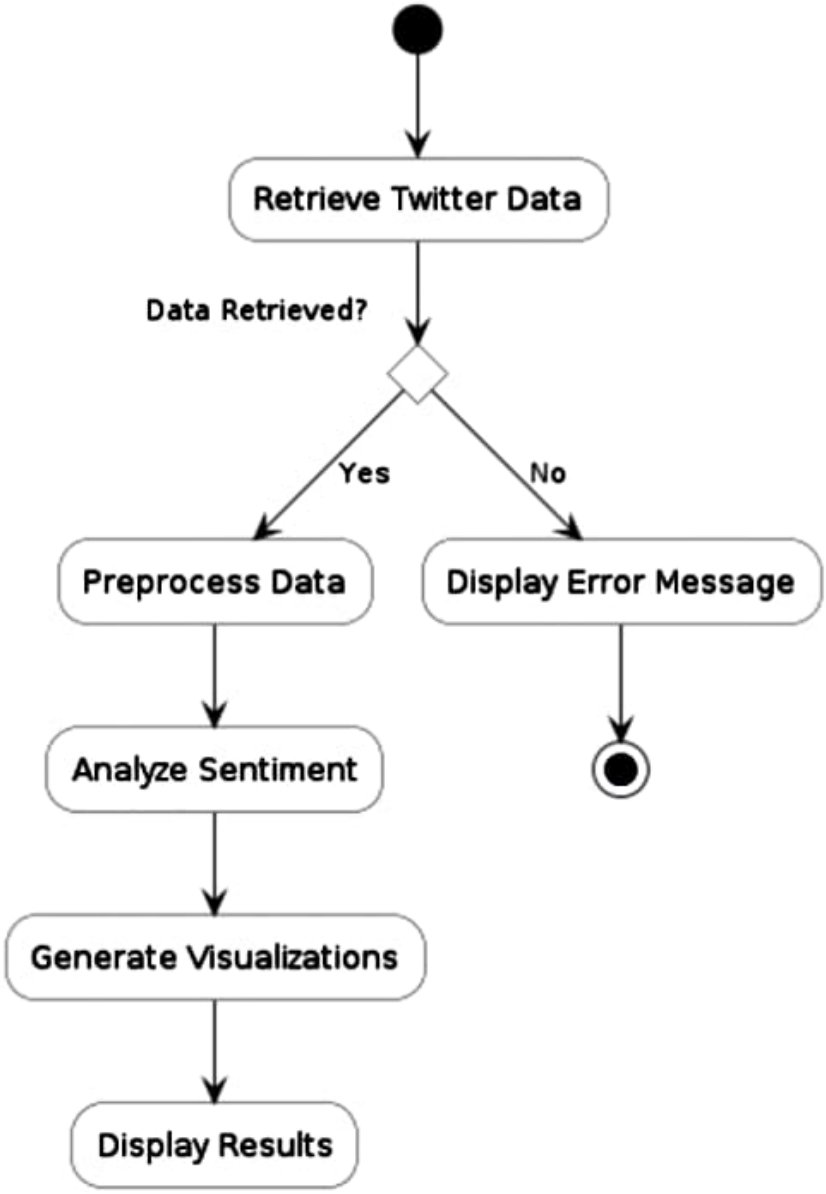
The TwitterDataset class manages data retrieval from a specified source and stores it in a DataFrame. Its method retrieveData() facilitates this process.

The SentimentAnalyzer class is responsible for analyzing sentiment in the provided DataFrame. Its analyzeSentiment(data) method returns sentiment analysis results.

The Visualization class generates visual representations of sentiment analysis results.

The DataFrame class represents the structure for preprocessing data. It contains the preprocessData() method to prepare data for sentiment analysis and visualization.

ACTIVITY DIAGRAM:



An activity diagram is a visual representation of the flow of actions within a system or process.

In this activity diagram, the process begins with the task of retrieving Twitter data. Upon successful retrieval, the data is preprocessed, sentiment analysis is performed, visualizations are generated, and results are displayed. If data retrieval fails, an error message is displayed, and the process restarts.

This diagram provides a clear and concise overview of the workflow in a Twitter sentiment analysis system, outlining the sequence of actions and potential decision points.