**Problem 4: Real-Time COVID-19 Statistics Tracker**

**Scenario:**

**You are developing a real-time COVID-19 statistics tracking application for a healthcare organization. The application should provide up-to-date information on COVID-19 cases, recoveries, and deaths for a specified region.**

**Tasks:**

1. **Model the data flow for fetching COVID-19 statistics from an external API and displaying it to the user.**
2. **Implement a Python application that integrates with a COVID-19 statistics API (e.g., disease.sh) to fetch real-time data.**
3. **Display the current number of cases, recoveries, and deaths for a specified region.**
4. **Allow users to input a region (country, state, or city) and display the corresponding COVID-19 statistics.**

**Deliverables:**

* **Data flow diagram illustrating the interaction between the application and the API.**
* **Pseudocode and implementation of the COVID-19 statistics tracking application.**
* **Documentation of the API integration and the methods used to fetch and display COVID-19 data.**
* **Explanation of any assumptions made and potential improvements.**

**Answer :**

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| User |

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| (1) Input region (country, state, or city)

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| COVID-19 Statistics Tracker|

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| (2) Construct API request URL with user input

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| External COVID-19 API |

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| (3) HTTP GET request to API

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| External COVID-19 API |

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| (4) JSON response with COVID-19 statistics

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| COVID-19 Statistics Tracker|

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| (5) Parse JSON response and extract relevant data

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| User |

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| (6) Display COVID-19 statistics to user

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**Python Code:**

import requests

def fetch\_covid\_data(region):

API\_URL = f"https://disease.sh/v3/covid-19/countries/{region}"

response = make\_api\_call(API\_URL)

if response.status\_code == 200:

return response.json()

else:

return f"Error fetching data: {response.status\_code}"

def make\_api\_call(url):

headers = {"Accept": "application/json"}

return requests.get(url, headers=headers)

def display\_statistics(data):

print(f"COVID-19 Statistics for {data['country']}:")

print(f"Total Cases: {data['cases']}")

print(f"Total Recoveries: {data['recovered']}")

print(f"Total Deaths: {data['deaths']}")

def main():

region = input("Enter the region (country, state, or city): ")

covid\_data = fetch\_covid\_data(region)

if isinstance(covid\_data, dict):

display\_statistics(covid\_data)

else:

print(covid\_data)

if \_name\_ == "\_main\_":

main()

**Pseudocode:**

**1.** Define class CovidStatsTracker:

* + Initialize with api\_key and base\_url
  + Define method get\_covid\_stats(region):

**2.**Construct request URL using base\_url, region, and API key

* + Send HTTP GET request to the API
  + If response is successful:
  + Parse JSON response
  + Extract current cases, recoveries, and deaths
  + Return extracted data

- Else:

* Return None

**3.**Define method display\_stats(data):

- If data is not None:

* Print current cases, recoveries, and deaths

- Else:

* + Print error message