App Reviews Sentiment Analysis

App Reviewa Sentiment Analysis means evaluating and understanding the sentiment expressed in user reviews of mobile applications.

In [2]:
```
import numpy as np
import pandas as pd
```

In [3]:
```
df = pd.read_csv("D:\Summer Training Video\ML\linkedin-reviews (1).csv")
```

In [4]:
```
df
```

Out[4]:

	Review	Rating
0	Does absolutely nothing for a LinkedIn beginne...	1
1	Force close(galaxy tab)	1
2	Slow and it tries to upload your contacts with...	1
3	Add ability to customize the profile and move ...	4
4	Good app, but it's a pain that it's not possib...	4
...	...	...
697	Can't trust, Going to uninstall just for that ...	1
698	It really gets me linked in with my friends. H...	5
699	It lacks most of what makes the other social n...	4
700	Really disappointed in the new version. Seems ...	2
701	One of the best looking and well designed apps...	5

702 rows × 2 columns

In [5]:
```
df.head()
```

Out[5]:

	Review	Rating
0	Does absolutely nothing for a LinkedIn beginne...	1
1	Force close(galaxy tab)	1
2	Slow and it tries to upload your contacts with...	1
3	Add ability to customize the profile and move ...	4
4	Good app, but it's a pain that it's not possib...	4

In [7]:
```
import matplotlib.pyplot as plt
import seaborn as sns
```

In [8]:
```
df.info()
```

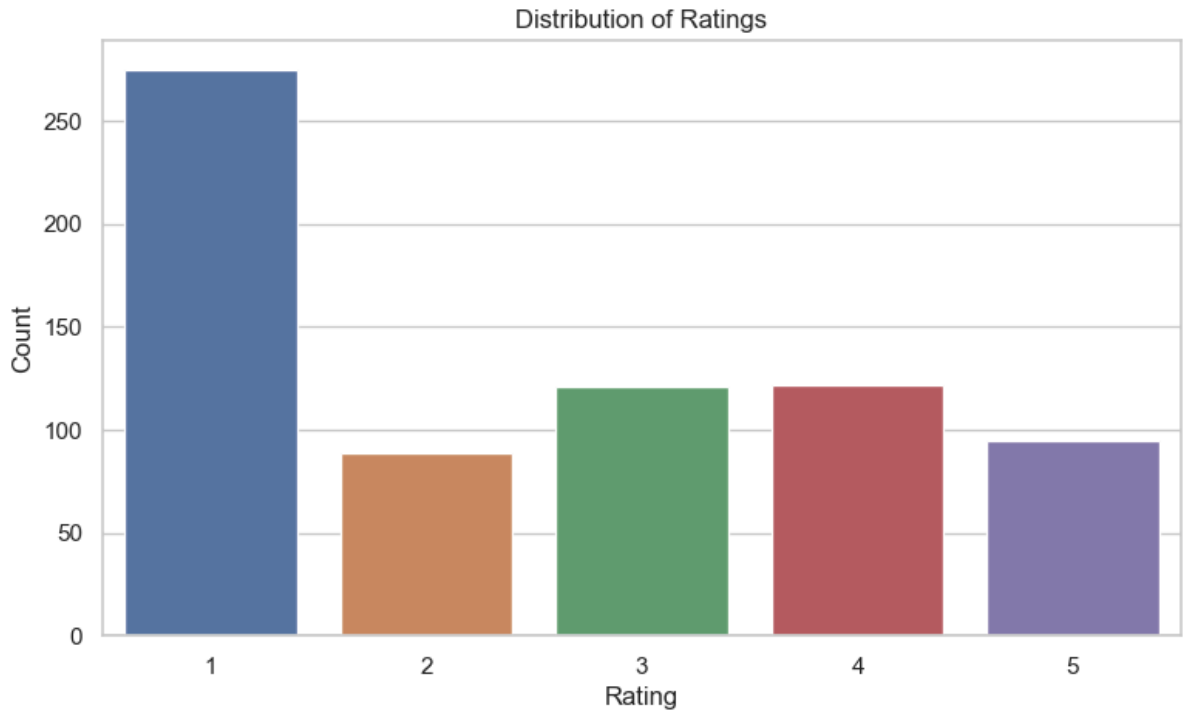
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 702 entries, 0 to 701
Data columns (total 2 columns):
 #   Column  Non-Null Count  Dtype 
---  ------  --------------  ----- 
 0   Review  702 non-null    object
 1   Rating  702 non-null    int64 
dtypes: int64(1), object(1)
memory usage: 11.1+ KB
```

Exploratory Data Analysis

we will start by analyzing the distributions of ratings. It will provide insight into the overall sentiment of the reviews. Then we can explore further, such as analyzing the length of reviews, any possibly derive insights from the text of the reviews.

Plotting the Distribution of Ratings

In [9]:
```
sns.set(style = 'whitegrid')
plt.figure(figsize = (9,5))
sns.countplot(data = df , x = 'Rating')
plt.title('Distribution of Ratings')
plt.xlabel('Rating')
plt.ylabel('Count')
plt.show()
```



Adding Sentiment Labels in the Data

we will use Textblob library. Textblob provides a polarity scores raning from -1(very negative) to 1(very positive) for a given text. We can use this scores to classify each review's sentiment as positive , negative or neutral

In [12]:
```
pip install Textblob
```

