Brian_Reppeto540Week9_10

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DSC 540 Week 9 & 10 Data Wrangling with Python:

Chapter

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[2]:
```
# import libraries

import urllib.request, urllib.parse, urllib.error
import requests
from bs4 import BeautifulSoup as bs
import ssl
import re
```

[3]:
```
# check SSL certificate

chk = ssl.create_default_context()
chk.check_hostname = False
chk.verify_mode = ssl.CERT_NONE
```

[4]:
```
# get data from the website using the requests library

top100url = 'https://www.gutenberg.org/browse/scores/top'
response = requests.get(top100url)
```

[5]:
```
# create a funtion to check the status code of the response and print a message␣
↪based on the status code

def statchck(r):
    if r.status_code==200:
        print("Success!")
        return 1
    else:
        print("Failed!")
        return -1
```

[6]:
```
# call the function

```

```
statchck(response)
```

```
Success!
```

[6]:
```
1
```

[7]:
```
# decode the content of the HTTP response to a string

cont = response.content.decode(response.encoding)
```

[8]:
```
# create a bs object for parsing HTML

soup = bs(cont, 'html.parser')
```

Find href tags and store them in the list of links & print first 30

[9]:
```
# create empty list to hold all the http links

list_links=[]
```

[10]:
```
# for loop through all 'a' tags extracting the href attribute of each link and␣
 ↪appending it to list_links

for link in soup.find_all('a'):
    list_links.append(link.get('href'))
```

[11]:
```
# display the first 30 elements of the list_links

list_links[:30]
```

[11]:
```
['/',
 '/about/',
 '/about/',
 '/policy/collection_development.html',
 '/about/contact_information.html',
 '/about/background/',
 '/policy/permission.html',
 '/policy/privacy_policy.html',
 '/policy/terms_of_use.html',
 '/ebooks/',
 '/ebooks/',
 '/ebooks/bookshelf/',
 '/browse/scores/top',
 '/ebooks/offline_catalogs.html',
 '/help/',
 '/help/',
 '/help/copyright.html',
 '/help/errata.html',
 '/help/file_formats.html',
 '/help/faq.html',
 '/policy/',
 '/help/public_domain_ebook_submission.html',
 '/help/submitting_your_own_work.html',
 '/help/mobile.html',
 '/attic/',
 '/donate/',
 '/donate/',
 '#books-last1',
 '#authors-last1',
 '#books-last7']
```

find the numeric digits in these links for the Top 100 books.

[12]:
```python
# create empty list to hold all the #'s

booknumb=[]
```

[13]:
```python
# loop through a subset of elements in list_links extracting numeric digits

for i in range(33,133):
    link=list_links[i]
    link=link.strip()
    # Regular expression to find the numeric digits in the link (href) string
    n=re.findall('[0-9]+',link)
    if len(n)==1:
        # Append the filenumber casted as integer
        booknumb.append(int(n[0]))
```

[14]:
```python
# print the book numbers

print(booknumb)
```

```
[84, 1342, 2701, 1513, 145, 64317, 100, 2641, 37106, 16389, 67979, 394, 6761,
2160, 6593, 1259, 4085, 5197, 174, 11, 2542, 844, 1952, 972, 25344, 1080, 98,
5200, 2554, 345, 1260, 1400, 408, 76, 72953, 43, 39742, 72948, 72950, 6130,
72955, 28054, 1232, 219, 205, 1727, 1661, 1093, 58585, 4300, 41445, 72954, 2591,
768, 2600, 46, 3207, 23, 2000, 42324, 1497, 2814, 5740, 11757, 7370, 72946,
1998, 45, 45502, 600, 1184, 36, 30254, 2852, 161, 11030, 33283, 15399, 8800,
829, 244, 35, 16, 55, 36034, 996, 74, 16328, 120, 514, 2680, 8492, 4363, 158,
27827, 19942, 67098, 3296, 5827, 2148]
```

[15]:
```python
# print first 2000 characters

print(soup.text[:2000])
```

Top 100 | Project Gutenberg

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```
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Middlemarch by George Eliot (1539)
The Great Gatsby by F. Scott  Fitzgerald (1438)
The Complete Works of William Shakespeare by William Shakespeare (1433)
A Room with a View by E. M.  Forster (1426)
Little Women; Or, Meg, Jo, Beth, and Amy by Louisa May Alcott (1414)
The Enchanted April by Elizabeth Von Arnim (1279)
The Blue Castle: a novel by L. M.  Montgomery (1260)
Cranford by Elizabeth Cleghorn Gaskell (1178)
The Adventures of Ferdinand Count Fathom - Complete by T.  Smollett (1165)
The Expedition of Humphry Clinker by T.  Smollett (1139)
History of Tom Jones, a Foundling by Henry Fielding (1133)
Twenty ye
```

find the names of top 100 Ebooks

[16]:
```
# create empty list for Ebook names

list_titles_temp=[]
```

```
[17]: # create a starting index

      st_idx=soup.text.splitlines().index('Top 100 EBooks yesterday')
```

```
[18]: # loop 1-100 to add the strings of next 100 lines

      for i in range(100):
          list_titles_temp.append(soup.text.splitlines()[st_idx+2+i])
```

```
[19]: # create empty list

      list_ttls=[]
```

```
[20]: # loop through the first 100 elements of list_titles_temp searching for items␣
       ↪and append to list_ttls



      for i in range(100):
          id1,id2=re.match('^[a-zA-Z ]*',list_titles_temp[i]).span()
          list_ttls.append(list_titles_temp[i][id1:id2])
```

```
[21]: # loop through the list and print the titles

      for b in list_ttls:
          print(b)
```

```
Top
Top
Top
Top



Top


Frankenstein
Pride and Prejudice by Jane Austen
Moby Dick
Romeo and Juliet by William Shakespeare
Middlemarch by George Eliot
The Great Gatsby by F
The Complete Works of William Shakespeare by William Shakespeare
A Room with a View by E
Little Women
The Enchanted April by Elizabeth Von Arnim
The Blue Castle
Cranford by Elizabeth Cleghorn Gaskell
The Adventures of Ferdinand Count Fathom
The Expedition of Humphry Clinker by T
```

```
History of Tom Jones
Twenty years after by Alexandre Dumas and Auguste Maquet
The Adventures of Roderick Random by T
My Life
The Picture of Dorian Gray by Oscar Wilde
Alice
A Doll
The Importance of Being Earnest
The Yellow Wallpaper by Charlotte Perkins Gilman
The Devil
The Scarlet Letter by Nathaniel Hawthorne
A Modest Proposal by Jonathan Swift
A Tale of Two Cities by Charles Dickens
Metamorphosis by Franz Kafka
Crime and Punishment by Fyodor Dostoyevsky
Dracula by Bram Stoker
Jane Eyre
Great Expectations by Charles Dickens
The Souls of Black Folk by W
Adventures of Huckleberry Finn by Mark Twain
Studies of trees in winter
The Strange Case of Dr
Half a Man
Annihilation by Isabel Ostrander
The Bunnikins
The Iliad by Homer
The Girl
The Brothers Karamazov by Fyodor Dostoyevsky
The Prince by Niccol
Heart of Darkness by Joseph Conrad
Walden
The Odyssey by Homer
The Adventures of Sherlock Holmes by Arthur Conan Doyle
The Beast in the Jungle by Henry James
The Prophet by Kahlil Gibran
Ulysses by James Joyce
Frankenstein
Le braconnier de la mer by Jean Maucl
Grimms
Wuthering Heights by Emily Bront
War and Peace by graf Leo Tolstoy
A Christmas Carol in Prose
Leviathan by Thomas Hobbes
Narrative of the Life of Frederick Douglass
Don Quijote by Miguel de Cervantes Saavedra
Frankenstein
The Republic by Plato
Dubliners by James Joyce
```

```
Tractatus Logico
The Velveteen Rabbit by Margery Williams Bianco
Second Treatise of Government by John Locke
Turrets
Thus Spake Zarathustra
Anne of Green Gables by L
How the Other Half Lives
Notes from the Underground by Fyodor Dostoyevsky
The Count of Monte Cristo by Alexandre Dumas and Auguste Maquet
The War of the Worlds by H
The Romance of Lust
The Hound of the Baskervilles by Arthur Conan Doyle
Sense and Sensibility by Jane Austen
Incidents in the Life of a Slave Girl
Calculus Made Easy by Silvanus P
The Interesting Narrative of the Life of Olaudah Equiano
The divine comedy by Dante Alighieri
Gulliver
A Study in Scarlet by Arthur Conan Doyle
The Time Machine by H
Peter Pan by J
The Wonderful Wizard of Oz by L
White Nights and Other Stories by Fyodor Dostoyevsky
Don Quixote by Miguel de Cervantes Saavedra
The Adventures of Tom Sawyer
Beowulf
Treasure Island by Robert Louis Stevenson
Little Women by Louisa May Alcott
Meditations by Emperor of Rome Marcus Aurelius
The King in Yellow by Robert W
```

Activity 10

[45]:
```python
# import libraries

import urllib.request, urllib.parse, urllib.error
import json
```

[46]:
```python
# open the json api file and extract the api key to store into the omdbapi␣
 ↪variable

with open('API_BER.json') as f:
    keys = json.load(f)
    omdbapi = keys['OMDBapi']
```

[48]:
```python
# construct the URL for accessing the OMDB API by passing the api key

serviceurl = 'http://www.omdbapi.com/?'
```

```
apikey = '&apikey='+omdbapi
```

[49]:
```
# create a function to format and display information from the json

def print_json(json_data):
    list_keys=['Title', 'Year', 'Rated', 'Released', 'Runtime', 'Genre',␣
 ↪'Director', 'Writer',
                'Actors', 'Plot', 'Language', 'Country', 'Awards', 'Ratings',
                'Metascore', 'imdbRating', 'imdbVotes', 'imdbID']
    print("-"*50)
    for k in list_keys:
        if k in list(json_data.keys()):
            print(f"{k}: {json_data[k]}")
    print("-"*50)
```

[50]:
```
# create a function to download and save the poster image of a movie provided␣
 ↪in a json

def save_poster(json_data):
    import os
    title = json_data['Title']
    poster_url = json_data['Poster']
    poster_file_extension=poster_url.split('.')[-1]
    poster_data = urllib.request.urlopen(poster_url).read()
    savelocation=os.getcwd()+'\\'+'Posters'+'\\'
    if not os.path.isdir(savelocation):
        os.mkdir(savelocation)

    filename=savelocation+str(title)+'.'+poster_file_extension
    f=open(filename,'wb')
    f.write(poster_data)
    f.close()
```

[51]:
```
# create a function to search for a movie by its title and display specific␣
 ↪details about the movie

def search_movie(title):
    try:
        url = serviceurl + urllib.parse.urlencode({'t': str(title)})+apikey
        print(f'Retrieving the data of "{title}" now... ')
        print(url)
        uh = urllib.request.urlopen(url)
        data = uh.read()
        json_data=json.loads(data)

        if json_data['Response']=='True':
            print_json(json_data)
            if json_data['Poster']!='N/A':
                save_poster(json_data)
        else:
            print("Error encountered: ",json_data['Error'])

    except urllib.error.URLError as e:
        print(f"ERROR: {e.reason}")
```

[52]:
```
# using the function search_movie search for the movie Titanic

search_movie("Titanic")
```

```
Retrieving the data of "Titanic" now…
http://www.omdbapi.com/?t=Titanic&apikey=e077ced1
--------------------------------------------------
Title: Titanic
Year: 1997
Rated: PG-13
Released: 19 Dec 1997
Runtime: 194 min
Genre: Drama, Romance
Director: James Cameron
Writer: James Cameron
Actors: Leonardo DiCaprio, Kate Winslet, Billy Zane
Plot: A seventeen-year-old aristocrat falls in love with a kind but poor artist
aboard the luxurious, ill-fated R.M.S. Titanic.
Language: English, Swedish, Italian, French
Country: United States, Mexico
Awards: Won 11 Oscars. 126 wins & 83 nominations total
Ratings: [{'Source': 'Internet Movie Database', 'Value': '7.9/10'}, {'Source':
'Rotten Tomatoes', 'Value': '88%'}, {'Source': 'Metacritic', 'Value': '75/100'}]
Metascore: 75
imdbRating: 7.9
imdbVotes: 1,267,049
imdbID: tt0120338
--------------------------------------------------
```

[53]:
```
# using the function search_movie search for "Random_error"

search_movie("Random_error")
```

```
Retrieving the data of "Random_error" now…
http://www.omdbapi.com/?t=Random_error&apikey=e077ced1
Error encountered:  Movie not found!
```

[ ]:
```

```

API exc. 3

[25]:
```python
# import libraries

import requests
```

[26]:
```python
# Connect to an API of your choice and do a simple data pull

api_key = '81abbd54a783fa7a406cecd44ea2b0fd'

# city to get weather data for

city = 'Cincinnati'

# base url

base_url = 'http://api.openweathermap.org/data/2.5/weather?'

# url with city name and API key

complete_url = base_url + 'q=' + city + '&appid=' + api_key+ '&units=imperial'

# GET request to the API

response = requests.get(complete_url)

# parse JSON response

weather_data = response.json()

# if smt check if the request was successful

if weather_data['cod'] == 200:
    weather_main = weather_data['weather'][0]['main']
    weather_description = weather_data['weather'][0]['description']
    temperature_fahrenheit = weather_data['main']['temp']
    humidity = weather_data['main']['humidity']
    wind_speed = weather_data['wind']['speed']
    print(f"Weather in {city}:")
    print(f"Main: {weather_main}")
    print(f"Description: {weather_description}")
    print(f"Temperature: {temperature_fahrenheit} F")
    print(f"Humidity: {humidity}%")

else:
    print("City not found. Please check the city name.")
```

```
Weather in Cincinnati:
Main: Clouds
Description: broken clouds
```

```
Temperature: 49.01 F
Humidity: 56%
```

```
[ ]:
```

Exc. 4

```
[27]: # import libraries


      import matplotlib.pyplot as plt
      import pandas as pd
      import numpy as np
```

```
[28]: # load the data from the Excel file

      file_path = "bb_game_sales.xlsx"
      bb_df = pd.read_excel(file_path)
```

```
/Applications/anaconda3/lib/python3.11/site-
packages/openpyxl/worksheet/_read_only.py:79: UserWarning: Unknown extension is
not supported and will be removed
  for idx, row in parser.parse():
```

```
[29]: # head the new df

      bb_df.head()
```

```
[29]:         Date           Item   Category  Price    Profit  Actual Profit
      0 2019-01-01           Beer  Beverages    4.0  0.500000            2.0
      1 2019-01-01      Hamburger   Hot Food    3.0  0.666667            2.0
      2 2019-01-01        Popcorn   Hot Food    5.0  0.800000            4.0
      3 2019-01-01          Pizza   Hot Food    2.0  0.250000            0.5
      4 2019-01-01  Bottled Water  Beverages    3.0  0.833333            2.5
```

```
[30]: # count of categories by date

      category_count_by_date = bb_df.groupby(['Date', 'Category']).size().
       ↪reset_index(name='Category_Count')
```

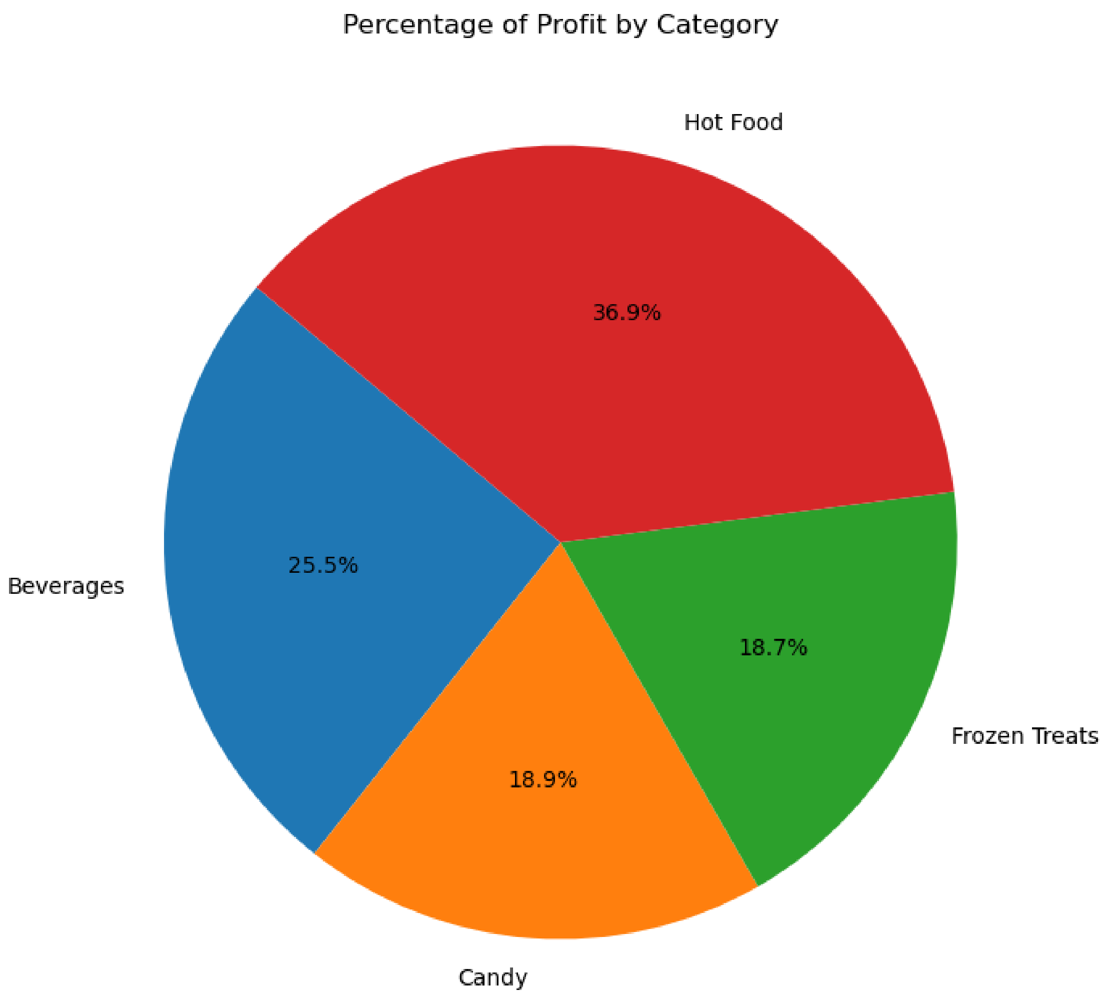
```
[31]: # merge the count with the original DataFrame

      bb_df = pd.merge(bb_df, category_count_by_date, on=['Date', 'Category'],␣
       ↪how='left')
```

```
[32]: bb_df.head()
```

```
[32]:         Date           Item   Category  Price    Profit  Actual Profit  \
      0 2019-01-01           Beer  Beverages    4.0  0.500000            2.0
```

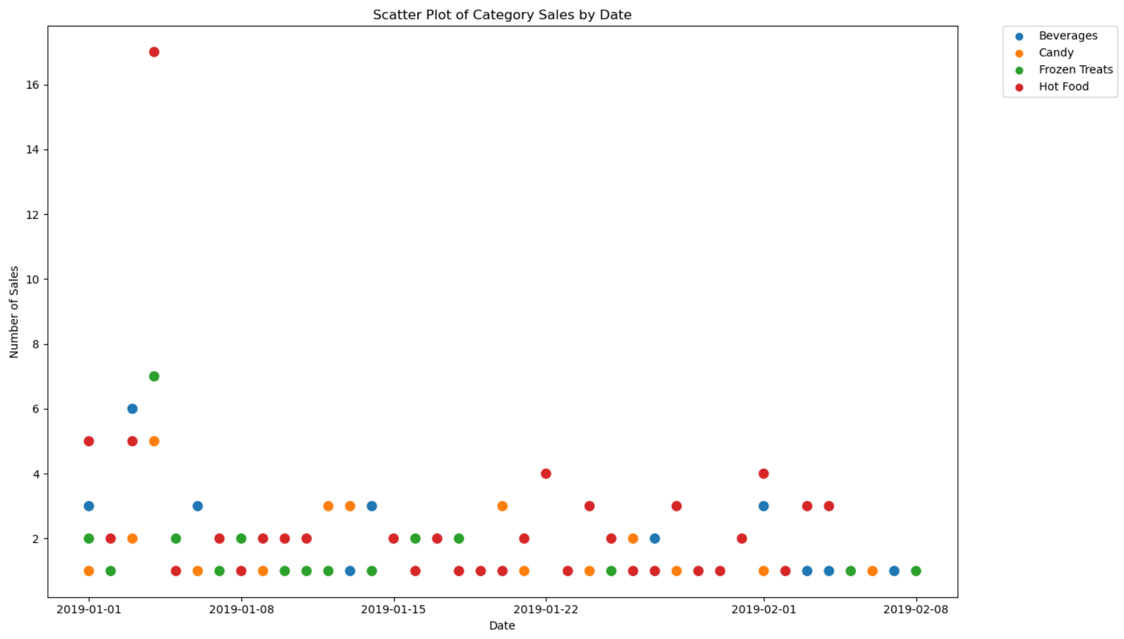
```
1 2019-01-01      Hamburger   Hot Food    3.0  0.666667            2.0
2 2019-01-01        Popcorn   Hot Food    5.0  0.800000            4.0
3 2019-01-01          Pizza   Hot Food    2.0  0.250000            0.5
4 2019-01-01  Bottled Water  Beverages    3.0  0.833333            2.5

   Category_Count
0               3
1               5
2               5
3               5
4               3
```

[33]:
```
# pie chart

# group by Category and calculate the total profit for each category

total_profit_by_category = bb_df.groupby('Category')['Profit'].sum()


plt.figure(figsize=(8, 8))
plt.pie(total_profit_by_category, labels=total_profit_by_category.index,␣
 ↪autopct='%1.1f%%', startangle=140)
plt.title('Percentage of Profit by Category')
plt.show()
```

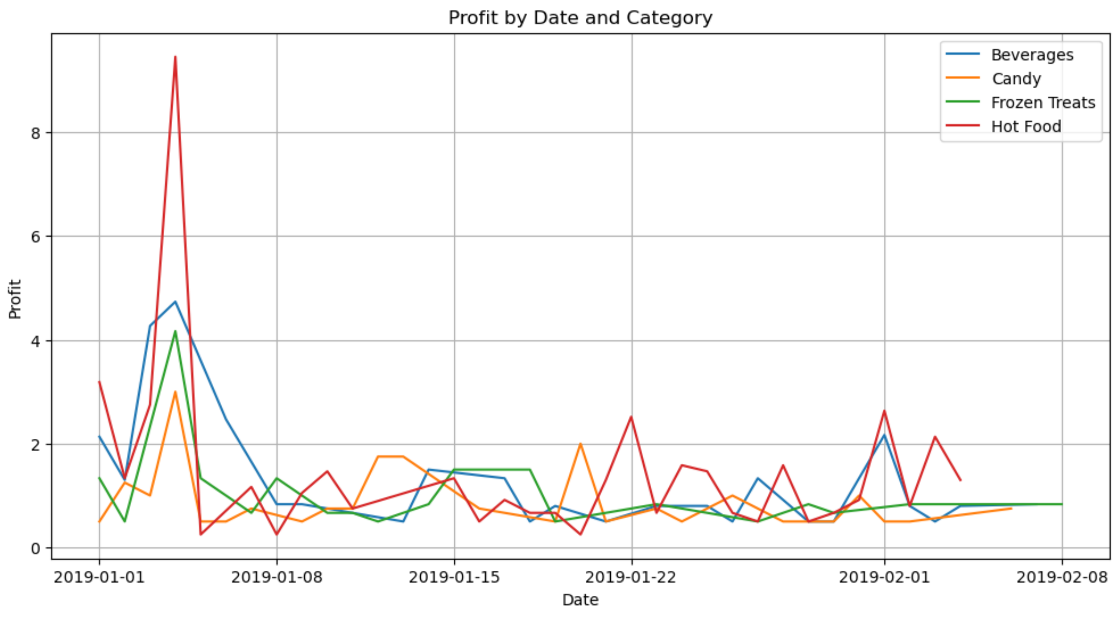


[59]:
```
# histogram

import seaborn as sns


# group data by 'category' and 'date' and count the number of sales

category_sales_by_date = bb_df.groupby(['Category', 'Date']).size().
  ↪reset_index(name='Sales')

plt.figure(figsize=(14, 8))
```

```
sns.scatterplot(data=category_sales_by_date, x='Date', y='Sales',␣
↪hue='Category', s=100)

plt.title('Scatter Plot of Category Sales by Date')
plt.xlabel('Date')
plt.ylabel('Number of Sales')
plt.legend(bbox_to_anchor=(1.05, 1), loc='upper left', borderaxespad=0.)
plt.tight_layout()
plt.show()
```



[35]:
```
# Line Chart

# group by Date and Category

profit_by_date_category = bb_df.groupby(['Date', 'Category'])['Profit'].sum().
↪reset_index()


plt.figure(figsize=(12, 6))

# iterate over unique categories and plot a line for each

for category in profit_by_date_category['Category'].unique():
    category_data = profit_by_date_category[profit_by_date_category['Category']␣
↪== category]
    plt.plot(category_data['Date'], category_data['Profit'], label=category)
plt.title('Profit by Date and Category')
plt.xlabel('Date')
plt.ylabel('Profit')
plt.legend()
plt.grid(True)
plt.show()
```



```
[ ]:
```