

Unit 12 - Tales from the Crypto

1. Sentiment Analysis

Use the news api to pull the latest news articles for bitcoin and ethereum and create a DataFrame of sentiment scores for each coin.

Use descriptive statistics to answer the following questions:

1. Which coin had the highest mean positive score?
2. Which coin had the highest negative score?
3. Which coin had the highest positive score?

In [1]:

```
# Initial imports
import os
import pandas as pd
from dotenv import load_dotenv
from nltk.sentiment.vader import SentimentIntensityAnalyzer
analyzer = SentimentIntensityAnalyzer()

%matplotlib inline
```

In [2]:

```
# Read your api key environment variable
# YOUR CODE HERE!
```

In [3]:

```
# Create a newsapi client
# YOUR CODE HERE!
```

In [5]:

```
# Fetch the Bitcoin news articles
# YOUR CODE HERE!
```

In [6]:

```
# Fetch the Ethereum news articles
# YOUR CODE HERE!
```

In [7]:

```
# Create the Bitcoin sentiment scores DataFrame
# YOUR CODE HERE!
```

Out[7]:

	text	Compound	Positive	Negative	Neutral
0	Just hackers burning up Oday like it's a fire ...	0.0258	0.061	0.059	0.880
1	Reuters had previously reported the FBI would ...	0.0772	0.038	0.000	0.962
2	Most of these accounts tweeted some variant of...	0.0000	0.000	0.000	1.000
3	Our investigation and cooperation with law enf...	0.5994	0.149	0.000	0.851
4	The bitcoin bulls are back in town.\r\nThe pri...	0.6369	0.140	0.000	0.860

In [8]:

```
# Create the Ethereum sentiment scores DataFrame
# YOUR CODE HERE!
```

Out[8]:

	text	Compound	Positive	Negative	Neutral
0	According to a public letter from the U.S. Com...	0.5719	0.132	0.000	0.868
1	When the inventor of AWS Lambda, Tim Wagner, a...	0.2263	0.053	0.000	0.947
2	Enlarge/ A screenshot from Wozniak's lawsuit s...	-0.6808	0.000	0.177	0.823
3	Crypto has been on a tear in the last week.\r\...	0.0000	0.000	0.000	1.000
4	Bitcoin crossed the \$11,000 level and ...	-0.4215	0.000	0.083	0.917

In [9]:

```
# Describe the Bitcoin Sentiment
# YOUR CODE HERE!
```

Out[9]:

	Compound	Positive	Negative	Neutral
count	20.000000	20.000000	20.000000	20.000000
mean	-0.214625	0.046000	0.090200	0.863800
std	0.462797	0.044974	0.084929	0.077649
min	-0.880400	0.000000	0.000000	0.687000
25%	-0.629500	0.000000	0.000000	0.834250
50%	-0.235650	0.044000	0.073500	0.858500
75%	0.089900	0.066250	0.145500	0.919500
max	0.636900	0.149000	0.277000	1.000000

In [10]:

```
# Describe the Ethereum Sentiment  
# YOUR CODE HERE!
```

Out[10]:

	Compound	Positive	Negative	Neutral
count	17.000000	17.000000	17.000000	17.000000
mean	0.169512	0.089353	0.053235	0.857471
std	0.488875	0.077845	0.059055	0.087565
min	-0.680800	0.000000	0.000000	0.660000
25%	-0.340000	0.000000	0.000000	0.814000
50%	0.361200	0.083000	0.051000	0.868000
75%	0.571900	0.136000	0.088000	0.917000
max	0.726900	0.226000	0.177000	1.000000

Questions:

Q: Which coin had the highest mean positive score?

A:

Q: Which coin had the highest compound score?

A:

Q. Which coin had the highest positive score?

A:

2. Natural Language Processing

Tokenizer

In this section, you will use NLTK and Python to tokenize the text for each coin. Be sure to:

1. Lowercase each word
2. Remove Punctuation
3. Remove Stopwords

In [11]:

```
from nltk.tokenize import word_tokenize, sent_tokenize
from nltk.corpus import stopwords
from nltk.stem import WordNetLemmatizer, PorterStemmer
from string import punctuation
import re
```

In [12]:

```
# Expand the default stopwords list if necessary
# YOUR CODE HERE!
```

In [13]:

```
# Complete the tokenizer function
def tokenizer(text):
    """Tokenizes text."""

    # Create a list of the words

    # Convert the words to Lowercase

    # Remove the punctuation

    # Remove the stop words

    # Lemmatize Words into root words

    return tokens
```

