Problem-Based Assignment (23SW-III)

Of

Data Structure and Algorithms

23SW Batch

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Dataset: https://www.kaggle.com/datasets/dataanalyst001/world-population-growth-rate-by-cities-2024/data

Step 1: Create sorted linked lists, one for each continent and put city name, population of 2024 and population 2023 in that list.

Step 2: Use linked list to make stacks for each continent for the year 2024 with cities having high population at top and low population at bottom. The top of stack is the city with the highest population.

Step 3: Use linked list to calculate the sum of population for both years of each continent and make a stack which stores the sum with continent name having highest population at the top.

Problem 1: List the cities whose population has shrunk in the year 2024 for all continents (Use step 1 data).

Problem 2: Which continent has the lowest population (Use step 3).

Problem 3: Which city has the highest growth rate, and which city has lowest growth rate regardless of continent (Calculate using the data of step 1).

Problem 4: List the cities which are at the middle of the stacks of each continent made in step 2.

Make the algorithm and code (GUI or command line for results) for the above mentioned problems.

Rubric for problem-based learning assignment

	Good (2.5 marks)	Fair (1.5 mark)	Unsatisfactory (1 mark)	Not Submitted(0 mark)
Data Structure creation	Demonstrates the ability to create data structures correctly.	Demonstrates a moderate level of ability to create data structures.	Not able to create data structures properly.	Not submitted
Organization & Structure of algorithms	The algorithms are well organized in a tight and logical fashion.	The algorithms are partially organized in a logical fashion.	The algorithms are not well organized in a tight and logical fashion.	Not submitted
Code Completeness	Demonstrates an in-depth, high-level understanding of the problems with complete code.	Demonstrates a moderate level of understanding of the problems with some code.	Fails to demonstrate an understanding of the problems and code.	Not submitted
Result Accuracy	The results presented are accurate.	The results presented are partially accurate.	The results are not in presentable form.	Not submitted