Intermediate Python Workshop Spring 2025

Jose Hernandez

Agenda

Goal

To run a multiple file code that can read csv files and plot data using Spyder on High Performance Compute Cluster

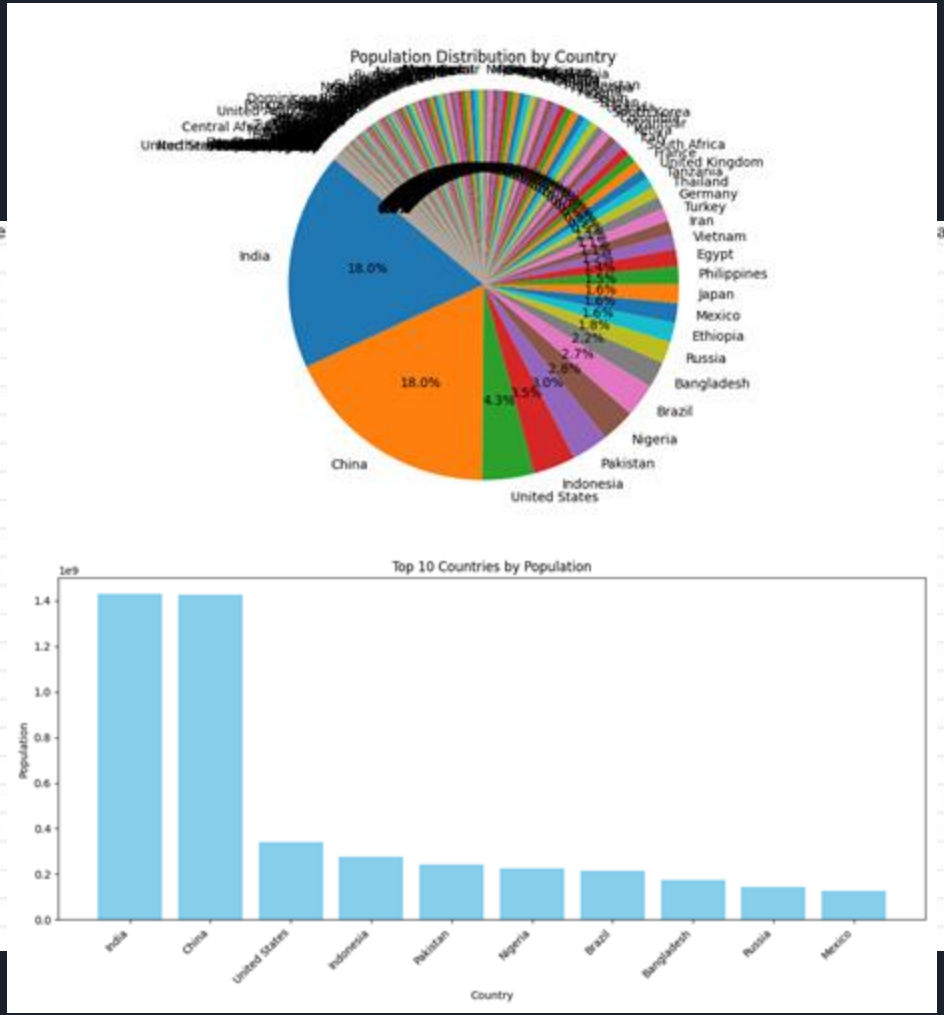
1. **Project Intro & File Organization**
2. **Intro to OOD & Spyder**
3. **Main Python File Explanation**
4. **Function Creation**

Overall project

Input a CSV of world demographics by country

Produce 2 plots:

- A pie chart of all countries with their share of global population
- A top 10 most populous countries bar chart



	iso_code	ank
2	IND	1
3	CHN	2
4	USA	3
5	IDN	4
6	PAK	5
7	NGA	6
8	BRA	7
9	BGD	8
10	RUS	9
11	ETH	10
12	MEX	11
13	JPN	12
14	PHL	13
15	EGY	14
16	VNM	16
17	IRN	17
18	TUR	18
19	DEU	19
20	THA	20
21	TZA	21
22	GBR	22
23	FRA	23
24	ZAF	24
25	ITA	25
26	KEN	26

Setting up Spyder

Steps of Project

- Input CSV
- Extract Columns
- Save data to New CSV
- Clean said data in the new CSV
- Plot the data

	iso_code	country	2024_last_updat	2023_population	area_sq_k	land_area_	density_/s	growth_rat	world_%	rank
2	IND	India	1,437,330,602	1,428,627,663	3.3M	3M	485	0.92%	18.01%	1
3	CHN	China	1,425,391,096	1,425,671,352	9.7M	9.4M	151	-0.03%	17.80%	2
4	USA	United Stat	341,205,217	339,996,563	9.4M	9.1M	37	0.53%	4.27%	3
5	IDN	Indonesia	279,043,747	277,534,122	1.9M	1.9M	149	0.82%	3.50%	4
6	PAK	Pakistan	243,610,523	240,485,658	881.9K	770.9K	318	1.96%	3.06%	5
7	NGA	Nigeria	227,328,875	223,804,632	923.8K	910.8K	252	2.39%	2.86%	6
8	BRA	Brazil	217,235,074	216,422,446	8.5M	8.4M	26	0.56%	2.72%	7
9	BGD	Banglades	174,114,413	172,954,319	147.6K	130.2K	1,342	1.01%	2.18%	8
10	RUS	Russia	144,118,182	144,444,359	17.1M	16.4M	9	-0.34%	1.80%	9
11	ETH	Ethiopia	128,635,743	126,527,060	1.1M	1.1M	115	2.52%	1.62%	10
12	MEX	Mexico	129,076,931	128,455,567	2M	1.9M	67	0.73%	1.62%	11
13	JPN	Japan	122,856,549	123,294,513	377.9K	364.5K	336	-0.54%	1.53%	12
14	PHL	Philippines	118,508,757	117,337,368	342.4K	298.2K	399	1.51%	1.49%	13
15	EGY	Egypt	113,877,183	112,716,598	1M	1M	115	1.57%	1.43%	14
16	VNM	Vietnam	99,287,500	98,858,950	331.2K	313.4K	317	0.65%	1.24%	16
17	IRN	Iran	89,600,667	89,172,767	1.6M	1.6M	55	0.71%	1.12%	17
18	TUR	Turkey	86,112,117	85,816,199	783.6K	783.6K	110	0.52%	1.08%	18
19	DEU	Germany	83,268,478	83,294,633	357.1K	349.4K	238	-0.05%	1.04%	19
20	THA	Thailand	71,861,260	71,801,279	513.1K	510.9K	141	0.12%	0.90%	20
21	TZA	Tanzania	68,743,722	67,438,106	945.1K	885.8K	78	2.94%	0.87%	21
22	GBR	United King	67,885,689	67,736,802	242.9K	241.9K	281	0.33%	0.85%	22
23	FRA	France	64,840,221	64,756,584	551.7K	547.6K	118	0.19%	0.81%	23
24	ZAF	South Afric	60,795,104	60,414,495	1.2M	1.2M	50	1%	0.76%	24
25	ITA	Italy	58,757,491	58,870,762	301.3K	295.7K	198	-0.29%	0.73%	25
26	KEN	Kenya	55,826,412	55,100,586	580.4K	569.1K	99	2%	0.70%	26

File Structure

Workshop/

├── Main.py # Overall program

├── csvfunctions.py # Functions dealing with data input and extraction

├── plotfunctions.py # Functions producing the plots

├──2024_population.csv # Original CSV file

Wrap Up

Survey

We appreciate your feedback!

Questions?