Uber Pickups Analysis Quiz

The question set is based on the August dataset, `uber-raw-data-aug14.csv`.

Keeping the dataset ready before questions

In [14]:
```
import pandas as pd

df = pd.read_csv(r"C:\Users\DELL\Downloads\Uber Trips Analysis\data\uber-raw-data-aug14.csv")
df.head()
```

Out[14]:

	Date/Time	Lat	Lon	Base
0	8/1/2014 0:03:00	40.7366	-73.9906	B02512
1	8/1/2014 0:09:00	40.7260	-73.9918	B02512
2	8/1/2014 0:12:00	40.7209	-74.0507	B02512
3	8/1/2014 0:12:00	40.7387	-73.9856	B02512
4	8/1/2014 0:12:00	40.7323	-74.0077	B02512

Q1. On what date did we see the most number of Uber pickups?

Skill Test: Grouping & Counting

In [15]:
```
# Convert the 'Date/Time' column to datetime format
df['Date/Time'] = pd.to_datetime(df['Date/Time'])

# Group by date and count the number of pickups
df['Date'] = df['Date/Time'].dt.date
pickup_counts = df.groupby('Date')['Lat'].count()
date_with_most_pickups = pickup_counts.idxmax()

print("Date with the most number of pickups:", date_with_most_pickups)
```

```
Date with the most number of pickups: 2014-08-07
```

Q.2 How many Uber pickups were made on the date with the highest number of pickups?

Skill Test: Indexing and filtering

In [16]:
```
# Filter the DataFrame to include only the rows for the date with the highest number of pickups
df['Date/Time'] = pd.to_datetime(df['Date/Time'])
df['Date'] = df['Date/Time'].dt.date
pickup_counts = df.groupby('Date')['Lat'].count()

date_with_highest_pickups = pickup_counts.idxmax()
number_of_pickups = pickup_counts[date_with_highest_pickups]

print("Date with the highest number of pickups:", date_with_highest_pickups)
print("Number of Uber pickups on the highest pickup date:", number_of_pickups)
```

```
Date with the highest number of pickups: 2014-08-07
Number of Uber pickups on the highest pickup date: 32759
```

Q.3 How many unique TLC base companies are affiliated with the Uber pickups in the dataset?

Skill Test: Counting unique values

In [17]:
```
# Count the number of unique TLC base companies
unique_companies = df['Base'].nunique()
print(unique_companies)
```

```
5
```

Q.4 Which TLC base company had the highest number of pickups?

Skill Test: Grouping, counting, and finding the maximum

In [18]:
```
# Group by TLC base company and count the number of pickups
pickup_counts = df.groupby('Base')['Lat'].count()
highest_pickup_company = pickup_counts.idxmax()
print("TLC base company with the highest number of pickups:", highest_pickup_company)
```

```
TLC base company with the highest number of pickups: B02617
```

Q.5 How many Uber pickups were made at each unique TLC base company?

Skill Test: Grouping and counting

In [19]:
```
# Group by TLC base company and count the number of pickups
pickup_counts = df.groupby('Base')['Lat'].count()
print(pickup_counts)
```

```
Base
B02512    31472
B02598   220129
B02617   355503
B02682   173280
B02764   48591
Name: Lat, dtype: int64
```

Q.6 Can you determine the busiest time of day for Uber pickups based on the date/time column?

Skill Test: Extracting time components, grouping, counting, and finding the maximum

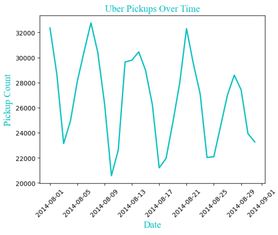
In [20]:
```
# Extract the hour from the 'Date/Time' column


# Group by hour and count the number of pickups


# Find the hour with the highest number of pickups
df['Hour'] = df['Date/Time'].dt.hour

# Group by hour and count the number of pickups
pickup_counts1 = df.groupby('Hour').size()
hour_with_highest_pickups = pickup_counts1.idxmax()

am_pm = 'AM' if hour_with_highest_pickups < 12 else 'PM'
if hour_with_highest_pickups > 12:
    hour_with_highest_pickups -= 12

print("Hour with the highest number of pickups:", hour_with_highest_pickups, am_pm)
```

```
Hour with the highest number of pickups: 5 PM
```

Q.7 Can you create a visualization (e.g., a bar chart or line plot) to represent the number of Uber pickups over time?

Skill Test: Data Visualization using Plotting function

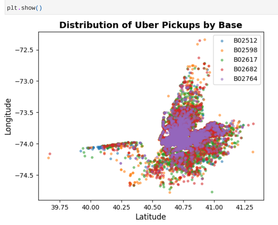
In [21]:
```
import matplotlib.pyplot as plt

# Group by date and count the number of pickups


pickup_count_by_date = df.groupby('Date')['Lat'].count()

#print(pickup_count_by_date)


# Create a line plot to visualize the number of pickups over time

plt.plot(pickup_count_by_date.index, pickup_count_by_date.values,color= 'c' ,linewidth = 2)

plt.xlabel("Date",fontsize = 15,fontname = 'Times New Roman',color = 'c')
plt.ylabel("Pickup Count",fontsize = 15,fontname = 'Times New Roman',color = 'c')
plt.title("Uber Pickups Over Time",fontsize = 15,fontname = 'Times New Roman',color = 'c')
plt.xticks(rotation=45)
plt.show()
```



Q8. Can you create a scatter plot to visualize the distribution of Uber pickups based on latitude and longitude?

Skill Test: Scatter Plot

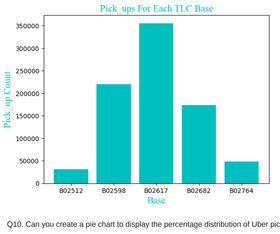
In [22]:
```
# Create a scatter plot to visualize the distribution of Uber pickups based on latitude and longitude
grouped_data = df.groupby('Base')

# Create a scatter plot for each group
for group_name, group_data in grouped_data:
    plt.scatter(group_data['Lat'], group_data['Lon'], label=group_name, s=10, alpha=0.5)

plt.xlabel('Latitude', fontsize=12)
plt.ylabel('Longitude', fontsize=12)
plt.title('Distribution of Uber Pickups by Base', fontsize=14, fontweight='bold')
plt.legend()

plt.show()
```



Q9. Can you create a bar chart to compare the number of Uber pickups for each TLC base company?

Skill Test: Bar Chart

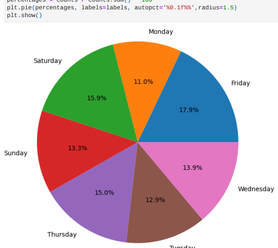
In [23]:
```
# Create a bar chart to compare the number of Uber pickups for each TLC base company
pickup_count_base = df.groupby('Base')['Lat'].count()
#print(pickup_count_base)
plt.bar(pickup_count_base.index,pickup_count_base.values, color = 'c')
plt.xlabel('Base',fontname = 'times new roman',fontsize = 15,c = 'c')
plt.ylabel('Pick_up Count',fontname = 'times new roman',fontsize = 15,c = 'c')
plt.title('Pick_ups For Each TLC Base',fontname = 'times new roman',fontsize = 15,c = 'c')
plt.show()
```



Q10. Can you create a pie chart to display the percentage distribution of Uber pickups for each day of the week?

Skill Test: Pie Chart

In [24]:
```
# Find the busiest time of day (hour) for Uber pickups
busiest_hour = pickup_counts1.idxmax()

# Print the busiest hour for Uber pickups
#print("Busiest time of day for Uber pickups:", busiest_hour)
df['DayOfWeek'] = df['Date/Time'].dt.day_name()
#print(df['DayOfWeek'])
pickup_counts = df.groupby('DayOfWeek')['Lat'].count()
labels = pickup_counts.index
counts = pickup_counts.values
percentages = counts / counts.sum() * 100
plt.pie(percentages, labels=labels, autopct='%0.1f%%',radius=1.5)
plt.show()
```



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