In [14]:

```
# Create a new tokens column for Bitcoin
# YOUR CODE HERE!
```

Out[14]:

	text	Compound	Positive	Negative	Neutral	tokens
0	Just hackers burning up Oday like it's a fire ...	0.0258	0.061	0.059	0.880	[hacker, burning, Oday, like, ', fire, sale, l...
1	Reuters had previously reported the FBI would ...	0.0772	0.038	0.000	0.962	[Reuters, previously, reported, FBI, would, la...
2	Most of these accounts tweeted some variant of...	0.0000	0.000	0.000	1.000	[account, tweeted, variant, message, someone, ...
3	Our investigation and cooperation with law enf...	0.5994	0.149	0.000	0.851	[investigation, cooperation, law, enforcement,...
4	The bitcoin bulls are back in town.\r\nThe pri...	0.6369	0.140	0.000	0.860	[bitcoin, bull, back, town, price, bitcoin, su...

In [15]:

```
# Create a new tokens column for Ethereum
# YOUR CODE HERE!
```

Out[15]:

	text	Compound	Positive	Negative	Neutral	tokens
0	According to a public letter from the U.S. Com...	0.5719	0.132	0.000	0.868	[According, public, letter, U.S., Comptroller,...
1	When the inventor of AWS Lambda, Tim Wagner, a...	0.2263	0.053	0.000	0.947	[inventor, AWS, Lambda, Tim, Wagner, former, h...
2	Enlarge/ A screenshot from Wozniak's lawsuit s...	-0.6808	0.000	0.177	0.823	[Enlarge/ screenshot, Wozniak, lawsuit, show,...
3	Crypto has been on a tear in the last week.\r\n...	0.0000	0.000	0.000	1.000	[Crypto, tear, last, week, Bitcoin, 18, last, ...
4	Bitcoin crossed the \$11,000 level and ...	-0.4215	0.000	0.083	0.917	[ul, li, Bitcoin, crossed, 11,000, level, trad...

NGrams and Frequency Analysis

In this section you will look at the ngrams and word frequency for each coin.

1. Use NLTK to produce the n-grams for $N = 2$.
2. List the top 10 words for each coin.

In [16]:

```
from collections import Counter
from nltk import ngrams
```

In [17]:

```
# Generate the Bitcoin N-grams where N=2
# YOUR CODE HERE!
```

Out[17]:

```
[(('Elon', 'Musk'), 4),
 (('Bill', 'Gates'), 3),
 (('Barack', 'Obama'), 3),
 (('Twitter', 'account'), 3),
 (('char', 'Image'), 2),
 (('Kanye', 'West'), 2),
 (('Gates', 'Barack'), 2),
 (('high-profile', 'Twitter'), 2),
 (('Joe', 'Biden'), 2),
 (('hacker', 'burning'), 1),
 (('burning', '0day'), 1),
 (('0day', 'like'), 1),
 (('like', ''), 1),
 ((' ', 'fire'), 1),
 (('fire', 'sale'), 1),
 (('sale', 'Imagine'), 1),
 (('Imagine', 'getting'), 1),
 (('getting', 'key'), 1),
 (('key', 'Twitter'), 1),
 (('Twitter', 'kingdom'), 1)]
```

In [18]:

```
# Generate the Ethereum N-grams where N=2
# YOUR CODE HERE!
```

Out[18]:

```
[(('last', 'week'), 2),
 (('Satoshi', 'Nakaboto'), 2),
 (('paper', 'wallet'), 2),
 (('According', 'public'), 1),
 (('public', 'letter'), 1),
 (('letter', 'U.S.'), 1),
 (('U.S.', 'Comptroller'), 1),
 (('Comptroller', 'Currency'), 1),
 (('Currency', 'federal'), 1),
 (('federal', 'group'), 1),
 (('group', 'responsible'), 1),
 (('responsible', 'security'), 1),
 (('security', 'banking'), 1),
 (('banking', 'system'), 1),
 (('system', 'bank'), 1),
 (('bank', 'allowed'), 1),
 (('allowed', 'hold'), 1),
 (('hold', 'cryptocurrencies'), 1),
 (('cryptocurrencies', 'doe...'), 1),
 (('doe...', '+1760'), 1)]
```

In [19]:

```
# Use the token_count function to generate the top 10 words from each coin
def token_count(tokens, N=3):
    """Returns the top N tokens from the frequency count"""
    return Counter(tokens).most_common(N)
```

In [20]:

```
# Get the top 10 words for Bitcoin
# YOUR CODE HERE!
```

Out[20]:

```
[('char', 20),
 ('account', 12),
 ('Twitter', 11),
 ('bitcoin', 8),
 ('scam', 6),
 ('hacker', 5),
 ('investigation', 5),
 ('', 4),
 ('would', 4),
 ('hack', 4)]
```

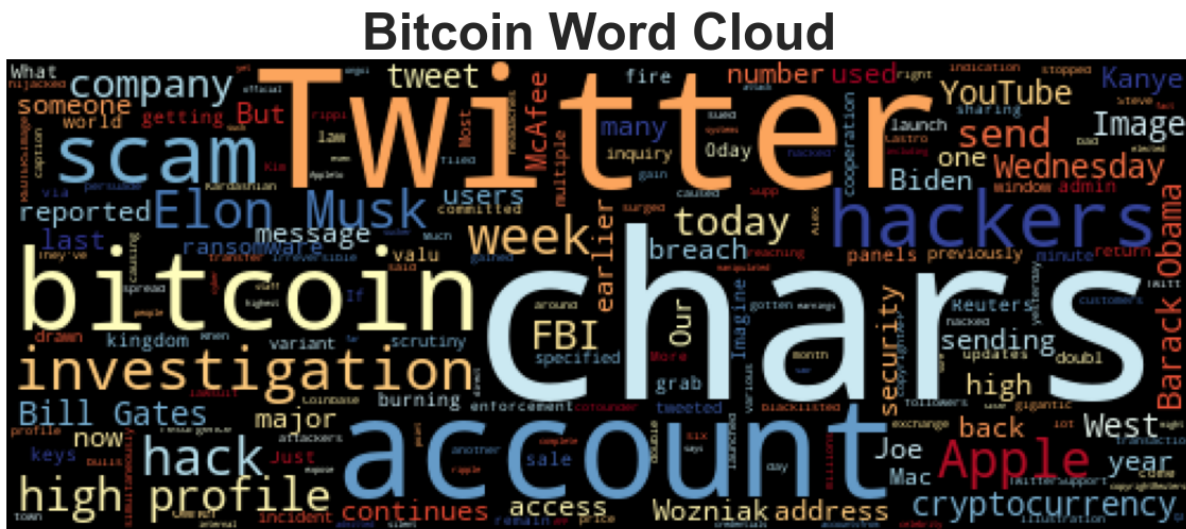
```
# Get the top 10 words for Ethereum
# YOUR CODE HERE!
```

```
[('char', 16),
 ('Bitcoin', 10),
 ('Ethereum', 7),
 ('blockchain', 4),
 ('crypto', 4),
 ('wallet', 4),
 ('cryptocurrency', 4),
 ('', 3),
 ('new', 3),
 ('last', 3)]
```

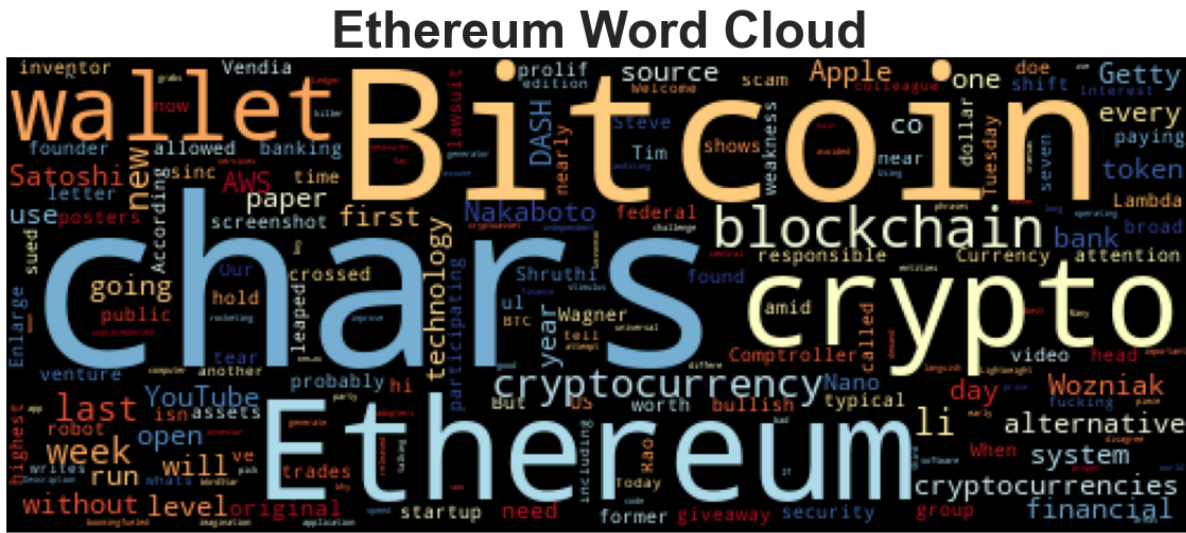
In this section, you will generate word clouds for each coin to summarize the news for each coin

```
from wordcloud import WordCloud
import matplotlib.pyplot as plt
plt.style.use('seaborn-whitegrid')
import matplotlib as mpl
mpl.rcParams['figure.figsize'] = [20.0, 10.0]
```

```
# Generate the Bitcoin word cloud
# YOUR CODE HERE!
```




```
# Generate the Ethereum word cloud
# YOUR CODE HERE!
```



In this section, you will build a named entity recognition model for both Bitcoin and Ethereum, then visualize the tags using SpaCy.

```
import spacy
from spacy import displacy
```

```
# Optional - download a language model for SpaCy
# !python -m spacy download en_core_web_sm
```

```
# Load the spaCy model
nlp = spacy.load('en_core_web_sm')
```

Bitcoin NER

In [29]:

```
# Concatenate all of the Bitcoin text together  
# YOUR CODE HERE!
```

Out[29]:

"Just hackers burning up 0day like it's a fire sale\r\nImagine getting the keys to the Twitter kingdom -- access to all the account admin panels in the world. What would you do? You could grab high-value... [+8860 chars]Reuters had previously reported the FBI would launch an investigation into the hack.\r\nThe FBI inquiry is now one of multiple investigations into the incident, which has drawn scrutiny from a number of... [+966 chars]Most of these accounts tweeted some variant of the same message: If someone were to send Bitcoin to the address specified in the tweets during a 30-minute window, the account owner would return double... [+3388 chars]Our investigation and cooperation with law enforcement continues, and we remain committed to sharing any updates here. More to come via @TwitterSupport as our investigation continues.\r\n- Twitter Support... [+1321 chars]The bitcoin bulls are back in town.\r\nThe price of bitcoin surged today by \$1,268.19, reaching a six-month high of \$11,203.90, or a one-day gain of 12.73%. It's another indication of the resurgence of... [+2562 chars]The company blacklisted the bitcoin address\r\nIllustration by Alex Castro\r\nThe cryptocurrency exchange Coinbase said that it stopped around 1,100 customers from sending bitcoin to hackers who gained access... [+1775 chars]Bitcoin scams are causing a lot of headaches right now. They've gotten so bad that an Apple cofounder has sued YouTube because of them.\r\nSteve Wozniak filed a lawsuit\r\nthis week against YouTube over... [+3523 chars]Much as with Twitter, the YouTube scams use Wozniak's image to persuade users that he would double any bitcoins they send him. "When users transfer their cryptocurrency, in an irreversible transaction... [+1242 chars]Image copyrightAFP/REUTERSImage caption\r\nKim Kardashian West, Kanye West, Elon Musk, Bill Gates and Barack Obama were all 'hacked'\r\nThe FBI has launched an investigation after hackers hijacked Twitter... [+6470 chars]A number of high-profile Twitter accounts were simultaneously hacked on Wednesday by attackers who used the accounts some with millions of followers to spread a cryptocurrency scam.\r\n@bitcoin, @ripple... [+2161 chars]A gigantic breach of Twitter's security yesterday caused various high-profile accounts from Bill Gates, to Barack Obama, to even the ever-silent Apple to tweet out scams and sucker people into sending money... [+7333 chars]Image copyrightReuters / AFP\r\nTwitter says hackers manipulated staff and used their credentials to access internal systems in a cyber-attack of celebrity accounts earlier this week.\r\nThe hackers had access to... [+4380 chars]On the back of a major security breach last week that saw a bitcoin scam ripple through some of the highest profile accounts on Twitter, the company today reported Q2 earnings that point to the ongoing... [+3994 chars]Last week's hack of over 100 very high-profile Twitter accounts did in fact expose the direct messages of many of those accounts, the company admitted today including those of an elected official in... [+2014 chars]2020 sure does suck so far. But the year might not yet be a complete wash.\r\nJohn McAfee\r\nstill has to eat his dick on live television.\r\nThree years ago on this date, on July 17, 2017, McAfee, the eccentric... [+3653 chars]San Francisco (CNN Business)Twitter(TWTR) accounts belonging to Joe Biden, Bill Gates, Elon Musk and Apple, among other prominent handles, were compromised on Wednesday and posted tweets that appeared... [+440 chars]Something normal happened on Twitter earlier this afternoon. Someone claiming to be Elon Musk started tweeting an obvious scam to entice his loyal bootlickers to send bitcoin to a random cryptocurrency... [+1211 chars]Twitter spectacularly shit the bed on Wednesday evening as it scrambled to stamp out a widespread hack of high-profile accounts.\r\nSoon after 6 pm ET, several verified Twitter accounts were blocked from... [+1465 chars]The threat of ransomware may seem ubiquitous, but there haven't been too many strains tailored specifically to infect Apple's Mac computers since the first full-fledged Mac ransomware surfaced only five... [+3731 chars]In case you haven't heard, Barack Obama, Joe Biden, Elon Musk, Kanye West, Apple, and other public figures and companies were victims of

a major hack by scammers asking for bitcoin.\r\nSo, we thought t... [+3082 characters]"

In [30]:

```
# Run the NER processor on all of the text  
# YOUR CODE HERE!
```

```
# Add a title to the document  
# YOUR CODE HERE!
```

In [31]:

```
# Render the visualization  
# YOUR CODE HERE!
```

Bitcoin NER

Just hackers burning up 0day like it's a fire sale

Imagine getting the keys to the Twitter **ORG** kingdom -- access to all the account admin panels in the world. What would you do? You could grab high-valu... [+8860 chars]Reuters had previously reported the FBI **ORG** would launch an investigation into the hack.

The FBI **ORG** inquiry is now one **CARDINAL** of multiple investigations into the incident, which has drawn scrutiny from a number o... [+966 chars]Most of these accounts tweeted some variant of the same message: If someone were to send Bitcoin **GPE** to the address specified in the tweets during a 30-minute **TIME** window, the account owner would return doubl... [+3388 chars]Our investigation and cooperation with law enforcement continues, and we remain committed to sharing any updates here. More to come via @TwitterSupport as our investigation continues.

— Twitter Supp... [+1321 chars]The bitcoin bulls are back in town.

The price of bitcoin **GPE** surged today **DATE** by \$ 1,268.19 **MONEY** , reaching a six-month **DATE** high of \$ 11,203.90 **MONEY** , or a one-day **DATE** gain of 12.73% **PERCENT** . It's another indication of the resurgence of... [+2562 chars]The company blacklisted the bitcoin address

Illustration by Alex Castro **PERSON**

The cryptocurrency exchange Coinbase **ORG** said that it stopped around 1,100 **CARDINAL** customers from sending bitcoin to hackers who gained a... [+1775 chars]Bitcoin scams are causing a lot of headaches right now. They've gotten so bad that an Apple **ORG** cofounder has sued YouTube **PRODUCT** because of them.

Steve Wozniak **PERSON** filed a lawsuit this week **DATE** against YouTube **PRODUCT** over... [+3523 chars]Much as with Twitter **ORG** , the YouTube **PRODUCT** scams use Wozniak **PERSON** 's image to persuade users that he would double any bitcoins they send him. "When users transfer their cryptocurrency, in an irreversible transactio... [+1242 chars]Image

copyrightAFP/REUTERSImage caption

Kim Kardashian West, Kanye West **GPE** , Elon Musk **ORG** , Bill Gates **PERSON** and Barack Obama **PERSON** were all 'hacked'

The **FBI** **ORG** has launched an investigation after hackers hijacked **Twitt** **PERSON** ...

[+6470 chars]A number of high-profile **Twitter** **PERSON** accounts were simultaneously hacked on **Wednesday** **DATE** by attackers who used the accounts some with **millions** **CARDINAL** of followers to spread a cryptocurrency scam.

@bitcoin, @ripl **ORG** ... [+2161 chars]A gigantic breach of **Twitters** **ORG** security yesterday **DATE** caused various high-profile accounts from **Bill Gates** **PERSON** , to **Barack Obama** **PERSON** , to even the ever-silent **Apple** **PERSON** tweet out scams and sucker people into sending m... [+7333 chars]Image copyright Reuters / AFP

Twitter **ORG** says hackers manipulated staff and used their credentials to access internal systems in a cyber-attack of celebrity accounts earlier this week **DATE** .

The hackers had ... [+4380 chars]On the back of a major security breach last week **DATE** that saw a bitcoin scam ripple through some of the highest profile accounts on **Twitter** **ORG** , the company today **DATE** reported Q2 earnings that point to the ongoing... [+3994 chars]Last week **DATE** 's hack of over **100** **CARDINAL** very high-profile **Twitter** **ORG** accounts did in fact expose the direct messages of many of those accounts, the company admitted today **DATE** including those of an elected official in ... [+2014 chars]2020 sure does suck so far. But the year **DATE** might not yet be a complete wash.

John McAfee **PERSON** still has to eat his dick on live television.

Three years ago **DATE** on this date **DATE** , on **July 17, 2017** **DATE** , **McAfee** **ORG** , the **ec** **ORG** ... [+3653 chars]San **Francisco** **ORG** (**CNN** **ORG**

Business)**Twitter**(**TWTR**) accounts belonging to **Joe Biden** **PERSON** , **Bill Gates** **PERSON** , **Elon Musk** **ORG** and **Apple** **ORG** , among other prominent handles, were compromised on **Wednesday** **DATE** and posted tweets that appear... [+440 chars]Something normal happened on **Twitter** **ORG** earlier this afternoon **TIME** . Someone claiming to be **Elon Musk** **ORG** started tweeting an obvious scam to entice his loyal bootlickers to send bitcoin to a random cryptocurren... [+1211 chars]Twitter spectacularly shit the bed on **Wednesday** evening

TIME as it scrambled to stamp out a widespread hack of high-profile accounts.

Soon after 6 pm ET **TIME** , several verified **Twitter** **ORG** accounts were blocked fr...

[+1465 chars]The threat of ransomware may seem ubiquitous, but there haven't been too many

strains tailored specifically to infect **Apple** **ORG** 's **Mac** **ORG** computers since the first

ORDINAL full-fledged **Mac** **ORG** ransomware surfaced only f... [+3731 chars]In case you

haven't heard, **Barack Obama** **PERSON** , **Joe Biden** **PERSON** , **Elon Musk** **PERSON** ,

Kanye West **GPE** , **Apple** **ORG** , and other public figures and companies were victims of a major hack by scammers asking for bitcoin. So, we thought t... [+3082 chars]



In [32]:

```
# List all Entities  
# YOUR CODE HERE!
```

Twitter ORG
FBI ORG
FBI ORG
one CARDINAL
Bitcoin GPE
30-minute TIME
bitcoin GPE
today DATE
1,268.19 MONEY
six-month DATE
11,203.90 MONEY
one-day DATE
12.73% PERCENT
Alex Castro PERSON
Coinbase ORG
around 1,100 CARDINAL
Apple ORG
YouTube PRODUCT
Steve Wozniak PERSON
this week DATE
YouTube PRODUCT
Twitter ORG
YouTube PRODUCT
Wozniak PERSON
Kanye West GPE
Elon Musk ORG
Bill Gates PERSON
Barack Obama PERSON
FBI ORG
Twitt PERSON
Twitter PERSON
Wednesday DATE
millions CARDINAL
@riprl ORG
Tweets ORG
yesterday DATE
Bill Gates PERSON
Barack Obama PERSON
Appleto PERSON
Twitter ORG
earlier this week DATE
last week DATE
Twitter ORG
today DATE
week DATE
100 CARDINAL
Twitter ORG
today DATE
the year DATE
John McAfee
PERSON
Three years ago DATE
this date DATE
July 17, 2017 DATE
McAfee ORG
ec ORG
San Francisco ORG

CNN ORG
Joe Biden PERSON
Bill Gates PERSON
Elon Musk ORG
Apple ORG
Wednesday DATE
Twitter ORG
earlier this afternoon TIME
Elon Musk ORG
Wednesday evening TIME
6 pm ET TIME
Twitter ORG
Apple ORG
Mac ORG
first ORDINAL
Mac ORG
Barack Obama PERSON
Joe Biden PERSON
Elon Musk PERSON
Kanye West GPE
Apple ORG

Ethereum NER

In [33]:

```
# Concatenate all of the Ethereum text together
# YOUR CODE HERE!
```

Out[33]:

```
'According to a public letter from the U.S. Comptroller of the Currency, the
federal group responsible for the security of the banking system, banks are n
ow allowed to hold cryptocurrencies.\r\nThis doe... [+1760 chars]When the inven
tor of AWS Lambda, Tim Wagner, and the former head of blockchain at AWS, Shru
thi Rao, co-found a startup, it's probably worth paying attention. Vendia, as
the new venture is called, com... [+4751 chars]Enlarge/ A screenshot from Wozni
ak\'s lawsuit shows a typical "Bitcoin giveaway" scam video on YouTube.\r\n4
with 4 posters participating\r\nApple co-founder Steve Wozniak has sued YouTu
be over the prolif... [+3424 chars]Crypto has been on a tear in the last wee
k.\r\nBitcoin is up 18% in the last seven days:\r\nEthereum is up over 30% in
the last week:\r\nBut this isn't the first time we've had a bullish run in cr
ypto sinc... [+1941 chars]<ul><li>Bitcoin crossed the $11,000 level and trades
near its highest level in nearly a year on Tuesday amid US dollar weakness an
d a broad shift to alternative assets.</li><li>The token leaped as hi... [+2656
chars]Our robot colleague Satoshi Nakamoto writes about Bitcoin BTC every fuc
king day.\r\nWelcome to another edition of Bitcoin Today, where I, Satoshi Na
kaboto, tell you whats been going on with Bitcoin in ... [+2946 chars]Interest
in bitcoin and other cryptocurrencies, including ethereum, is boomingfueled b
y unprecedented central bank stimulus measures and rocketing demand for alter
native finance.\r\nThe bitcoin price, ... [+3141 chars]Lightweight, open-sourc
e, universal paper wallet generator\r\nDescription\r\nUsing third-party servi
ces to generate paper wallets should be avoided without proper code auditing
by independent entities.\r\n... [+2361 chars]Getty\r\nYou have to use phrases l
ike Ethereum Is Going To The Moon because we are after all talking about cryp
tocurrency, the bad boy of the financial world.\r\nIve never been a fan of Et
hereum because ... [+4415 chars]Many who are new to crypto assume that there wi
ll only be one important cryptoasset in the long run, and that the challenge
as an investor is to pick the best one.\r\nWe disagree.\r\nWhy? Because diffe
re... [+9664 chars]getty\r\nEvery computer operating system needs a killer app.
Without an application that grabs the imagination of the early adopters, a pi
ece of technology will languish. The PC had WordStar, the Apple... [+6518 char
s]BITCOIN DASH THE Bitcoin is the original cryptocurrency, and was released a
s open-source software in 2009. CRYPTO UNIVERSE Dash is an attempt to improve
on Bitcoin in two main areas: speed of transac... [+8117 chars]If you're into
cryptocurrency like Bitcoin, Ethereum, ERC20, and others, then you need a goo
d crypto wallet. The Ledger Nano X Bluetooth crypto hardware wallet is down t
o $89.25 on Amazon. The Nano X... [+2003 chars]Five years ago this week, the fi
rst general-purpose blockchain went live on mainnet. Ethereum paved the way f
or a whole new use case for blockchain technology untethered from Bitcoins or
iginal vision... [+9252 chars]BUY BITCOIN WITH VENMO OWNr Wallet helps users to
keep their digital coins safe from external threats, while also offering a va
riety of useful features to both holders and traders. www.ownrwallet.comSigal
Mandelker, then-U.S. Treasury undersecretary for terrorism and financial inte
lligence, speaks ... [+] during a 2018 conference on cyber law enforcement at
the Department of Justice in Washingto... [+5801 chars]In the race to become th
e dominant cryptocurrency platform, Ethereum is gaining on Bitcoin.\r\nTake a
look at the market capitalization of ether, the native token of the Ethereum
blockchain. Currently,... [+6910 chars]'
```

In [34]:

```
# Run the NER processor on all of the text  
# YOUR CODE HERE!  
  
# Add a title to the document  
# YOUR CODE HERE!
```

In [35]:

```
# Render the visualization  
# YOUR CODE HERE!
```

Ethereum NER

According to a public letter from the U.S. **GPE** Comptroller of the Currency, the federal group responsible for the security of the banking system, banks are now allowed to hold cryptocurrencies.

This doe... [+1760 chars]When the inventor of **AWS Lambda** **ORG** , **Tim Wagner** **PERSON** , and the former head of blockchain at AWS, **Shruthi Rao** **PERSON** , co-found a startup, it's probably worth paying attention. **Vendia** **ORG** , as the new venture is called, com... [+4751 chars]Enlarge/ A screenshot from **Wozniak** **PERSON** 's lawsuit shows a typical " **Bitcoin** **GPE** giveaway" scam video on **YouTube** **PRODUCT** .

4 **CARDINAL** with **4** **CARDINAL** posters participating
Apple **ORG** co-founder **Steve Wozniak** **PERSON** has sued **YouTube** **ORG** over the prolif... [+3424 chars]Crypto has been on a tear in the last week **DATE** .

Bitcoin **GPE** is up **18%** **PERCENT** in the last seven days **DATE** :
Ethereum is up over **30%** **PERCENT** in the last week **DATE** :
But this isn't the first **ORDINAL** time we've had a bullish run in crypto sinc... [+1941 chars]
 Bitcoin **GPE** crossed the \$ **11,000** **MONEY** level and trades near its highest level in nearly a year **DATE** on Tuesday **DATE** amid **US** **GPE** dollar weakness and a broad shift to alternative assets.The token leaped as hi... [+2656 chars]Our robot colleague **Satoshi Nakaboto** **ORG** writes about **Bitcoin** **GPE** **BTC** every fucking day.

Welcome to another edition of **Bitcoin** **GPE** Today **DATE** , where I, **Satoshi Nakaboto** **PERSON** , tell you whats been going on with **Bitcoin** **GPE** in ... [+2946 chars]Interest in **bitcoin** **GPE** and other cryptocurrencies, including ethereum, is boomingfueled by unprecedented central bank stimulus measures and rocketing demand for alternative finance.

The bitcoin price, ... [+3141 chars]Lightweight, open-source, universal paper wallet generator
Description

Using third **ORDINAL** -party services to generate paper wallets should be avoided without proper code auditing by independent entities.

... [+2361 chars]Getty

You have to use phrases like Ethereum Is Going To The Moon because we are after all talking about cryptocurrency, the bad boy of the financial world.

I've never been a fan of Ethereum because ... [+4415 chars] Many who are new to crypto assume that there will only be one **CARDINAL** important cryptoasset in the long run, and that the challenge as an investor is to pick the best one.

We disagree.

Why? Because differe... [+9664 chars] getty

Every computer operating system needs a killer app. Without an application that grabs the imagination of the early adopters, a piece of technology will languish. The PC had WordStar **FAC**, the Apple **ORG** ... [+6518 chars] **BITCOIN DASH ORG THE Bitcoin GPE** is the original cryptocurrency, and was released as open-source software in 2009 **DATE**.

CRYPTO UNIVERSE Dash PERSON is an attempt to improve on Bitcoin **GPE** in two **CARDINAL** main areas: speed of transac... [+8117 chars] If you're into cryptocurrency like Bitcoin **GPE**, Ethereum **GPE**, ERC20 **ORG**, and others, then you need a good crypto wallet. The Ledger Nano X Bluetooth **WORK_OF_ART** crypto hardware wallet is down to \$ 89.25 **MONEY** on Amazon **ORG**. The Nano X... [+2003 chars] Five years ago this week **DATE**, the first **ORDINAL** general-purpose blockchain went live on mainnet. Ethereum paved the way for a whole new use case for blockchain technology untethered from Bitcoin's **ORG** original vision... [+9252 chars] **BUY BITCOIN WITH VENMO OWNR Wallet** helps users to keep their digital coins safe from external threats, while also offering a variety of useful features to both holders and traders. www.ownrwallet.com Sigal Mandelker **PERSON**, then-U.S. Treasury **ORG** undersecretary for terrorism and financial intelligence, speaks ... [+] during a 2018 **DATE** conference on cyber law enforcement at the Department of Justice **ORG** in Washingto... [+5801 chars] In the race to become the dominant cryptocurrency platform, Ethereum is gaining on Bitcoin **GPE**. Take a look at the market capitalization of ether, the native token of the Ethereum blockchain. Currently,... [+6910 chars]

In [36]:

```
# List all Entities  
# YOUR CODE HERE!
```

U.S. GPE
AWS Lambda ORG
Tim Wagner PERSON
Shruthi Rao PERSON
Vendia ORG
Wozniak PERSON
Bitcoin GPE
YouTube PRODUCT
4 CARDINAL
4 CARDINAL
Apple ORG
Steve Wozniak PERSON
YouTube ORG
the last week DATE
Bitcoin GPE
18% PERCENT
the last seven days DATE
over 30% PERCENT
the last week DATE
first ORDINAL
Bitcoin GPE
11,000 MONEY
nearly a year DATE
Tuesday DATE
US GPE
Satoshi Nakaboto ORG
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Apple ORG
DASH ORG
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2009 DATE
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Bitcoin GPE
Ethereum GPE
ERC20 ORG
The Ledger Nano X Bluetooth WORK_OF_ART
89.25 MONEY
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Mandelker PERSON
U.S. Treasury ORG
2018 DATE
the Department of Justice ORG
Bitcoin GPE

