Import modules

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import re
import string
import nltk
import warnings
from textblob import TextBlob
from wordcloud import WordCloud
%matplotlib inline

warnings.filterwarnings('ignore')
```

Loading MoneyLion Dataset

In [2]:
```
df = pd.read_csv('MoneyLion Final 2.csv')
df.head()
```

Out[2]:

	date	username	tweet
0	16/08/2021	jonahlupton	@Sureshktrader Right now I like $UPST and$SOF...
1	16/08/2021	sureshktrader	@JonahLupton You were pitching Fuse moneylion ...
2	16/08/2021	bladentaj	When I see this #MoneyLion trending, all I ima...
3	15/08/2021	craigmo93689450	@MoneyLion Money lion is there when you need i...
4	14/08/2021	tbakerbroadmoor	We're already seeing public market valuations ...

In [3]:
```
df.shape
```

Out[3]:
```
(13052, 3)
```

Preprocessing the Dataset

In [4]:
```
def remove_pattern(input_txt, pattern):
    r = re.findall(pattern, input_txt)
    for word in r:
        input_txt = re.sub(word, "", input_txt)
    return input_txt
```

In [5]:
```
df.drop_duplicates(subset='tweet', inplace=True)
df.shape
```

Out[5]:
```
(13052, 3)
```

In [6]:
```
# remove twitter handles (@user)
df ['clean_tweet'] = np.vectorize(remove_pattern)(df['tweet'], "@[\w]*")
df.head()
```

Out[6]:

	date	username	tweet	clean_tweet
0	16/08/2021	jonahlupton	@Sureshktrader Right now I like $UPST and SOF...	Right now I like $UPST and SOFI the most — o...
1	16/08/2021	sureshktrader	@JonahLupton You were pitching Fuse moneylion ...	You were pitching Fuse moneylion acfew months...
2	16/08/2021	bladentaj	When I see this #MoneyLion trending, all I ima...	When I see this #MoneyLion trending, all I ima...
3	15/08/2021	craigmo93689450	@MoneyLion Money lion is there when you need i...	Money lion is there when you need it it's awe...
4	14/08/2021	tbakerbroadmoor	We're already seeing public market valuations ...	We're already seeing public market valuations ...

In [7]:

```
#remove special characters, numbers and punctuation
df ['clean_tweet'] = df ['clean_tweet'].str.replace("[^a-zA-Z#]", " ")
df ['clean_tweet'] = df ['clean_tweet'].str.replace("https", " ")
df ['clean_tweet'] = df ['clean_tweet'].str.replace("bit.ly", " ")
df ['clean_tweet'] = df ['clean_tweet'].str.replace("link", " ")
df ['clean_tweet'] = df ['clean_tweet'].str.replace("pic.twitter", " ")
df ['clean_tweet'] = df ['clean_tweet'].str.replace("referral", " ")
df ['clean_tweet'] = df ['clean_tweet'].str.replace("join", " ")
df ['clean_tweet'] = df ['clean_tweet'].str.replace("MoneyLion", " ")

df.head()
```

Out[7]:

	date	username	tweet	clean_tweet
0	16/08/2021	jonahlupton	@Sureshktrader Right now I like $UPST and SOF...	Right now I like UPST and SOFI the most o...
1	16/08/2021	sureshktrader	@JonahLupton You were pitching Fuse moneylion ...	You were pitching Fuse moneylion acfew months...
2	16/08/2021	bladentaj	When I see this #MoneyLion trending, all I ima...	When I see this # trending all I imagined wa...
3	15/08/2021	craigmo93689450	@MoneyLion Money lion is there when you need i...	Money lion is there when you need it it s awe...
4	14/08/2021	tbakerbroadmoor	We're already seeing public market valuations ...	We re already seeing public market valuations ...

In [8]:

