Importing Libraries

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from datetime import datetime
import warnings
warnings.filterwarnings('ignore')

df = pd.read_csv("UberDataset.csv")

df
```

```
            START_DATE          END_DATE  CATEGORY
START  \
0     01-01-2016 21:11  01-01-2016 21:17  Business       Fort Pierce

1     01-02-2016 01:25  01-02-2016 01:37  Business       Fort Pierce

2     01-02-2016 20:25  01-02-2016 20:38  Business       Fort Pierce

3     01-05-2016 17:31  01-05-2016 17:45  Business       Fort Pierce

4     01-06-2016 14:42  01-06-2016 15:49  Business       Fort Pierce

...                ...               ...       ...               ...

1151  12/31/2016 13:24  12/31/2016 13:42  Business           Kar?chi

1152  12/31/2016 15:03  12/31/2016 15:38  Business  Unknown Location

1153  12/31/2016 21:32  12/31/2016 21:50  Business        Katunayake

1154  12/31/2016 22:08  12/31/2016 23:51  Business           Gampaha

1155            Totals               NaN       NaN               NaN


                   STOP    MILES          PURPOSE
0          Fort Pierce      5.1   Meal/Entertain
1          Fort Pierce      5.0              NaN
2          Fort Pierce      4.8  Errand/Supplies
3          Fort Pierce      4.7          Meeting
4       West Palm Beach     63.7   Customer Visit
...                ...      ...              ...
1151  Unknown Location      3.9   Temporary Site
1152  Unknown Location     16.2          Meeting
1153           Gampaha      6.4   Temporary Site
```

```
1154         Ilukwatta     48.2   Temporary Site
1155               NaN  12204.7              NaN

[1156 rows x 7 columns]
```

```
df.shape
```

```
(1156, 7)
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1156 entries, 0 to 1155
Data columns (total 7 columns):
 #   Column      Non-Null Count  Dtype  
---  ------      --------------  -----  
 0   START_DATE  1156 non-null   object 
 1   END_DATE    1155 non-null   object 
 2   CATEGORY    1155 non-null   object 
 3   START       1155 non-null   object 
 4   STOP        1155 non-null   object 
 5   MILES       1156 non-null   float64
 6   PURPOSE     653 non-null    object 
dtypes: float64(1), object(6)
memory usage: 63.3+ KB
```

```
df.isnull().sum()
```

```
START_DATE      0
END_DATE        1
CATEGORY        1
START           1
STOP            1
MILES           0
PURPOSE       503
dtype: int64
```

Data Preprocessing

```
df['PURPOSE'].fillna('NOT',inplace=True)
```

```
df.head()
```

```
         START_DATE           END_DATE  CATEGORY        START  
STOP  \
0  01-01-2016 21:11  01-01-2016 21:17  Business  Fort Pierce      Fort
Pierce
1  01-02-2016 01:25  01-02-2016 01:37  Business  Fort Pierce      Fort
Pierce
```

```
2  01-02-2016 20:25  01-02-2016 20:38  Business  Fort Pierce      Fort
Pierce
3  01-05-2016 17:31  01-05-2016 17:45  Business  Fort Pierce      Fort
Pierce
4  01-06-2016 14:42  01-06-2016 15:49  Business  Fort Pierce  West
Palm Beach

   MILES          PURPOSE
0    5.1   Meal/Entertain
1    5.0              NOT
2    4.8  Errand/Supplies
3    4.7          Meeting
4   63.7   Customer Visit
```

```
df["START_DATE"]= pd.to_datetime(df["START_DATE"],errors="coerce")
df["END_DATE"]= pd.to_datetime(df["END_DATE"],errors="coerce")

df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1156 entries, 0 to 1155
Data columns (total 7 columns):
 #   Column      Non-Null Count  Dtype
---  ------      --------------  -----
 0   START_DATE  421 non-null    datetime64[ns]
 1   END_DATE    420 non-null    datetime64[ns]
 2   CATEGORY    1155 non-null   object
 3   START       1155 non-null   object
 4   STOP        1155 non-null   object
 5   MILES       1156 non-null   float64
 6   PURPOSE     1156 non-null   object
dtypes: datetime64[ns](2), float64(1), object(4)
memory usage: 63.3+ KB
```

```
df["Date"]=pd.DatetimeIndex(df["START_DATE"]).date
df["Time"]=pd.DatetimeIndex(df["START_DATE"]).hour

df["Day-Night"] =
pd.cut(x=df["Time"],bins=[0,10,15,19,24],labels=["Morning","Afternon",
"Evening","Night"])

df.head()
```

```
           START_DATE            END_DATE  CATEGORY        START  \
0 2016-01-01 21:11:00 2016-01-01 21:17:00  Business  Fort Pierce
1 2016-01-02 01:25:00 2016-01-02 01:37:00  Business  Fort Pierce
2 2016-01-02 20:25:00 2016-01-02 20:38:00  Business  Fort Pierce
3 2016-01-05 17:31:00 2016-01-05 17:45:00  Business  Fort Pierce
4 2016-01-06 14:42:00 2016-01-06 15:49:00  Business  Fort Pierce

             STOP  MILES          PURPOSE        Date  Time Day-Night
```

```
0      Fort Pierce    5.1   Meal/Entertain  2016-01-01  21.0     Night
1      Fort Pierce    5.0              NOT  2016-01-02   1.0   Morning
2      Fort Pierce    4.8  Errand/Supplies  2016-01-02  20.0     Night
3      Fort Pierce    4.7          Meeting  2016-01-05  17.0   Evening
4  West Palm Beach   63.7   Customer Visit  2016-01-06  14.0  Afternon
```

```
df.dropna(inplace=True)
```

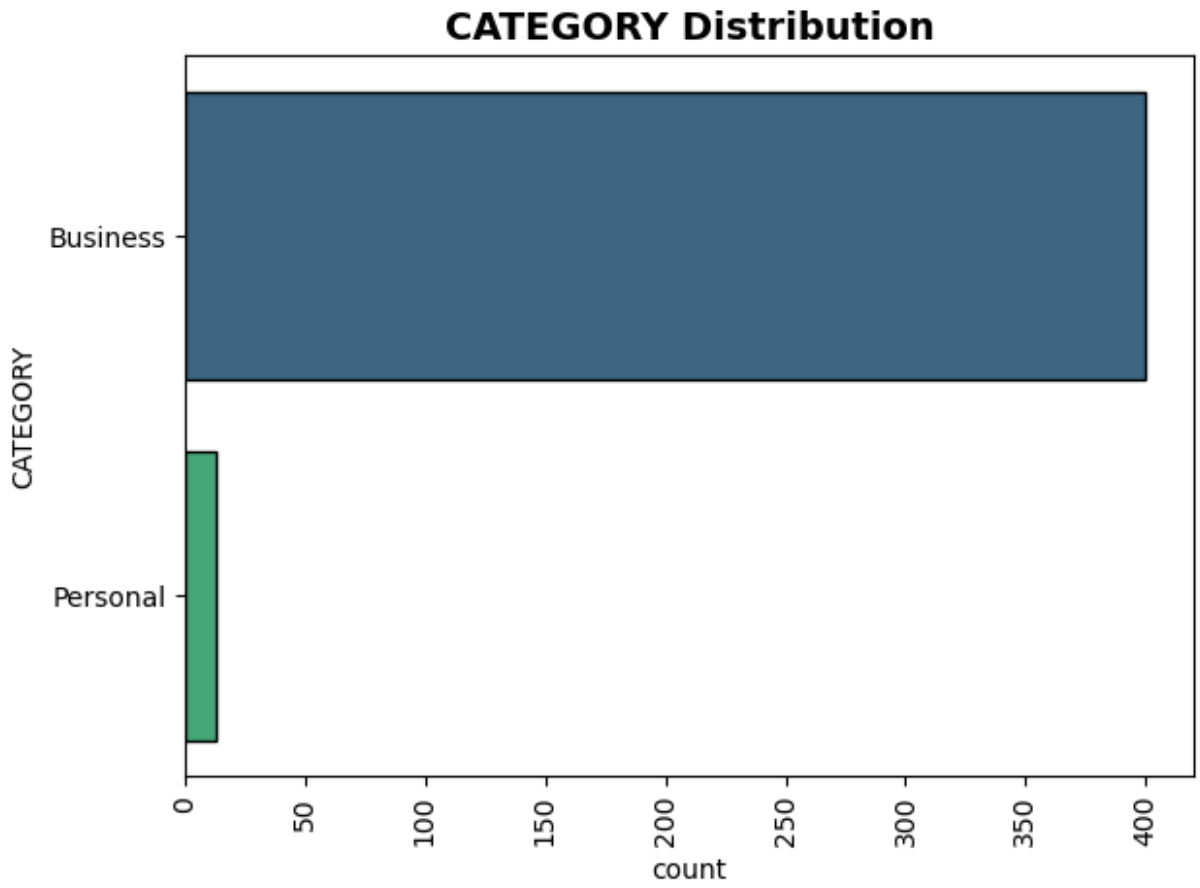
```
df.shape
```

