Experiment: 10

AIM: Perform Sentiment Analysis using real-life data.

OBJECTIVES: To implement and understand **Sentiment Analysis** using the **VADER (Valence Aware Dictionary and sEntiment Reasoner)** tool from the NLTK library in Python.

REQUIREMENTS: Python (version 3.x or above), NLTK library, WordNet.

THEORY:

Sentiment analysis is a popular task in natural language processing. The goal of sentiment analysis is to classify the text based on the mood or mentality expressed in the text, which can be positive negative, or neutral. The goal that Sentiment mining tries to gain is to be analysed people's opinions in a way that can help businesses expand. It focuses not only on polarity (positive, negative & neutral) but also on emotions (happy, sad, angry, etc.). It uses various Natural Language Processing algorithms such as Rule-based, Automatic, and Hybrid.

Implementation of Sentiment Analysis using NLTK

Step 1: Importing necessary Library.

```
import nltk
nltk.download('vader_lexicon')
from nltk.sentiment import SentimentIntensityAnalyzer
```

```
[nltk_data] Downloading package vader_lexicon to
[nltk_data]     C:\Users\tdhan\AppData\Roaming\nltk_data...
```

Step 2: Taking input in the form of sentences.

```
sia = SentimentIntensityAnalyzer()
sentences = [
    "I love this product! It's amazing!",
    "This is the worst movie I have ever seen.",
    "The food was okay, not too bad.",
    "I'm not sure how I feel about this.",
    "Absolutely fantastic service! Highly recommend."
]
for sentence in sentences:
    scores = sia.polarity_scores(sentence)
    print(f"REVIEW: {sentence}")
    print(f"Sentiment Scores: {scores}")
    print("Overall Sentiment:", end="- ")

    if scores['compound'] >= 0.05:
        print("Positive\n")
    elif scores['compound'] <= -0.05:
        print("Negative\n")
    else:
        print("Neutral\n")
```

Output

```
REVIEW: I love this product! It's amazing!
Sentiment Scores: {'neg': 0.0, 'neu': 0.259, 'pos': 0.741, 'compound': 0.8619}
Overall Sentiment:- Positive

REVIEW: This is the worst movie I have ever seen.
Sentiment Scores: {'neg': 0.369, 'neu': 0.631, 'pos': 0.0, 'compound': -0.6249}
Overall Sentiment:- Negative

REVIEW: The food was okay, not too bad.
Sentiment Scores: {'neg': 0.0, 'neu': 0.513, 'pos': 0.487, 'compound': 0.5789}
Overall Sentiment:- Positive

REVIEW: I'm not sure how I feel about this.
Sentiment Scores: {'neg': 0.246, 'neu': 0.754, 'pos': 0.0, 'compound': -0.2411}
Overall Sentiment:- Negative

REVIEW: Absolutely fantastic service! Highly recommend.
Sentiment Scores: {'neg': 0.0, 'neu': 0.301, 'pos': 0.699, 'compound': 0.7893}
Overall Sentiment:- Positive
```

Conclusion

In this experiment, we successfully implemented **Sentiment Analysis** using **VADER** from the NLTK library. We analyzed various sentences and classified them as **positive** or **negative** based on their compound score. VADER is ideal for analyzing **short, informal text**, especially from **social media**.