```
df['clean_tweet'] = df['clean_tweet'].replace(to_replace=r'^https?:\/\/.*[\r\n]*',value='
df.head()
```

Out[8]:

	date	username	tweet	clean_tweet
0	16/08/2021	jonahlupton	@Sureshktrader Right now I like $UPST and SOF...	Right now I like UPST and SOFI the most o...
1	16/08/2021	sureshktrader	@JonahLupton You were pitching Fuse moneylion ...	You were pitching Fuse moneylion acfew months...
2	16/08/2021	bladentaj	When I see this #MoneyLion trending, all I ima...	When I see this # trending all I imagined wa...
3	15/08/2021	craigmo93689450	@MoneyLion Money lion is there when you need i...	Money lion is there when you need it it s awe...
4	14/08/2021	tbakerbroadmoor	We're already seeing public market valuations ...	We re already seeing public market valuations ...

In [9]:
```
df ['clean_tweet'] = df ['clean_tweet'].apply(lambda x: " ".join([w for w in x.split() if
df.head()
```

Out[9]:

	date	username	tweet	clean_tweet
0	16/08/2021	jonahlupton	@Sureshktrader Right now I like $UPST and$SOF...	Right like UPST SOFI most once trades couple m...
1	16/08/2021	sureshktrader	@JonahLupton You were pitching Fuse moneylion ...	were pitching Fuse moneylion acfew months What...
2	16/08/2021	bladentaj	When I see this #MoneyLion trending, all I ima...	When this trending imagined lion millionaire
3	15/08/2021	craigmo93689450	@MoneyLion Money lion is there when you need i...	Money lion there when need awesome bank SwgWXsL
4	14/08/2021	tbakerbroadmoor	We're already seeing public market valuations ...	already seeing public market valuations #finte...

In [10]:
```
df.shape
```

Out[10]:
```
(13052, 4)
```

Positive/Negative/Neutral

In [11]:
```
## To create subjectivity (use to tell how subjective or opinionated the tweet is)
def getSubjectivity(text):
    return TextBlob(text).sentiment.subjectivity

## To create polarity (use to tell how positive or negative the tweet is)
def getPolarity(text):
    return TextBlob(text).sentiment.polarity

## Create the Subjectivity and Polarity results columns in the df
df["Subjectivity"] = df['clean_tweet'].apply(getSubjectivity)
df["Polarity"] = df['clean_tweet'].apply(getPolarity)

def getAnalysis(score):
    if score < 0:
        return "Negative"
    elif score == 0:
        return "Neutral"
    else :
        return "Positive"

df["Analysis"] = df["Polarity"].apply(getAnalysis)
df.head()
```

Out[11]:

	date	username	tweet	clean_tweet	Subjectivity	Polarity	Analysis
0	16/08/2021	jonahlupton	@Sureshktrader Right now I like $UPST and$SOF...	Right like UPST SOFI most once trades couple m...	0.517857	0.392857	Positive
1	16/08/2021	sureshktrader	@JonahLupton You were pitching Fuse moneylion ...	were pitching Fuse moneylion acfew months What...	0.000000	0.000000	Neutral
2	16/08/2021	bladentaj	When I see this #MoneyLion trending, all I ima...	When this trending imagined lion millionaire	0.000000	0.000000	Neutral

	date	username	tweet	clean_tweet	Subjectivity	Polarity	Analysis
3	15/08/2021	craigmo93689450	@MoneyLion Money lion is there when you need i...	Money lion there when need awesome bank SwgWXsL	1.000000	1.000000	Positive
4	14/08/2021	tbakerbroadmoor	We're already seeing public market valuations ...	already seeing public market valuations #finte...	0.066667	0.000000	Neutral

In [ ]:
```
#print all positive tweets

j=1
sortedDF =df.sort_values(by=['Polarity'])
for i in range (0, sortedDF.shape[0]):
    if (sortedDF['Analysis'][i] == 'Positive'):
        print (str(j)+ ') '+sortedDF['clean_tweet'][i])
        print()
        j = j+1
```

In [ ]:
```
#print all negative tweets

j=1
sortedDF =df.sort_values(by=['Polarity'])
for i in range (0, sortedDF.shape[0]):
    if (sortedDF['Analysis'][i] == 'Negative'):
        print (str(j)+ ') '+sortedDF['clean_tweet'][i])
        print()
        j = j+1
```

In [ ]:
```
#print all neutral tweets

j=1
sortedDF =df.sort_values(by=['Polarity'])
for i in range (0, sortedDF.shape[0]):
    if (sortedDF['Analysis'][i] == 'Neutral'):
        print (str(j)+ ') '+sortedDF['clean_tweet'][i])
        print()
        j = j+1
```

In [12]:
```
#Get the percentage of positive tweets

ptweets = df[df.Analysis == 'Positive']
ptweets = ptweets['clean_tweet']

result = round ( (ptweets.shape[0] / df.shape[0] *100))
print (str(result)+ "% of positive tweets")
```

```
50% of positive tweets
```

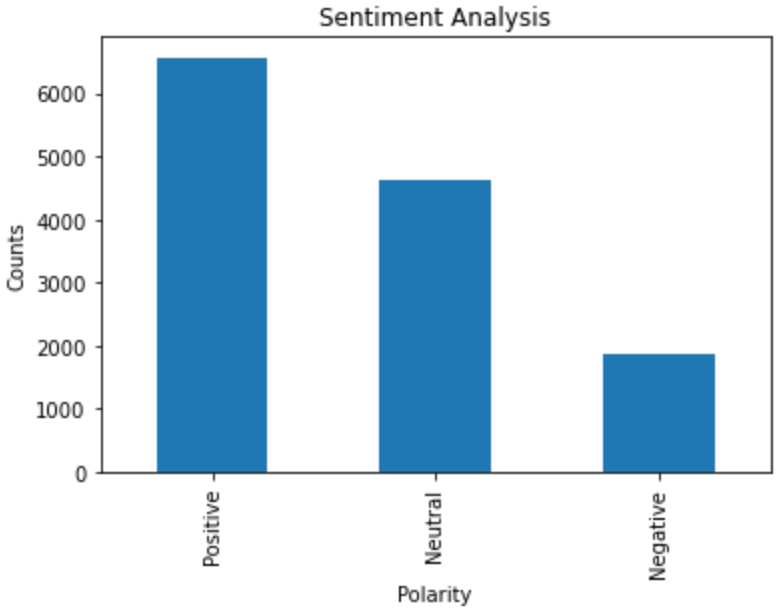
In [13]:
```
negtweets = df[df.Analysis == 'Negative']
negtweets = negtweets['clean_tweet']

result = round ( (negtweets.shape[0] / df.shape[0] *100))
print (str(result)+ "% of negative tweets")
```

```
14% of negative tweets
```

In [14]:
```
netweets = df[df.Analysis == 'Neutral']
netweets = netweets['clean_tweet']

result = round ( (netweets.shape[0] / df.shape[0] *100))
print (str(result)+ "% of neutral tweets")
```

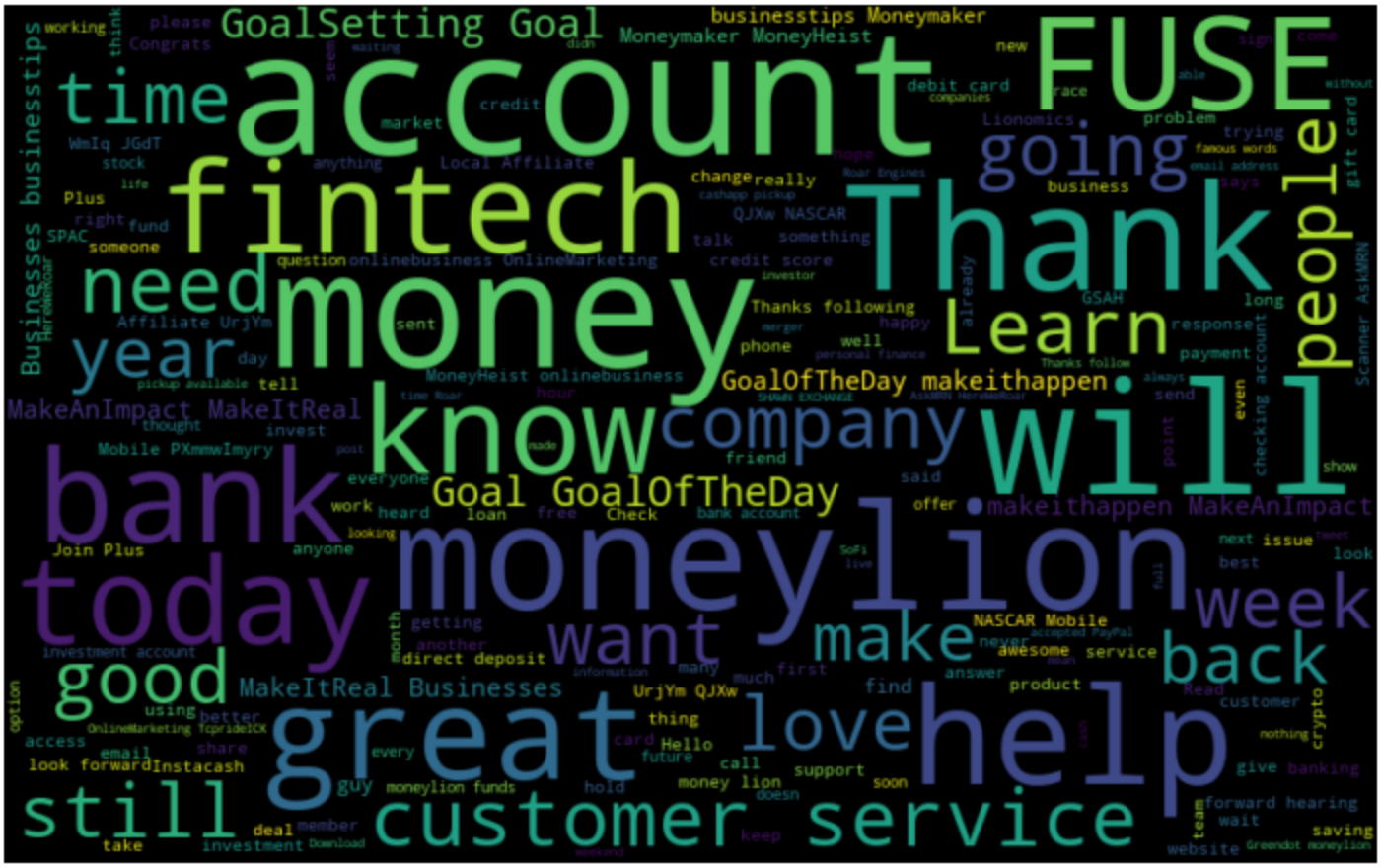
```
35% of neutral tweets
```

In [15]:
```
#Sho the value counts

df['Analysis'].value_counts()

#plot and visualize the counts
plt.title('Sentiment Analysis')
plt.xlabel('Polarity')
plt.ylabel('Counts')
df['Analysis'].value_counts().plot(kind='bar')
plt.show()
```



Exploratory Data Analysis

In [16]:
```
#Visualize the frequent words

all_words = " ".join([sentence for sentence in df ['clean_tweet']])

wordcloud = WordCloud (width =800, height=500, random_state=42, max_font_size=100).generat

