In [1]:
```
#DSC540 Final Project
#Shaquiel Pashtunyar
```

In [2]:
```
#Imports
import requests as r
import pandas as pd
import xlrd
from bs4 import BeautifulSoup
import numpy as np
import matplotlib.pyplot as plt
```

In [3]:
```
print("Step one is getting all 3 data files from past weeks, altering them to be clear
```

```
Step one is getting all 3 data files from past weeks, altering them to be cleaned up
and have similar columns
```

In [4]:
```
#Getting HTML Table
url1 = "https://en.wikipedia.org/wiki/List_of_largest_meteorites_on_Earth"
page = r.get(url1)
```

In [5]:
```
soup = BeautifulSoup(page.content,'html.parser')
```

In [6]:
```
tables = soup.find('table', class_='wikitable')
```

In [7]:
```
list = pd.read_html(url1)
```

In [8]:
```
Iron = list[0]
Iron
```

Out[8]:

	N°	Meteorite name	Found year	Region/Country	Coordinates	Group	Classification	Mass
0	1	Hoba	1920	Grootfontein, Namibia	.mw-parser-output .geo-default,.mw-parser-outp...	Ataxite	IVB	60,000 kg (130,000 lb)
1	2	Cape York(Ahnighito)	1894	Meteorite Island, Greenland	76°08′N 64°56′W / 76.133°N 64.933°W	Octahedrite	IIIAB	30,875 kg (68,068 lb)
2	3	Campo del Cielo(Gancedo) [3]	2016	Chaco, Argentina	27°37′48″S 61°42′00″W / 27.63000°S 61.70000°W	Octahedrite	IAB	30,800 kg (67,900 lb)
3	4	Campo del Cielo(El Chaco)	1969	Chaco, Argentina	27°36′34.94″S 61°40′53.31″W / 27.6097056°S 6...	Octahedrite	IAB	28,840 kg (63,580 lb)
4	5	Armanty	1898	Xinjiang, China	47°N 88°E / 47°N 88°E	Octahedrite	IIIE	28,000 kg (62,000 lb)
5	6	Bacubirito	1863	Sinaloa, Mexico	26°12′N 107°50′W / 26.200°N 107.833°W	Octahedrite	UNG	22,000 kg (49,000 lb)
6	7	Cape York(Agpalilik)	1963	Nordgronland, Greenland	76°07′59.88″N 64°55′59.88″W / 76.1333000°N 6...	Octahedrite	IIIAB	20,100 kg (44,300 lb)
7	8	Mbozi	1930	Mbeya, Tanzania	09°07′N 33°04′E / 9.117°N 33.067°E	Octahedrite	UNG	16,000 kg (35,000 lb)
8	9	Willamette	1902	Oregon, United States	45°22′00.12″N 122°34′58.8″W / 45.3667000°N 1...	Octahedrite	IIIAB	14,150 kg (31,200 lb)
9	10	Chupaderos I	1852	Chihuahua, Mexico	27°00′N 105°06′W / 27.000°N 105.100°W	Octahedrite	IIIAB	14,114 kg (31,116 lb)
10	11	Mundrabilla I	1911	Western Australia, Australia	30°46′59.88″S 127°33′00″E / 30.7833000°S 127...	Octahedrite	IAB	12,400 kg (27,300 lb)
11	12	Morito	1600	Chihuahua, Mexico	27°03′N 105°26′W / 27.050°N 105.433°W	Octahedrite	IIIAB	10,100 kg (22,300 lb)

	N°	Meteorite name	Found year	Region/Country	Coordinates	Group	Classification	Mass
12	13	Santa Catharina	1875	Santa Catarina, Brazil	26°13′S 48°36′W / 26.217°S 48.600°W	Ataxite	IAB	7,000 kg (15,000 lb)
13	14	Chupaderos II	1852	Chihuahua, Mexico	27°00′N 105°06′W / 27.000°N 105.100°W	Octahedrite	IIIAB	6,770 kg (14,930 lb)
14	15	Mundrabilla II	1911	Western Australia, Australia	30°47′S 127°33′E / 30.783°S 127.550°E	Octahedrite	IAB	6,100 kg (13,400 lb)
15	16	Bendegó	1784	Bahia, Brazil	10°07′01″S 39°15′41″W / 10.11694°S 39.26139°W	Octahedrite	IC	5,260 kg (11,600 lb)

In [9]:
```
StonyIron = list[1]
StonyIron
```

Out[9]:

	N°	Meteorite name	Found year	Region/Country	Coordinates	Group	Classification	TKW	obs
0	1	Brenham	1882	Kansas, United States	37°34′57″N 99°09′49″W / 37.58250°N 99.16361°W	Pallasite	PMG	4,300 kg (9,500 lb)	
1	2	Vaca Muerta	1861	Antofagasta, Chile	25°45′S 70°30′W / 25.750°S 70.500°W	Mesosiderite	A1	3,830 kg (8,440 lb)	
2	3	Huckitta	1924	Northern Territory, Australia	22°22′S 135°46′E / 22.367°S 135.767°E	Pallasite	PMG	2,300 kg (5,100 lb)	
3	4	Fukang	2000	Xinjiang, China	44°25′48″N 87°37′48″E / 44.43000°N 87.63000°E	Pallasite	PMG	1,003 kg (2,211 lb)	
4	5	Imilac	1822	Antofagasta, Chile	24°12′12″S 68°48′24″W / 24.20333°S 68.80667°W	Pallasite	PMG	920 kg (2,030 lb)	
5	6	Bondoc	1956	Southern Tagalog, Philippines	13°31′N 122°27′E / 13.517°N 122.450°E	Mesosiderite	B4	888.60 kg (1,959.0 lb)	
6	7	Brahin	1810	Gomel', Belarus	52°30′00″N 30°19′48″E / 52.50000°N 30.33000°E	Pallasite	PMG	823 kg (1,814 lb)	
7	8	Esquel	1951	Chubut, Argentina	42°54′00″S 71°19′48″W / 42.90000°S 71.33000°W	Pallasite	PMG	755 kg (1,664 lb)	
8	9	Krasnojarsk	1749	Krasnoyarsky Krai, Russia	54°54′N 91°48′E / 54.900°N 91.800°E	Pallasite	PMG	700 kg (1,500 lb)	
9	10	Jepara	2008	Jawa Tengah, Indonesia	06°36′S 110°44′E / 6.600°S 110.733°E	Pallasite	PMG	499.50 kg (1,101.2 lb)	
10	11	Seymchan	1967	Magadan Oblast, Russia	62°54′00″N 152°25′48″E / 62.90000°N 152.43000°E	Pallasite	PMG	323.30 kg (712.8 lb)	

	N°	Meteorite name	Found year	Region/Country	Coordinates	Group	Classification	TKW	obs
11	12	Estherville	1879	Iowa, United States	43°25′N 94°50′W / 43.417°N 94.833°W	Mesosiderite	A3/4	320 kg (710 lb)	
12	13	Omolon	1981	Magadan Oblast, Russia	64°01′12″N 161°48′30″E / 64.02000°N 161.80833°E	Pallasite	PMG	250 kg (550 lb)	
13	14	Youxi	2006	Fujian, China	23°03′36″N 118°00′36″E / 23.06000°N 118.01000°E	Pallasite	PMG	218 kg (481 lb)	
14	15	Pallasovka	1990	Volgograd Oblast, Russia	49°52′00″N 46°36′42″E / 49.86667°N 46.61167°E	Pallasite	PMG	198 kg (437 lb)	

In [10]:
```
StonyIron = StonyIron.rename(columns={"TKW": "Mass"})
StonyIron.columns
frames = [Iron, StonyIron]
HTMLSite = pd.concat(frames)
```

In [11]:
```
HTMLSite['Mass'] = HTMLSite['Mass'].apply(lambda st: st[st.find("(")+1:st.find(")")])
HTMLSite['Mass'] = HTMLSite['Mass'].str.rstrip(' lb')
```

In [12]:
```
HTMLSite = HTMLSite.rename(columns={"Found year":"FoundYear"})
HTMLSite= HTMLSite.drop(["Image"], axis =1)
HTMLSite= HTMLSite.drop(["Fall observed"], axis =1)
```

In [13]:
```
HTMLSite= HTMLSite.drop(["Region/Country"], axis =1)
HTMLSite= HTMLSite.drop(["Group"], axis =1)
HTMLSite = HTMLSite.rename(columns={"Meteorite name":"Meteor_Name"})
```

In [14]:
```
HTMLSite['Mass'] = HTMLSite['Mass'].str.replace(',', '').astype(float)
HTMLSite.sort_values('Mass', ascending=False)
HTMLSite.iloc[0,[4]] = "19°35′32″S / 17°56′01″E"
HTMLSite = HTMLSite.rename(columns={"N°":"id"})
```