```
Defaulting to user installation because normal site-packages is not writeable
Collecting Textblob
  Obtaining dependency information for Textblob from https://files.pythonhosted.org/packages/02/07/5fd2945356dd839974d3a25de8a142dc37293c21315729a41e775b5f3569/textblob-0.18.0.post0-py3-none-any.whl.metadata (https://files.pythonhosted.org/packages/02/07/5fd2945356dd839974d3a25de8a142dc37293c21315729a41e775b5f3569/textblob-0.18.0.post0-py3-none-any.whl.metadata)
  Downloading textblob-0.18.0.post0-py3-none-any.whl.metadata (4.5 kB)
Requirement already satisfied: nltk>=3.8 in c:\programdata\anaconda3\lib\site-packages (from Textblob) (3.8.1)
Requirement already satisfied: click in c:\programdata\anaconda3\lib\site-packages (from nltk>=3.8->Textblob) (8.0.4)
Requirement already satisfied: joblib in c:\programdata\anaconda3\lib\site-packages (from nltk>=3.8->Textblob) (1.2.0)
Requirement already satisfied: regex>=2021.8.3 in c:\programdata\anaconda3\lib\site-packages (from nltk>=3.8->Textblob) (2022.7.9)
Requirement already satisfied: tqdm in c:\programdata\anaconda3\lib\site-packages (from nltk>=3.8->Textblob) (4.65.0)
Requirement already satisfied: colorama in c:\programdata\anaconda3\lib\site-packages (from click->nltk>=3.8->Textblob) (0.4.6)
Downloading textblob-0.18.0.post0-py3-none-any.whl (626 kB)
   ---------------------------------------- 0.0/626.3 kB ? eta -:--:--
    --------------------------------------- 10.2/626.3 kB ? eta -:--:--
   - -------------------------------------- 30.7/626.3 kB 445.2 kB/s eta 0:00:02
   ------- -------------------------------- 122.9/626.3 kB 1.0 MB/s eta 0:00:01
   ------------------------- -------------- 409.6/626.3 kB 2.9 MB/s eta 0:00:01
   ---------------------------------------- 626.3/626.3 kB 3.6 MB/s eta 0:00:00
Installing collected packages: Textblob
Successfully installed Textblob-0.18.0.post0
Note: you may need to restart the kernel to use updated packages.
```

In [15]:
```
from textblob import TextBlob
```

In [16]:
```
def textblob_sentiment_analysis(review):
    sentiment = TextBlob(review).sentiment
    if sentiment.polarity > 0.1:
        return 'Positive'
    elif sentiment.polarity < -0.1:
        return 'Negative'
    else:
        'Neutral'
```

In [17]:
```
df['Sentiment'] = df['Review'].apply(textblob_sentiment_analysis)
```

In [18]:
```
df.sample(5)
```

Out[18]:

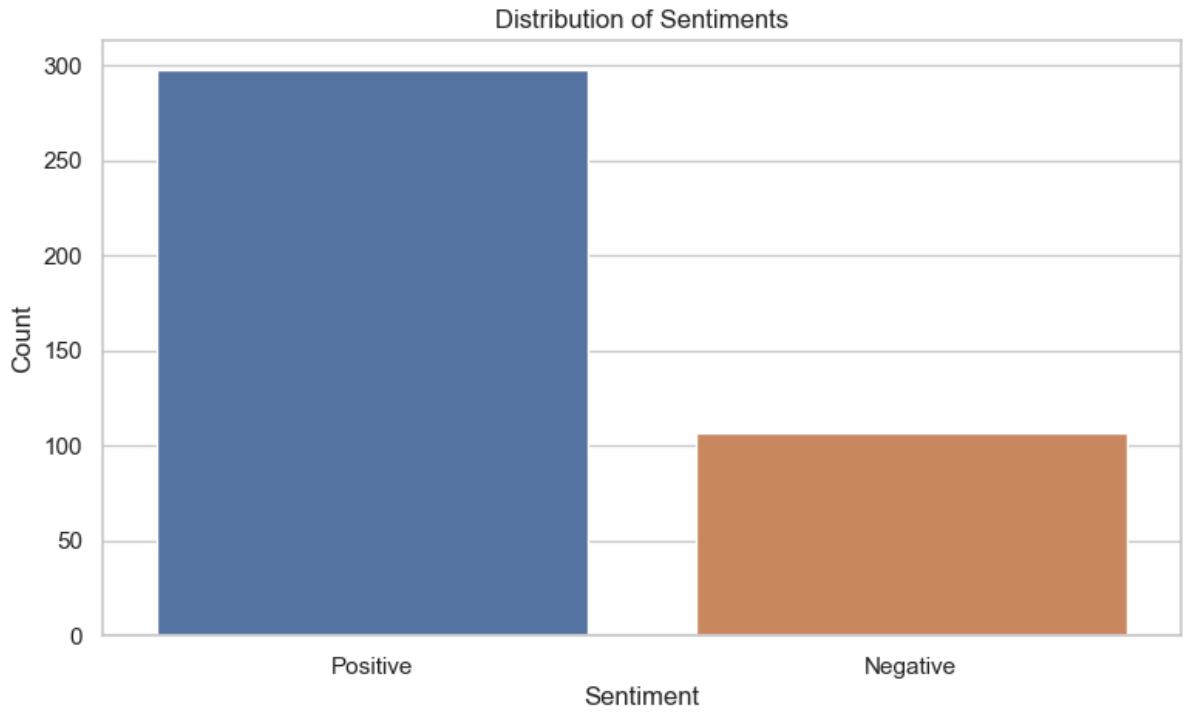
	Review	Rating	Sentiment
623	Take a great idea and douche it up...	1	Positive
325	Nice app. Only Miss the ability to interact wi...	4	Positive
48	Doesn't log in. FAIL	1	Negative
112	Last update broke it for HTC Desire on Froyo -...	1	None
393	Works OK, but it's slow, a memory hog (no SD),...	3	Positive

Analyzing App Reviews Sentiments

In [19]:
```
sentiment_distribution = df['Sentiment'].value_counts()
sentiment_distribution
```

Out[19]:
```
Sentiment
Positive    298
Negative    107
Name: count, dtype: int64
```

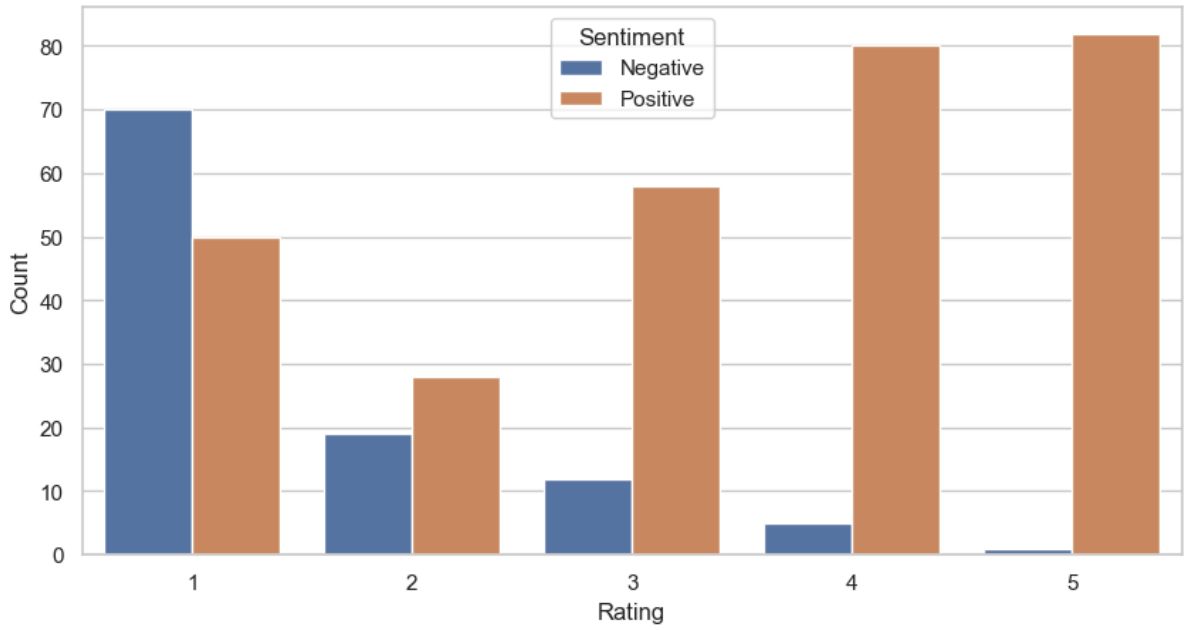
In [30]:
```
plt.figure(figsize = (9,5))
sns.barplot(x = sentiment_distribution.index ,
            y = sentiment_distribution.values)
plt.title('Distribution of Sentiments')
plt.xlabel('Sentiment')
plt.ylabel('Count')
plt.show()
```



So , we can see althrough the app has low ratings, still the reviewers don't use many negative words in the reviews for the app.

Next , we'll explore the relationship bnetween the sentiments and the ratings. This analysis can help us understand whether there is a correlation between the sentiments of the text and numerical ratings.

In [31]:
```
plt.figure(figsize = (10,5))
sns.countplot(data = df ,
              x = 'Rating',
              hue = 'Sentiment')
plt.xlabel('Rating')
plt.ylabel('Count')
plt.legend(title='Sentiment')
plt.show()
```



Summary

App Reviews Sentiment Analysis is a valuable tool for app developers and business to understand user feedback, priortize feature updates and maintain a positive user community. It involves using data analysis techniques to determine whether the sentiments in these reviews are positive , neagative , neutral.

In [ ]:
```
```