1 – Import Required Libraries

```
import pandas as pd
import matplotlib.pyplot as plt
```

□ 2 – Load Dataset □

```
df = pd.read_csv("sentimentdataset.csv")
df.head(3)
```

```
   Unnamed: 0.1  Unnamed: 0  \
0             0           0
1             1           1
2             2           2

                                                Text    Sentiment  \
0   Enjoying a beautiful day at the park!        ...   Positive
1   Traffic was terrible this morning.           ...   Negative
2   Just finished an amazing workout! □          ...   Positive

             Timestamp            User     Platform  \
0  2023-01-15 12:30:00   User123          Twitter
1  2023-01-15 08:45:00   CommuterX        Twitter
2  2023-01-15 15:45:00   FitnessFan      Instagram

                                     Hashtags  Retweets  Likes
Country  \
0   #Nature #Park                                    15.0   30.0     USA

1   #Traffic #Morning                                 5.0   10.0
Canada
2   #Fitness #Workout                                20.0   40.0   USA


   Year  Month  Day  Hour
0  2023      1   15    12
1  2023      1   15     8
2  2023      1   15    15
```

□ 3 – Dataset Shape □

```
df.shape
```

```
(732, 15)
```

4 – Dataset Information

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 732 entries, 0 to 731
Data columns (total 15 columns):
 #   Column        Non-Null Count  Dtype  
---  ------        --------------  -----  
 0   Unnamed: 0.1  732 non-null    int64  
 1   Unnamed: 0    732 non-null    int64  
 2   Text          732 non-null    object 
 3   Sentiment     732 non-null    object 
 4   Timestamp     732 non-null    object 
 5   User          732 non-null    object 
 6   Platform      732 non-null    object 
 7   Hashtags      732 non-null    object 
 8   Retweets      732 non-null    float64
 9   Likes         732 non-null    float64
 10  Country       732 non-null    object 
 11  Year          732 non-null    int64  
 12  Month         732 non-null    int64  
 13  Day           732 non-null    int64  
 14  Hour          732 non-null    int64  
dtypes: float64(2), int64(6), object(7)
memory usage: 85.9+ KB
```

5 – Column Names

```
df.columns
```

```
Index(['Unnamed: 0.1', 'Unnamed: 0', 'Text', 'Sentiment', 'Timestamp',
'User',
       'Platform', 'Hashtags', 'Retweets', 'Likes', 'Country', 'Year',
'Month',
       'Day', 'Hour'],
      dtype='object')
```

6 – Missing Values Check

