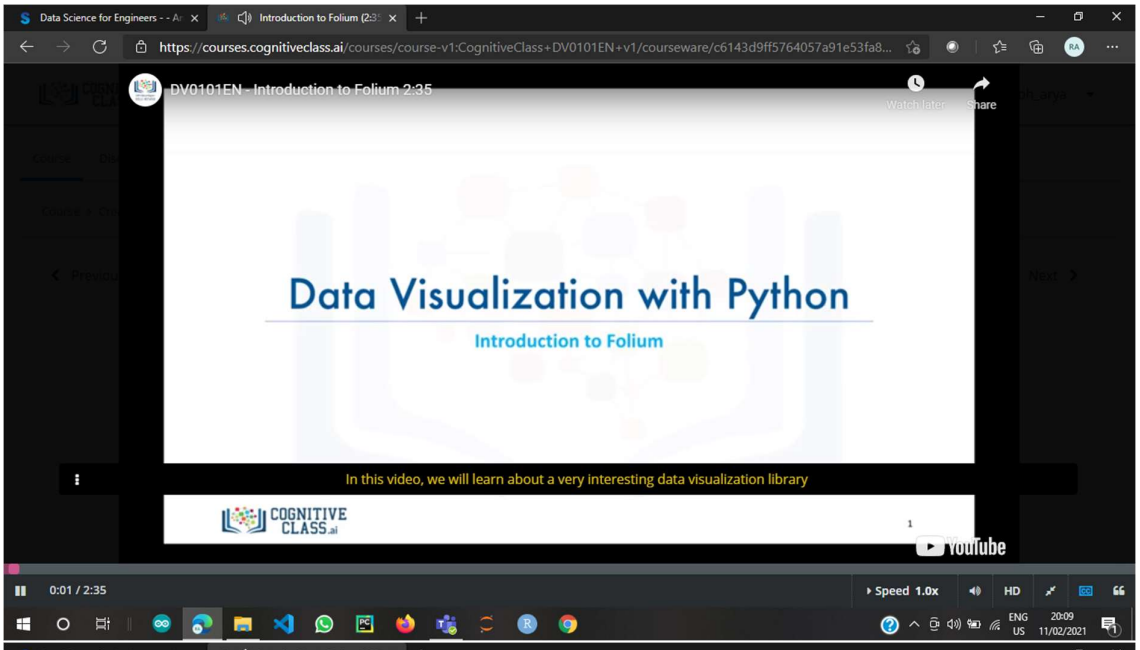
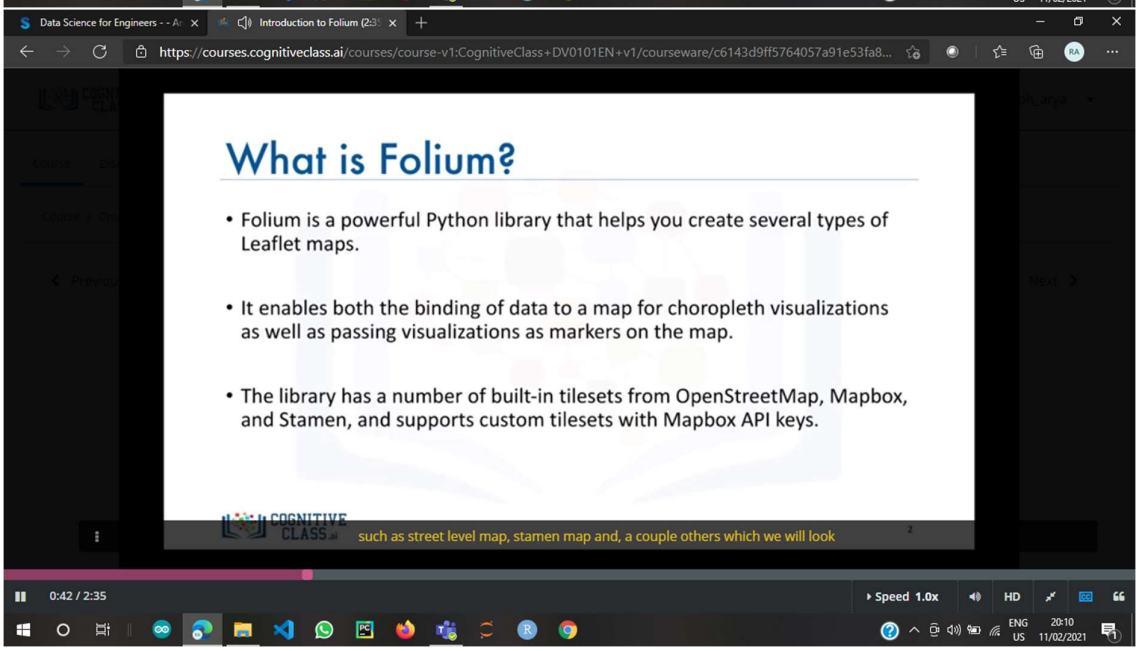
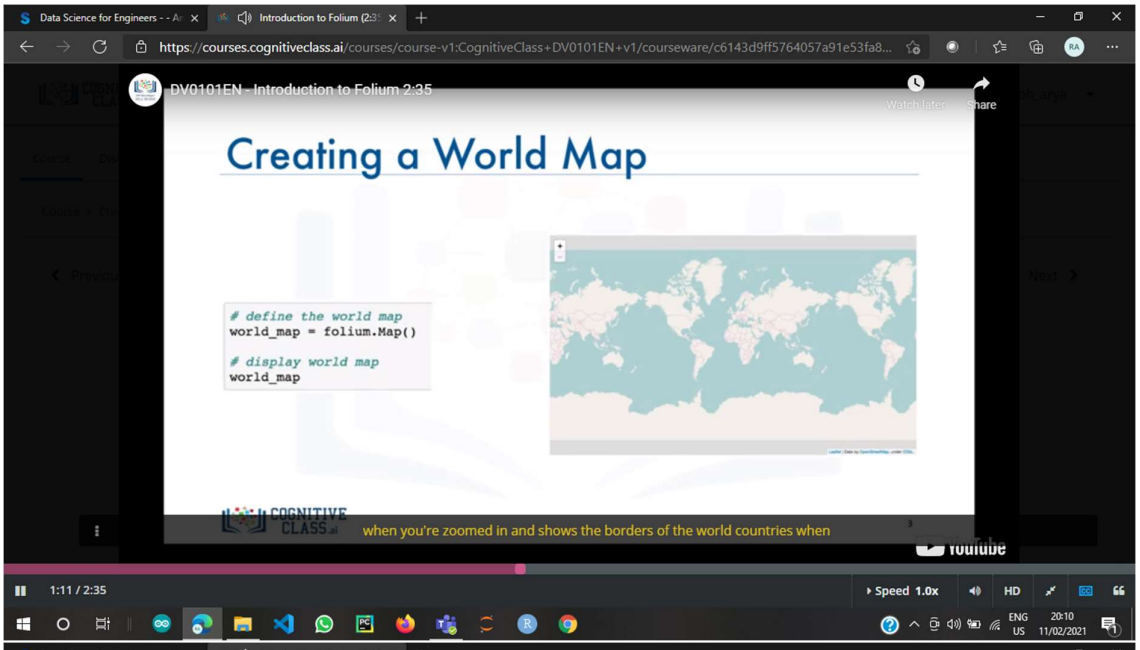
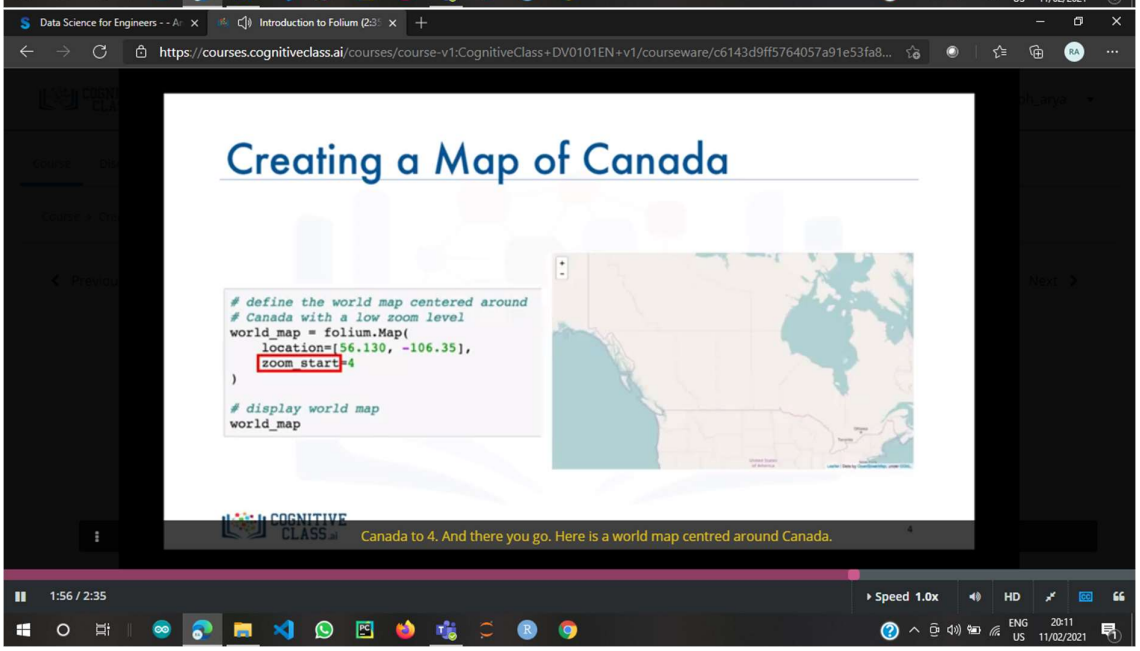
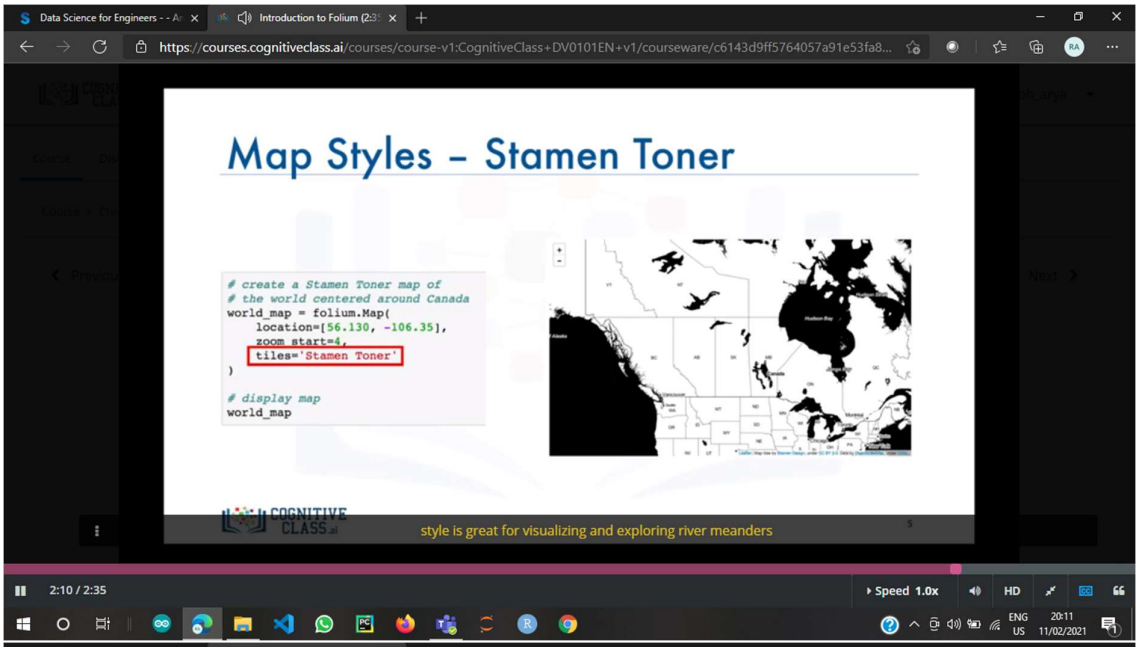
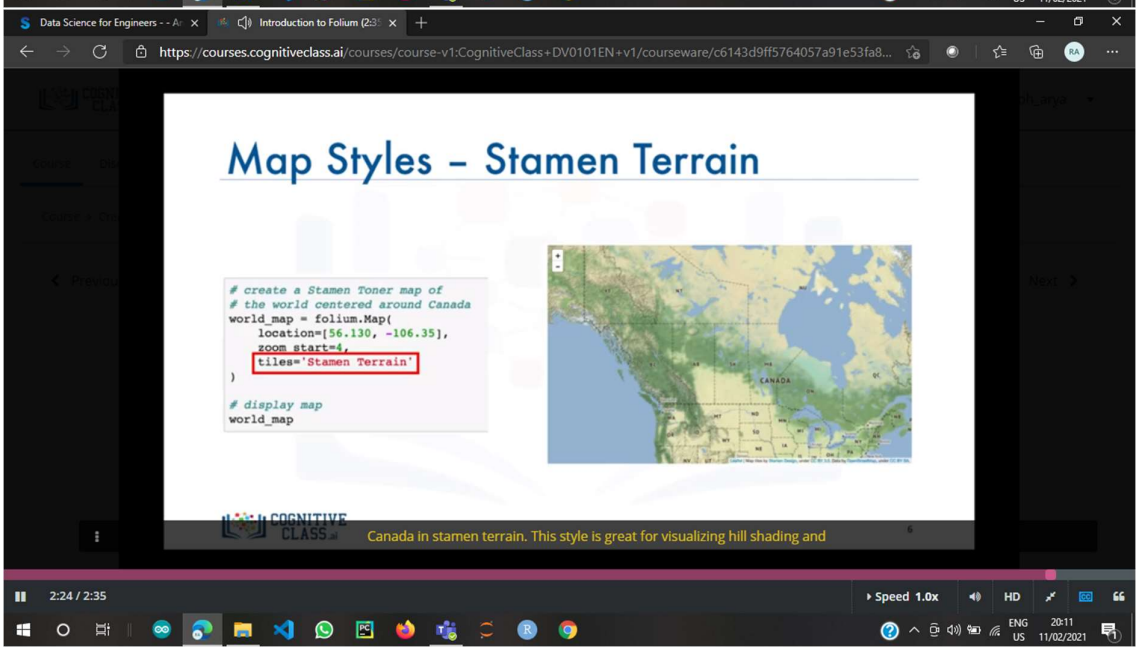

Data Science for Engineers - - Ar
Introduction to Folium (2:3
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
DV0101EN - Introduction to Folium 2:35
Watch later
Share
Data Visualization with Python
Introduction to Folium
In this video, we will learn about a very interesting data visualization library
COGNITIVE CLASS.ai
1
YouTube
0:01 / 2:35
Speed 1.0x
HD
ENG US
20:09
11/02/2021

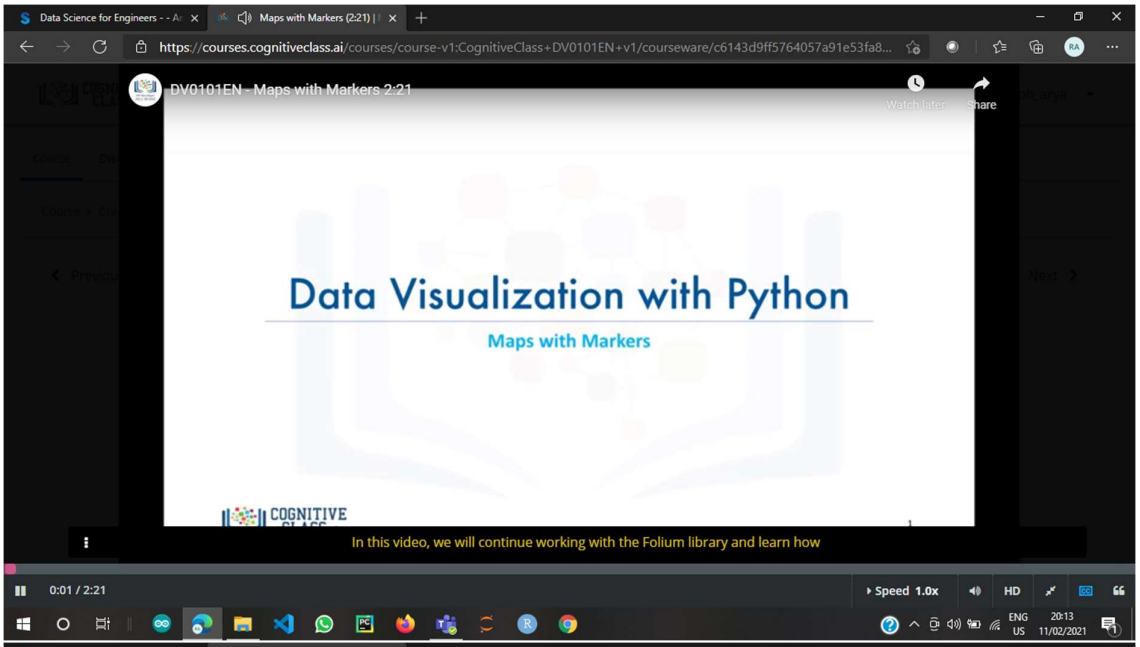

Data Science for Engineers - - Ar
Introduction to Folium (2:3
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
What is Folium?
• Folium is a powerful Python library that helps you create several types of Leaflet maps.
• It enables both the binding of data to a map for choropleth visualizations as well as passing visualizations as markers on the map.
• The library has a number of built-in tilesets from OpenStreetMap, Mapbox, and Stamen, and supports custom tilesets with Mapbox API keys.
COGNITIVE CLASS.ai
such as street level map, stamen map and, a couple others which we will look
2
0:42 / 2:35
Speed 1.0x
HD
ENG US
20:10
11/02/2021


Data Science for Engineers - - Ar
Introduction to Folium (2:3
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
DV0101EN - Introduction to Folium 2:35
Watch later
Share
Creating a World Map
# define the world map
world_map = folium.Map()
# display world map
world_map
when you're zoomed in and shows the borders of the world countries when
1:11 / 2:35
Speed 1.0x
HD
ENG
US
20:10
11/02/2021


Data Science for Engineers - - Ar
Introduction to Folium (2:3
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
Creating a Map of Canada
# define the world map centered around
# Canada with a low zoom level
world_map = folium.Map(
location=[56.130, -106.35],
zoom_start=4
)
display world map
world_map
Canada to 4. And there you go. Here is a world map centred around Canada.
1:56 / 2:35
Speed 1.0x
HD
ENG
US
20:11
11/02/2021


Data Science for Engineers - - Ar
Introduction to Folium (2:3
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
Map Styles – Stamen Toner
# create a Stamen Toner map of
# the world centered around Canada
world_map = folium.Map(
location=[56.130, -106.35],
zoom_start=4,
tiles='Stamen Toner'
)
display map
world_map
COGNITIVE CLASS.ai
style is great for visualizing and exploring river meanders
2:10 / 2:35
Speed 1.0x
HD
ENG US
20:11 11/02/2021


Data Science for Engineers - - Ar
Introduction to Folium (2:3
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
Map Styles – Stamen Terrain
# create a Stamen Toner map of
# the world centered around Canada
world_map = folium.Map(
location=[56.130, -106.35],
zoom_start=4,
tiles='Stamen Terrain'
)
display map
world_map
CANADA
COGNITIVE CLASS.ai
Canada in stamen terrain. This style is great for visualizing hill shading and
2:24 / 2:35
Speed 1.0x
HD
ENG US
20:11 11/02/2021


Data Science for Engineers - -
Maps with Markers (2:21)
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
DV0101EN - Maps with Markers 2:21
Watch later
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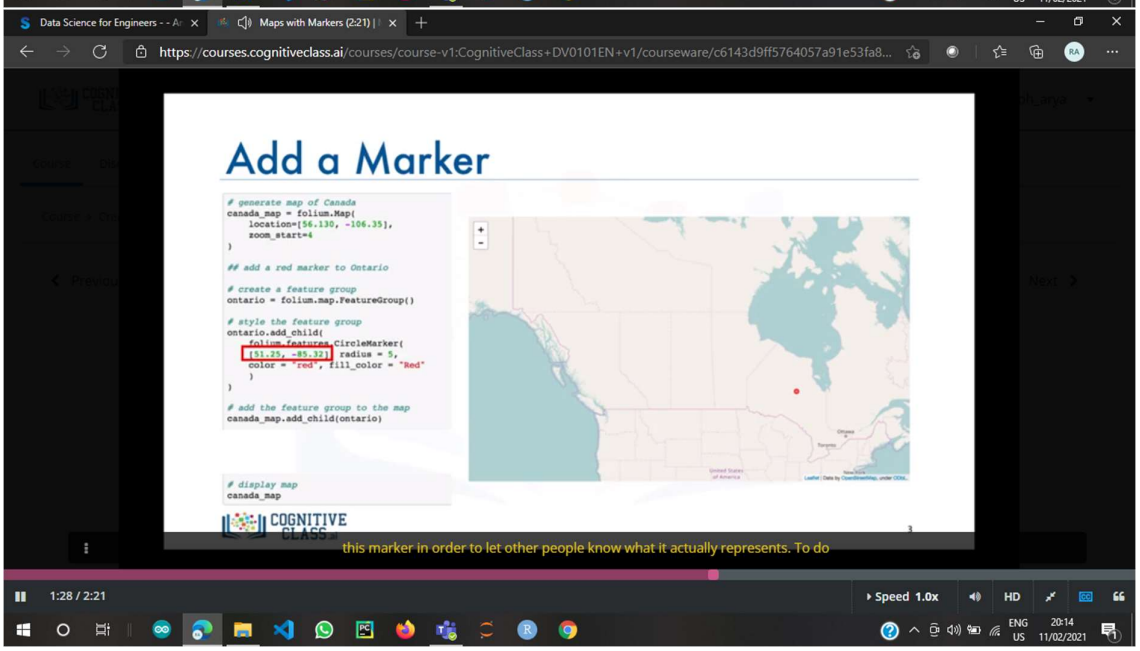
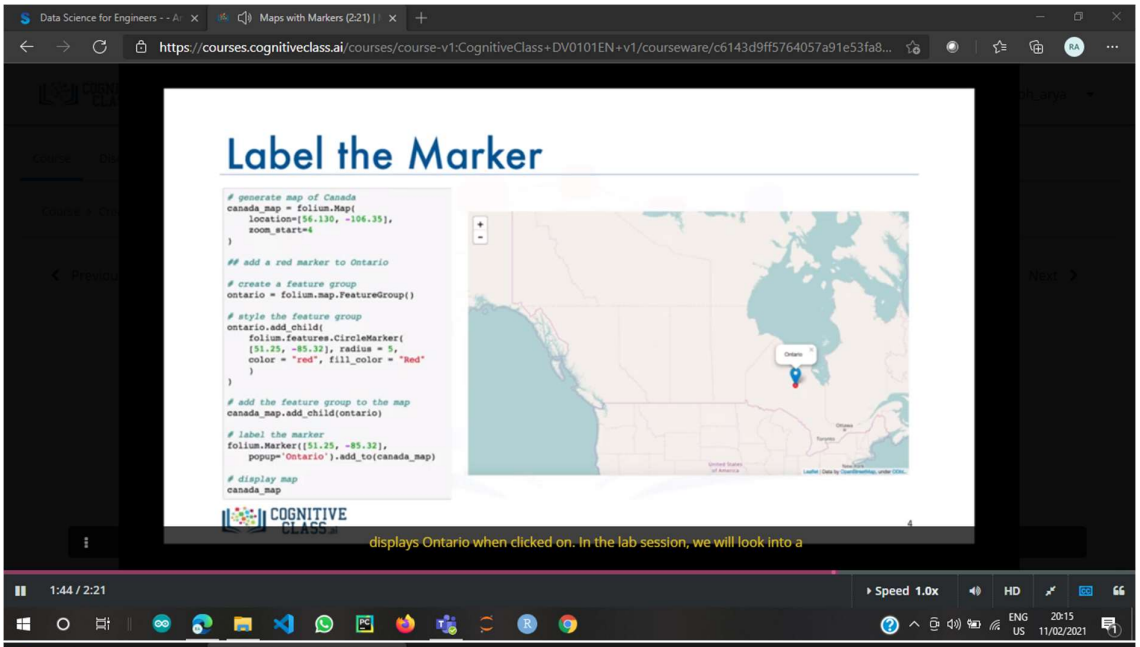
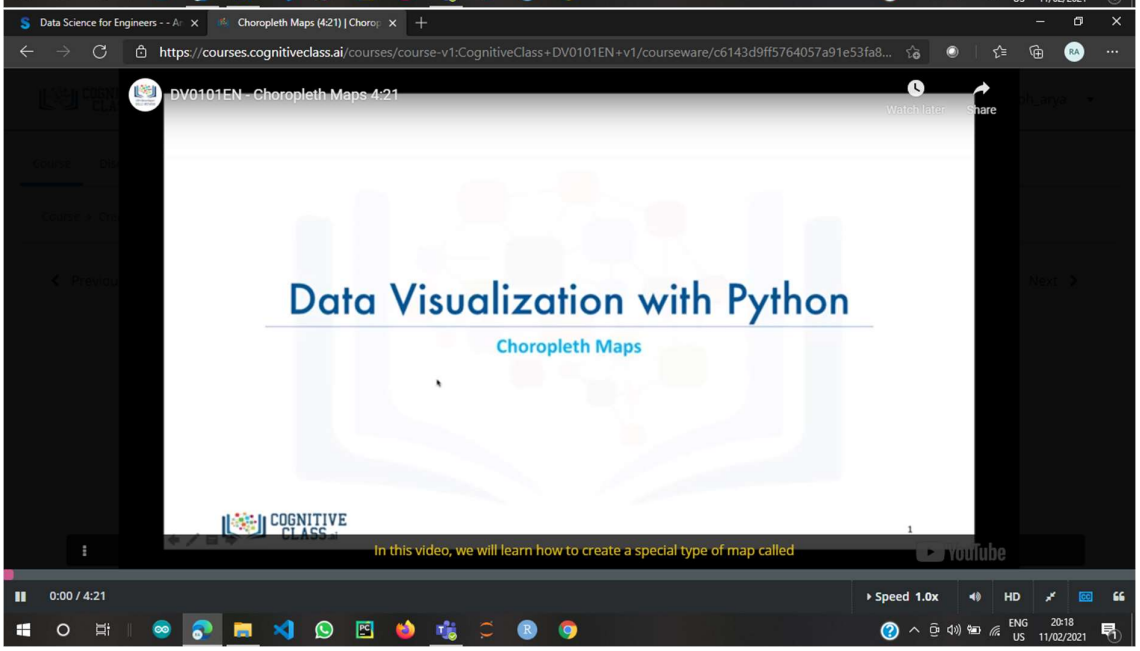
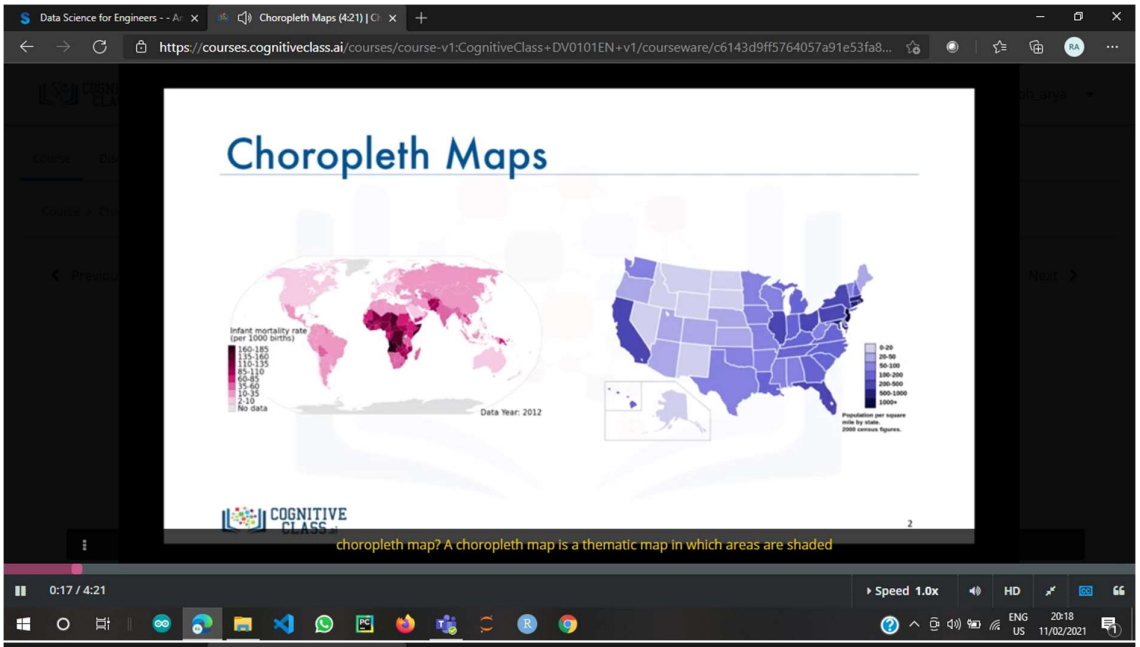
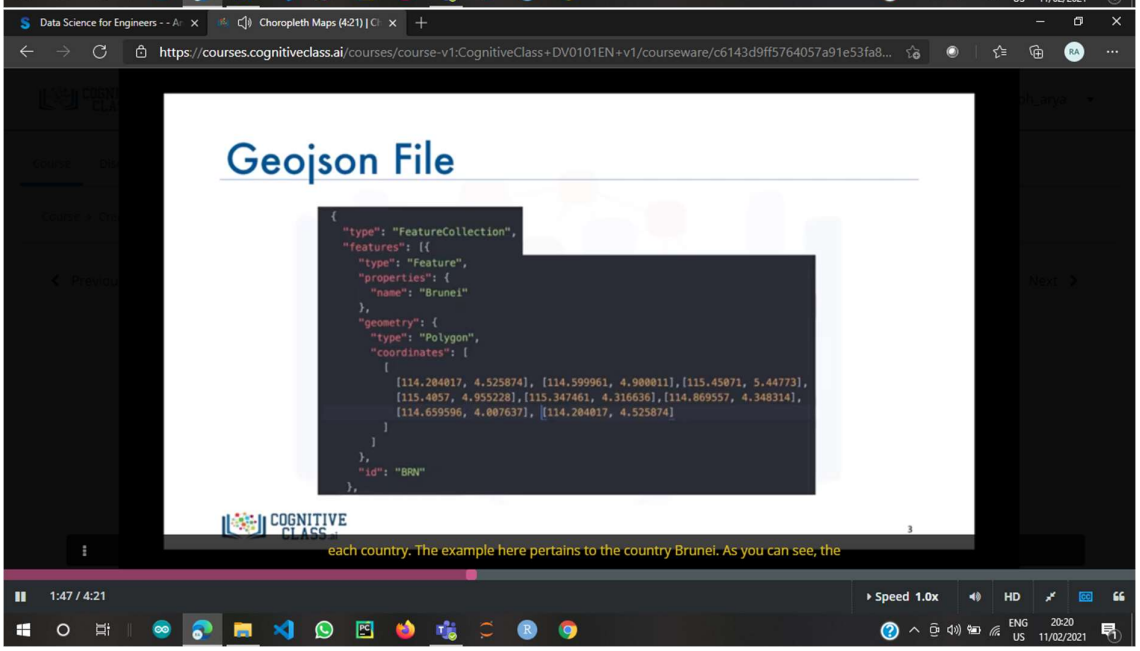
Data Visualization with Python
Maps with Markers
COGNITIVE CLASS
In this video, we will continue working with the Folium library and learn how
0:01 / 2:21
Speed 1.0x
HD
ENG US
20:13
11/02/2021


Data Science for Engineers - -
Maps with Markers (2:21)
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
Add a Marker
# generate map of Canada
canada_map = folium.Map(
location=[56.130, -106.35],
zoom_start=4
)
add a red marker to Ontario
# create a feature group
ontario = folium.map.FeatureGroup()
# style the feature group
ontario.add_child(
folium.features.CircleMarker(
[51.25, -85.32] radius = 5,
color = 'red', fill_color = "Red"
)
)
# add the feature group to the map
canada_map.add_child(ontario)
# display map
canada_map
COGNITIVE CLASS
this marker in order to let other people know what it actually represents. To do
1:28 / 2:21
Speed 1.0x
HD
ENG US
20:14
11/02/2021


Data Science for Engineers - - Ar
Maps with Markers (2:21) |
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
Label the Marker
# generate map of Canada
canada_map = folium.Map(
location=[56.130, -106.35],
zoom_start=4
)
add a red marker to Ontario
# create a feature group
ontario = folium.map.FeatureGroup()
# style the feature group
ontario.add_child(
folium.features.CircleMarker(
[51.25, -85.32], radius = 5,
color = "red", fill_color = "Red"
)
)
# add the feature group to the map
canada_map.add_child(ontario)
# label the marker
folium.Marker([51.25, -85.32],
popup='Ontario').add_to(canada_map)
# display map
canada_map
Ontario
COGNITIVE CLASS
displays Ontario when clicked on. In the lab session, we will look into a
1:44 / 2:21
Speed 1.0x
HD
ENG US
20:15
11/02/2021


Data Science for Engineers - - Ar
Choropleth Maps (4:21) | Choro
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
DV0101EN - Choropleth Maps 4:21
Watch later
Share
Data Visualization with Python
Choropleth Maps
COGNITIVE CLASS
In this video, we will learn how to create a special type of map called
YouTube
0:00 / 4:21
Speed 1.0x
HD
ENG US
20:18
11/02/2021


Data Science for Engineers - -
Choropleth Maps (4:21) |
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
Choropleth Maps
Infant mortality rate (per 1000 births)
160-185
135-160
110-135
85-110
60-85
35-60
10-35
2-10
No data
Data Year: 2012
0-20
20-50
50-100
100-200
200-500
500-1000
1000+
Population per square mile by state. 2000 census figures.
COGNITIVE CLASS
2
choropleth map? A choropleth map is a thematic map in which areas are shaded
0:17 / 4:21
Speed 1.0x
HD
ENG US
20:18
11/02/2021


Data Science for Engineers - -
Choropleth Maps (4:21) |
https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...
Geojson File
{
"type": "FeatureCollection",
"features": [{
"type": "Feature",
"properties": {
"name": "Brunei"
},
"geometry": {
"type": "Polygon",
"coordinates": [
[
[114.204017, 4.525874], [114.599961, 4.900011],[115.45071, 5.44773],
[115.4057, 4.955228],[115.347461, 4.316636],[114.869557, 4.348314],
[114.659596, 4.007637], [114.204017, 4.525874]
]
]
},
"id": "BRN"
},
COGNITIVE CLASS
3
each country. The example here pertains to the country Brunei. As you can see, the
1:47 / 4:21
Speed 1.0x
HD
ENG US
20:20
11/02/2021

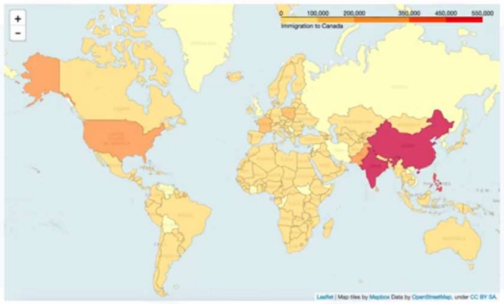
Data Science for Engineers - - A | Choropleth Maps (4:21) | Cl

https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...

DV0101EN - Choropleth Maps 4:21

Watch later Share

Creating the Map



COGNITIVE CLASS.ai

4

Canada. Before we go over the code to do that, let's do a

YouTube

2:11 / 4:21 Speed 1.0x HD

ENG US 20:21 11/02/2021

Data Science for Engineers - - A | Choropleth Maps (4:21) | Cl

https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...

Dataset - Recap

	Type	Coverage	OdName	AREA	AreaName	REG	RegName	DEV	DevName	1980	...	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
0	Immigrants	Foreigners	Afghanistan	935	Asia	5501	Southern Asia	902	Developing regions	16	...	2978	3436	3009	2652	2111	1746	1758	2203	2635	2004
1	Immigrants	Foreigners	Albania	908	Europe	925	Southern Europe	901	Developed regions	1	...	1450	1223	856	702	560	716	561	539	620	603
2	Immigrants	Foreigners	Algeria	903	Africa	912	Northern Africa	902	Developing regions	80	...	3616	3626	4807	3623	4005	5393	4752	4325	3774	4331
3	Immigrants	Foreigners	American Samoa	909	Oceania	957	Polynesia	902	Developing regions	0	...	0	0	1	0	0	0	0	0	0	0
4	Immigrants	Foreigners	Andorra	908	Europe	925	Southern Europe	901	Developed regions	0	...	0	0	1	1	0	0	0	0	1	1

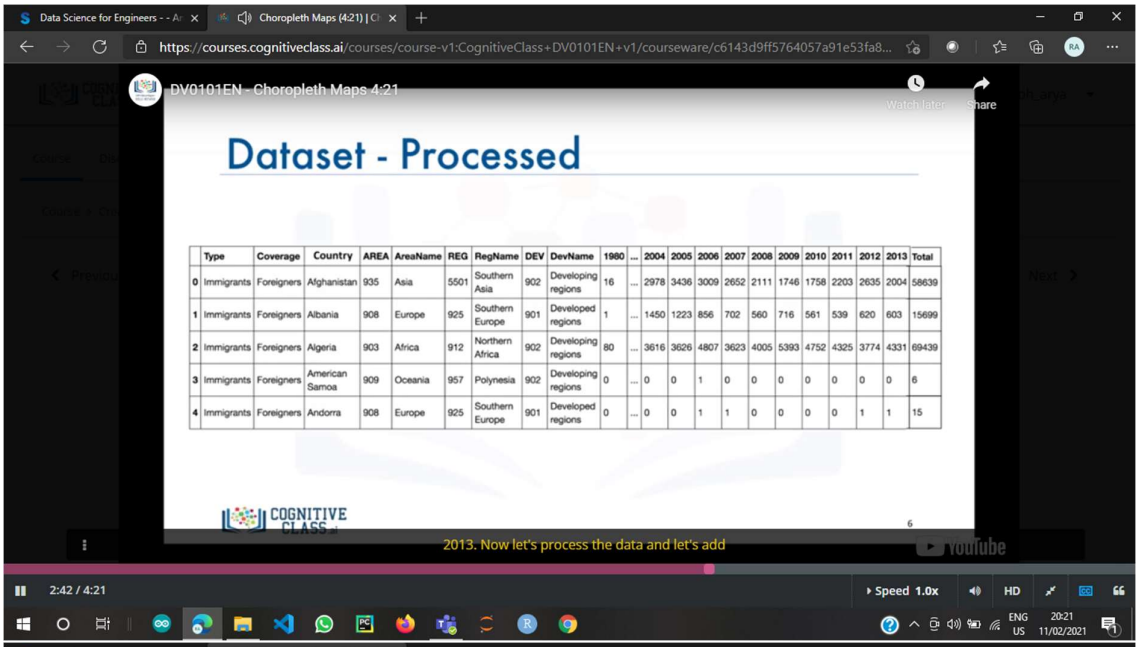
COGNITIVE CLASS.ai

5

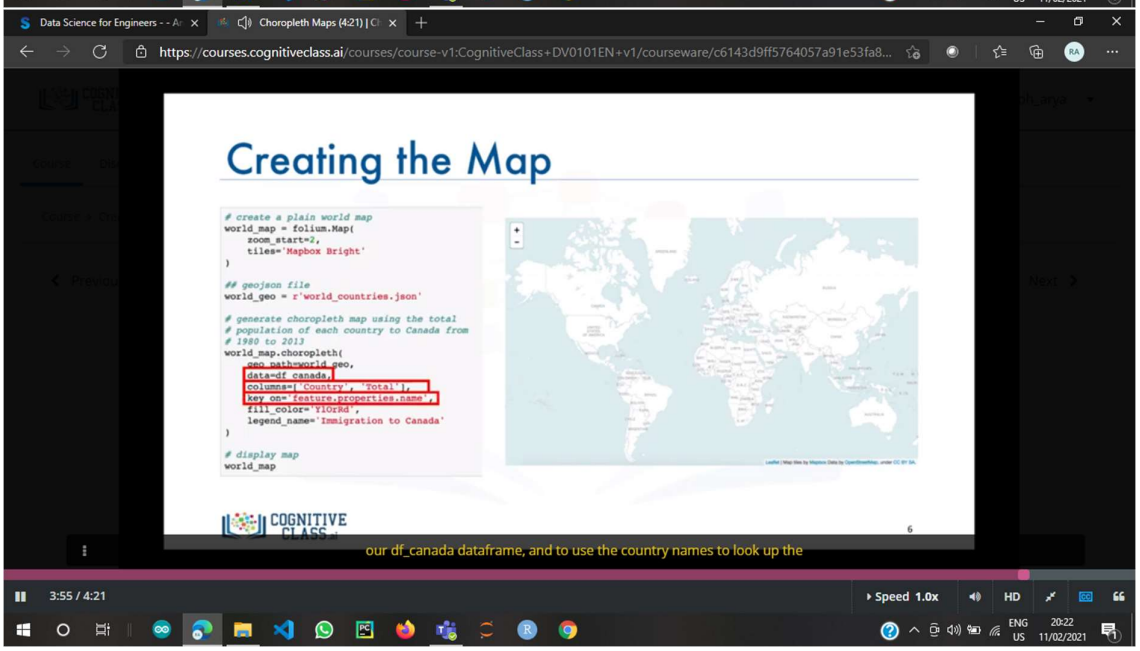
Canada. Before we go over the code to do that, let's do a

2:15 / 4:21 Speed 1.0x HD

ENG US 20:21 11/02/2021



	Type	Coverage	Country	AREA	AreaName	REG	RegName	DEV	DevName	1980	...	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
0	Immigrants	Foreigners	Afghanistan	935	Asia	5501	Southern Asia	902	Developing regions	16	...	2978	3436	3009	2652	2111	1746	1758	2203	2635	2004	58639
1	Immigrants	Foreigners	Albania	908	Europe	925	Southern Europe	901	Developed regions	1	...	1450	1223	856	702	560	716	561	539	620	603	15699
2	Immigrants	Foreigners	Algeria	903	Africa	912	Northern Africa	902	Developing regions	80	...	3616	3626	4807	3623	4005	5393	4752	4325	3774	4331	69439
3	Immigrants	Foreigners	American Samoa	909	Oceania	957	Polynesia	902	Developing regions	0	...	0	0	1	0	0	0	0	0	0	0	6
4	Immigrants	Foreigners	Andorra	908	Europe	925	Southern Europe	901	Developed regions	0	...	0	0	1	1	0	0	0	0	1	1	15



Data Science for Engineers - - Ar | Choropleth Maps (4:21) | Cl

https://courses.cognitiveclass.ai/courses/course-v1:CognitiveClass+DV0101EN+v1/courseware/c6143d9ff5764057a91e53fa8...

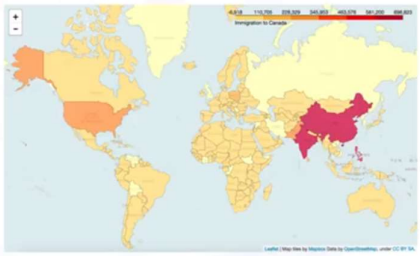
Creating the Map

```
# create a plain world map
world_map = folium.Map(
    zoom_start=2,
    tiles='Mapbox Bright'
)

## geojson file
world_geo = r'world_countries.json'

# generate choropleth map using the total
# population of each country to Canada from
# 1980 to 2013
world_map.choropleth(
    geo_path=world_geo,
    data=df_canada,
    columns=['Country', 'Total'],
    key_on='feature.properties.name',
    fill_color='YlOrRd',
    legend_name='Immigration to Canada'
)

# display map
world_map
```



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7

you have it. A choropleth map of Canada showing the intensity of immigration

4:04 / 4:21 Speed 1.0x HD

ENG US 20:22 11/02/2021