System Requirements Specification Index

For

Python Basics and NumPy, Pandas
UseCase No 7
1.0

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Task 1

In this use case, you are provided with a predefined DataFrame containing hotel information, including hotel names, ratings, and prices per night. Your task is to write Python code using pandas to manage and analyze this data.

The first objective is to filter and retrieve only those hotels that meet a minimum rating threshold of 4.0, ensuring that only high-quality options are considered.

The second objective is to calculate the average price per night across all listed hotels, which helps in understanding the overall pricing trend.

Hotel Management (`hotel.py`)

Function 1: `filter_hotels_by_rating(df, min_rating)`

Dataset:
[Hotel ID, Hotel Name, Rating, Price Per Night]

```
hotel_data = pd.DataFrame({
    "Hotel ID": [1, 2, 3, 4, 5],
    "Hotel Name": ["Grand Stay", "Comfort Inn", "Luxury Palace", "Budget
Lodge", "Ocean View"],
    "Rating": [4.5, 3.8, 4.9, 3.2, 4.3],
    "Price Per Night": [2500, 1800, 4000, 1200, 3200]
})
```

Purpose:
Returns all hotels whose rating is greater than or equal to the specified minimum of 4.0.

Parameters:
• `df (pd.DataFrame)`: DataFrame of hotel records
• `min_rating (float)`: Minimum rating threshold

Returns:

• Returns {Filtered DataFrame of matching hotels : `pd.DataFrame`}

Instructions:

1. Use a condition to filter `Rating` column.
2. Return only matching rows in dataframe .

Function 2: `get_average_price(df)`

Purpose:
Calculate the average price per night across all hotels.

Parameters:
• `df (pd.DataFrame)`: DataFrame of hotel records

Returns:
• Returns : { Rounded average of "Price Per Night" column for all the hotels in **`float value`** }

Instructions:

1. Access the `"Price Per Night"` column.
2. Use `.mean()` to calculate average.
3. Use `round(..., 2)` and return the result.

Task 2

Your are tasked to analyze gym or club membership data using a pandas DataFrame. It includes a predefined dataset containing member IDs, names, membership types, monthly fees, and duration of activity.

The program implements three key functions: one to calculate the total revenue contribution of a specific member by multiplying their monthly fee with months active, another to count how many members belong to each membership type using a loop, and a third to check whether a specific member (Alice) qualifies as a long-term member, defined by having more than 12 months of activity.

Gym Membership Management (Gym.py)

Function 1: *`calculate_total_contribution(df, member_id)`*

Dataset:
[Member ID, Name, Membership Type, Monthly Fee, Months Active]

```
membership_data = pd.DataFrame({
    "Member ID": [101, 102, 103, 104, 105],
    "Name": ["Alice", "Bob", "Charlie", "Diana", "Ethan"],
    "Membership Type": ["Gold", "Silver", "Gold", "Bronze", "Silver"],
    "Monthly Fee": [1500, 1000, 1500, 800, 1000],
    "Months Active": [12, 8, 6, 3, 10]
})
```

Purpose:
Calculate the total revenue for Alice Member ID 101

Parameters:
• `df (pd.DataFrame)`: Gym member dataset
• `member_id (int)`: Member ID to look up

Returns:

• **Returns** {**monthly fee × months active type : int**}

Instructions:

1. Filter the row with matching `member_id`.
2. Multiply `Monthly Fee` by `Months Active`.
3. Return the result as `int`.

Function 2: *`count_members_per_type(df)`*

Purpose:
Count the number of members under each membership type using a loop.

Parameters:
• `df (pd.DataFrame)`: Gym member dataset

Returns:

Returns : Dictionary of {Membership type : count}

Instructions:

1. Initialize empty dictionary.
2. Loop through `"Membership Type"` column.
3. Use condition to increment counters.

Function 3: `is_alice_long_term(df)`

Purpose:
Check if Alice has more than 12 months of activity.

Parameters:
• `df (pd.DataFrame)`: Gym member dataset

Returns:
• **`Return`** `True` if Alice has more than 12 months, else `False {type :Boolean }`

Instructions:

1. Filter the row where name is "Alice".
2. Compare `"Months Active"` with data give which is more than 12 months or not .
3. Return boolean result.

Task 3

This usecase contains information about event management system which includes their names, locations, number of registered attendees, and entry fees.

The program includes three key functions: one to calculate the total number of people registered across all events, another to count how many events have an entry fee greater than 10, and a third to determine how many events are being hosted in New York.

Event Management (`Event.py`)

Function 1: `get_total_people_registered(df)`

Dataset:
[Event ID, Event Name, Location, Registered People, Entry Fee]

```
event_data = pd.DataFrame({
    "Event ID": [201, 202, 203, 204, 205],
    "Event Name": ["Tech Summit", "Music Fest", "Job Fair", "Food Carnival",
"Book Launch"],
    "Location": ["New York", "Los Angeles", "Chicago", "New York", "Boston"],
    "Registered People": [120, 200, 75, 180, 50],
    "Entry Fee": [50, 30, 0, 20, 10]
})
```

Purpose:
Find the total number of people registered across all events.

Parameters:
• `df (pd.DataFrame)`: Event dataset

Returns:
• `returns{` The Sum of registered people type: int}

Instructions:

1. Use `.sum()` on `"Registered People"` column.
2. Return the result.

Function 2: `count_events_with_high_fees(df)`

Purpose:
Count how many events have entry fees greater than 10.

Parameters:
• `df (pd.DataFrame)`: Event dataset

Returns:
• `returns {` Number of such events type :int }

Instructions:

1. Use condition on `"Entry Fee"` > 10.
2. Use `.shape[0]` to count matching rows.
3. The final value should be int from count

Function 3: `count_events_in_newyork(df)`

Purpose:
Count how many events are happening in New York.

Parameters:
• `df (pd.DataFrame)`: Event dataset

Returns:
• `{`**`returns`**   Number of events in New York type :int }

Instructions:

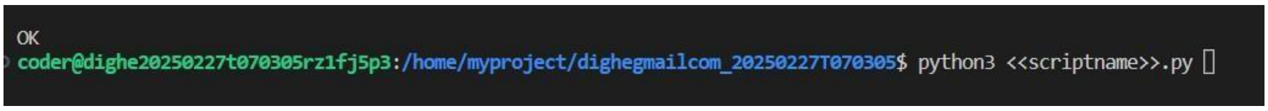
1. Use condition on `"Location"` == `"New York"` (case-insensitive).
2. Use `.shape[0]` to get count.
3. The final value should be a int from count

Execution Steps to Follow:

- All actions like build, compile, running application, running test cases will be through the Command Terminal.

- To open the command terminal the test takers, need to go to Application menu (Three horizontal lines at left top) -> Terminal -> New Terminal
- This editor Auto Saves the code
- If you want to exit(logout) and continue the coding later anytime (using Save & Exit option on Assessment Landing Page)
- These are time bound assessments the timer would stop if you logout and while logging in back using the same credentials the timer would resume from the same time it was stopped from the previous logout.
- To setup environment:
  You can run the application without importing any packages
- To launch application:
  python3 hotel.py
  python3 Event.py
  python3 Gym.py
- To run Test cases:
  python3 -m unittest

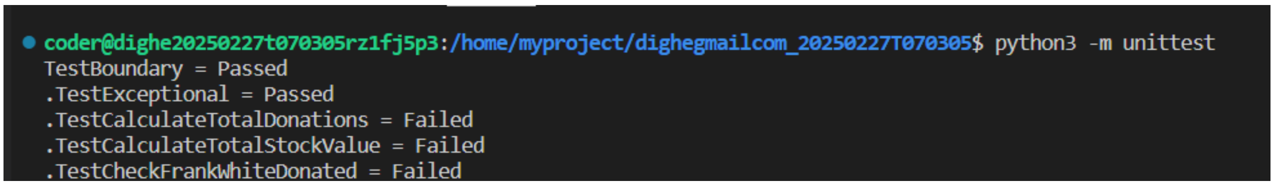
Screen shot to run the program



```
OK
coder@dighe20250227t070305rz1fj5p3:/home/myproject/dighegmailcom_20250227T070305$ python3 <<scriptname>>.py
```

To run the application

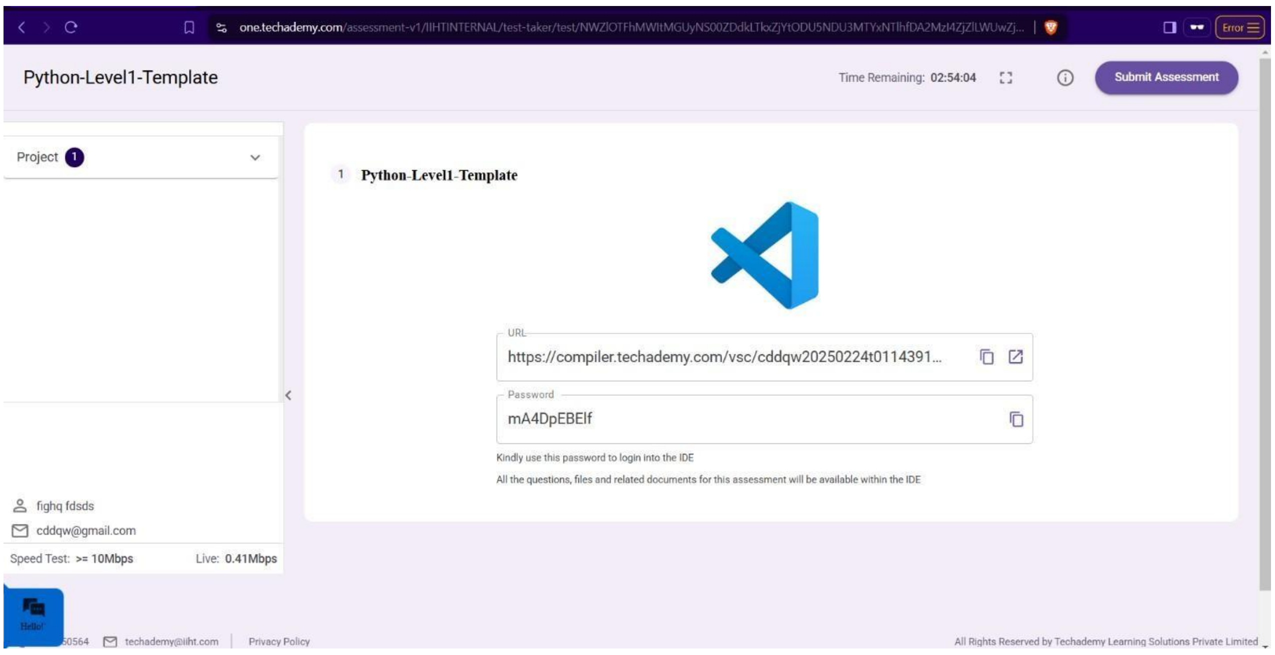
python3 hotel.py
python3 Event.py
python3 Gym.py



```
coder@dighe20250227t070305rz1fj5p3:/home/myproject/dighegmailcom_20250227T070305$ python3 -m unittest
TestBoundary = Passed
.TestExceptional = Passed
.TestCalculateTotalDonations = Failed
.TestCalculateTotalStockValue = Failed
.TestCheckFrankWhiteDonated = Failed
```

To run the testcase

python3 -m unittest


one.techademy.com/assessment-v1/IIHTINTERNAL/test-taker/test/NWZlOTFhMWItMGUyNS00ZDdkLTkxZjYtODU5NDU3MTYxNTlhfDA2MzI4ZjZlLWUwZj...

Python-Level1-Template

Time Remaining: 02:54:04

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Project 1

1 Python-Level1-Template

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Kindly use this password to login into the IDE

All the questions, files and related documents for this assessment will be available within the IDE

fighq fdsds
cddqw@gmail.com
Speed Test: >= 10Mbps Live: 0.41Mbps

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- Once you are done with development and ready with submission, you may navigate to the previous tab and submit the workspace. It is mandatory to click on “Submit Assessment” after you are done with code.