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]:

```python
# 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]:

```python
# Read your api key environment variable
load_dotenv()
api_key = os.getenv("NEWS_API_KEY")
```

In [3]:

```python
# Create a newsapi client
from newsapi import NewsApiClient
```

In [4]:

```python
newsapi = NewsApiClient(api_key=api_key)
```

In [5]:

```python
# Fetch the Bitcoin news articles
btc_headlines = newsapi.get_everything(
    q="bitcoin",
    language="en",
    sort_by="relevancy"
)
```

In [6]:

```python
# Fetch the Ethereum news articles
eth_headlines = newsapi.get_everything(
    q="ethereum",
    language="en",
    sort_by="relevancy"
)
```

In [7]:

```python
# Create the Bitcoin sentiment scores DataFrame
sentiments = []

for articles in btc_headlines["articles"]:
    try:
        text = articles["content"]
        results = analyzer.polarity_scores(text)
        compound = results["compound"]
        pos = results["pos"]
        neu = results["neu"]
        neg = results["neg"]

        sentiments.append({
            "text": text,
            "Compound": compound,
            "Positive": pos,
            "Negative": neg,
            "Neutral": neu,
        })
    except AttributeError:
        pass

btc  = pd.DataFrame(sentiments)
btc.head()
```

Out[7]:

	text	Compound	Positive	Negative	Neutral
0	Just hackers burning up 0day 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]:

```python
# Create the ethereum sentiment scores DataFrame
sentiments = []

for articles in eth_headlines["articles"]:
    try:
        text = articles["content"]
        results = analyzer.polarity_scores(text)
        compound = results["compound"]
        pos = results["pos"]
        neu = results["neu"]
        neg = results["neg"]

        sentiments.append({
            "text": text,
            "Compound": compound,
            "Positive": pos,
            "Negative": neg,
            "Neutral": neu,
        })
    except AttributeError:
        pass

eth  = pd.DataFrame(sentiments)
eth.head()
```

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

```
# Describe the Bitcoin Sentiment
btc.describe()
```

	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

```
# Describe the Ethereum Sentiment
eth.describe()
```

	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:

Important note: The sample answers may vary depending on when this code is running since news may change over time.

Q: Which coin had the highest mean positive score?

A: Ethereum had a slightly higher mean positive score

Q: Which coin had the highest compound score?

A: Bitcoin had the highest compound score

Q. Which coin had the highest positive score?

A: Bitcoin had the highest Positive score

---

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]:

```python
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]:

```python
wnl = WordNetLemmatizer()
stop = stopwords.words('english')
stop.append("u")
stop.append("it'")
stop.append("'s")
stop.append("n't")
stop.append('…')
stop.append("\`")
stop.append('``')
stop.append('char')
stop.append("''")
stop = set(stop)
```

In [13]:

```python
def tokenizer(text):
    """Tokenizes text."""

    # Create a list of the words
    words = word_tokenize(text)

    # Convert the words to lowercase
    words = list(filter(lambda w: w.lower(), words))

    # Remove the punctuation
    words = list(filter(lambda t: t not in punctuation, words))

    # Remove the stopwords
    words = list(filter(lambda t: t.lower() not in stop, words))

    # Lemmatize words into root words
    tokens = [wnl.lemmatize(word) for word in words]

    return tokens
```

```
btc["tokens"] = btc.text.apply(tokenizer)
btc.head()
```

Out[14]:

	text	Compound	Positive	Negative	Neutral	tokens
0	Just hackers burning up 0day like it's a fire ...	0.0258	0.061	0.059	0.880	[hacker, burning, 0day, 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]:

```
eth["tokens"] = eth.text.apply(tokenizer)
eth.head()
```

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\...	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]:

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

In [17]:

```python
N = 2
grams = ngrams(tokenizer(btc.text.str.cat()), N)
Counter(grams).most_common(20)
```

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)]
```

```
N = 2
grams = ngrams(tokenizer(eth.text.str.cat()), N)
Counter(grams).most_common(20)
```

```
[(('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)]
```

```
def token_count(tokens, N=3):
    """Returns the top N tokens from the frequency count"""
    return Counter(tokens).most_common(N)
```

```
# Get the top 10 words
all_tokens = tokenizer(btc.text.str.cat())
token_count(all_tokens, 10)
```

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

```
# Get the top 10 words
all_tokens = tokenizer(eth.text.str.cat())
token_count(all_tokens, 10)
```

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

Word Clouds

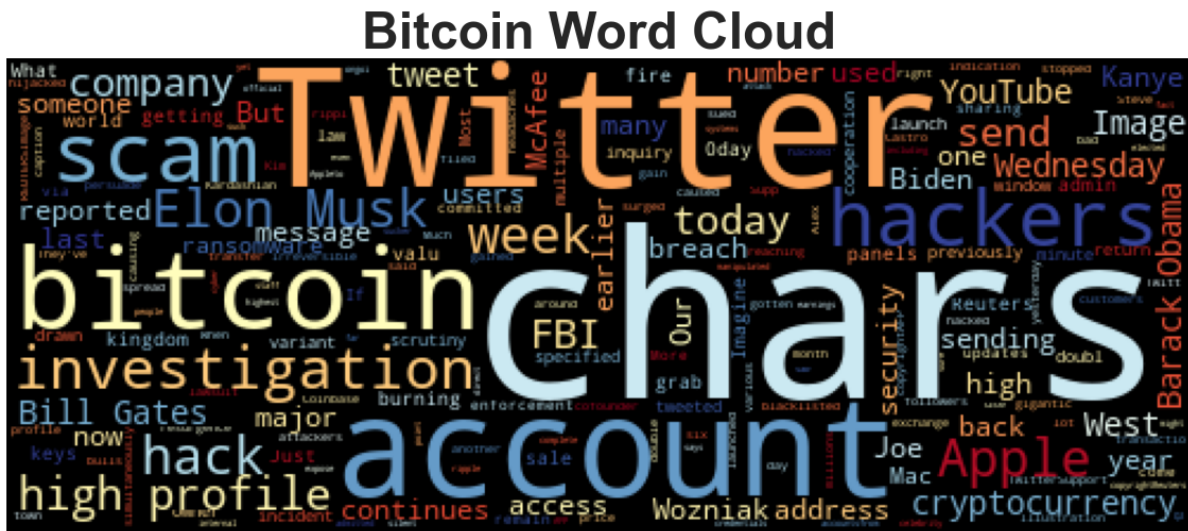In this section, you will generate word clouds for each coin to summarize the news for each coin

```
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]
```

```
def wordcloud(text, title=""):
    df_cloud = WordCloud(width=500, colormap='RdYlBu').generate(text)
    plt.imshow(df_cloud)
    plt.axis("off")
    fontdict = {"fontsize": 48, "fontweight" : "bold"}
    plt.title(title, fontdict=fontdict)
    plt.show()
```

In [24]:

```
wordcloud(btc.text.str.cat(), title="Bitcoin Word Cloud")
```

Bitcoin Word Cloud

In [25]:

```
wordcloud(eth.text.str.cat(), title="Ethereum Word Cloud")
```

Ethereum Word Cloud

3. Named Entity Recognition
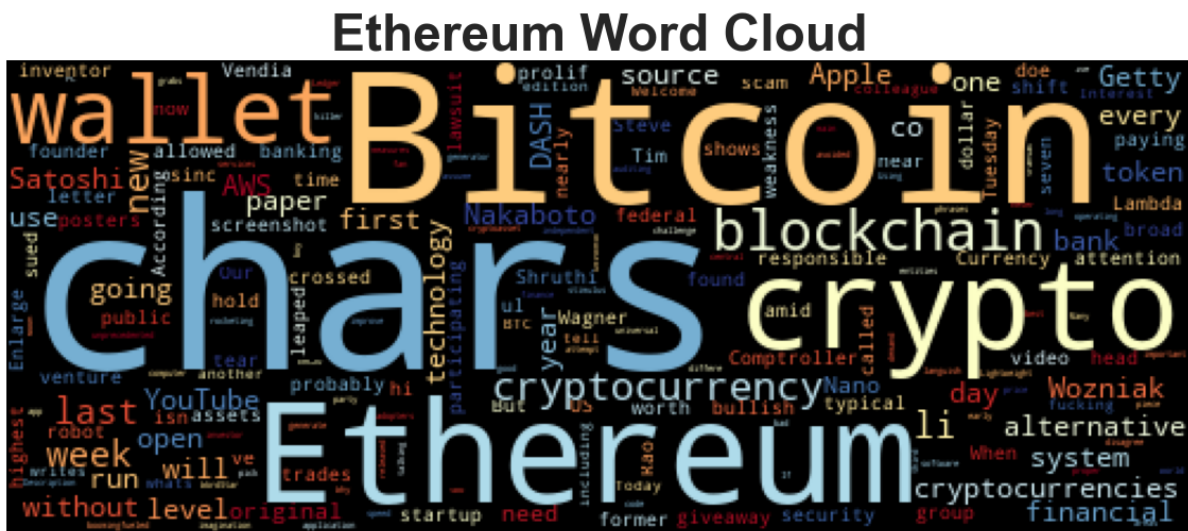
In this section, you will build a named entity recognition model for both coins and visualize the tags using SpaCy.

In [26]:

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

In [27]:

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

In [28]:

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

Bitcoin NER

```python
# Concatenate all of the bitcoin text together
all_btc_text = btc.text.str.cat()
all_btc_text
```

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-valu… [+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 o… [+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 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.\r\n— Twitter Supp… [+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 a… [+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\n this 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 transactio… [+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 Twitt… [+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, @rippl… [+2161 chars]A gigantic breach of Twitters security yesterday caused various high-profile accountsfrom Bill Gates, to Barack Obama, to even the ever-silent Appleto tweet out scams and sucker people into sending m… [+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 … [+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 ongoi… [+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\n still has to eat his dick on live television.\r\nThree years ago on this date, on July 17, 2017, McAfee, the ec… [+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 appeare… [+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 cryptocurren… [+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 fr… [+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 f… [+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 char
s]"

```python
# Run the NER processor on all of the text
doc = nlp(all_btc_text)

# Add a title to the document
doc.user_data["title"] = "Bitcoin NER"
```

```python
# Render the visualization
displacy.render(doc, style='ent', jupyter=True)
```

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, @rippl **ORG** … [+2161 chars]A gigantic breach of Twitters **ORG** security yesterday **DATE** caused various high-profile accountsfrom Bill Gates **PERSON** , to Barack Obama **PERSON** , to even the ever-silent Appleto **PERSON** tweet out scams and sucker people into sending m… [+7333 chars]Image copyrightReuters / 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 ongoi… [+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 appeare… [+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]

```python
# List all Entities
for ent in doc.ents:
    print(ent.text, ent.label_)
```

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
@rippl ORG
Twitters 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
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

```python
# Concatenate all of the bitcoin text together
all_eth_text = eth.text.str.cat()
all_eth_text
```

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 now allowed to hold cryptocurrencies.\r\nThis doe… [+1760 chars]When the inventor of AWS Lambda, Tim Wagner, and the former head of blockchain at AWS, Shruthi 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 Wozniak\'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 YouTube over the prolif… [+3424 chars]Crypto has been on a tear in the last week.\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 crypto sinc… [+1941 chars]
Bitcoin crossed the $11,000 level and trades near its highest level in nearly a year on Tuesday amid US dollar weakness and a broad shift to alternative assets.
The token leaped as hi… [+2656 chars]Our robot colleague Satoshi Nakaboto writes about Bitcoin BTC every fucking day.\r\nWelcome to another edition of Bitcoin Today, where I, Satoshi Nakaboto, tell you whats been going on with Bitcoin in … [+2946 chars]Interest in bitcoin and other cryptocurrencies, including ethereum, is boomingfueled by unprecedented central bank stimulus measures and rocketing demand for alternative finance.\r\nThe bitcoin price, … [+3141 chars]Lightweight, open-source, universal paper wallet generator\r\nDescription\r\nUsing third-party services 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 like Ethereum Is Going To The Moon because we are after all talking about cryptocurrency, the bad boy of the financial world.\r\nIve never been a fan of Ethereum because … [+4415 chars]Many who are new to crypto assume that there will 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 differe… [+9664 chars]getty\r\nEvery 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, the Apple… [+6518 chars]BITCOIN DASH THE Bitcoin is the original cryptocurrency, and was released as 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 good crypto wallet. The Ledger Nano X Bluetooth crypto hardware wallet is down to $89.25 on Amazon. The Nano X… [+2003 chars]Five years ago this week, the first general-purpose blockchain went live on mainnet. Ethereum paved the way for a whole new use case for blockchain technology untethered from Bitcoins 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.comSigal Mandelker, then-U.S. Treasury undersecretary for terrorism and financial intelligence, speaks ... [+] during a 2018 conference on cyber law enforcement at the Department of Justice in Washingto… [+5801 chars]In the race to become the 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]'

```python
# Run the NER processor on all of the text
eth_doc = nlp(all_eth_text)

# Add a title to the document
eth_doc.user_data["title"] = "Ethereum NER"
```

```python
# Render the visualization
displacy.render(eth_doc, style='ent', jupyter=True)
```

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.

Ive 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   Bitcoins **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.comSigal   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]

```python
# List all Entities
for ent in eth_doc.ents:
    print(ent.text, ent.label_)
```

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
Bitcoin GPE
Bitcoin GPE
Today DATE
Satoshi Nakaboto PERSON
Bitcoin GPE
bitcoin GPE
third ORDINAL
one CARDINAL
WordStar FAC
Apple ORG
DASH ORG
Bitcoin GPE
2009 DATE
CRYPTO UNIVERSE Dash PERSON
Bitcoin GPE
two CARDINAL
Bitcoin GPE
Ethereum GPE
ERC20 ORG
The Ledger Nano X Bluetooth WORK_OF_ART
89.25 MONEY
Amazon ORG
chars]Five years ago this week DATE
first ORDINAL
Bitcoins ORG
Mandelker PERSON
U.S. Treasury ORG
2018 DATE
the Department of Justice ORG
Bitcoin GPE