```
pip install pandas numpy nltk scikit-learn matplotlib seaborn wordcloud
```

```
Requirement already satisfied: pandas in /usr/local/lib/python3.11/dist-packages (2.2.2)
Requirement already satisfied: numpy in /usr/local/lib/python3.11/dist-packages (2.0.2)
Requirement already satisfied: nltk in /usr/local/lib/python3.11/dist-packages (3.9.1)
Requirement already satisfied: scikit-learn in /usr/local/lib/python3.11/dist-packages (1.6.1)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.11/dist-packages (3.10.0)
Requirement already satisfied: seaborn in /usr/local/lib/python3.11/dist-packages (0.13.2)
Requirement already satisfied: wordcloud in /usr/local/lib/python3.11/dist-packages (1.9.4)
Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python3.11/dist-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.11/dist-packages (from pandas) (2025.2)
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Requirement already satisfied: regex>=2021.8.3 in /usr/local/lib/python3.11/dist-packages (from nltk) (2024.11.6)
Requirement already satisfied: tqdm in /usr/local/lib/python3.11/dist-packages (from nltk) (4.67.1)
Requirement already satisfied: scipy>=1.6.0 in /usr/local/lib/python3.11/dist-packages (from scikit-learn) (1.15.3)
Requirement already satisfied: threadpoolctl>=3.1.0 in /usr/local/lib/python3.11/dist-packages (from scikit-learn) (3.6.0)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (1.3.2)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (4.58.5)
Requirement already satisfied: kiwisolver>=1.3.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (1.4.8)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (25.0)
Requirement already satisfied: pillow>=8 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (11.2.1)
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (3.2.3)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-packages (from python-dateutil>=2.8.2->pandas) (1.17.0)
```

```
import pandas as pd
import numpy as np
import re
import nltk
import seaborn as sns
import matplotlib.pyplot as plt
from wordcloud import WordCloud
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy
```

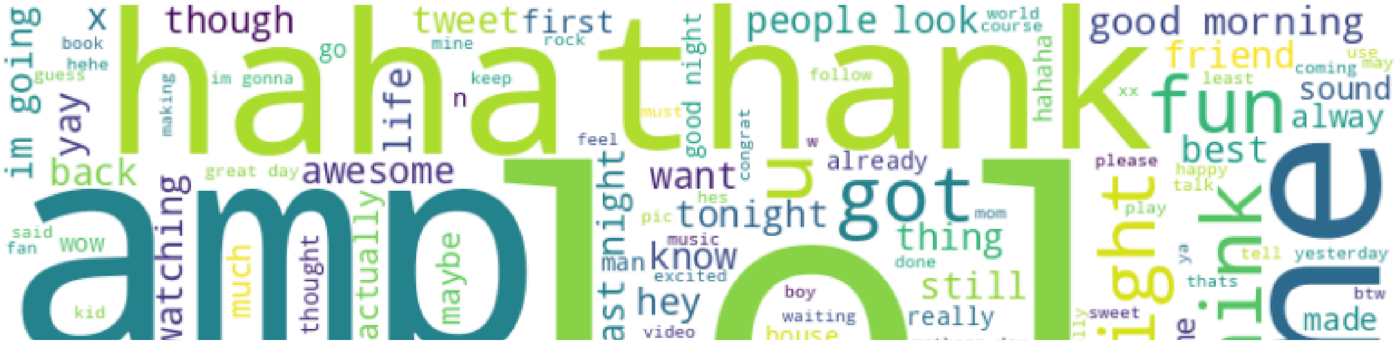
What can I help you build?

```
nltk.download('stopwords')
from nltk.corpus import stopwords
```

```
stop_words = set(stopwords.words('english'))

df = pd.read_csv("tweet.csv", encoding='ISO-8859-1', header=None)

df.columns = ['Sentiment', 'ID', 'Date', 'Query', 'User', 'Text']

df['Sentiment'] = df['Sentiment'].replace({0: 'negative', 4: 'positive'})

def clean_text(text):
    if pd.isnull(text):
        return ""
    text = str(text).lower()
    text = re.sub(r"http\S+", "", text)
    text = re.sub(r"@\w+", "", text)
    text = re.sub(r"[^a-z\s]", "", text)
    text = re.sub(r"\s+", " ", text).strip()
    words = text.split()
    words = [word for word in words if word not in stop_words]
    return " ".join(words)

df['cleaned_text'] = df['Text'].apply(clean_text)

df = df[df['cleaned_text'].str.strip() != ""]

vectorizer = TfidfVectorizer(max_features=5000)
X = vectorizer.fit_transform(df['cleaned_text'])

y = df['Sentiment']

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

model = LogisticRegression(max_iter=1000)
model.fit(X_train, y_train)

y_pred = model.predict(X_test)

print("\n✅ Accuracy:", accuracy_score(y_test, y_pred))
print("\n📋 Classification Report:\n", classification_report(y_test, y_pred))
print("\n📊 Confusion Matrix:\n", confusion_matrix(y_test, y_pred))

if 'positive' in df['Sentiment'].unique():
    positive_text = " ".join(df[df['Sentiment'] == 'positive']['cleaned_text'])
    positive_text = ' '.join(df[df['Sentiment'] == 'positive']['cleaned_text'])
    wordcloud = WordCloud(width=800, height=400, background_color='white').generate(positive_text)

    plt.figure(figsize=(10, 5))
    plt.imshow(wordcloud, interpolation='bilinear')
    plt.axis('off')
    plt.title("Word Cloud for Positive Sentiment")
    plt.show()
```

```
[nltk_data] Downloading package stopwords to /root/nltk_data...
[nltk_data]   Package stopwords is already up-to-date!

✅ Accuracy: 0.7751595776412337

📋 Classification Report:
               precision    recall  f1-score   support

    negative       0.79      0.76      0.77    158640
    positive       0.77      0.79      0.78    159857

    accuracy                           0.78    318497
   macro avg       0.78      0.78      0.78    318497
weighted avg       0.78      0.78      0.78    318497


📊 Confusion Matrix:
 [[119834  38806]
 [ 32805 127052]]
```

Word Cloud for Positive Sentiment


haha
thank
lol
amp
love
fun
got
though
tweet
first
people
look
good morning
friend
sound
alway
best
im going
yay
back
awesome
want
tonight
know
thing
still
really
hey
watching
much
thought
actually
maybe
life
good night
last night
already
made
yesterday
great day
im gonna
wow
hahaha
hehe
book
guess
keep
follow
please
happy
talk
play
tell
thats
btw
sweet
boy
waiting
house
excited
music
video
man
mom
done
feel
pic
hes
congrat
go
mine
rock
world
course
coming
use
may
least
xx
x
n
u
w
ya
said
fan
kid
making
must