#plot the graph
plt.figure(figsize=(15,8))
plt.imshow(wordcloud, interpolation = 'bilinear')
plt.axis('off')
plt.show()
```



Export Data

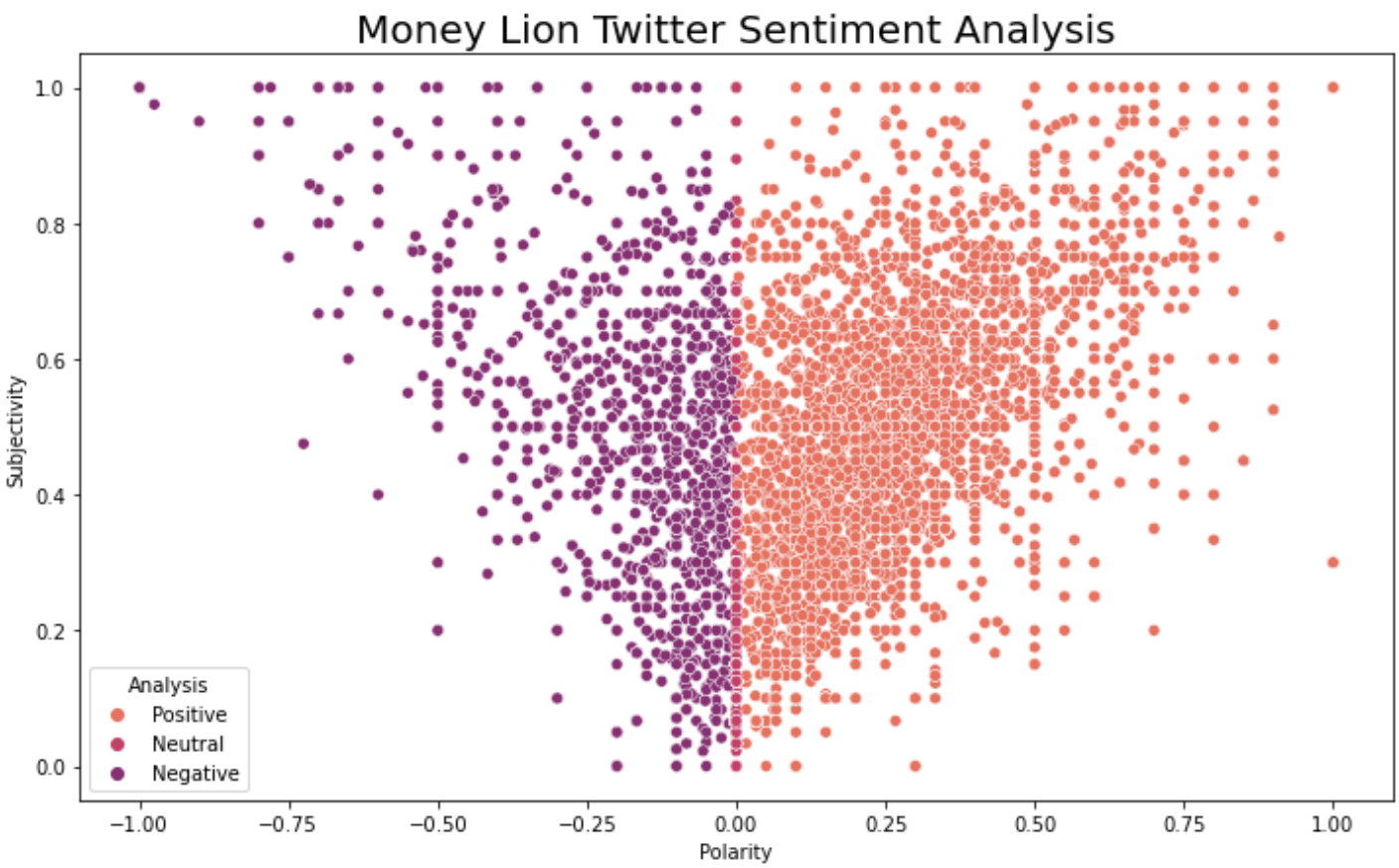
In [ ]:

```
#df.to_csv(r'../Documents/MoneyLionCleanData.csv')
```

Scatter Plot

In [17]:

```
plt.figure(figsize=(12, 7))
data = pd.read_csv('MoneyLionCleanData.csv')
sns.scatterplot(data['Polarity'], data['Subjectivity'],
                hue = data['Analysis'], edgecolor='white',
                palette="flare")
plt.title("Money Lion Twitter Sentiment Analysis", fontsize=20)
plt.show()
```


Money Lion Twitter Sentiment Analysis
Subjectivity
Polarity
Analysis
Positive
Neutral
Negative
1.0
0.8
0.6
0.4
0.2
0.0
−1.00
−0.75
−0.50
−0.25
0.00
0.25
0.50
0.75
1.00