```
(413, 10)
```

Data Visulization

In which category do people book the most Uber rides?

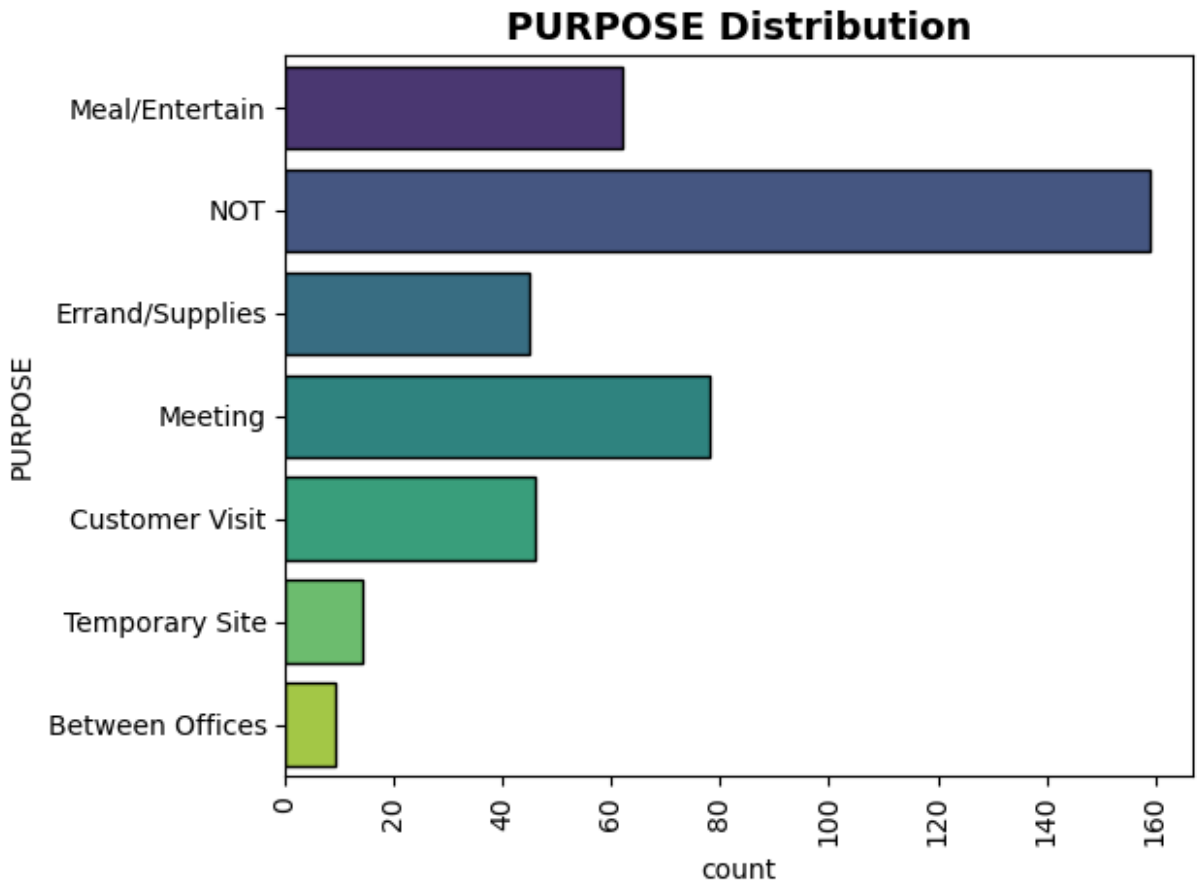
```
# Create the figure with a larger size
sns.countplot(df['CATEGORY'], palette='viridis', edgecolor='black')
plt.xticks(rotation=90)
plt.title("CATEGORY Distribution", fontsize=14, fontweight='bold')  # Title for the left subplot
# Show the plot
plt.tight_layout()  # Adjust layout to prevent overlap of titles and labels
plt.show()
```



Conclusion : Business users predominantly prefer Uber over personal, indicating a stronger reliance on ride-sharing services for professional needs.

For which purpose do people book Uber rides the most?

```
sns.countplot(df['PURPOSE'], palette='viridis', edgecolor='black')
plt.xticks(rotation=90)
plt.title("PURPOSE Distribution", fontsize=14, fontweight='bold')  # Title for the right subplot

# Show the plot
plt.tight_layout()  # Adjust layout to prevent overlap of titles and labels
plt.show()
```

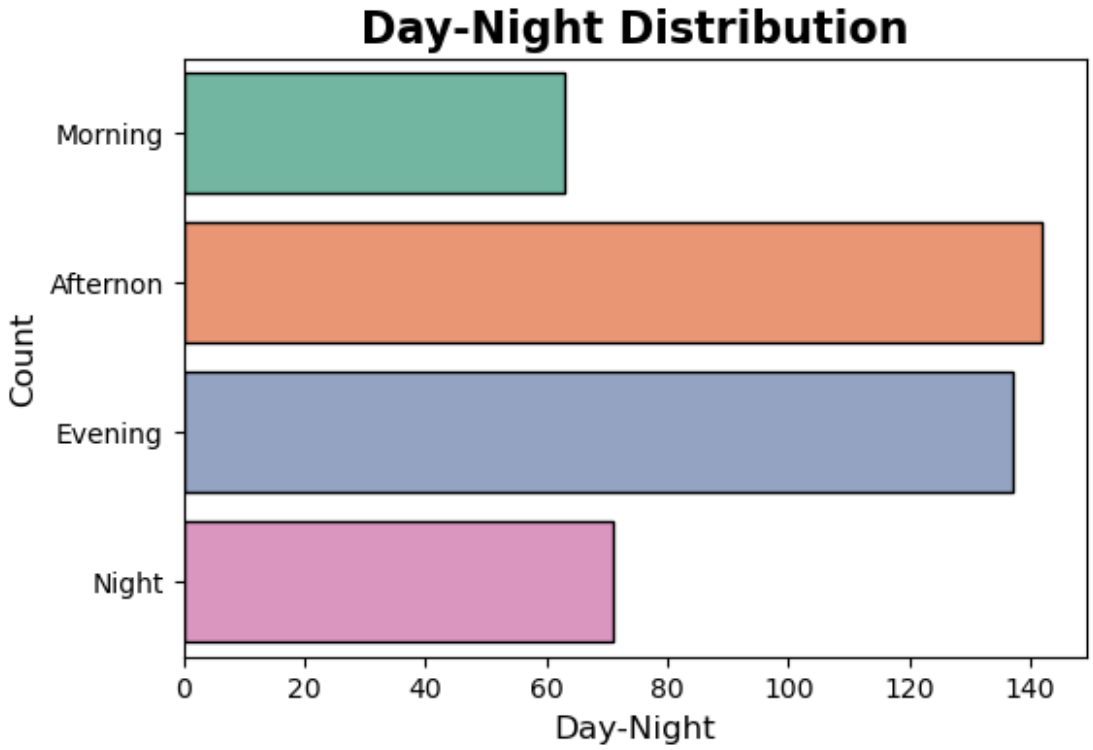


Conclusion: Additionally, the data shows that Uber is more frequently used for meetings compared to other purposes, highlighting its importance in business-related travel.

At what time do people book cabs the most from Uber?

```
# Set the global color palette to "pastel"
sns.set_palette("muted")

# Create the countplot with improved aesthetics
plt.figure(figsize=(6, 4))  # Set figure size
ax = sns.countplot(y=df["Day-Night"],
edgecolor="black",palette="Set2")  # Use the global pastel palette

# Add a title and axis labels
ax.set_title("Day-Night Distribution", fontsize=16, fontweight='bold')
# Title
ax.set_xlabel("Day-Night", fontsize=12)  # X-axis label
ax.set_ylabel("Count", fontsize=12)  # Y-axis label
```

```
# Show the plot
plt.show()
```



Conclusion: Peope book cab mostly in Afternoon as seen from graph

```
df.head()
```

	START_DATE	END_DATE	CATEGORY	START	STOP	MILES	PURPOSE	Date	Time	Day-Night
0	2016-01-01 21:11:00	2016-01-01 21:17:00	Business	Fort Pierce	Fort Pierce	5.1	Meal/Entertain	2016-01-01	21.0	Night
1	2016-01-02 01:25:00	2016-01-02 01:37:00	Business	Fort Pierce	Fort Pierce	5.0	NOT	2016-01-02	1.0	Morning
2	2016-01-02 20:25:00	2016-01-02 20:38:00	Business	Fort Pierce	Fort Pierce	4.8	Errand/Supplies	2016-01-02	20.0	Night
3	2016-01-05 17:31:00	2016-01-05 17:45:00	Business	Fort Pierce	Fort Pierce	4.7	Meeting	2016-01-05	17.0	Evening
4	2016-01-06 14:42:00	2016-01-06 15:49:00	Business	Fort Pierce	Fort Pierce	63.7	Customer Visit	2016-01-06	14.0	Afternoon

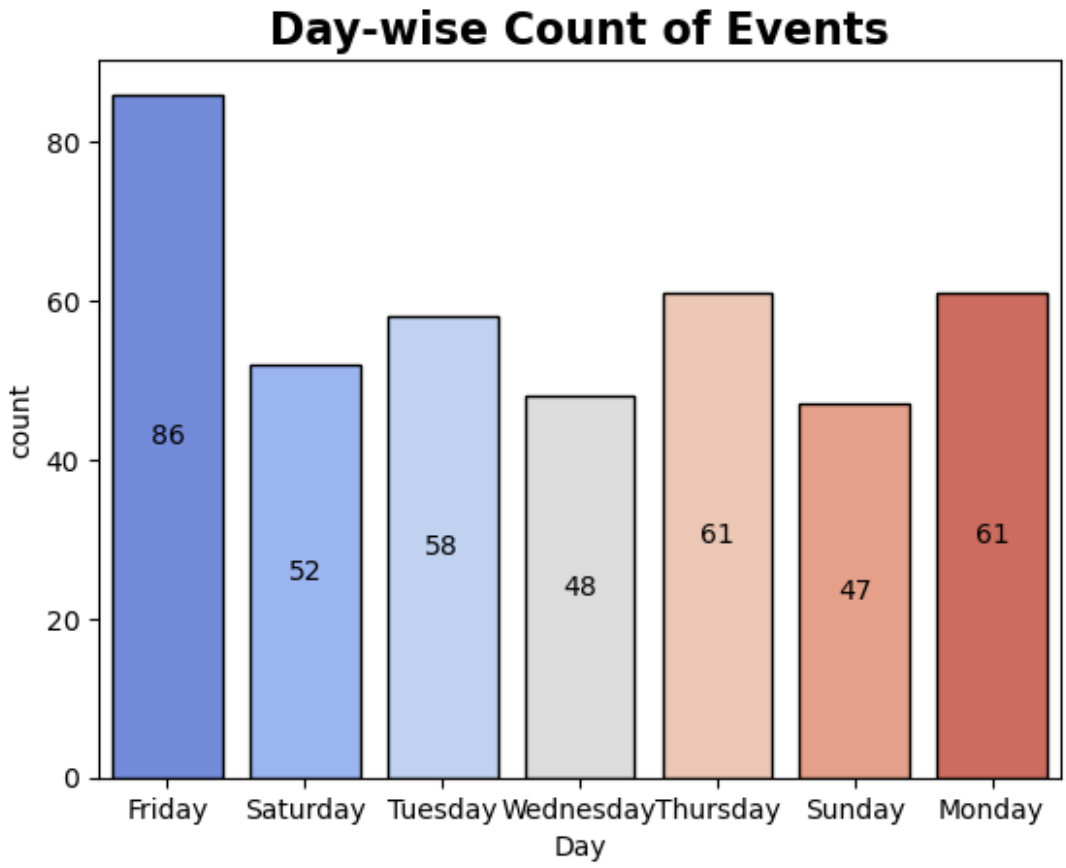
```
4  West Palm Beach   63.7   Customer Visit  2016-01-06  14.0  Afternon


df['Day']=df.START_DATE.dt.weekday

day_label = { 0.0: 'Monday',
    1.0: 'Tuesday',
    2.0: 'Wednesday',
    3.0: 'Thursday',
    4.0: 'Friday',
    5.0: 'Saturday',
    6.0: 'Sunday'}

df['Day']=df.Day.map(day_label)

df.head()
```

```
            START_DATE             END_DATE  CATEGORY        START  \
0 2016-01-01 21:11:00 2016-01-01 21:17:00  Business  Fort Pierce
1 2016-01-02 01:25:00 2016-01-02 01:37:00  Business  Fort Pierce
2 2016-01-02 20:25:00 2016-01-02 20:38:00  Business  Fort Pierce
3 2016-01-05 17:31:00 2016-01-05 17:45:00  Business  Fort Pierce
4 2016-01-06 14:42:00 2016-01-06 15:49:00  Business  Fort Pierce

               STOP  MILES          PURPOSE        Date  Time Day-Night
\
0      Fort Pierce    5.1   Meal/Entertain  2016-01-01  21.0     Night

1      Fort Pierce    5.0              NOT  2016-01-02   1.0   Morning

2      Fort Pierce    4.8  Errand/Supplies  2016-01-02  20.0     Night

3      Fort Pierce    4.7          Meeting  2016-01-05  17.0   Evening

4  West Palm Beach   63.7   Customer Visit  2016-01-06  14.0  Afternon


         Day
0     Friday
1   Saturday
2   Saturday
3    Tuesday
4  Wednesday
```

On which days of the week do people book Uber rides the most?

```
# Assuming day_label contains counts of the 'Day' column
day_label = df['Day'].value_counts(sort=False)
```

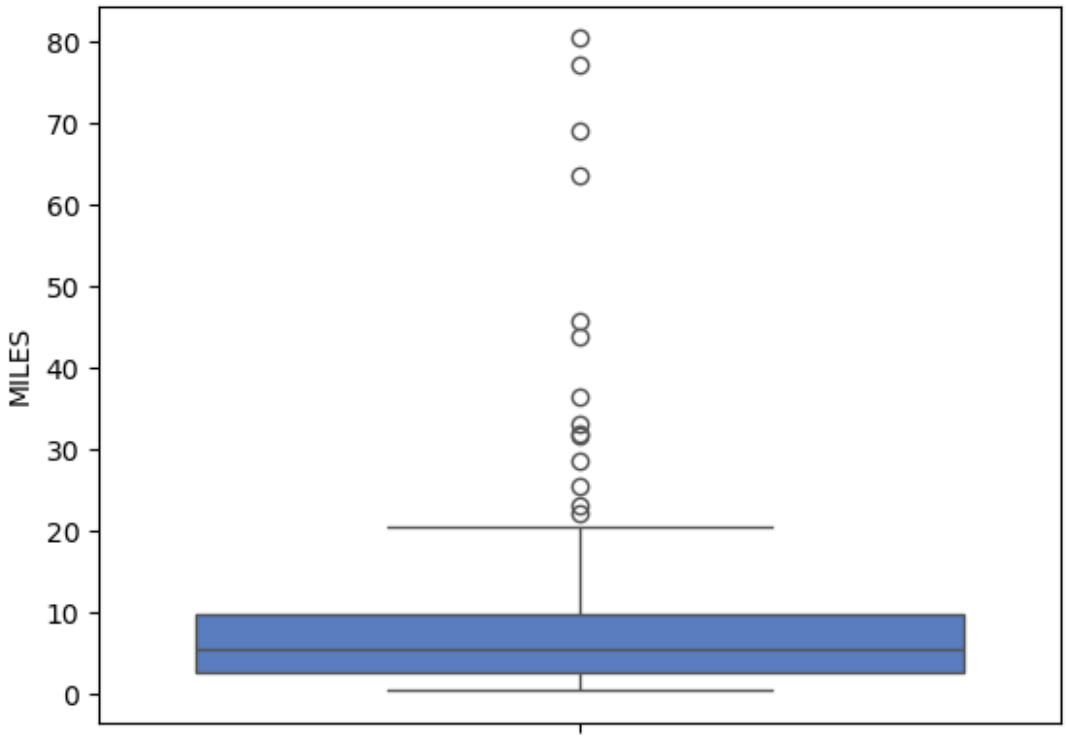
```
# Create the barplot
ax = sns.barplot(x=day_label.index, y=day_label, edgecolor='black',
palette='coolwarm')

# Annotate each bar with its value
for bar in ax.containers:
    ax.bar_label(bar, fmt='%.0f', label_type='center')  # '%.0f'
formats the label as an integer

plt.title("Day-wise Count of Events", fontsize=16, fontweight='bold')
plt.show()
```



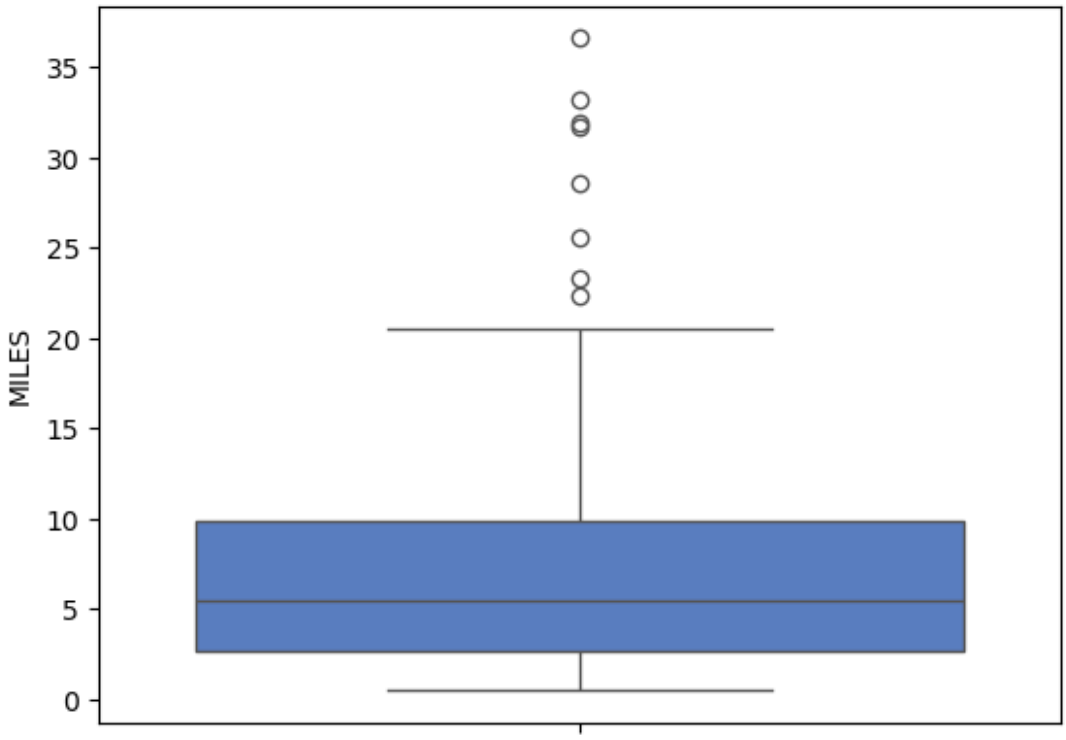
Conclusion : The data clearly indicates that Friday is the most popular day for Uber rides, with a significant increase in bookings compared to other days of the week. This suggests that people tend to prefer Uber on Fridays, possibly due to weekend travel, social events, or end-of-week commutes.

How many miles do people usually book a cab for through Uber?

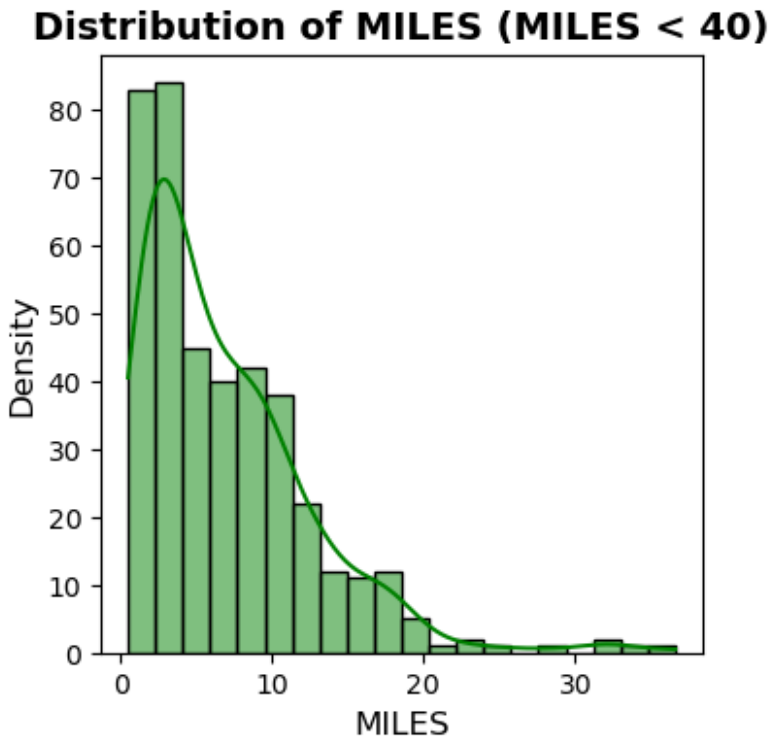
```
sns.boxplot(df[df['MILES']<100]['MILES'])
plt.show()
```




```
sns.boxplot(df[df['MILES']<40]['MILES'])
plt.show()
```




```
# Filter the data
filtered_data = df[df['MILES'] < 40]['MILES']

# Plot the histogram and KDE
plt.figure(figsize=(4,4))
sns.histplot(filtered_data, kde=True, bins=20, color='green',
edgecolor='black')

# Add title and labels
plt.title("Distribution of MILES (MILES < 40)", fontsize=14,
fontweight='bold')
plt.xlabel("MILES", fontsize=12)
plt.ylabel("Density", fontsize=12)

# Show the plot
plt.show()
```



Conclusion:The data reveals that most Uber bookings are for distances up to 20 miles, indicating that people primarily use the service for shorter trips. Although rides can extend up to 80 miles, such long-distance bookings are rare, suggesting that Uber is more commonly used for local travel.