```
df.isnull().sum()
```

```
Unnamed: 0.1    0
Unnamed: 0      0
Text            0
Sentiment       0
```

```
Timestamp        0
User             0
Platform         0
Hashtags         0
Retweets         0
Likes            0
Country          0
Year             0
Month            0
Day              0
Hour             0
dtype: int64
```

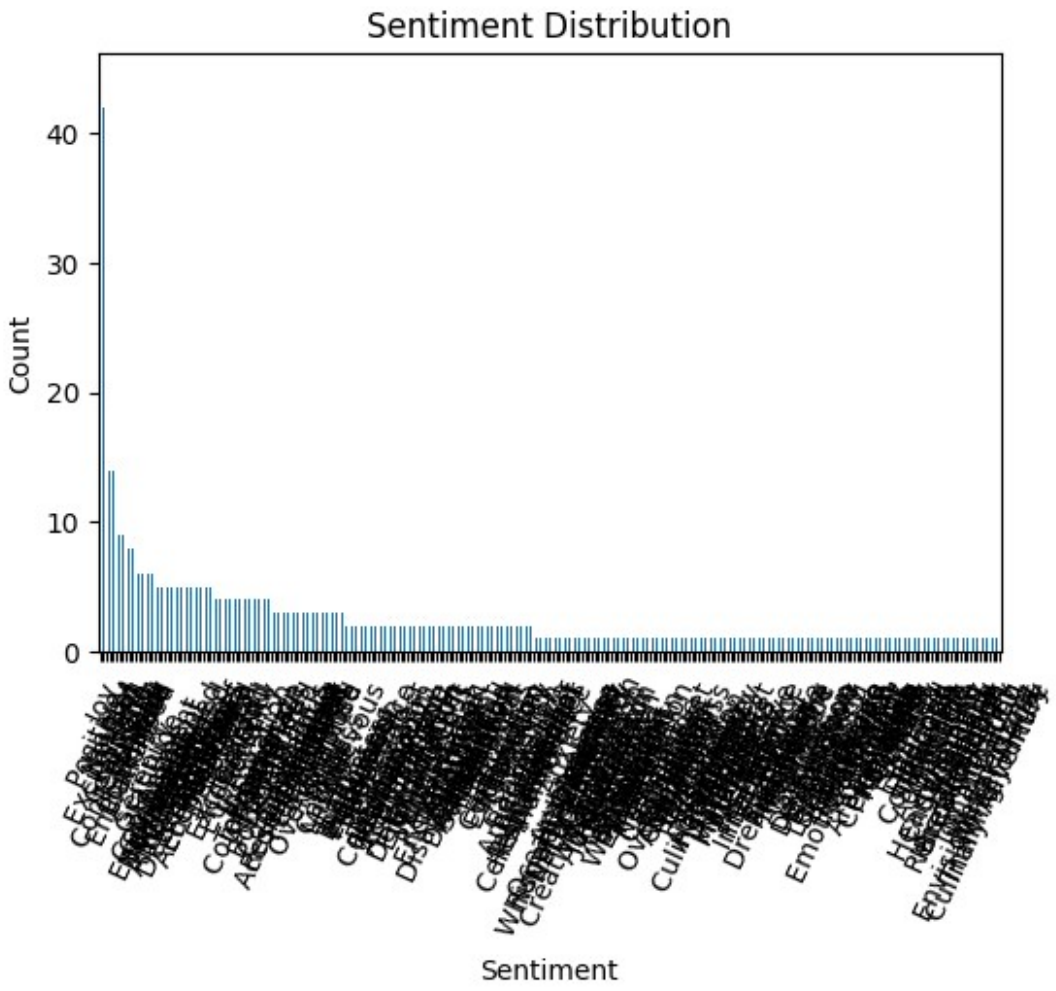
7 – Sentiment Count Analysis

```
df["Sentiment"].value_counts()
```

```
Sentiment
Positive                44
Joy                     42
Excitement              32
Happy                   14
Neutral                 14
                        ..
Vibrancy                 1
Culinary Adventure       1
Mesmerizing              1
Thrilling Journey        1
Winter Magic             1
Name: count, Length: 279, dtype: int64
```

8 – Sentiment Distribution Visualization

```
plt.figure(figsize=(6,4))
df["Sentiment"].value_counts().plot(kind="bar")
plt.title("Sentiment Distribution")
plt.xlabel("Sentiment")
plt.ylabel("Count")
plt.xticks(rotation =65)
plt.show()
```



9 – Text Length Feature Engineering

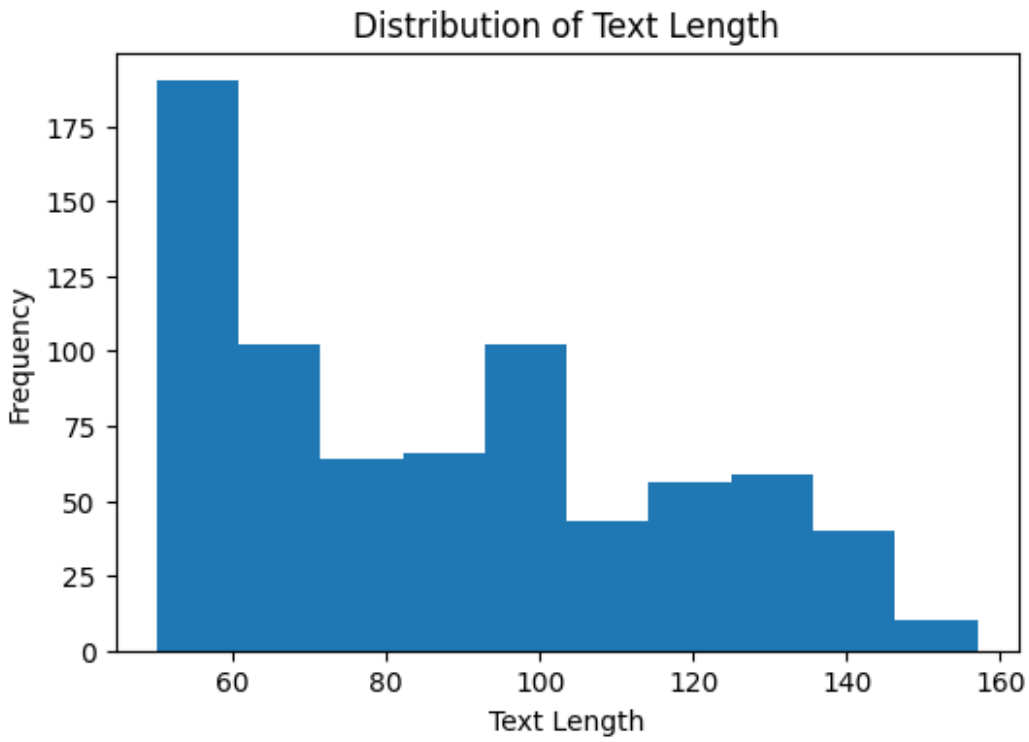
```
df["text_length"] = df["Text"].apply(len)
df.head()
```