In [15]:
```
#Final HTML Table can be seen above
HTMLSite
```

Out[15]:

	id	Meteor_Name	FoundYear	Coordinates	Classification	Mass
0	1	Hoba	1920	.mw-parser-output .geo-default,.mw-parser-outp...	19°35′32″S / 17°56′01″E	130000.0
1	2	Cape York(Ahnighito)	1894	76°08′N 64°56′W / 76.133°N 64.933°W	IIIAB	68068.0
2	3	Campo del Cielo(Gancedo)[3]	2016	27°37′48″S 61°42′00″W / 27.63000°S 61.70000°W	IAB	67900.0
3	4	Campo del Cielo(El Chaco)	1969	27°36′34.94″S 61°40′53.31″W / 27.6097056°S 6...	IAB	63580.0
4	5	Armanty	1898	47°N 88°E / 47°N 88°E	IIIE	62000.0
5	6	Bacubirito	1863	26°12′N 107°50′W / 26.200°N 107.833°W	UNG	49000.0
6	7	Cape York(Agpalilik)	1963	76°07′59.88″N 64°55′59.88″W / 76.1333000°N 6...	IIIAB	44300.0
7	8	Mbozi	1930	09°07′N 33°04′E / 9.117°N 33.067°E	UNG	35000.0
8	9	Willamette	1902	45°22′00.12″N 122°34′58.8″W / 45.3667000°N 1...	IIIAB	31200.0
9	10	Chupaderos I	1852	27°00′N 105°06′W / 27.000°N 105.100°W	IIIAB	31116.0
10	11	Mundrabilla I	1911	30°46′59.88″S 127°33′00″E / 30.7833000°S 127...	IAB	27300.0
11	12	Morito	1600	27°03′N 105°26′W / 27.050°N 105.433°W	IIIAB	22300.0
12	13	Santa Catharina	1875	26°13′S 48°36′W / 26.217°S 48.600°W	IAB	15000.0
13	14	Chupaderos II	1852	27°00′N 105°06′W / 27.000°N 105.100°W	IIIAB	14930.0
14	15	Mundrabilla II	1911	30°47′S 127°33′E / 30.783°S 127.550°E	IAB	13400.0
15	16	Bendegó	1784	10°07′01″S 39°15′41″W / 10.11694°S 39.26139°W	IC	11600.0
0	1	Brenham	1882	37°34′57″N 99°09′49″W / 37.58250°N 99.16361°W	PMG	9500.0
1	2	Vaca Muerta	1861	25°45′S 70°30′W / 25.750°S 70.500°W	A1	8440.0
2	3	Huckitta	1924	22°22′S 135°46′E / 22.367°S 135.767°E	PMG	5100.0
3	4	Fukang	2000	44°25′48″N 87°37′48″E / 44.43000°N 87.63000°E	PMG	2211.0
4	5	Imilac	1822	24°12′12″S 68°48′24″W / 24.20333°S 68.80667°W	PMG	2030.0

	id	Meteor_Name	FoundYear	Coordinates	Classification	Mass
5	6	Bondoc	1956	13°31′N 122°27′E / 13.517°N 122.450°E	B4	1959.0
6	7	Brahin	1810	52°30′00″N 30°19′48″E / 52.50000°N 30.33000°E	PMG	1814.0
7	8	Esquel	1951	42°54′00″S 71°19′48″W / 42.90000°S 71.33000°W	PMG	1664.0
8	9	Krasnojarsk	1749	54°54′N 91°48′E / 54.900°N 91.800°E	PMG	1500.0
9	10	Jepara	2008	06°36′S 110°44′E / 6.600°S 110.733°E	PMG	1101.2
10	11	Seymchan	1967	62°54′00″N 152°25′48″E / 62.90000°N 152.43000°E	PMG	712.8
11	12	Estherville	1879	43°25′N 94°50′W / 43.417°N 94.833°W	A3/4	710.0
12	13	Omolon	1981	64°01′12″N 161°48′30″E / 64.02000°N 161.80833°E	PMG	550.0
13	14	Youxi	2006	23°03′36″N 118°00′36″E / 23.06000°N 118.01000°E	PMG	481.0
14	15	Pallasovka	1990	49°52′00″N 46°36′42″E / 49.86667°N 46.61167°E	PMG	437.0

In [16]:
```
#CSV File
Landings = pd.read_csv(r'meteorite-landings.csv')
```

In [17]:
```
Landings = Landings.rename(columns={"year":"FoundYear"})
Landings = Landings.rename(columns={"mass":"Mass"})
Landings = Landings.rename(columns={"name":"Meteor_Name"})
Landings = Landings.rename(columns={"GeoLocation":"Coordinates"})
Landings = Landings.rename(columns={"recclass":"Classification"})
```

In [18]:
```
Landings = Landings[np.isfinite(Landings['Mass'])]
```

In [19]:
```
Landings= Landings.drop(["reclat"], axis =1)
Landings= Landings.drop(["reclong"], axis =1)
Landings= Landings.drop(["fall"], axis =1)
Landings= Landings.drop(["nametype"], axis =1)
```

In [20]:
```
Landings.dropna()
```

Out[20]:

	Meteor_Name	id	Classification	Mass	FoundYear	Coordinates
0	Aachen	1	L5	21.0	1880.0	(50.775000, 6.083330)
1	Aarhus	2	H6	720.0	1951.0	(56.183330, 10.233330)
2	Abee	6	EH4	107000.0	1952.0	(54.216670, -113.000000)
3	Acapulco	10	Acapulcoite	1914.0	1976.0	(16.883330, -99.900000)
4	Achiras	370	L6	780.0	1902.0	(-33.166670, -64.950000)
...	...	...	...	...	...	...
45711	Zillah 002	31356	Eucrite	172.0	1990.0	(29.037000, 17.018500)
45712	Zinder	30409	Pallasite, ungrouped	46.0	1999.0	(13.783330, 8.966670)
45713	Zlin	30410	H4	3.3	1939.0	(49.250000, 17.666670)
45714	Zubkovsky	31357	L6	2167.0	2003.0	(49.789170, 41.504600)
45715	Zulu Queen	30414	L3.7	200.0	1976.0	(33.983330, -115.683330)

38116 rows × 6 columns

In [21]:
```
Landings.dtypes
```

Out[21]:
```
Meteor_Name        object
id                  int64
Classification     object
Mass              float64
FoundYear         float64
Coordinates        object
dtype: object
```

In [22]:
```
Landings.Mass = Landings.Mass.astype(int)
Landings["FoundYear"] = Landings["FoundYear"].astype(str).str[:-2]
```

In [23]:
```
#CSV File
Landings.head()
```

Out[23]:

	Meteor_Name	id	Classification	Mass	FoundYear	Coordinates
0	Aachen	1	L5	21	1880	(50.775000, 6.083330)
1	Aarhus	2	H6	720	1951	(56.183330, 10.233330)
2	Abee	6	EH4	107000	1952	(54.216670, -113.000000)
3	Acapulco	10	Acapulcoite	1914	1976	(16.883330, -99.900000)
4	Achiras	370	L6	780	1902	(-33.166670, -64.950000)

In [24]:
```
NASAAPI = pd.read_json(r'https://data.nasa.gov/resource/gh4g-9sfh.json')
```

In [25]:
```
NASAAPI = NASAAPI.drop([":@computed_region_nnqa_25f4" ,":@computed_region_cbhk_fwbd"],
```

In [26]:
```
NASAAPI= NASAAPI.dropna()
NASAAPI['year'] = NASAAPI['year'].str[:4]
```

In [27]:
```
NASAAPI= NASAAPI.drop(["nametype"], axis =1)
```

In [28]:
```
NASAAPI= NASAAPI.drop(["geolocation"], axis =1)
NASAAPI= NASAAPI.drop(["fall"], axis =1)
```

In [29]:
```
NASAAPI["Coordinates"]= "("+NASAAPI["reclat"].astype(str)+", "+NASAAPI["reclat"].astyp
```

In [30]:
```
NASAAPI = NASAAPI.rename(columns={"name":"Meteor_Name"})
NASAAPI = NASAAPI.rename(columns={"mass":"Mass"})
NASAAPI = NASAAPI.rename(columns={"year":"FoundYear"})
NASAAPI = NASAAPI.rename(columns={"recclass":"Classification"})
```

In [31]:
```
NASAAPI= NASAAPI.drop(["reclat"], axis =1)
NASAAPI= NASAAPI.drop(["reclong"], axis =1)
```

In [32]:
```
NASAAPI.dtypes
```

Out[32]:
```
Meteor_Name        object
id                  int64
Classification     object
Mass              float64
FoundYear          object
Coordinates        object
dtype: object
```

In [33]:
```
#API Dataset
NASAAPI
```

Out[33]:

	Meteor_Name	id	Classification	Mass	FoundYear	Coordinates
0	Aachen	1	L5	21.0	1880	(50.775, 50.775)
1	Aarhus	2	H6	720.0	1951	(56.18333, 56.18333)
2	Abee	6	EH4	107000.0	1952	(54.21667, 54.21667)
3	Acapulco	10	Acapulcoite	1914.0	1976	(16.88333, 16.88333)
4	Achiras	370	L6	780.0	1902	(-33.16667, -33.16667)
...	...	...	...	...	...	...
995	Tirupati	24009	H6	230.0	1934	(13.63333, 13.63333)
996	Tissint	54823	Martian (shergottite)	7000.0	2011	(29.48195, 29.48195)
997	Tjabe	24011	H6	20000.0	1869	(-7.08333, -7.08333)
998	Tjerebon	24012	L5	16500.0	1922	(-6.66667, -6.66667)
999	Tomakovka	24019	LL6	600.0	1905	(47.85, 47.85)

959 rows × 6 columns

In [34]:
```
print("I have the three files that have been cleaned and processed in past weeks, I wi
```

```
I have the three files that have been cleaned and processed in past weeks, I will now
work to merge them
```

