## Q4.Calculate Toll Rate

import pandas as pd

def calculate\_toll\_rate(input\_df):

# Check if the input DataFrame is empty

if input\_df.empty:

raise ValueError("Input DataFrame is empty")

# Define rate coefficients for each vehicle type

rate\_coefficients = {

'moto': 0.8,

'car': 1.2,

'rv': 1.5,

'bus': 2.2,

'truck': 3.6

}

# Add columns for each vehicle type with calculated toll rates

for vehicle\_type, rate\_coefficient in rate\_coefficients.items():

input\_df[vehicle\_type] = input\_df['distance'] \* rate\_coefficient

return input\_df

# Example usage:

# Assuming df is the DataFrame created in Question 2

# df = create\_dataframe() # You need to replace this with the actual creation of the DataFrame

result\_df = calculate\_toll\_rate(df)

print(result\_df)