```
   Unnamed: 0.1  Unnamed: 0  \
0             0           0
1             1           1
2             2           2
3             3           3
4             4           4

                                                Text    Sentiment  \
0   Enjoying a beautiful day at the park!        ...   Positive
1   Traffic was terrible this morning.           ...   Negative
2   Just finished an amazing workout! 🏋          ...   Positive
3   Excited about the upcoming weekend getaway!  ...   Positive
4   Trying out a new recipe for dinner tonight.  ...   Neutral
```

```
             Timestamp            User     Platform  \
0  2023-01-15 12:30:00   User123          Twitter
1  2023-01-15 08:45:00   CommuterX        Twitter
2  2023-01-15 15:45:00   FitnessFan      Instagram
3  2023-01-15 18:20:00   AdventureX       Facebook
4  2023-01-15 19:55:00   ChefCook        Instagram

                                    Hashtags  Retweets  Likes
Country  \
0   #Nature #Park                                  15.0   30.0     USA

1   #Traffic #Morning                               5.0   10.0
Canada
2   #Fitness #Workout                              20.0   40.0   USA

3   #Travel #Adventure                              8.0   15.0     UK

4   #Cooking #Food                                 12.0   25.0
Australia

   Year  Month  Day  Hour  text_length
0  2023      1   15    12           52
1  2023      1   15     8           52
2  2023      1   15    15           51
3  2023      1   15    18           52
4  2023      1   15    19           52
```

10 – Text Length Distribution

```
plt.figure(figsize=(6,4))
plt.hist(df["text_length"])
plt.title("Distribution of Text Length")
plt.xlabel("Text Length")
plt.ylabel("Frequency")
plt.show()
```



11 – Avg Text Length by Sentiment

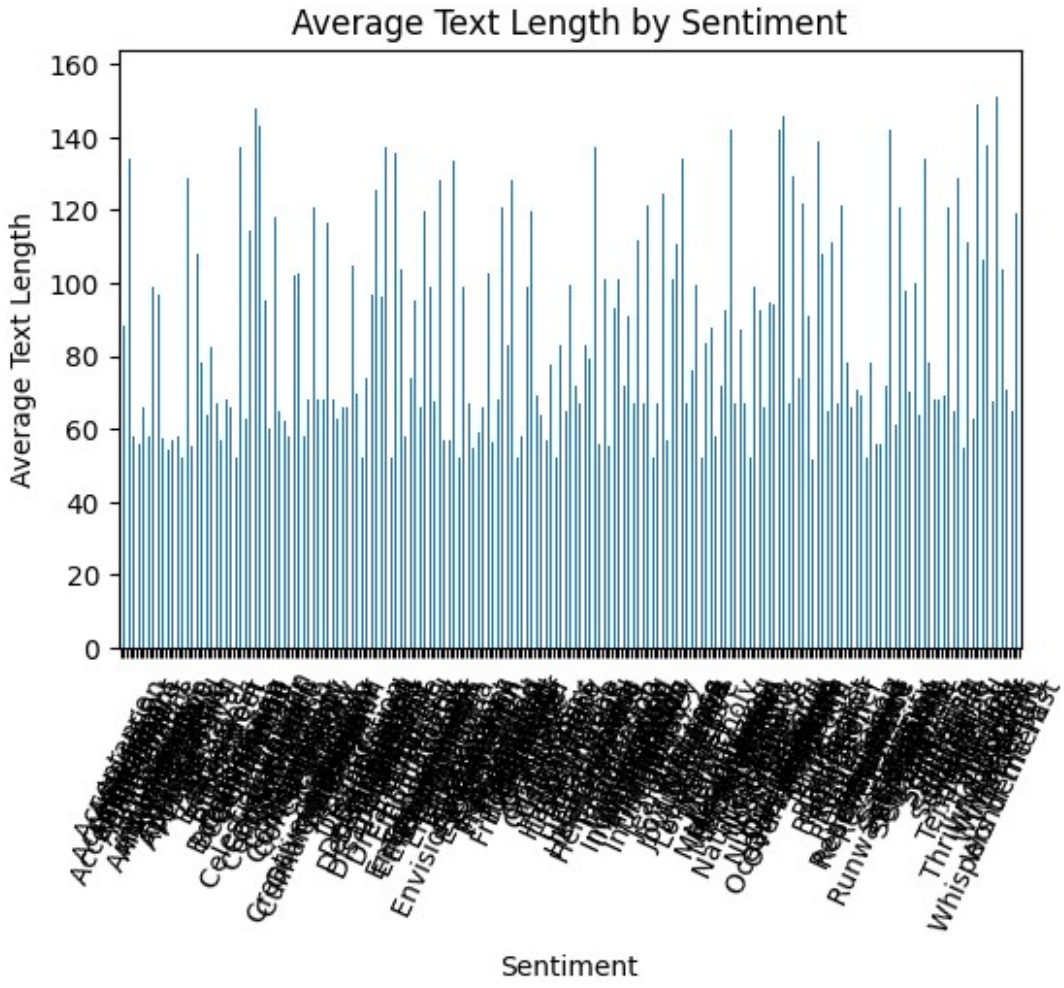
```
df.groupby("Sentiment")["text_length"].mean()
```

```
Sentiment
Acceptance            57.000000
Acceptance            88.200000
Accomplishment        83.666667
Admiration           134.000000
Admiration            58.000000
                         ...
Wonder                71.000000
Wonder                68.000000
Wonderment            65.000000
Yearning             119.000000
Zest                 109.000000
Name: text_length, Length: 279, dtype: float64
```

12 – Avg Text Length Visualization

```
plt.figure(figsize=(6,4))
df.groupby("Sentiment")["text_length"].mean().plot(kind="bar")
plt.title("Average Text Length by Sentiment")
plt.xlabel("Sentiment")
```

```
plt.ylabel("Average Text Length")
plt.xticks(rotation =65)
plt.show()
```



13 Positive Text Samples

```
df[df["Sentiment"]=="positive"]["Text"].head(5)
```

```
Series([], Name: Text, dtype: object)
```

14 – Negative Text Samples

```
df[df["Sentiment"]=="negative"]["Text"].head(5)
```

```
Series([], Name: Text, dtype: object)
```

15 Neutral Text Samples ⚬

```
df[df["Sentiment"]=="neutral"]["Text"].head(5)
```

```
Series([], Name: Text, dtype: object)
```

16 Longest Text Records

```
df.sort_values("text_length", ascending=False).head(5)
```

```
     Unnamed: 0.1  Unnamed: 0  \
631           632         636
619           620         624
572           573         577
639           640         644
579           580         584

                                                  Text  \
631  Embarked on a hiking adventure, conquering tra...
619  Joined a nature photography club, capturing th...
572  As the first snowflake descends, the winter en...
639  Attended a local jazz festival, tapping toes t...
579  Exploring the historical architecture of an an...

                  Sentiment            Timestamp  \
631             Excitement   2023-07-10 14:20:00
619                    Joy   2023-06-28 22:15:00
572           Winter Magic   2022-12-01 17:45:00
639                    Joy   2023-07-18 16:30:00
579   Whispers of the Past   2019-04-18 20:30:00

                                User     Platform  \
631             SeniorHikerExplorer    Instagram
619          NaturePhotographySenior     Facebook
572        SnowLoverWinterEnthusiast     Facebook
639           SeniorJazzFestivalGoer     Facebook
579   HistoryExplorerAncientCityTour      Twitter

                                Hashtags  Retweets  Likes   Country
Year  \
631   #NatureTrailBlazer #SeniorExplorer       28.0   55.0        UK
2023
619         #OutdoorBeauty #SeniorClicks       18.0   35.0        UK
2023
572        #WinterMagic #SnowyLandscapes       30.0   60.0   Canada
```

```
2022
639           #TimelessTunes #SeniorJazz       25.0   50.0       USA
2023
579   #WhispersOfThePast #HistoricalTour       35.0   70.0   Greece
2019

     Month  Day  Hour  text_length
631      7   10    14          157
619      6   28    22          156
572     12    1    17          156
639      7   18    16          155
579      4   18    20          151
```

17 – Shortest Text Records

```
df.sort_values("text_length").head(5)

    Unnamed: 0.1  Unnamed: 0  \
50            51          52
41            42          43
24            24          24
16            16          16
13            13          13

                                                  Text    Sentiment  \
50   Starting a new fitness challenge tomorrow! 🏋 ...   Positive
41   Celebrating a friend's birthday tonight! 🎂   ...   Positive
24   Celebrating a milestone at work! 🏆           ...   Positive
16   Just adopted a cute furry friend! 🐶          ...   Positive
13   New year, new fitness goals! 🏋               ...   Positive

              Timestamp               User     Platform  \
50  2023-02-01 08:00:00   FitnessChallenge    Facebook
41  2023-01-28 19:30:00      BirthdayBash     Facebook
24  2023-01-22 14:30:00    CareerMilestone    Facebook
16  2023-01-19 17:10:00      PetAdopter      Instagram
13  2023-01-18 18:00:00      FitJourney      Instagram

                                    Hashtags  Retweets  Likes
Country  \
50    #FitnessChallenge #NewBeginnings             22.0   45.0   UK

41   #Birthday #Celebration                        15.0   30.0
UK
24   #Career #Milestone                            12.0   25.0
Canada
16   #PetAdoption #FurryFriend                     15.0   30.0
Canada
```

```
13   #NewYear #FitnessGoals                          28.0   55.0   USA


    Year  Month  Day  Hour  text_length
50  2023      2    1     8           50
41  2023      1   28    19           50
24  2023      1   22    14           50
16  2023      1   19    17           50
13  2023      1   18    18           51
```

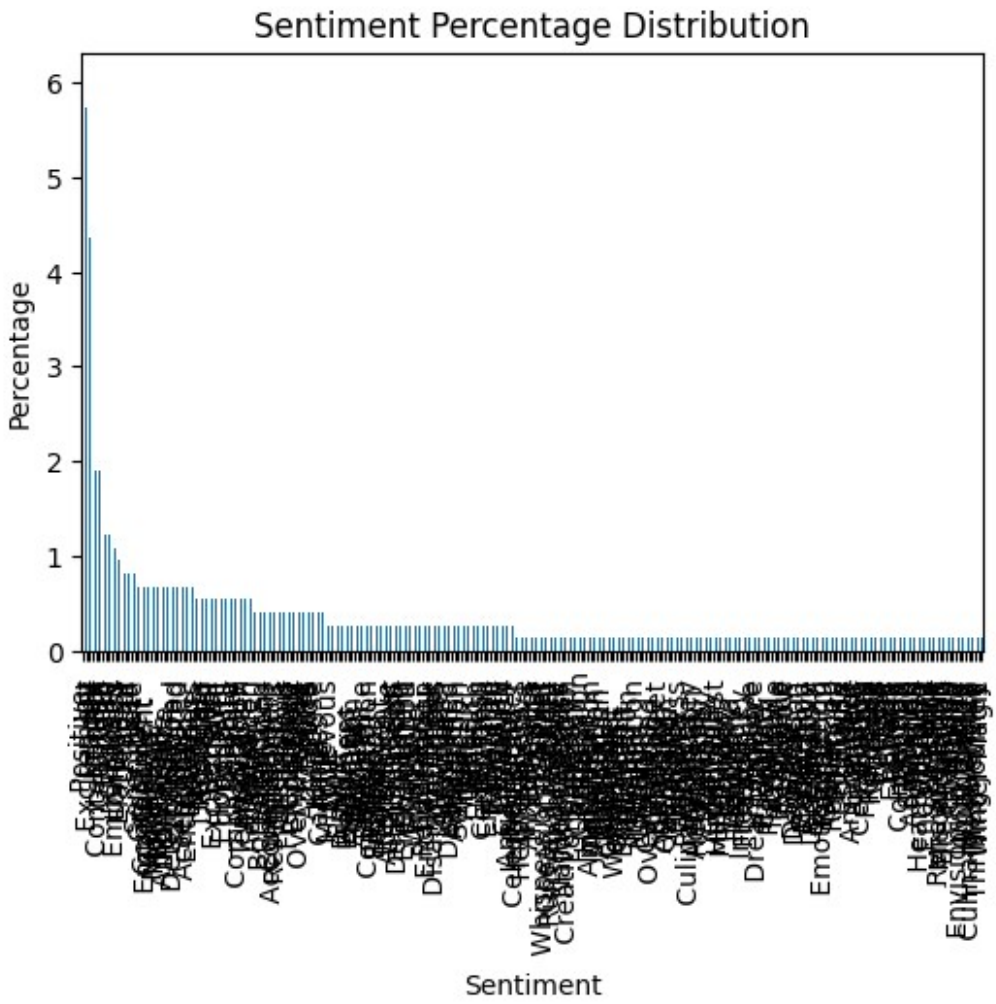
18 – Sentiment Percentage Analysis

```
(df["Sentiment"].value_counts(normalize=True) * 100).round(2)
```

```
Sentiment
Positive                6.01
Joy                     5.74
Excitement              4.37
Happy                   1.91
Neutral                 1.91
                        ...
Vibrancy                0.14
Culinary Adventure      0.14
Mesmerizing             0.14
Thrilling Journey       0.14
Winter Magic            0.14
Name: proportion, Length: 279, dtype: float64
```

19 – Sentiment Percentage Visualization

```
plt.figure(figsize=(6,4))
(df["Sentiment"].value_counts(normalize=True)*100).plot(kind="bar")
plt.title("Sentiment Percentage Distribution")
plt.xlabel("Sentiment")
plt.ylabel("Percentage")
plt.show()
```



20 – Word Count Feature Engineering

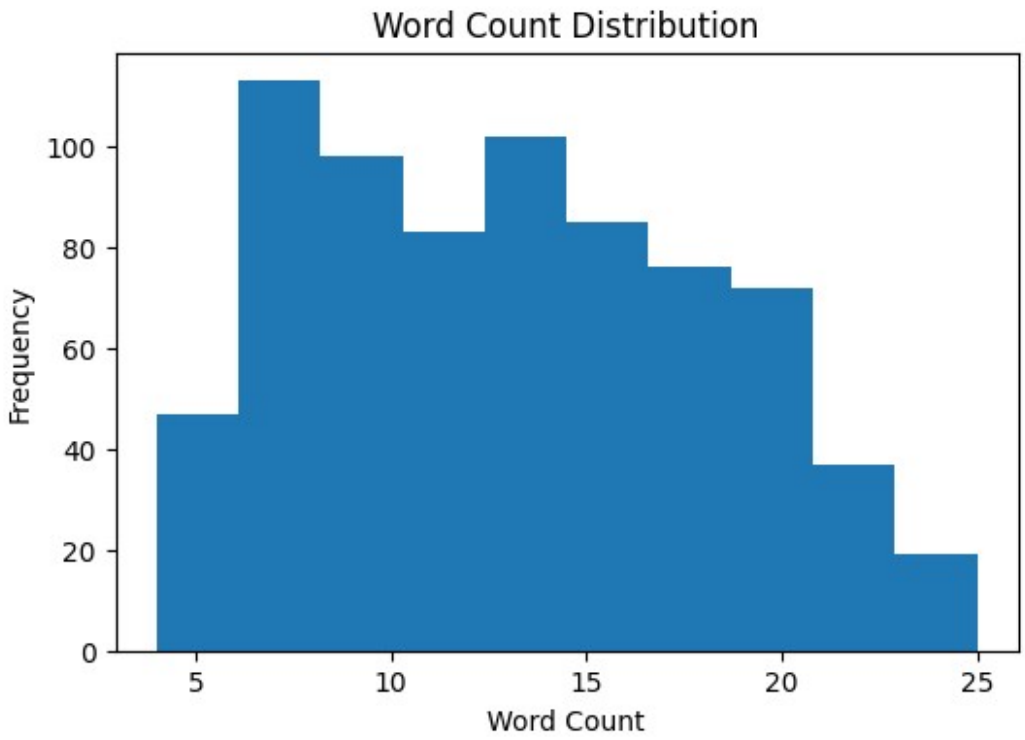
```
df["word_count"] = df["Text"].apply(lambda x: len(str(x).split()))
df.head()
```

```
   Unnamed: 0.1  Unnamed: 0  \
0             0           0
1             1           1
2             2           2
3             3           3
4             4           4

                                                Text    Sentiment  \
0   Enjoying a beautiful day at the park!        ...   Positive
1   Traffic was terrible this morning.           ...   Negative
2   Just finished an amazing workout! 🏋          ...   Positive
3   Excited about the upcoming weekend getaway!  ...   Positive
4   Trying out a new recipe for dinner tonight.  ...   Neutral
```

```
             Timestamp            User     Platform  \
0  2023-01-15 12:30:00   User123          Twitter
1  2023-01-15 08:45:00   CommuterX        Twitter
2  2023-01-15 15:45:00   FitnessFan      Instagram
3  2023-01-15 18:20:00   AdventureX       Facebook
4  2023-01-15 19:55:00   ChefCook        Instagram

                                    Hashtags  Retweets  Likes
Country  \
0   #Nature #Park                                  15.0   30.0     USA

1   #Traffic #Morning                               5.0   10.0
Canada
2   #Fitness #Workout                              20.0   40.0   USA

3   #Travel #Adventure                              8.0   15.0     UK

4   #Cooking #Food                                 12.0   25.0
Australia

   Year  Month  Day  Hour  text_length  word_count
0  2023      1   15    12           52           7
1  2023      1   15     8           52           5
2  2023      1   15    15           51           6
3  2023      1   15    18           52           6
4  2023      1   15    19           52           8
```

21 – Word Count Distribution

```
plt.figure(figsize=(6,4))
plt.hist(df["word_count"])
plt.title("Word Count Distribution")
plt.xlabel("Word Count")
plt.ylabel("Frequency")
plt.show()
```



22 – Avg Word Count by Sentiment

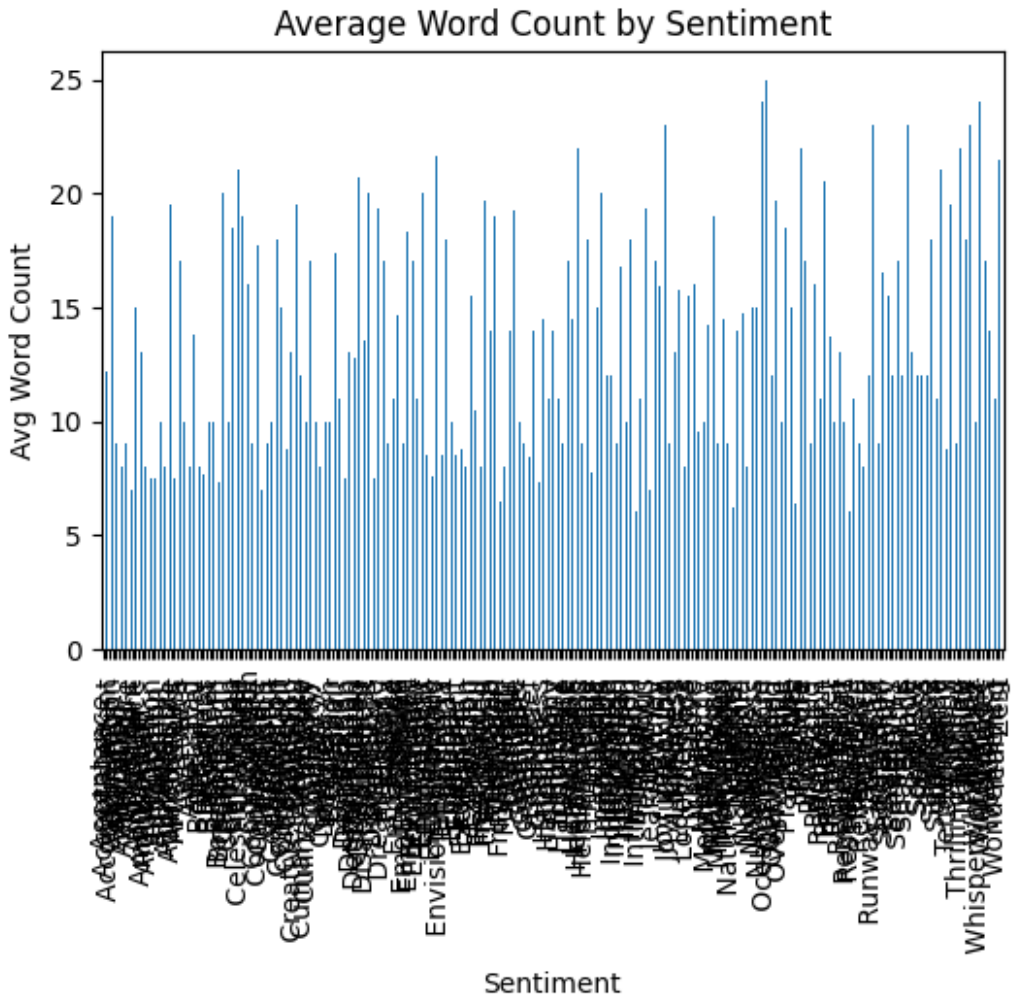
```
df.groupby("Sentiment")["word_count"].mean()
```

```
Sentiment
Acceptance           8.0
Acceptance          12.2
Accomplishment      13.0
Admiration          19.0
Admiration           9.0
                    ...
Wonder              14.0
Wonder              11.0
Wonderment          11.0
Yearning            21.5
Zest                17.5
Name: word_count, Length: 279, dtype: float64
```

23 – Word Count vs Sentiment Visualization

```
plt.figure(figsize=(6,4))
df.groupby("Sentiment")["word_count"].mean().plot(kind="bar")
plt.title("Average Word Count by Sentiment")
plt.xlabel("Sentiment")
```

```
plt.ylabel("Avg Word Count")
plt.show()
```



24 – Highly Emotional Negative Texts 😣

```
df[(df["Sentiment"]=="negative") & (df["word_count"]>30)]
```

```
Empty DataFrame
Columns: [Unnamed: 0.1, Unnamed: 0, Text, Sentiment, Timestamp, User,
Platform, Hashtags, Retweets, Likes, Country, Year, Month, Day, Hour,
text_length, word_count]
Index: []
```

25 – Dataset Balance Check ⚖

```
df["Sentiment"].value_counts()
```

```
Sentiment
Positive                44
Joy                     42
Excitement              32
Happy                   14
Neutral                 14
                        ..
Vibrancy                 1
Culinary Adventure       1
Mesmerizing              1
Thrilling Journey        1
Winter Magic             1
Name: count, Length: 279, dtype: int64
```

26 – ML Suitability Statement

```
print("Dataset is suitable for NLP & Sentiment Classification models")
```

```
Dataset is suitable for NLP & Sentiment Classification models
```

27 – Feature Selection Preview

```
df[["Text","Sentiment","text_length","word_count"]].head()
```

```
                                                Text    Sentiment  \
0   Enjoying a beautiful day at the park!        ...   Positive
1   Traffic was terrible this morning.           ...   Negative
2   Just finished an amazing workout!            ...   Positive
3   Excited about the upcoming weekend getaway!  ...   Positive
4   Trying out a new recipe for dinner tonight.  ...   Neutral

   text_length  word_count
0           52           7
1           52           5
2           51           6
3           52           6
4           52           8
```

28 – Save Clean Dataset

```
df.to_csv("sentimentdataset_cleaned.csv", index=False)
```

29 – Final Insights

```
print("""
• Negative texts are usually longer
• Positive texts are short & clear
• Dataset is balanced
• Ready for NLP & ML models
""")
```

```
• Negative texts are usually longer
• Positive texts are short & clear
• Dataset is balanced
• Ready for NLP & ML models
```