In [35]:
```
import sqlite3
```

In [36]:
```
frames = [NASAAPI, Landings, HTMLSite]
```

In [37]:
```
result = pd.concat(frames)
```

In [38]:
```
result
```

Out[38]:

	Meteor_Name	id	Classification	Mass	FoundYear	Coordinates
0	Aachen	1	L5	21.0	1880	(50.775, 50.775)
1	Aarhus	2	H6	720.0	1951	(56.18333, 56.18333)
2	Abee	6	EH4	107000.0	1952	(54.21667, 54.21667)
3	Acapulco	10	Acapulcoite	1914.0	1976	(16.88333, 16.88333)
4	Achiras	370	L6	780.0	1902	(-33.16667, -33.16667)
...	...	...	...	...	...	...
10	Seymchan	11	PMG	712.8	1967	62°54′00″N 152°25′48″E / 62.90000°N 152.43000°E
11	Estherville	12	A3/4	710.0	1879	43°25′N 94°50′W / 43.417°N 94.833°W
12	Omolon	13	PMG	550.0	1981	64°01′12″N 161°48′30″E / 64.02000°N 161.80833°E
13	Youxi	14	PMG	481.0	2006	23°03′36″N 118°00′36″E / 23.06000°N 118.01000°E
14	Pallasovka	15	PMG	437.0	1990	49°52′00″N 46°36′42″E / 49.86667°N 46.61167°E

46575 rows × 6 columns

In [39]:
```
result = result[pd.to_numeric(result.FoundYear, errors='coerce').notnull()]
result['FoundYear']= result['FoundYear'].astype(int)
```

```
C:\Users\spashtunyar\AppData\Local\Temp\ipykernel_37276\1782897002.py:2: SettingWithC
opyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/us
er_guide/indexing.html#returning-a-view-versus-a-copy
  result['FoundYear']= result['FoundYear'].astype(int)
```

In [40]:
```
#Creating Meteor SQL Database
conn = sqlite3.connect('MeteorDB')
c = conn.cursor()
```

In [41]:
```
NASAAPI.head(1)
```

Out[41]:

	Meteor_Name	id	Classification	Mass	FoundYear	Coordinates
0	Aachen	1	L5	21.0	1880	(50.775, 50.775)

In [42]:
```
c.execute('CREATE TABLE IF NOT EXISTS NASAAPI (Meteorite Name TEXT, id INTEGER, Classi
```

Out[42]:
```
<sqlite3.Cursor at 0x1cfd288a880>
```

In [43]:
```
#Adding API DF
NASAAPI.to_sql('NASAAPI', conn, if_exists='replace', index = False)
```

Out[43]:
```
959
```

In [44]:
```
Landings.head(1)
```

Out[44]:

	Meteor_Name	id	Classification	Mass	FoundYear	Coordinates
0	Aachen	1	L5	21	1880	(50.775000, 6.083330)

In [45]:
```
c.execute('CREATE TABLE IF NOT EXISTS Landings (Meteorite Name TEXT, id INTEGER, namet
```

Out[45]:
```
<sqlite3.Cursor at 0x1cfd288a880>
```

In [46]:
```
#ADDING CSV DF
Landings.to_sql('Landings', conn, if_exists='replace', index = False)
```

Out[46]:
```
45585
```

In [47]:
```
HTMLSite.head(1)
```

Out[47]:

	id	Meteor_Name	FoundYear	Coordinates	Classification	Mass
0	1	Hoba	1920	.mw-parser-output .geo-default,.mw-parser-outp...	19°35′32″S / 17°56′01″E	130000.0

In [48]:
```
c.execute('CREATE TABLE IF NOT EXISTS HTML (Meteorite Name TEXT, FoundYear INTEGER, id
```

Out[48]:
```
<sqlite3.Cursor at 0x1cfd288a880>
```

In [49]:
```
#ADDING HTML WIKIPEDIA DF
HTMLSite.to_sql('HTML', conn, if_exists='replace', index = False)
```

Out[49]:
```
31
```

In [50]:
```
print("All three of my data tables have been added as SQL Tables now")
```

```
All three of my data tables have been added as SQL Tables now
```

In [51]:
```
#Helps me search
Cursor = conn.cursor()
```

In [52]:
```
#Checking CSV
Cursor.execute("SELECT * FROM Landings LIMIT 1000;")
records = Cursor.fetchall()
records[1]
```

Out[52]:
```
('Aarhus', 2, 'H6', 720, '1951', '(56.183330, 10.233330)')
```

In [53]:
```
#Checking HTML
Cursor.execute("SELECT * FROM HTML LIMIT 1000;")
records = Cursor.fetchall()
records[1]
```

Out[53]:
```
(2,
 'Cape York(Ahnighito)',
 1894,
 '76°08’N 64°56’W\ufeff / \ufeff76.133°N 64.933°W',
 'IIIAB',
 68068.0)
```

