TASK 3 : DASHBOARD DEVELEPMENT

Step-1

pip install dash pandas

output:

```
Collecting dash
  Downloading dash-3.1.1-py3-none-any.whl.metadata (10 kB)
Requirement already satisfied: pandas in /usr/local/lib/python3.11/dist-packages (2.2.2)
Requirement already satisfied: Flask<3.2,>=1.0.4 in /usr/local/lib/python3.11/dist-packages (from dash) (3.1.1)
Requirement already satisfied: Werkzeug<3.2 in /usr/local/lib/python3.11/dist-packages (from dash) (3.1.3)
Requirement already satisfied: plotly>=5.0.0 in /usr/local/lib/python3.11/dist-packages (from dash) (5.24.1)
Requirement already satisfied: importlib-metadata in /usr/local/lib/python3.11/dist-packages (from dash) (8.7.0)
Requirement already satisfied: typing-extensions>=4.1.1 in /usr/local/lib/python3.11/dist-packages (from dash) (4.14.0)
Requirement already satisfied: requests in /usr/local/lib/python3.11/dist-packages (from dash) (2.32.3)
Collecting retrying (from dash)
  Downloading retrying-1.4.0-py3-none-any.whl.metadata (7.5 kB)
Requirement already satisfied: nest-asyncio in /usr/local/lib/python3.11/dist-packages (from dash) (1.6.0)
Requirement already satisfied: setuptools in /usr/local/lib/python3.11/dist-packages (from dash) (75.2.0)
Requirement already satisfied: numpy>=1.23.2 in /usr/local/lib/python3.11/dist-packages (from pandas) (2.0.2)
Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python3.11/dist-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.11/dist-packages (from pandas) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.11/dist-packages (from pandas) (2025.2)
Requirement already satisfied: blinker>=1.9.0 in /usr/local/lib/python3.11/dist-packages (from Flask<3.2,>=1.0.4->dash) (1.9.0)
Requirement already satisfied: click>=8.1.3 in /usr/local/lib/python3.11/dist-packages (from Flask<3.2,>=1.0.4->dash) (8.2.1)
Requirement already satisfied: itsdangerous>=2.2.0 in /usr/local/lib/python3.11/dist-packages (from Flask<3.2,>=1.0.4->dash) (2.2.0)
Requirement already satisfied: jinja2>=3.1.2 in /usr/local/lib/python3.11/dist-packages (from Flask<3.2,>=1.0.4->dash) (3.1.6)
Requirement already satisfied: markupsafe>=2.1.1 in /usr/local/lib/python3.11/dist-packages (from Flask<3.2,>=1.0.4->dash) (3.0.2)
Requirement already satisfied: tenacity>=6.2.0 in /usr/local/lib/python3.11/dist-packages (from plotly>=5.0.0->dash) (8.5.0)
Requirement already satisfied: packaging in /usr/local/lib/python3.11/dist-packages (from plotly>=5.0.0->dash) (24.2)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-packages (from python-dateutil>=2.8.2->pandas) (1.17.0)
Requirement already satisfied: zipp>=3.20 in /usr/local/lib/python3.11/dist-packages (from importlib-metadata->dash) (3.23.0)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.11/dist-packages (from requests->dash) (3.4.2)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.11/dist-packages (from requests->dash) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.11/dist-packages (from requests->dash) (2.4.0)
```

```
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.11/dist-packages (from requests->dash) (2025.6.15)
Downloading dash-3.1.1-py3-none-any.whl (7.9 MB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 7.9/7.9 MB 47.0 MB/s eta 0:00:00
Downloading retrying-1.4.0-py3-none-any.whl (11 kB)
Installing collected packages: retrying, dash
Successfully installed dash-3.1.1 retrying-1.4.0
```

step-2

```
import pandas as pd
import dash
from dash import dcc, html
from dash.dependencies import Input, Output
import plotly.express as px
```

step-3

```
# Load data
df = pd.read_csv("/content/NYC Yellow Taxi Trip Data.csv")
df = df.dropna()
df = df[df['trip_distance'] > 0]
df['pickup_datetime'] = pd.to_datetime(df['tpep_pickup_datetime'])
df['hour'] = df['pickup_datetime'].dt.hour
df['day'] = df['pickup_datetime'].dt.day_name()
```

output:

```
/tmp/ipython-input-4-2764539047.py:5: UserWarning: Parsing dates in %d-%m-%Y %H:%M format when dayfirst=False (the default) was specified. Pass `dayfirst=True` or specify a format to silence this warning.
  df['pickup_datetime'] = pd.to_datetime(df['tpep_pickup_datetime'])
```

Step-4

```
# App setup
app = dash.Dash(__name__)
app.layout = html.Div([
    html.H1("NYC Yellow Taxi Dashboard"),

    dcc.Dropdown(id='day-filter', options=[
        {'label': day, 'value': day} for day in df['day'].unique()
    ], value='Friday', clearable=False),

    dcc.Graph(id='fare-hour-graph'),
    dcc.Graph(id='trip-count-day')
])

@app.callback(
    Output('fare-hour-graph', 'figure'),
    Input('day-filter', 'value')
)
def update_graph(day):
    dff = df[df['day'] == day]
    fig = px.bar(dff.groupby('hour')['fare_amount'].mean().reset_index(),
                 x='hour', y='fare_amount', title=f"Avg Fare on {day}")
    return fig

@app.callback(
    Output('trip-count-day', 'figure'),
    Input('day-filter', 'value')
)
def update_trip_count(day):
    fig = px.histogram(df, x='day', title="Trip Count by Day")
    return fig
```

```
if __name__ == '__main__':
    app.run(debug=True)
```

output: