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

**Scenario:**

**You are creating a real-time COVID-19 statistics tracking application for a healthcare organization. The application will deliver current information on COVID-19 cases, recoveries, and deaths for a specified region.**

**Tasks:**

**1. Model the data flow for retrieving COVID-19 statistics from an external API and presenting them to the user.**

**2. Develop a Python application that connects 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. Enable users to input a region (country, state, or city) and show the corresponding COVID-19 statistics.**

**Deliverables:**

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

**Data flow**

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| User |

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

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| COVID-19 Statistics Tracker|

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| (2) Build API request URL using user input

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| External COVID-19 API |

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| (3) Send HTTP GET request to API

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| External COVID-19 API |

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| (4) Receive 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 information

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| User |

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| (6) Present COVID-19 statistics to user

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**Python Code**

import requests

def get\_covid\_data(region):

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

response = make\_request(API\_URL)

if response.status\_code == 200:

return response.json()

else:

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

def make\_request(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 = get\_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)`:
* Construct the request URL using `base\_url`, `region`, and `api\_key`.
* Send an HTTP GET request to the API.

If the response is successful:

* Parse the JSON response.
* Extract current cases, recoveries, and deaths.
* Return the extracted data.

Else:

Return `None`.

2. Define method `display\_stats(data)`:

If `data` is not `None`:

Print current cases, recoveries, and deaths.

Else:

Print an error message.