In [54]:
```
#Checking API
Cursor.execute("SELECT * FROM NASAAPI LIMIT 1000;")
records = Cursor.fetchall()
records[1]
```

Out[54]:
```
('Aarhus', 2, 'H6', 720.0, '1951', '(56.18333, 56.18333)')
```

In [55]:
```
print("All three of the DF's have become SQL Tables")
```

```
All three of the DF's have become SQL Tables
```

In [56]:
```
result.head(1)
```

Out[56]:

	Meteor_Name	id	Classification	Mass	FoundYear	Coordinates
0	Aachen	1	L5	21.0	1880	(50.775, 50.775)

In [57]:
```
c.execute('CREATE TABLE IF NOT EXISTS FINALMETEORTABLE (Meteorite Name TEXT, FoundYear
```

Out[57]:
```
<sqlite3.Cursor at 0x1cfd288a880>
```

In [58]:
```
result.to_sql('FINALMETEORTABLE', conn, if_exists='replace', index = False)
```

Out[58]:
```
46301
```

In [59]:
```
Cursor.execute("SELECT * FROM FINALMETEORTABLE LIMIT 1000;")
names = [description[0] for description in Cursor.description]
names
```

Out[59]:
```
['Meteor_Name', 'id', 'Classification', 'Mass', 'FoundYear', 'Coordinates']
```

In [60]:
```
sql_query = pd.read_sql_query ('''
                               SELECT
                               *
                               FROM FINALMETEORTABLE
                               ''', conn)
```

In [61]:
```
#Table join complete
FinalTable = pd.DataFrame(sql_query, columns = ['Meteor_Name', 'Classification', 'Mass
```

In [62]:
```
FinalTable
```

Out[62]:

	Meteor_Name	Classification	Mass	FoundYear
0	Aachen	L5	21.0	1880
1	Aarhus	H6	720.0	1951
2	Abee	EH4	107000.0	1952
3	Acapulco	Acapulcoite	1914.0	1976
4	Achiras	L6	780.0	1902
...	...	...	...	...
46296	Seymchan	PMG	712.8	1967
46297	Estherville	A3/4	710.0	1879
46298	Omolon	PMG	550.0	1981
46299	Youxi	PMG	481.0	2006
46300	Pallasovka	PMG	437.0	1990

46301 rows × 4 columns

In [63]:
```
FinalTable.dtypes
```

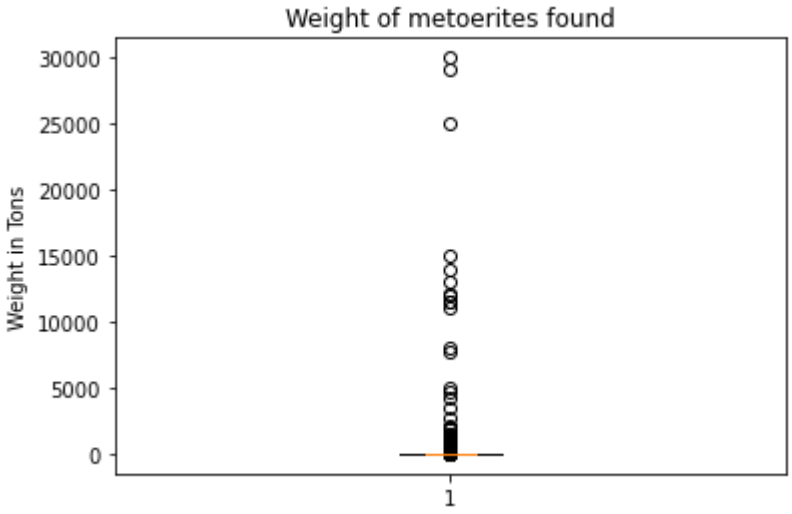
Out[63]:
```
Meteor_Name        object
Classification     object
Mass              float64
FoundYear           int64
dtype: object
```

In [64]:
```
FinalTable['Mass'].astype(int)
```

Out[64]:
```
0            21
1           720
2        107000
3          1914
4           780
          ...
46296       712
46297       710
46298       550
46299       481
46300       437
Name: Mass, Length: 46301, dtype: int32
```

