IBM Developer
SKILLS NETWORK

Dash Components

Objectives

- Create a dash application layout
- Add HTML H1, P, and Div components
- Add core graph component
- Add multiple charts

Dataset Used

Airline Reporting Carrier On-Time Performance dataset from Data Asset eXchange

Lab Questions

We will be using the same pie and sunburst chart theme from Plotly basics lab.

Theme for Pie Chart

Proportion of distance group (250 mile distance interval group) by month (month indicated by numbers).

Theme for Sunburst Chart

Hierarchical view in othe order of month and destination state holding value of number of flights.

In [1]:

```
# Import required packages
import pandas as pd
import plotly.express as px
```

Load the data

In [2]:

```
# Read the airline data into pandas dataframe
# Read the airline data into pandas dataframe
airline_data =  pd.read_csv('https://cf-courses-data.s3.us.cloud-object-storage.appd
                            encoding = "ISO-8859-1",
                            dtype={'Div1Airport': str, 'Div1TailNum': str,
                                   'Div2Airport': str, 'Div2TailNum': str})
```

In [3]:

```
# Preview the first 5 lines of the loaded data
airline_data.head()
```

Out[3]:

	Unnamed: 0	Year	Quarter	Month	DayofMonth	DayOfWeek	FlightDate	Reporting_Airline	DOT_
0	1295781	1998	2	4	2	4	1998-04-02	AS	
1	1125375	2013	2	5	13	1	2013-05-13	EV	
2	118824	1993	3	9	25	6	1993-09-25	UA	
3	634825	1994	4	11	12	6	1994-11-12	HP	
4	1888125	2017	3	8	17	4	2017-08-17	UA	

5 rows × 110 columns

In [4]:

```
# Shape of the data
airline_data.shape
```

Out[4]:

```
(27000, 110)
```

In [5]:

```
# Randomly sample 500 data points. Setting the random state to be 42 so that we get
data = airline_data.sample(n=500, random_state=42)
```

In [6]:

```
# Get the shape of the trimmed data
data.shape
```

Out[6]:

```
(500, 110)
```

Proportion of distance group (250 mile distance interval group) by month (month indicated by numbers).

In [7]:

```
# Pie Chart Creation
fig = px.pie(data, values='Month', names='DistanceGroup', title='Distance group prop
fig.show()
```

Let's start creating dash application

Theme

Proportion of distance group (250 mile distance interval group) by month (month indicated by numbers).

To do:

1. Import required libraries and create an application layout
2. Add title to the dashboard using HTML H1 component
3. Add a paragraph about the chart using HTML P component
4. Add the pie chart created above using core graph component
5. Run the app

Hints

General examples can be found here.

- For step 1 (only review), this is very specific to running app from Jupyerlab.
    - For Jupyterlab,we will be using `jupyter-dash` library. Adding `from jupyter_dash import JupyterDash` import statement.
    - Instead of creating dash application using `app = dash.Dash()` , we will be using `app = JupyterDash(__name__)` .
- For step 2,
    - Plotly H1 HTML Component
    - Title as `Airline Performance Dashboard`
    - Use `style` parameter and make the title center aligned, with color code `#503D36` , and font-size as 40. Check `More about HTML` section here.
- For step 3,
    - Plotly Paragraph Component
    - Paragraph as `Proportion of distance group (250 mile distance interval group) by month (month indicated by numbers).`
    - Use `style` parameter to make the description center aligned and with color `#F57241` .
- For step 4, refer dcc.Graph component usage.
- For step 5, you can refer examples provided here.

NOTE: Run the solution cell multiple times if you are not seeing the result.

App Skeleton

```
import dash

from jupyter_dash import JupyterDash


app = JupyterDash(__name__)
JupyterDash.infer_jupyter_proxy_config()


app.layout = html.Div(children=[html.H1(.......),
                                html.P(.......),
                                dcc.Graph(......)
                               ]
                      )
if __name__ == '__main__':
    app.run_server(mode="inline", host="localhost")
```

In [14]:

```
# Import required libraries
import dash
import dash_html_components as html
import dash_core_components as dcc
from jupyter_dash import JupyterDash
```

In [16]:

```
JupyterDash.infer_jupyter_proxy_config()
```

In [18]:

```
# needs to be run again in a separate cell due to a jupyterdash bug
JupyterDash.infer_jupyter_proxy_config()
```

In [19]:

```
# Create a dash application
app = JupyterDash(__name__)

# Get the layout of the application and adjust it.
# Create an outer division using html.Div and add title to the dashboard using html.
# Add description about the graph using HTML P (paragraph) component
# Finally, add graph component.
app.layout = html.Div(children=[html.H1('Airline Dashboard',
                                         style={'textAlign': 'center',
                                                'color': '#503D36',
                                                 'font-size': 40}),
                                html.P('Proportion of distance group (250 mile dista
                                        style={'textAlign':'center', 'color': '#F572
                                dcc.Graph(figure=fig)])
if __name__ == '__main__':
    app.run_server(mode="inline", host="localhost")
```

```
/home/jupyterlab/conda/envs/python/lib/python3.6/site-packages/jupyter_dash/jupyter_
```

```
app.py:139: UserWarning:

The 'environ['werkzeug.server.shutdown']' function is deprecated and will be removed
in Werkzeug 2.1.
```

Double-click **here** for the solution.

Summary

Congratulations for completing your dash basics lab.

In this lab, you have learnt how to use dash HTML and core components for creating dashboard.

Author

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Changelog

Date	Version	Changed by	Change Description
12-18-2020	1.0	Nayef	Added dataset link and upload to Git

In [ ]: