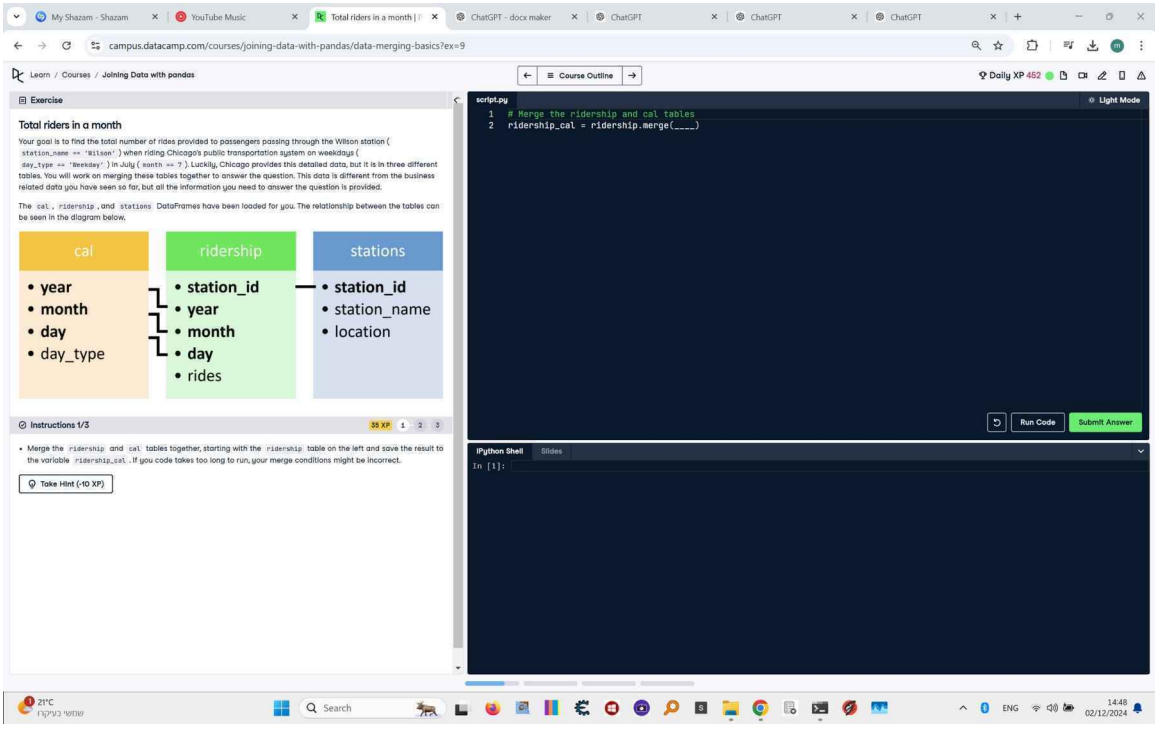
Total Riders in a Month



Question:

Your goal is to find the total number of rides provided to passengers passing through the Wilson station (station_name == 'Wilson') when riding Chicago's public transportation system on weekdays ('day_type == Weekday') in July (month == 7). Luckily, Chicago provides this detailed data, but it is in three different tables. You will work on merging these tables together to answer the question.

Tables Provided:

- `cal`: Contains columns `year`, `month`, `day`, and `day_type` (e.g., Weekday, Weekend).
- `ridership`: Contains columns `station_id`, `year`, `month`, `day`, and `rides`.
- `stations`: Contains columns `station_id`, `station_name`, and `location`.

Instructions:

1. Merge the `ridership` and `cal` tables together, starting with the `ridership` table on the left, and save the result to a variable `ridership_cal`.

2. Merge the `ridership_cal` table with the `stations` table, and filter for rows where `station_name` is 'Wilson'.

3. Further filter the data for weekdays in July and calculate the total number of rides.

Answer:

```
# Step 1: Merge `ridership` and `cal` tables
ridership_cal = ridership.merge(cal, on=['year', 'month', 'day'])


# Step 2: Merge `ridership_cal` with `stations` and filter for 'Wilson'
ridership_cal_stations = ridership_cal.merge(stations, on='station_id')
filtered_data = ridership_cal_stations[ridership_cal_stations['station_name']
== 'Wilson']


# Step 3: Filter for weekdays in July and calculate total rides
filtered_data = filtered_data[(filtered_data['day_type'] == 'Weekday') &
(filtered_data['month'] == 7)]
total_rides = filtered_data['rides'].sum()
print(total_rides)
```

Explanation of the Code:

1. `ridership.merge(cal, on=['year', 'month', 'day'])`: This merges the `ridership` table with the `cal` table on common columns `year`, `month`, and `day`, combining date-specific information.

2. `ridership_cal.merge(stations, on='station_id')`: This merges the result with the `stations` table on the `station_id` column to add station-specific details. The result is filtered for rows where `station_name` is 'Wilson'.

3. The final filter applies conditions for `day_type` (Weekday) and `month` (July), and the total number of rides is calculated using the `.sum()` method on the `rides` column.