In [1]:
```
import pandas as pd

# Load the dataset
data = pd.read_csv("C:/Users/PAVILION/Downloads/nlp_dataset.csv")

# Display the first few rows of the dataset
print(data.head())
```

```
                                             Comment Emotion
0  i seriously hate one subject to death but now ...    fear
1                 im so full of life i feel appalled   anger
2  i sit here to write i start to dig out my feel...    fear
3  ive been really angry with r and i feel like a...     joy
4  i feel suspicious if there is no one outside l...    fear
```

In [3]:
```
import re
import nltk
from nltk.corpus import stopwords
from nltk.tokenize import word_tokenize

# Download stopwords
nltk.download('punkt')
nltk.download('stopwords')
```

```
[nltk_data] Downloading package punkt to
[nltk_data]     C:\Users\PAVILION\AppData\Roaming\nltk_data...
[nltk_data]   Package punkt is already up-to-date!
[nltk_data] Downloading package stopwords to
[nltk_data]     C:\Users\PAVILION\AppData\Roaming\nltk_data...
[nltk_data]   Package stopwords is already up-to-date!
```

Out[3]: True

In [7]:
```
# Function to clean text
def clean_text(text):
    text = text.lower()  # Lowercase
    text = re.sub(r'[^a-z\s]', '', text)  # Remove punctuation and numbers
    tokens = word_tokenize(text)  # Tokenization
    tokens = [word for word in tokens if word not in stopwords.words('engl
    return ' '.join(tokens)
```

In [8]:
```
# Apply the cleaning function
data['cleaned_text'] = data['Comment'].apply(clean_text)
```

In [10]:
```
from sklearn.feature_extraction.text import TfidfVectorizer

# Create a TfidfVectorizer instance
vectorizer = TfidfVectorizer(max_features=1000)  # Limit to top 1000 featu
X = vectorizer.fit_transform(data['cleaned_text'])
y = data['Emotion']  # Target variable
```

In [12]:
```
from sklearn.model_selection import train_test_split
from sklearn.naive_bayes import MultinomialNB
from sklearn.svm import SVC

# Split the dataset into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, r

# Train Naive Bayes model
nb_model = MultinomialNB()
nb_model.fit(X_train, y_train)
```

Out[12]:
```
MultinomialNB
MultinomialNB()
```

In [13]:
```
# Train Support Vector Machine model
svm_model = SVC(kernel='linear')
svm_model.fit(X_train, y_train)
```

Out[13]:
```
SVC
SVC(kernel='linear')
```

In [14]:
```
from sklearn.metrics import accuracy_score, f1_score

# Predictions
nb_predictions = nb_model.predict(X_test)
svm_predictions = svm_model.predict(X_test)

# Metrics
nb_accuracy = accuracy_score(y_test, nb_predictions)
nb_f1 = f1_score(y_test, nb_predictions, average='weighted')

svm_accuracy = accuracy_score(y_test, svm_predictions)
svm_f1 = f1_score(y_test, svm_predictions, average='weighted')

print(f"Naive Bayes - Accuracy: {nb_accuracy}, F1 Score: {nb_f1}")
print(f"SVM - Accuracy: {svm_accuracy}, F1 Score: {svm_f1}")
```

```
Naive Bayes - Accuracy: 0.9132996632996633, F1 Score: 0.9133716011282641
SVM - Accuracy: 0.9461279461279462, F1 Score: 0.9460903357272678
```

In [15]:
```
data
```

Out[15]:

	Comment	Emotion	cleaned_text
0	i seriously hate one subject to death but now ...	fear	seriously hate one subject death feel reluctan...
1	im so full of life i feel appalled	anger	im full life feel appalled
2	i sit here to write i start to dig out my feel...	fear	sit write start dig feelings think afraid acce...
3	ive been really angry with r and i feel like a...	joy	ive really angry r feel like idiot trusting fi...
4	i feel suspicious if there is no one outside l...	fear	feel suspicious one outside like rapture happe...
...	...	...	...
5932	i begun to feel distressed for you	fear	begun feel distressed
5933	i left feeling annoyed and angry thinking that...	anger	left feeling annoyed angry thinking center stu...
5934	i were to ever get married i d have everything...	joy	ever get married everything ready offer got to...
5935	i feel reluctant in applying there because i w...	fear	feel reluctant applying want able find company...
5936	i just wanted to apologize to you because i fe...	anger	wanted apologize feel like heartless bitch

5937 rows × 3 columns