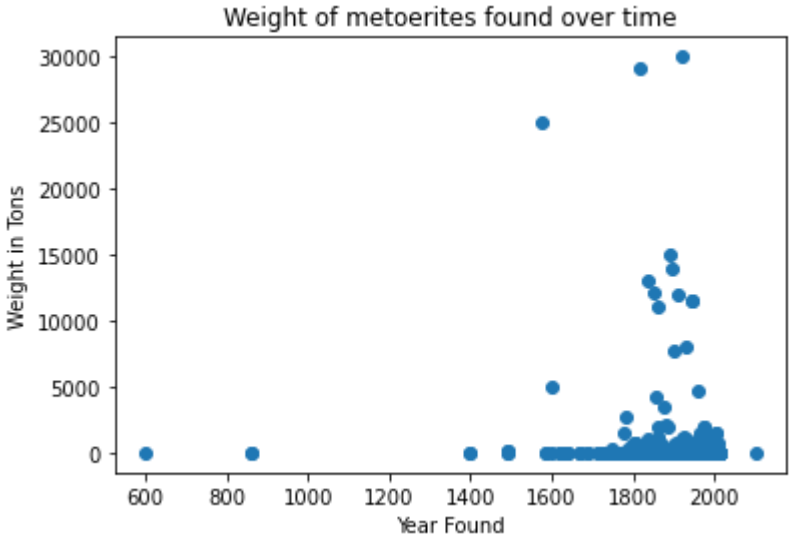
In [65]:
```
#First plot is to see the sheer weight of the meteor
plt.boxplot(FinalTable.Mass/2000, notch=True)
plt.ylabel('Weight in Tons')
plt.title('Weight of metoerites found')
```

Out[65]:
```
Text(0.5, 1.0, 'Weight of metoerites found')
```



In [66]:
```
#Found Year of Meteors and the weight
plt.scatter(FinalTable["FoundYear"],FinalTable["Mass"]/2000)
plt.xlabel('Year Found')
plt.ylabel('Weight in Tons')
plt.title('Weight of metoerites found over time')
```

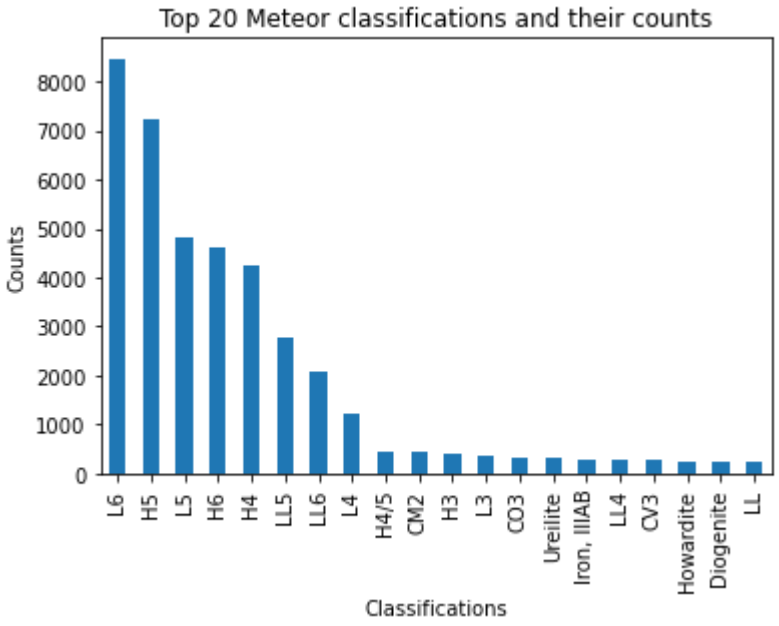
Out[66]:
```
Text(0.5, 1.0, 'Weight of metoerites found over time')
```



In [67]:
```
import seaborn as sns
from matplotlib.pyplot import figure
import matplotlib.pyplot as plt
```

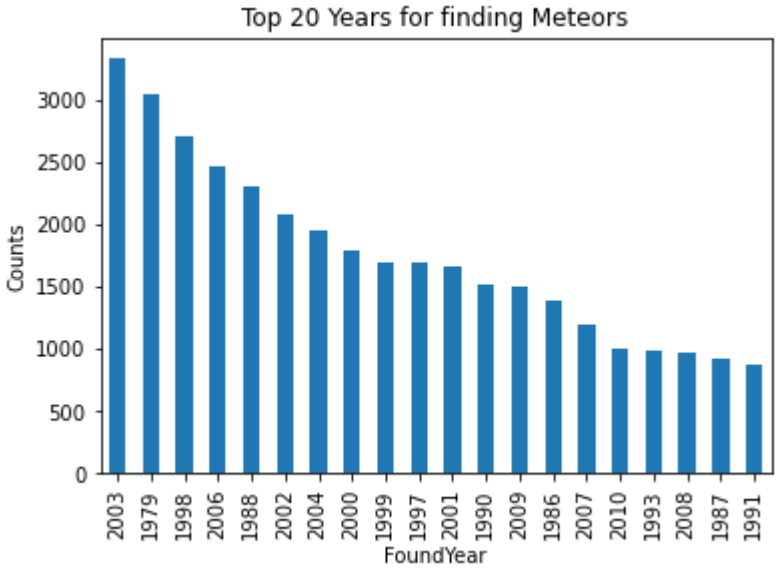
In [68]:
```
#Finding what was the most common class of Meteors out there
FinalTable['Classification'].value_counts().head(20).plot(kind='bar');
plt.xlabel('Classifications')
plt.ylabel('Counts')
plt.title('Top 20 Meteor classifications and their counts')
```

Out[68]:
```
Text(0.5, 1.0, 'Top 20 Meteor classifications and their counts')
```



In [69]:
```
#Finding what was the most common Year for Meteors exploration, interesting that 2003
FinalTable['FoundYear'].value_counts().head(20).plot(kind='bar');
plt.xlabel('FoundYear')
plt.ylabel('Counts')
plt.title('Top 20 Years for finding Meteors')
```

Out[69]:
```
Text(0.5, 1.0, 'Top 20 Years for finding Meteors')
```



In [70]:
```
FinalTable['Classification'].value_counts().head(10).sum()
```

Out[70]:
```
36301
```

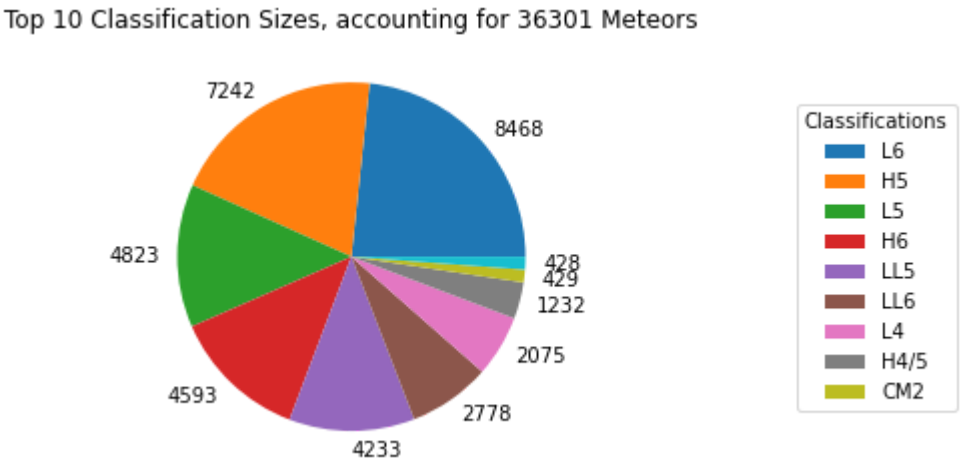
In [71]:
```
FinalTable['Classification'].value_counts().head(10)
```

Out[71]:
```
L6      8468
H5      7242
L5      4823
H6      4593
H4      4233
LL5     2778
LL6     2075
L4      1232
H4/5     429
CM2      428
Name: Classification, dtype: int64
```

In [73]:
```
Top10 =FinalTable['Classification'].value_counts().head(10)
```

In [77]:
```
#Pie chart of the meteors
fig, ax = plt.subplots()
ax.pie(FinalTable['Classification'].value_counts().head(10), labels = Top10)
Labels = ['L6', 'H5', 'L5','H6','LL5', 'LL6', 'L4','H4/5','CM2']
ax.legend(Labels,
          title="Classifications",
          loc="center left",
          bbox_to_anchor=(1.5, 0, 0.5, 1))
ax.set_title('Top 10 Classification Sizes, accounting for 36301 Meteors')
```

Out[77]:
```
Text(0.5, 1.0, 'Top 10 Classification Sizes, accounting for 36301 Meteors')
```



In [78]:
```
print("This project has been a major learning experience for me. For one, I had to scr
```

This project has been a major learning experience for me. For one, I had to scrub the data from each of the various sources I got thoroughly. I did not go into too much de tail for the scrubbing steps, as those were handled in the last few weeks of the clas s, but it involved a lot of clean up. The data wrangling had me altering column, remo ving empty rows, reformatting geolocation information, renaming columns to have the s ame names so they could be merged and dropping unnecessary data points. This data wra ngling component shows the power of clean data. Clean data, although it took some eff ort to obtain, led to quick insights, and a joined data table that allowed me work th rough the data quickly. I also learned a bit about making a SQL database within pytho n. This allowed me to take my cleaned data tables and save them in a location that ot hers or myself can call on later. This is a great way to store data and can be repeat ed in future projects. Although there was a lot of data munging, I tried to stay on t he right side of the ethics behind my alterations. I didn’t change any data values to new ones, rather cleaned up the values, and the corrupt rows to be more legible. Some things like changing column names were for uniformity between data sets. I want to ma ke sure I don’t change the integrity of the data, because I would want the conclusion s that I come to be the same if someone else performed a similar series of munging ac tions. This is important to ensure that I have trustworthy results when I share data.

In [ ]: