

HOA 7.2

gathering image data using webcam

```
In [5]: !pip install opencv-python
```

Collecting opencv-python

Obtaining dependency information for opencv-python from https://files.pythonhosted.org/packages/c7/ec/9dabb6a9abfdebb3c45b0cc52dec901caafef2b2c7e7d6a839ed86d81e91/opencv_python-4.9.0.80-cp37-abi3-win_amd64.whl.metadata

Downloading opencv_python-4.9.0.80-cp37-abi3-win_amd64.whl.metadata (20 kB)

Requirement already satisfied: numpy>=1.21.2 in c:\users\very jay hahahaha\anaconda3\lib\site-packages (from opencv-python) (1.26.4)

Downloading opencv_python-4.9.0.80-cp37-abi3-win_amd64.whl (38.6 MB)

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Installing collected packages: opencv-python
 Successfully installed opencv-python-4.9.0.80

In [7]: `!pip install google-python`

ERROR: Could not find a version that satisfies the requirement google-python (from versions: none)
 ERROR: No matching distribution found for google-python

In [9]: `import cv2
 key = cv2.waitKey(1)
 webcam = cv2.VideoCapture(0)
 while True:
 try:`

```
check, frame = webcam.read()
print(check) #prints true as long as the webcam is running
print(frame) #prints matrix values of each framecd
cv2.imshow("Capturing", frame)
key = cv2.waitKey(1)
if key == ord('s'):
    cv2.imwrite(filename='saved_img.jpg', img=frame)
    webcam.release()
    img_new = cv2.imread('saved_img.jpg', cv2.IMREAD_GRAYSCALE)
    img_new = cv2.imshow("Captured Image", img_new)
    cv2.waitKey(1650)
    cv2.destroyAllWindows()
    print("Processing image...")
    img_ = cv2.imread('saved_img.jpg', cv2.IMREAD_ANYCOLOR)
    print("Converting RGB image to grayscale...")
    gray = cv2.cvtColor(img_, cv2.COLOR_BGR2GRAY)
    print("Converted RGB image to grayscale...")
    print("Resizing image to 28x28 scale...")
    img_ = cv2.resize(gray,(28,28))
    print("Resized...")
    img_resized = cv2.imwrite(filename='saved_img-final.jpg', img=img_)
    print("Image saved!")
elif key == ord('q'):
    print("Turning off camera.")
    webcam.release()
    print("Camera off.")
    print("Program ended.")
    cv2.destroyAllWindows()
    break

except KeyboardInterrupt:
    print("Turning off camera.")
    webcam.release()
    print("Camera off.")
    print("Program ended.")
    cv2.destroyAllWindows()
    break
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 [ 85  89 103]
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...

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[[ 84  87 105]
```

```

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  [ 74  85 105]]

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  [ 88  93 102]
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  [ 88  92 103]]

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  [ 89  90 101]
  [ 90  90  99]
  [ 86  87  96]]

...

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  ...
  [ 72  54  63]
 [106  90 100]
 [102  86  97]]

```

```

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 [113 115 121]
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 [ 75  86 106]
 [ 74  85 105]]

[[113 117 131]
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 [116 120 122]
 ...
 [ 88  93 102]
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 [ 88  92 103]]

[[113 118 129]
 [114 118 124]
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...

```



```

[[ 93  96  95]
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 [ 72  54  63]
 [106  90 100]
 [102  86  97]]

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 [117 117 119]
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 [ 79  79  90]]

[[122 120 129]
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 [ 86  88  90]]

```

```

[[118 118 125]
 [116 118 122]
 [118 120 122]
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 [ 83  84  89]]

...

[[ 89  91  91]
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 [115 115 120]
 [117 117 119]
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 [ 79  82  90]
 [ 83  82  94]
 [ 79  79  90]]]

```

```
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 [121 121 127]
 [120 122 124]
 ...
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 [ 86  88  90]]

[[118 118 125]
 [116 118 122]
 [118 120 122]
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...

[[ 89  91  91]
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 [ 86  86  86]
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 [ 69  44  42]
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 [108 101  99]
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True
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  [117 119 125]
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  [ 72  79 108]]

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  [ 84  86 111]]

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 [ 77  80  89]]

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 [ 84  88  90]]

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 [119 119 119]
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...

[[ 76  88  96]
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 ...

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```

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[ 92  93  98]
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...

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[[[111 115 128]
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 [113 116 125]
 ...
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 [ 82  78 105]]

[[116 120 133]
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 [116 119 125]
 ...

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```

[ 90  89 104]
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[[117 120 126]
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True
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```



```
...  
[ 75  79 103]  
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[[116 119 119]  
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[ 84  85 103]]  
  
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...  
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...  
  
[[ 75  82 109]  
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[ 82  91 105]
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[ 80  89 100]
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...

[[ 75  82 109]
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[[ 79  85 109]

```

```

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[[ 80  88 105]
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 [120  99 114]]]
True
[[[113 118 127]
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  ...
  [ 76  84 101]
  [ 77  88  99]
  [ 72  84  94]]

[[113 119 123]
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 [116 118 122]
 ...
 [ 89  92  98]
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 [ 86  88  90]]

[[117 120 125]
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 [116 118 122]
 ...
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...

```

```

[[ 85  93  92]
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[[ 84  86  86]
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 [121  98  98]]]
True
[[[114 114 114]
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 [ 80  86  90]]

[[124 125 125]
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 [ 89  94  93]
 [ 85  90  90]]

[[120 120 120]

```

```

[118 119 120]
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...
[ 85  90  90]
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...

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 [101  97  95]]]
True
[[[115 115 127]
 [116 117 126]
 [119 120 126]
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 [ 78  78 106]
 [ 81  80 112]
 [ 76  76 108]]]

```

```
[[119 123 127]
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 ...
 [ 87  89 110]
 [ 87  88 113]
 [ 82  83 108]]

[[120 122 124]
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 [119 121 121]
 ...
 [ 84  86 105]
 [ 84  87 105]
 [ 81  84 102]]

...

[[ 85  90  90]
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 [ 68  49  53]
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[[ 84  91  91]
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 [ 89  94  93]
 ...
 [ 82  71  71]
 [107  96  97]
 [109  98  99]]]
```

Turning off camera.
Camera off.
Program ended.

gathering voice data using microphone

Setup

In [10]: `!pip3 install sounddevice`

```
Collecting sounddevice
  Obtaining dependency information for sounddevice from https://files.pythonhosted.org/packages/39/ae/5e84220bfca4256e4ca2a62a174636089ab6ff671b5f9ddd7e8238587acd/sounddevice-0.4.6-py3-none-win_amd64.whl.metadata
  Downloading sounddevice-0.4.6-py3-none-win_amd64.whl.metadata (1.4 kB)
Requirement already satisfied: CFFI>=1.0 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from sounddevice) (1.16.0)
Requirement already satisfied: pycparser in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from CFFI>=1.0->sounddevice) (2.21)
Downloading sounddevice-0.4.6-py3-none-win_amd64.whl (199 kB)
----- 0.0/199.7 kB ? eta -:--:--
-- ----- 10.2/199.7 kB ? eta -:--:--
-- ----- 10.2/199.7 kB ? eta -:--:--
----- 41.0/199.7 kB 330.3 kB/s eta 0:00:01
----- 153.6/199.7 kB 919.0 kB/s eta 0:00:01
----- 199.7/199.7 kB 1.1 MB/s eta 0:00:00
Installing collected packages: sounddevice
Successfully installed sounddevice-0.4.6
```

In [11]: `!pip3 install wavio`

```
Collecting wavio
  Obtaining dependency information for wavio from https://files.pythonhosted.org/packages/bf/02/40d03e99a3d2d8d1e9392f44376f470120427fffb12483579dc7e0365f712/wavio-0.0.8-py3-none-any.whl.metadata
  Downloading wavio-0.0.8-py3-none-any.whl.metadata (5.7 kB)
Requirement already satisfied: numpy>=1.19.0 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from wavio) (1.26.4)
Downloading wavio-0.0.8-py3-none-any.whl (9.4 kB)
Installing collected packages: wavio
Successfully installed wavio-0.0.8
```

In [12]: `!pip3 install scipy`

Requirement already satisfied: scipy in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (1.11.4)

Requirement already satisfied: numpy<1.28.0,>=1.21.6 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from scipy) (1.26.4)

In [22]: !pip install pyaudio

Collecting pyaudio

Obtaining dependency information for pyaudio from https://files.pythonhosted.org/packages/82/d8/f043c854aad450a76e476b0cf9cda1956419e1dacf1062eb9df3c0055abe/PyAudio-0.2.14-cp311-cp311-win_amd64.whl.metadata

Downloading PyAudio-0.2.14-cp311-cp311-win_amd64.whl.metadata (2.7 kB)

Downloading PyAudio-0.2.14-cp311-cp311-win_amd64.whl (164 kB)

```
----- 0.0/164.1 kB ? eta -:-:--
-- ----- 10.2/164.1 kB ? eta -:-:--
----- ----- 30.7/164.1 kB 330.3 kB/s eta 0:00:01
----- ----- 81.9/164.1 kB 573.4 kB/s eta 0:00:01
----- ----- 164.1/164.1 kB 986.1 kB/s eta 0:00:00
```

Installing collected packages: pyaudio

Successfully installed pyaudio-0.2.14

Code

```
In [25]: # import required libraries
import sounddevice as sd
from scipy.io.wavfile import write
import wavio as wv
# Sampling frequency
freq = 44100
# Recording duration
duration = 5
# Start recorder with the given values
# of duration and sample frequency
recording = sd.rec(int(duration * freq),
                    samplerate=freq, channels=2)
# Record audio for the given number of seconds
print('now recording...')
sd.wait()
print('end of recording')
# This will convert the NumPy array to an audio
# file with the given sampling frequency
write("recording2.wav", freq, recording)
```



```
# Convert the NumPy array to audio file
wv.write("recording3.wav", recording, freq, sampwidth=2)
```

now recording...
end of recording

Image Scraping using BeautifulSoup and Request

Setup

In [26]: !pip install bs4

```
Collecting bs4
  Obtaining dependency information for bs4 from https://files.pythonhosted.org/packages/51/bb/bf7aab772a159614954d84aa832c129624ba6c32faa559dfb200a534e50b/bs4-0.0.2-py2.py3-none-any.whl.metadata
  Downloading bs4-0.0.2-py2.py3-none-any.whl.metadata (411 bytes)
Requirement already satisfied: beautifulsoup4 in c:\users\very jay hahahaha\anaconda3\lib\site-packages (from bs4) (4.12.2)
Requirement already satisfied: soupsieve>1.2 in c:\users\very jay hahahaha\anaconda3\lib\site-packages (from beautifulsoup4->bs4) (2.5)
Downloading bs4-0.0.2-py2.py3-none-any.whl (1.2 kB)
Installing collected packages: bs4
Successfully installed bs4-0.0.2
```

Code

```
In [27]: import requests
from bs4 import BeautifulSoup
def getdata(url):
    r = requests.get(url)
    return r.text

htmldata = getdata("https://www.google.com/")
soup = BeautifulSoup(htmldata, 'html.parser')
for item in soup.find_all('img'):
    print(item['src'])
```

/images/branding/googlelogo/1x/googlelogo_white_background_color_272x92dp.png

Image Scraping using Selenium

Setup

```
In [11]: import time
from selenium import webdriver

driver = webdriver.Chrome() # Optional argument, if not specified will search path.

driver.get('http://www.google.com/');

time.sleep(5) # Let the user actually see something!

search_box = driver.find_element_by_name('q')

search_box.send_keys('ChromeDriver')

search_box.submit()

time.sleep(5) # Let the user actually see something!

driver.quit()
```

```
-----
AttributeError                                Traceback (most recent call last)
Cell In[11], line 12
      8 driver.get('http://www.google.com/');
     10 time.sleep(5) # Let the user actually see something!
--> 12 search_box = driver.find_element_by_name('q')
     14 search_box.send_keys('ChromeDriver')
     16 search_box.submit()

AttributeError: 'WebDriver' object has no attribute 'find_element_by_name'
```

```
In [28]: pip install selenium
```

Collecting selenium

Obtaining dependency information for selenium from <https://files.pythonhosted.org/packages/3f/fd/c2e7bb547b5b96c7bd536b4a80c4564b7ce5cd38d10095fbba8648996ab9/selenium-4.18.1-py3-none-any.whl.metadata>

Downloading selenium-4.18.1-py3-none-any.whl.metadata (6.9 kB)

Requirement already satisfied: urllib3[socks]<3,>=1.26 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from selenium) (2.1.0)

Collecting trio~=0.17 (from selenium)

Obtaining dependency information for trio~=0.17 from <https://files.pythonhosted.org/packages/17/c9/f86f89f14d52f9f2f652ce24cb2f60141a51d087db1563f3fba94ba07346/trio-0.25.0-py3-none-any.whl.metadata>

Downloading trio-0.25.0-py3-none-any.whl.metadata (8.7 kB)

Collecting trio-websocket~=0.9 (from selenium)

Obtaining dependency information for trio-websocket~=0.9 from https://files.pythonhosted.org/packages/48/be/a9ae5f50cad5b6f85bd2574c2c923730098530096e170c1ce7452394d7aa/trio_websocket-0.11.1-py3-none-any.whl.metadata

Downloading trio_websocket-0.11.1-py3-none-any.whl.metadata (4.7 kB)

Requirement already satisfied: certifi>=2021.10.8 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from selenium) (2024.2.2)

Requirement already satisfied: typing_extensions>=4.9.0 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from selenium) (4.9.0)

Collecting attrs>=23.2.0 (from trio~=0.17->selenium)

Obtaining dependency information for attrs>=23.2.0 from <https://files.pythonhosted.org/packages/e0/44/827b2a91a5816512fcaf3cc4ebc465ccd5d598c45cefa6703fcf4a79018f/attrs-23.2.0-py3-none-any.whl.metadata>

Downloading attrs-23.2.0-py3-none-any.whl.metadata (9.5 kB)

Collecting sortedcontainers (from trio~=0.17->selenium)

Obtaining dependency information for sortedcontainers from <https://files.pythonhosted.org/packages/32/46/9cb0e58b2deb7f82b84065f37f3bffe12413f947f9388e4cac22c4621ce/sortedcontainers-2.4.0-py2.py3-none-any.whl.metadata>

Downloading sortedcontainers-2.4.0-py2.py3-none-any.whl.metadata (10 kB)

Requirement already satisfied: idna in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from trio~=0.17->selenium) (3.4)

Collecting outcome (from trio~=0.17->selenium)

Obtaining dependency information for outcome from <https://files.pythonhosted.org/packages/55/8b/5ab7257531a5d830fc8000c476e63c935488d74609b50f9384a643ec0a62/outcome-1.3.0.post0-py2.py3-none-any.whl.metadata>

Downloading outcome-1.3.0.post0-py2.py3-none-any.whl.metadata (2.6 kB)

Requirement already satisfied: sniffio>=1.3.0 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from trio~=0.17->selenium) (1.3.0)

Requirement already satisfied: cffi>=1.14 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from trio~=0.17->selenium) (1.16.0)

Collecting wsproto>=0.14 (from trio-websocket~=0.9->selenium)

Obtaining dependency information for wsproto>=0.14 from <https://files.pythonhosted.org/packages/78/58/e860788190eba3bcce367f74d29c4675466ce8dddffa85f7827588416f01/wsproto-1.2.0-py3-none-any.whl.metadata>

Downloading wsproto-1.2.0-py3-none-any.whl.metadata (5.6 kB)

Requirement already satisfied: pysocks!=1.5.7,<2.0,>=1.5.6 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from urllib3[socks]<3,>=1.26->selenium) (1.7.1)

Requirement already satisfied: pycparser in c:\users\ery jay hahaha\anaconda3\lib\site-packages (from cffi>=1.14->trio~=0.17->selenium) (2.21)

Collecting h11<1,>=0.9.0 (from wsproto>=0.14->trio-websocket~=0.9->selenium)

Obtaining dependency information for h11<1,>=0.9.0 from <https://files.pythonhosted.org/packages/95/04/ff642e65ad6b90db43e668d70ffb6736436c7ce41fcc549f4e9472234127/h11-0.14.0-py3-none-any.whl.metadata>

Downloading h11-0.14.0-py3-none-any.whl.metadata (8.2 kB)

Downloading selenium-4.18.1-py3-none-any.whl (10.0 MB)

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----- 10.0/10.0 MB 6.3 MB/s eta 0:00:01
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Downloading trio-0.25.0-py3-none-any.whl (467 kB)
----- 0.0/467.2 kB ? eta -:-:--
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Downloading trio_websocket-0.11.1-py3-none-any.whl (17 kB)
Downloading attrs-23.2.0-py3-none-any.whl (60 kB)
----- 0.0/60.8 kB ? eta -:-:--
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Downloading wsproto-1.2.0-py3-none-any.whl (24 kB)
Downloading outcome-1.3.0.post0-py2.py3-none-any.whl (10 kB)
Downloading sortedcontainers-2.4.0-py2.py3-none-any.whl (29 kB)
Downloading h11-0.14.0-py3-none-any.whl (58 kB)
----- 0.0/58.3 kB ? eta -:-:--
----- 58.3/58.3 kB ? eta 0:00:00
Installing collected packages: sortedcontainers, h11, attrs, wsproto, outcome, trio, trio-websocket, selenium
  Attempting uninstall: attrs
    Found existing installation: attrs 23.1.0
    Uninstalling attrs-23.1.0:
      Successfully uninstalled attrs-23.1.0
Successfully installed attrs-23.2.0 h11-0.14.0 outcome-1.3.0.post0 selenium-4.18.1 sortedcontainers-2.4.0 trio-0.25.0 trio-websocket-0.11.1 wsproto-1.2.0
Note: you may need to restart the kernel to use updated packages.

```

```

In [44]: !pip install selenium
import sys
sys.path.insert(0, '/usr/lib/chromium-browser/chromedriver')

from selenium import webdriver
from selenium.webdriver.common.by import By
import time
import requests
import shutil
import os
import getpass
import urllib.request
import io
import time

```

```

from PIL import Image
user = getpass.getuser()
chrome_options = webdriver.ChromeOptions()
chrome_options.add_argument('--headless')
chrome_options.add_argument('--no-sandbox')
chrome_options.add_argument('--disable-dev-shm-usage')
driver = webdriver.Chrome()
def scroll_to_end(driver):
    driver.execute_script("window.scrollTo(0, document.body.scrollHeight);")
    time.sleep(5)#sleep_between_interactions

def getImageUrls(name,totalImgs,driver):
    search_url = "https://www.google.com/search?q=cat&tbm=isch&ved=2ahUKewjNn_Gn7YyFAxU3yDgGHQYQCesQ2-cCegQIABAA&oq=cat&gs_lp="
    driver.get(search_url)
    img_urls = set()
    img_count = 0
    results_start = 0

    while(img_count+results_start<totalImgs): #Extract actual images now
        scroll_to_end(driver)
        totalResults = driver.find_elements(By.CLASS_NAME,"Q4LuWd")
        print('total results:', len(totalResults))
        print(f"Found: {totalResults} search results. Extracting links from{results_start}:{totalResults}")
        for img in totalResults[results_start:totalImgs]:
            img.click()
            time.sleep(5)
            image = driver.find_element(By.CLASS_NAME,'iPVvYb')
            img_urls.add(image.get_attribute('src'))
            print(img_urls)
            img_count=len(img_urls)
            print(img_count)

    return img_urls

def downloadImages(folder_path,file_name,url):
    try:
        image_content = requests.get(url).content
    except Exception as e:
        print(f"ERROR - COULD NOT DOWNLOAD {url} - {e}")
    try:

```

```
image_file = io.BytesIO(image_content)
image = Image.open(image_file).convert('RGB')
file_path = os.path.join(folder_path, file_name)
with open(file_path, 'wb') as f:
    image.save(f, "JPEG", quality=85)
print(f"SAVED - {url} - AT: {file_path}")
except Exception as e:
    print(f"ERROR - COULD NOT SAVE {url} - {e}")

def saveInDestFolder(searchNames, destDir, totalImgs, driver):
    for name in list(searchNames):
        path = os.path.join(destDir, name)
        if not os.path.isdir(path):
            os.mkdir(path)
        print('Current Path', path)
        totalLinks = getImageUrls(name, totalImgs, driver)
        print('totalLinks', totalLinks)

    if totalLinks is None:
        print('images not found for :', name)

    else:
        for i, link in enumerate(totalLinks):
            file_name = f"{i:150}.jpg"
            downloadImages(path, file_name, link)

searchNames = ['cat']
destDir = f'D:/ERY FILES NEED FOR REFORMAT/BACKUP/School/2nd Year 2nd Sem/Computational Thinking With Python/hoa7.2'
totalImgs = 5

saveInDestFolder(searchNames, destDir, totalImgs, driver)
```

Requirement already satisfied: selenium in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (4.18.1)

Requirement already satisfied: urllib3[socks]<3,>=1.26 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from selenium) (2.1.0)

Requirement already satisfied: trio~=0.17 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from selenium) (0.25.0)

Requirement already satisfied: trio-websocket~=0.9 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from selenium) (0.11.1)

Requirement already satisfied: certifi>=2021.10.8 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from selenium) (2024.2.2)

Requirement already satisfied: typing_extensions>=4.9.0 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from selenium) (4.9.0)

Requirement already satisfied: attrs>=23.2.0 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from trio~=0.17->selenium) (23.2.0)

Requirement already satisfied: sortedcontainers in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from trio~=0.17->selenium) (2.4.0)

Requirement already satisfied: idna in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from trio~=0.17->selenium) (3.4)

Requirement already satisfied: outcome in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from trio~=0.17->selenium) (1.3.0.post0)

Requirement already satisfied: sniffio>=1.3.0 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from trio~=0.17->selenium) (1.3.0)

Requirement already satisfied: cffi>=1.14 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from trio~=0.17->selenium) (1.16.0)

Requirement already satisfied: wsproto>=0.14 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from trio-websocket~=0.9->selenium) (1.2.0)

Requirement already satisfied: pysocks!=1.5.7,<2.0,>=1.5.6 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from urllib3[socks]<3,>=1.26->selenium) (1.7.1)

Requirement already satisfied: pycparser in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from cffi>=1.14->trio~=0.17->selenium) (2.21)

Requirement already satisfied: h11<1,>=0.9.0 in c:\users\ery jay hahahaha\anaconda3\lib\site-packages (from wsproto>=0.14->trio-websocket~=0.9->selenium) (0.14.0)

Current Path D:/ERY FILES NEED FOR REFORMAT/BACKUP/School/2nd Year 2nd Sem/Computational Thinking With Python/hoa7.2\cat

total results: 100

Found: [<selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.43")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.45")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.47")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.49")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.51")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.52")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.53")>]

localhost:8888/nbconvert/html/PISALBON_Hands-on Activity 7.2 Webscraping using BeautifulSoup and Requests.ipynb?download=false

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localhost:8888/nbconvert/html/PISALBON_Hands-on Activity 7.2 Webscraping using BeautifulSoup and Requests.ipynb?download=false

```

85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.193")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.195")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.197")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.199")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.201")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.203")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.205")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.207")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.209")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.211")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.213")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.215")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.217")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.219")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.221")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.223")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.225")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.227")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.229")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.231")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.233")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.235")>, <selenium.webdriver.remote.webelement.WebElement (session="60330accebcfbccb03ebdd7aa45e85e0", element="f.41F4DBE44B2D99D6F6C14374BD11CD79.d.1C5F87730713515B19326196A3B3A2BB.e.237")>]
{'https://i.natgeo.com/n/548467d8-c5f1-4551-9f58-6817a8d2c45e/NationalGeographic_2572187_square.jpg'}
1
{'https://cdn.britannica.com/70/234870-050-D4D024BB/Orange-colored-cat-yawns-displaying-teeth.jpg', 'https://i.natgeo.com/n/548467d8-c5f1-4551-9f58-6817a8d2c45e/NationalGeographic_2572187_square.jpg'}
2
{'https://cdn.britannica.com/70/234870-050-D4D024BB/Orange-colored-cat-yawns-displaying-teeth.jpg', 'https://upload.wikimedia.org/wikipedia/commons/thumb/1/15/Cat_August_2010-4.jpg/1200px-Cat_August_2010-4.jpg', 'https://i.natgeo.com/n/548467d8-c5f1-4551-9f58-6817a8d2c45e/NationalGeographic_2572187_square.jpg'}

```

3

```
{'https://cdn.britannica.com/34/235834-050-C5843610/two-different-breeds-of-cats-side-by-side-outdoors-in-the-garden.jpg', 'https://cdn.britannica.com/70/234870-050-D4D024BB/Orange-colored-cat-yawns-displaying-teeth.jpg', 'https://upload.wikimedia.org/wikipedia/commons/thumb/1/15/Cat_August_2010-4.jpg/1200px-Cat_August_2010-4.jpg', 'https://i.natgeofe.com/n/548467d8-c5f1-4551-9f58-6817a8d2c45e/NationalGeographic_2572187_square.jpg'}
```

4

```
{'https://media.4-paws.org/5/b/4/b/5b4b5a91dd9443fa1785ee7fca66850e06dcc7f9/VIER%20PFOTEN_2019-12-13_209-2890x2000-1920x1329.jpg', 'https://i.natgeofe.com/n/548467d8-c5f1-4551-9f58-6817a8d2c45e/NationalGeographic_2572187_square.jpg', 'https://cdn.britannica.com/34/235834-050-C5843610/two-different-breeds-of-cats-side-by-side-outdoors-in-the-garden.jpg', 'https://upload.wikimedia.org/wikipedia/commons/thumb/1/15/Cat_August_2010-4.jpg/1200px-Cat_August_2010-4.jpg', 'https://cdn.britannica.com/70/234870-050-D4D024BB/Orange-colored-cat-yawns-displaying-teeth.jpg'}
```

5

```
totalLinks {'https://media.4-paws.org/5/b/4/b/5b4b5a91dd9443fa1785ee7fca66850e06dcc7f9/VIER%20PFOTEN_2019-12-13_209-2890x2000-1920x1329.jpg', 'https://i.natgeofe.com/n/548467d8-c5f1-4551-9f58-6817a8d2c45e/NationalGeographic_2572187_square.jpg', 'https://cdn.britannica.com/34/235834-050-C5843610/two-different-breeds-of-cats-side-by-side-outdoors-in-the-garden.jpg', 'https://upload.wikimedia.org/wikipedia/commons/thumb/1/15/Cat_August_2010-4.jpg/1200px-Cat_August_2010-4.jpg', 'https://cdn.britannica.com/70/234870-050-D4D024BB/Orange-colored-cat-yawns-displaying-teeth.jpg'}
```

```
SAVED - https://media.4-paws.org/5/b/4/b/5b4b5a91dd9443fa1785ee7fca66850e06dcc7f9/VIER%20PFOTEN_2019-12-13_209-2890x2000-1920x1329.jpg - AT: D:/ERY FILES NEED FOR REFORMAT/BACKUP/School/2nd Year 2nd Sem/Computational Thinking With Python/hoa7.2\cat\0.jpg
```

```
SAVED - https://i.natgeofe.com/n/548467d8-c5f1-4551-9f58-6817a8d2c45e/NationalGeographic_2572187_square.jpg - AT: D:/ERY FILES NEED FOR REFORMAT/BACKUP/School/2nd Year 2nd Sem/Computational Thinking With Python/hoa7.2\cat\
```

1.jpg

```
SAVED - https://cdn.britannica.com/34/235834-050-C5843610/two-different-breeds-of-cats-side-by-side-outdoors-in-the-garden.jpg - AT: D:/ERY FILES NEED FOR REFORMAT/BACKUP/School/2nd Year 2nd Sem/Computational Thinking With Python/hoa7.2\cat\
```

2.jpg

```
SAVED - https://upload.wikimedia.org/wikipedia/commons/thumb/1/15/Cat_August_2010-4.jpg/1200px-Cat_August_2010-4.jpg - AT: D:/ERY FILES NEED FOR REFORMAT/BACKUP/School/2nd Year 2nd Sem/Computational Thinking With Python/hoa7.2\cat\
```

3.jpg

```
SAVED - https://cdn.britannica.com/70/234870-050-D4D024BB/Orange-colored-cat-yawns-displaying-teeth.jpg - AT: D:/ERY FILES NEED FOR REFORMAT/BACKUP/School/2nd Year 2nd Sem/Computational Thinking With Python/hoa7.2\cat\
```

4.jpg

Web Scraping of Movies Information using BeautifulSoup

```
In [46]: from requests import get
url = 'https://www.imdb.com/search/title?release_date=2017&sort=num_votes,desc&page=1'
agent_dict = {'User-Agent': 'Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/123.0.0.0
```



```
response = get(url,headers=agent_dict)
print(response.text[:500])
```

```
<!DOCTYPE html><html lang="en-US" xmlns:og="http://opengraphprotocol.org/schema/" xmlns:fb="http://www.facebook.com/2008/fbml">
<head><meta charset="utf-8"/><meta name="viewport" content="width=device-width"/><script>if(typeof uet === 'function'){ uet('b
b', 'LoadTitle', {wb: 1}); }</script><script>window.addEventListener('load', (event) => {
    if (typeof window.csa !== 'undefined' && typeof window.csa === 'function') {
        var csalatenacyPlugin = window.csa('Content', {
```

```
In [47]: from bs4 import BeautifulSoup
html_soup = BeautifulSoup(response.text, 'html.parser')
headers = {'Accept-Language': 'en-US,en;q=0.8'}
type(html_soup)
```

Out[47]: bs4.BeautifulSoup

```
In [50]: movie_containers = html_soup.find('div', class_ = 'ipc-metadata-list-summary-item__c')
print(type(movie_containers))
print(len(movie_containers))
```

```
<class 'bs4.element.ResultSet'>
50
```

```
In [51]: first_movie = movie_containers[0]
first_movie
```

```

Out[51]: <div class="ipc-metadata-list-summary-item__c"><div class="ipc-metadata-list-summary-item__tc"><span aria-disabled="false" class="ipc-metadata-list-summary-item__t"></span><div class="sc-ab6fa25a-3 bVYfLY dli-parent"><div class="sc-ab6fa25a-2 g0sifL"><div class="sc-e5a25b0f-0 jQjDIb dli-poster-container"><div class="ipc-poster ipc-poster--base ipc-poster--dynamic-width ipc-sub-grid-item ipc-sub-grid-item--span-2" role="group"><div aria-label="add to watchlist" class="ipc-watchlist-ribbon ipc-focusable ipc-watchlist-ribbon--s ipc-watchlist-ribbon--base ipc-watchlist-ribbon--loading ipc-watchlist-ribbon--onImage ipc-poster__watchlist-ribbon" role="button" tabindex="0"><svg class="ipc-watchlist-ribbon_bg" height="34px" role="presentation" viewBox="0 0 24 34" width="24px" xmlns="http://www.w3.org/2000/svg"><polygon class="ipc-watchlist-ribbon_bg-ribbon" fill="#000000" points="24 0 0 0 0 32 12.2436611 26.2926049 24 31.7728343"></polygon><polygon class="ipc-watchlist-ribbon_bg-hover" points="24 0 0 0 0 32 12.2436611 26.2926049 24 31.7728343"></polygon><polygon class="ipc-watchlist-ribbon_bg-shadow" points="24 4 31.7728343 24 33.7728343 12.2436611 28.2926049 0 34 0 32 12.2436611 26.2926049"></polygon></svg><div class="ipc-watchlist-ribbon__icon" role="presentation"><svg class="ipc-loader ipc-loader--circle ipc-watchlist-ribbon_loader" data-testid="watchlist-ribbon-loader" height="48px" role="presentation" version="1.1" viewBox="0 0 48 48" width="48px" xmlns="http://www.w3.org/2000/svg"><g class="ipc-loader__container" fill="currentColor"><circle class="ipc-loader__circle ipc-loader__circle--one" cx="24" cy="9" r="4"></circle><circle class="ipc-loader__circle ipc-loader__circle--two" cx="35" cy="14" r="4"></circle><circle class="ipc-loader__circle ipc-loader__circle--three" cx="39" cy="24" r="4"></circle><circle class="ipc-loader__circle ipc-loader__circle--four" cx="35" cy="34" r="4"></circle><circle class="ipc-loader__circle ipc-loader__circle--five" cx="24" cy="39" r="4"></circle><circle class="ipc-loader__circle ipc-loader__circle--six" cx="13" cy="34" r="4"></circle><circle class="ipc-loader__circle ipc-loader__circle--seven" cx="9" cy="24" r="4"></circle><circle class="ipc-loader__circle ipc-loader__circle--eight" cx="13" cy="14" r="4"></circle></g></svg></div></div><div class="ipc-media ipc-media--poster-27x40 ipc-image-media-ratio--poster-27x40 ipc-media--base ipc-media--poster-m ipc-poster__poster-image ipc-media__img" style="width:100%"></div><a aria-label="View title page for Logan" class="ipc-lockup-overlay ipc-focusable" href="/title/tt3315342/?ref=sr_i_1"><div class="ipc-lockup-overlay__screen"></div></a></div></div><div class="sc-b0691f29-0 jbYPfh"><div class="ipc-title ipc-title--base ipc-title--title ipc-title-link-no-icon ipc-title--on-textPrimary sc-b0691f29-9 kl0wFB dli-title"><a class="ipc-title-link-wrapper" href="/title/tt3315342/?ref=sr_t_1" tabindex="0"><h3 class="ipc-title__text">1. Logan</h3></a></div><div class="sc-b0691f29-7 hrgukm dli-title-metadata"><span class="sc-b0691f29-8 ilsLEX dli-title-metadata-item">2017</span><span class="sc-b0691f29-8 ilsLEX dli-title-metadata-item">2h 17m</span><span class="sc-b0691f29-8 ilsLEX dli-title-metadata-item">R-16</span></div><span class="sc-b0691f29-1 grHDBY"><div class="sc-e2dbc1a3-0 ajrIH sc-b0691f29-2 bhhtyj dli-ratings-container" data-testid="ratingGroup--container"><span aria-label="IMDb rating: 8.1" class="ipc-rating-star ipc-rating-star--base ipc-rating-star--imdb ratingGroup--imdb-rating" data-testid="ratingGroup--imdb-rating"><svg class="ipc-icon ipc-icon--star-inline" fill="currentColor" height="24" role="presentation" viewBox="0 0 24 24" width="24" xmlns="http://www.w3.org/2000/svg"><path d="M12 20.115.82 3.682c1.066.675 2.37-.322 2.09-1.584l-1.543-6.926 5.146-4.667c.94-.85.435-2.465-.799-2.567l-6.773-.602l13.29.89a1.38 1.38 0 0 0-2.581 0l-2.65 6.53-6.774.602C.052 8.126-.453 9.74.486 10.59l5.147 4.666-1.542 6.926c-.28 1.262 1.023 2.26 2.09 1.585l12 20.099z"></path></svg>8.1<span class="ipc-rating-star--voteCount"> (<!-- -->827K<!-- --></span></span><button aria-label="Rate Logan" class="ipc-rate-button

```

```
sc-e2dbc1a3-1 jbo0Qc ratingGroup--user-rating ipc-rate-button--unrated ipc-rate-button--base" data-testid="rate-button"><span
class="ipc-rating-star ipc-rating-star--base ipc-rating-star--rate"><svg class="ipc-icon ipc-icon--star-border-inline" fill
="currentColor" height="24" role="presentation" viewBox="0 0 24 24" width="24" xmlns="http://www.w3.org/2000/svg"><path d="M2
2.724 8.2171-6.786-.587-2.65-6.22c-.477-1.133-2.103-1.133-2.58 01-2.65 6.234-6.772.573c-1.234.098-1.739 1.636-.8 2.44615.146
4.446-1.542 6.598c-.28 1.202 1.023 2.153 2.09 1.5115.818-3.495 5.819 3.509c1.065.643 2.37-.308 2.089-1.511-1.542-6.612 5.145-
4.446c.94-.81.45-2.348-.785-2.446zm-10.726 8.891-5.272 3.174 1.402-5.983-4.655-4.026 6.141-.531 2.384-5.634 2.398 5.648 6.14.
531-4.654 4.026 1.402 5.983-5.286-3.187z"></path></svg><span class="ipc-rating-star--rate">Rate</span></span></button></div><
span class="sc-b0691f29-11 TmkKM"><span class="sc-b0901df4-0 bcQdDJ metacritic-score-box" style="background-color:#54A72A">77
</span><span class="metacritic-score-label">Metascore</span></span></span></div><div class="sc-ab6fa25a-4 ggHbBR dli-post-ele
ment"><button aria-disabled="false" aria-label="See more information about Logan" class="ipc-icon-button dli-info-icon ipc-ic
on-button--base ipc-icon-button--onAccent2" role="button" tabindex="0" title="See more information about Logan"><svg class="i
pc-icon ipc-icon--info" fill="currentColor" height="24" role="presentation" viewBox="0 0 24 24" width="24" xmlns="http://www.
w3.org/2000/svg"><path d="M0 0h24v24H0V0z" fill="none"></path><path d="M11 7h2v2h-2zm0 4h2v6h-2zm1-9C6.48 2 2 6.48 2 12s4.48
10 10 10 10-4.48 10-10S17.52 2 12 2zm0 18c-4.41 0-8-3.59-8s3.59-8 8-8 8 3.59 8 8-3.59 8-8 8z"></path></svg></button></div>
</div><div class="sc-ab6fa25a-1 bBwFsP"><div class="ipc-html-content ipc-html-content--base sc-ab6fa25a-0 bhexuD dli-plot-con
tainer" role="presentation"><div class="ipc-html-content-inner-div">In a future where mutants are nearly extinct, an elderly
and weary Logan leads a quiet life. But when Laura, a mutant child pursued by scientists, comes to him for help, he must get
her to safety.</div></div></div></div></div></div>
```

getting the title

```
In [68]: first_movie_title_class = first_movie.find('div', class_ = 'ipc-title ipc-title--base ipc-title--title ipc-title-link-no-icon')
```

```
In [65]: first_movie_title.a.text[3:]
```

```
Out[65]: 'Logan'
```

getting the movie rating

```
In [69]: first_movie_rating_class = first_movie.find('div', class_ = 'sc-e2dbc1a3-0 ajrIH sc-b0691f29-2 bhhtyj dli-ratings-container')
```

```
In [72]: first_movie_rating_class.span.text[0:3]
```

```
Out[72]: '8.1'
```

getting the metascore

```
In [86]: first_metascore_class = first_movie.find('span', class_ = 'sc-b0901df4-0 bcQdDJ metacritic-score-box')
```

```
In [87]: first_metascore_class
```

```
Out[87]: <span class="sc-b0901df4-0 bcQdDJ metacritic-score-box" style="background-color:#54A72A">77</span>
```

```
In [88]: first_metascore_class.text
```

```
Out[88]: '77'
```

getting the number of votes

```
In [94]: first_votes = first_movie.find('span', class_ = 'ipc-rating-star ipc-rating-star--base ipc-rating-star--imdb ratingGroup--imdb')
first_votes
```

```
Out[94]: <span aria-label="IMDb rating: 8.1" class="ipc-rating-star ipc-rating-star--base ipc-rating-star--imdb ratingGroup--imdb-rating" data-testid="ratingGroup--imdb-rating"><svg class="ipc-icon ipc-icon--star-inline" fill="currentColor" height="24" role="presentation" viewBox="0 0 24 24" width="24" xmlns="http://www.w3.org/2000/svg"><path d="M12 20.115.82 3.682c1.066.675 2.37-.322 2.09-1.584l-1.543-6.926 5.146-4.667c.94-.85.435-2.465-.799-2.567l-6.773-.602L13.29.89a1.38 1.38 0 0 0-2.581 0l-2.65 6.53-6.774.602C.052 8.126-.453 9.74.486 10.59l5.147 4.666-1.542 6.926c-.28 1.262 1.023 2.26 2.09 1.585L12 20.099z"></path></svg> 8.1<span class="ipc-rating-star--voteCount"> (<!-- -->827K<!-- --></span></span>
```

```
In [95]: first_votes = first_votes.text[5:-1]
print('number of votes in logan:', first_votes)
```

number of votes in logan: 827K

The Script

```
In [99]: # Lists to store the scraped data in
names = []
years = []
imdb_ratings = []
metascores = []
votes = []
# Extract data from individual movie container
for container in movie_containers:
```

```

# If the movie has Metascore, then extract:
    if container.find('span', class_ = 'sc-b0901df4-0 bcQdDJ metacritic-score-box') is not None:
# The name
    name = container.find('h3', class_='ipc-title__text').text[3:]
    names.append(name)
# The year
    year = container.find('span', class_ = 'sc-b0691f29-8 ilsLEX dli-title-metadata-item').text
    years.append(year)
# The IMDB rating
    imdb = container.find('span', class_ = 'ipc-rating-star ipc-rating-star--base ipc-rating-star--imdb ratingGroup--imdb-rat
    imdb_ratings.append(imdb)
# The Metascore
    m_score = container.find('span', class_ = 'sc-b0901df4-0 bcQdDJ metacritic-score-box').text
    metascores.append(int(m_score))
# The number of votes
    vote = container.find('span', class_ = 'ipc-rating-star--voteCount').text[2:-1]
    votes.append(vote)

```

In [101...

```

import pandas as pd
test_df = pd.DataFrame({'movie': names,
    'year': years,
    'imdb': imdb_ratings,
    'metascore': metascores,
    'votes': votes
})
print(test_df.info())
test_df.index += 1 #making sure that the index starts in 1
test_df

```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 41 entries, 0 to 40
Data columns (total 5 columns):
 #   Column      Non-Null Count  Dtype
---  -
 0   movie       41 non-null    object
 1   year        41 non-null    object
 2   imdb        41 non-null    object
 3   metascore   41 non-null    int64
 4   votes       41 non-null    object
dtypes: int64(1), object(4)
memory usage: 1.7+ KB
None
```

Out[101...

	movie	year	imdb	metascore	votes
1	Logan	2017	8.1	77	827K
2	Thor: Ragnarok	2017	7.9	74	813K
3	Guardians of the Galaxy Vol. 2	2017	7.6	67	756K
4	Dunkirk	2017	7.8	94	736K
5	Spider-Man: Homecoming	2017	7.4	73	716K
6	Wonder Woman	2017	7.3	76	698K
7	Get Out	2017	7.8	85	691K
8	Star Wars: Episode VIII - The Last Jedi	2017	6.9	84	670K
9	Blade Runner 2049	2017	8.0	81	658K
10	Baby Driver	2017	7.5	86	605K
11	It	2017	7.3	69	603K
12	Coco	2017	8.4	81	586K
13	Three Billboards Outside Ebbing, Missouri	2017	8.1	88	553K
14	John Wick: Chapter 2	2017	7.4	75	509K
15	Justice League	2017	6.1	45	477K
16	The Shape of Water	2017	7.3	87	446K
17	Jumanji: Welcome to the Jungle	2017	6.9	58	436K
18	Kingsman: The Golden Circle	2017	6.7	44	361K
19	Kong: Skull Island	2017	6.7	62	345K
20	Pirates of the Caribbean: Salazar's Revenge	2017	6.5	39	344K
21	Beauty and the Beast	2017	7.1	65	333K
22	Lady Bird	2017	7.4	93	326K

	movie	year	imdb	metascore	votes
23	Call Me by Your Name	2017	7.8	94	313K
24	The Greatest Showman	2017	7.5	48	310K
25	Alien: Covenant	2017	6.4	65	302K
26	Murder on the Orient Express	2017	6.5	52	295K
27	War for the Planet of the Apes	2017	7.4	82	280K
28	Wind River	2017	7.7	73	279K
29	Fast & Furious 8	2017	6.6	56	253K
30	Life	2017	6.6	54	252K
31	Mother!	2017	6.6	76	249K
32	The Hitman's Bodyguard	2017	6.9	47	246K
33	I, Tonya	2017	7.5	77	242K
34	King Arthur: Legend of the Sword	2017	6.7	41	232K
35	Ghost in the Shell	2017	6.3	52	227K
36	Darkest Hour	2017	7.4	75	220K
37	American Made	2017	7.1	65	207K
38	Atomic Blonde	2017	6.7	63	206K
39	The Mummy	2017	5.4	34	206K
40	Baywatch	2017	5.5	37	201K
41	Bright	2017	6.3	29	201K

The script for multiple pages


```

In [8]: from time import time
        from time import sleep
        from requests import get
        from random import randint
        from IPython.core.display import clear_output
        from bs4 import BeautifulSoup

        from IPython.core.display import clear_output
        pages = ['1','2','3','4','5']
        years_url = ['2017', '2018', '2019', '2020']

        # Redeclaring the lists to store data in
        names = []
        years = []
        imdb_ratings = []
        metascores = []
        votes = []

        # Preparing the monitoring of the loop
        start_time = time()
        requests = 0

        # For every year in the interval 2000-2017
        for year_url in years_url:

            # For every page in the interval 1-4
            for page in pages:

                # Make a get request
                url = f'https://www.imdb.com/search/title/?release_date={year_url}-01-01,{year_url}-12-31&sort=num_votes,desc'
                agent = {"User-Agent": "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/123.0.0
                response = get(url, headers = agent)
                print(response.text[:500])
                #response = get('https://www.imdb.com/search/title?release_date=' + year_url +
                #'&sort=num_votes,desc&page=' + page, headers = headers)

                # Pause the loop
                sleep(5)

                # Monitor the requests

```

```

requests += 1
elapsed_time = time() - start_time
print('Request: {}; Frequency: {} requests/s'.format(requests, requests/elapsed_time))
clear_output(wait = True)

# Throw a warning for non-200 status codes
if response.status_code != 200:
    print('Request: {}; Status code: {}'.format(requests, response.status_code))

# Break the loop if the number of requests is greater than expected
if requests > 72:
    print('Number of requests was greater than expected.')
    break

# Parse the content of the request with BeautifulSoup
page_html = BeautifulSoup(response.text, 'html.parser')

# Select all the 50 movie containers from a single page
mv_containers = page_html.find_all('div', class_ = 'sc-ab6fa25a-3 bVYfLY dli-parent')

# For every movie of these 50
for container in mv_containers:
    # If the movie has a Metascore, then:
    if container.find('span', class_ = 'sc-b0901df4-0 bcQdDJ metacritic-score-box') is not None:
        # Scrape the name
        name = container.find('h3', class_='ipc-title__text').text[3:]
        names.append(name)

        # Scrape the year
        year = container.find('span', class_ = 'sc-b0691f29-8 ilsLEX dli-title-metadata-item').text
        years.append(year)

        # Scrape the IMDB rating
        imdb = container.find('span', class_ = 'ipc-rating-star ipc-rating-star--base ipc-rating-star--imdb ratingGroup')
        imdb_ratings.append(imdb)

        # Scrape the Metascore
        m_score = container.find('span', class_ = 'sc-b0901df4-0 bcQdDJ metacritic-score-box').text
        metascores.append(m_score)

        # Scrape the number of votes

```

```

vote = container.find('span', class_ = 'ipc-rating-star--voteCount').text[2:-1]
votes.append(vote)

```

```

<!DOCTYPE html><html lang="en-US" xmlns:og="http://opengraphprotocol.org/schema/" xmlns:fb="http://www.facebook.com/2008/fbml">
<head><meta charset="utf-8"/><meta name="viewport" content="width=device-width"/><script>if(typeof uet === 'function'){ uet('b
b', 'LoadTitle', {wb: 1}); }</script><script>window.addEventListener('load', (event) => {
    if (typeof window.csa !== 'undefined' && typeof window.csa === 'function') {
        var csalatenacyPlugin = window.csa('Content', {

```

Request:20; Frequency: 0.11417431548285321 requests/s

```

In [28]: import pandas as pd
movie_ratings = pd.DataFrame({'movie': names,
'year': years,
'imdb': imdb_ratings,
'metascore': metascores,
'votes': votes
})
movie_ratings.index += 1
print(movie_ratings.info())
movie_ratings.head(10)

```

```

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 785 entries, 1 to 785
Data columns (total 5 columns):
#   Column      Non-Null Count  Dtype
---  -
0   movie       785 non-null    object
1   year        785 non-null    object
2   imdb        785 non-null    object
3   metascore   785 non-null    object
4   votes       785 non-null    object
dtypes: object(5)
memory usage: 30.8+ KB
None

```

Out[28]:

	movie	year	imdb	metascore	votes
1	Logan	2017	8.1	77	827K
2	Thor: Ragnarok	2017	7.9	74	813K
3	Guardians of the Galaxy Vol. 2	2017	7.6	67	756K
4	Dunkirk	2017	7.8	94	736K
5	Spider-Man: Homecoming	2017	7.4	73	716K
6	Wonder Woman	2017	7.3	76	698K
7	Get Out	2017	7.8	85	691K
8	Star Wars: Episode VIII - The Last Jedi	2017	6.9	84	670K
9	Blade Runner 2049	2017	8.0	81	658K
10	Baby Driver	2017	7.5	86	605K

In [29]: `movie_ratings.tail(10)`

Out[29]:

	movie	year	imdb	metascore	votes
776	The Hunt	2020	6.5	50	128K
777	Greyhound	2020	7.0	64	114K
778	Hamilton	2020	8.3	88	112K
779	Eurovision Song Contest: The Story of Fire Saga	2020	6.5	50	102K
780	I'm Thinking of Ending Things	2020	6.6	78	99K
781	Project Power	2020	6.0	51	97K
782	Spenser Confidential	2020	6.2	49	97K
783	Underwater	2020	5.9	48	97K
784	Minari	2020	7.4	89	96K
785	News of the World	2020	6.8	73	95K

In [30]: `movie_ratings.to_csv('movie_lists.csv')`

Data Preparation

In [31]: `movie_ratings = pd.read_csv('movie_lists.csv')
movie_ratings.index += 1`In [32]: `movie_ratings['year'].unique()`Out[32]: `array([2017, 2018, 2019, 2020], dtype=int64)`In [33]: `movie_ratings.dtypes`

```
Out[33]: Unnamed: 0      int64  
         movie         object  
         year         int64  
         imdb         float64  
         metascore    int64  
         votes        object  
         dtype: object
```

```
In [34]: movie_ratings['year'] = movie_ratings['year'].astype(int)
```

```
In [35]: movie_ratings['year'].unique()
```

```
Out[35]: array([2017, 2018, 2019, 2020])
```

```
In [36]: movie_ratings.dtypes
```

```
Out[36]: Unnamed: 0      int64  
         movie         object  
         year         int32  
         imdb         float64  
         metascore    int64  
         votes        object  
         dtype: object
```

```
In [37]: movie_ratings.head(10)
```

Out[37]:

Unnamed: 0		movie	year	imdb	metascore	votes
1	1	Logan	2017	8.1	77	827K
2	2	Thor: Ragnarok	2017	7.9	74	813K
3	3	Guardians of the Galaxy Vol. 2	2017	7.6	67	756K
4	4	Dunkirk	2017	7.8	94	736K
5	5	Spider-Man: Homecoming	2017	7.4	73	716K
6	6	Wonder Woman	2017	7.3	76	698K
7	7	Get Out	2017	7.8	85	691K
8	8	Star Wars: Episode VIII - The Last Jedi	2017	6.9	84	670K
9	9	Blade Runner 2049	2017	8.0	81	658K
10	10	Baby Driver	2017	7.5	86	605K

In [38]: `movie_ratings.tail(10)`

Out[38]:

Unnamed: 0		movie	year	imdb	metascore	votes
776	776	The Hunt	2020	6.5	50	128K
777	777	Greyhound	2020	7.0	64	114K
778	778	Hamilton	2020	8.3	88	112K
779	779	Eurovision Song Contest: The Story of Fire Saga	2020	6.5	50	102K
780	780	I'm Thinking of Ending Things	2020	6.6	78	99K
781	781	Project Power	2020	6.0	51	97K
782	782	Spenser Confidential	2020	6.2	49	97K
783	783	Underwater	2020	5.9	48	97K
784	784	Minari	2020	7.4	89	96K
785	785	News of the World	2020	6.8	73	95K

In [39]: movie_ratings

Out[39]:

Unnamed: 0		movie	year	imdb	metascore	votes
1	1	Logan	2017	8.1	77	827K
2	2	Thor: Ragnarok	2017	7.9	74	813K
3	3	Guardians of the Galaxy Vol. 2	2017	7.6	67	756K
4	4	Dunkirk	2017	7.8	94	736K
5	5	Spider-Man: Homecoming	2017	7.4	73	716K
...
781	781	Project Power	2020	6.0	51	97K
782	782	Spenser Confidential	2020	6.2	49	97K
783	783	Underwater	2020	5.9	48	97K
784	784	Minari	2020	7.4	89	96K
785	785	News of the World	2020	6.8	73	95K

785 rows × 6 columns