



## and dataset

First, let's get the SpaceX Launch dataset for this lab:

- Run the following `wget` command line in the terminal to download dataset as `spacex_launch_dash.csv`

```
1 wget "https://cf-courses-data.s3.us.cloud-object
```

- Test the skeleton app by running the following command in the terminal:

```
1     python3.8 spacex_dash_app.py
```

- Observe the port number (8050) shown in the terminal.

```
theia@theiadocker-anilaj:~/home/project$ python3.8 spacex_dash_app.py
spacex_dash_app:4: UserWarning:
The dash.html components namespace is deprecated. Please replace
```

File Edit Selection View Go Run Terminal Help

spaceX\_dash\_app.py >

```
1 # Import required libraries
2 import pandas as pd
3 import dash
4 import dash_html_components as html
5 import dash_core_components as dcc
6 from dash.dependencies import Input, Output
7 import plotly.express as px
8
9 # Read the SpaceX data into pandas dataframe
10 spacex_df = pd.read_csv("spacex_launch_dash.csv")
11 max_payload = spacex_df['Payload Mass (kg)'].max()
12 min_payload = spacex_df['Payload Mass (kg)'].min()
13
14 # Create a dash application
15 app = dash.Dash(__name__)
16
```

Python Python theia@theiadocker-lutollar: /home/project x

```
theia@theiadocker-lutollar:/home/project$ python3.8 -m pip install pandas dash
Defaulting to user installation because normal site-packages is not writable
Collecting pandas
  Downloading pandas-1.5.3-cp38-cp38-manylinux_2_17_x86_64.manylinux2
014_x86_64.whl (12.2 MB)
```

```
Collecting dash  
  Downloading dash-2.9.1-py3-none-any.whl (10.2 MB)  
    10.2/10.2 MB 97.7 MB/s eta 0:00:00  
Collecting numpy>=1.20.3  
  Downloading numpy-1.24.2-cp38-cp38-manylinux_2_17_x86_64.manylinux2  
014_x86_64.whl (17.3 MB)
```

```
Requirement already satisfied: pytz>=2020.1 in /home/theia/.local/lib/python3.8/site-packages (from pandas) (2022.1)
Requirement already satisfied: python-dateutil>=2.8.1 in /home/theia/.local/lib/python3.8/site-packages (from pandas) (2.8.2)
Collecting dash-html-components==2.0.0
  Downloading dash_html_components-2.0.0-py3-none-any.whl (4.1 kB)
Collecting plotly==5.0.0
  Downloading plotly-5.13.1-py2.py3-none-any.whl (15.2 MB)
Collecting dash-table==5.0.0
  Downloading dash_table-5.0.0-py3-none-any.whl (15.2/15.2 MB 78.6 MB/s eta 0:00:00
```

Collecting dash-table==5.0.0

```
  Downloading dash_table-5.0.0-py3-none-any.whl (3.9 kB)
Collecting dash-core-components==2.0.0
  Downloading dash_core_components-2.0.0-py3-none-any.whl (3.8 kB)
Requirement already satisfied: Flask>=1.0.4 in /home/theia/.local/lib/python3.8/site-packages (from dash) (2.2.2)
Requirement already satisfied: Jinja2>=3.0.0 in /home/theia/.local/lib/python3.8/site-packages (from Flask>=1.0.4->dash) (3.1.2)
Requirement already satisfied: itsdangerous>=2.0 in /home/theia/.local/lib/python3.8/site-packages (from Flask>=1.0.4->dash) (2.1.2)
Requirement already satisfied: importlib-metadata>=3.6.0 in /home/theia/.local/lib/python3.8/site-packages (from Flask>=1.0.4->dash) (4.12.0)
```

```
Requirement already satisfied: click>=8.0 in /home/theia/.local/lib/python3.8/site-packages (from Flask>=1.0.4->dash) (8.1.3)
Requirement already satisfied: Werkzeug>=2.2.2 in /home/theia/.local/lib/python3.8/site-packages (from Flask>=1.0.4->dash) (2.2.2)
Requirement already satisfied: tenacity>=6.2.0 in /home/theia/.local/lib/python3.8/site-packages (from plotly)=5.0.0->dash) (8.0.1)
Requirement already satisfied: six>=1.5 in /home/theia/.local/lib/pypyhon3.8/site-packages (from python-dateutil>=2.8.1->pandas) (1.16.0)
Requirement already satisfied: zipp>=0.5 in /home/theia/.local/lib/python3.8/site-packages (from importlib-metadata>=3.6.0->Flask>=1.0.4->dash) (3.8.1)
Requirement already satisfied: MarkupSafe>=2.0 in /home/theia/.local/lib/python3.8/site-packages (from Jinja2>=3.0->Flask>=1.0.4->dash) (2.1.3)
Requirement already satisfied: cycler>=0.10.0 in /home/theia/.local/lib/python3.8/site-packages (from colorsys>=1.4.3->dash==2.3.1) (0.10.0)
Requirement already satisfied: pytz>=2021.3 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (2022.1)
Requirement already satisfied: six>=1.5 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (1.16.0)
Requirement already satisfied: pyparsing>=2.4.7 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (2.4.7)
Requirement already satisfied: dateutil>=2.8.1 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (2.8.1)
Requirement already satisfied: tzlocal>=4.0.0 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (4.0.0)
Requirement already satisfied: pydantic>=1.9.0 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (1.9.0)
Requirement already satisfied: pydantic-type-annotations>=1.6.0 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (1.6.0)
Requirement already satisfied: typeguard>=2.13.2 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (2.13.2)
Requirement already satisfied: type-annotations>=3.4.3 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (3.4.3)
Requirement already satisfied: type-hint-optional>=1.0.1 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (1.0.1)
Requirement already satisfied: type-annotator>=1.0.2 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (1.0.2)
Requirement already satisfied: typeguard>=2.13.2 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (2.13.2)
Requirement already satisfied: type-annotations>=3.4.3 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (3.4.3)
Requirement already satisfied: type-hint-optional>=1.0.1 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (1.0.1)
Requirement already satisfied: type-annotator>=1.0.2 in /home/theia/.local/lib/python3.8/site-packages (from pendulum>=2.1.2->dash==2.3.1) (1.0.2)
```

```
.1.1')
Installing collected packages: dash-table, dash-html-components, dash-
core-components, plotly, numpy, pandas, dash
Successfully installed dash-2.9.1 dash-core-components-2.0.0 dash-htm
l-components-2.0.0 dash-table-5.0.0 numpy-1.24.2 pandas-1.5.3 plotly-
5.13.1
theia@theiadocker-lutollar:/home/project$ wget "https://cf-courses-da
ta.s3.us.cloud-object-storage.appdomain.cloud/IBM-DS0321EN-SkillsNetw
ork/datasets/spacex_launch_dash.csv"
--2023-03-23 06:16:05-- https://cf-courses-data.s3.us.cloud-object-s
torage.appdomain.cloud/IBM-DS0321EN-SkillsNetwork/datasets/spacex_la
unch_dash.csv
```

```
[...]  
Resolving cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud  
(cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud)... 169.6  
(cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud)... 169.6  
3.118.104  
Connecting to cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud  
(cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud)|169.  
63.118.104|:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: 2476 (2.4K) [text/csv]  
Saving to: 'spacex_launch_dash.csv'  
  
spacex launch das 100%[=====]> 2.42K ---KB/s in 0s  
  
2023-03-23 06:16:25 (323 MB/s) - 'spacex_launch_dash.csv' saved [2476]
```

```
2023-03-23 06:18:03 (322 MB/s) - 'spacex_launch_dash.py' saved [2476/2476]

theia@theiadocker-lutollar:/home/project$ wget "https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DS0321EN-SkillsNetwork/labs/module_3/spacex_dash_app.py"
--2023-03-23 06:16:12-- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DS0321EN-SkillsNetwork/labs/module_3/spacex_dash_app.py
Resolving cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud (cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud)... 169.3.118.104
Connecting to cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud (cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud)|169.3.118.104|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2110 (2.1K) [text/x-python]
Saving to: 'spacex_dash_app.py'

spacex_dash_app.py 100%[=====] 2.06K --.-KB/s in 0s

2023-03-23 06:16:12 (308 MB/s) - 'spacex_dash_app.py' saved [2110/2110]

theia@theiadocker-lutollar:/home/project$ python3.8 spacex_dash_app.py
spacex_dash_app.py:4: UserWarning:
The dash_html_components package is deprecated. Please replace
`import dash html components as html` with `from dash import html`
`import dash_html_components as html` with `from dash import html`
`import dash_html_components as html`
spacex_dash_app.py:5: UserWarning:
The dash_core_components package is deprecated. Please replace
`import dash core components as dcc` with `from dash import dcc`
`import dash_core_components as dcc`
Dash is running on http://127.0.0.1:8050

* Serving Flask app 'spacex_dash_app'
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:8050
Press CTRL+C to quit
127.0.0.1 - - [23/Mar/2023 06:18:02] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:02] "GET /_dash-component-suites/dash/deps/polyfill@7.v2_9_1m1679566557.12.1.min.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:02] "GET /_dash-component-suites/dash/deps/react@16.v2_9_1m1679566557.14.0.min.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:02] "GET /_dash-component-suites/dash/deps/react-dom@16.v2_9_1m1679566557.14.0.min.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:02] "GET /_dash-component-suites/dash/deps/prop-types@15.v2_9_1m1679566557.8.1.min.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:02] "GET /_dash-component-suites/dash/dcc/dash core components-shared.v2 9 0m1679566557.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:02] "GET /_dash-component-suites/dash/dash_table/bundle.v5_2_3m1679566557.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:02] "GET /_dash-component-suites/dash/dash-renderer/build/dash renderer.v2 9 1m1679566557.min.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:02] "GET /_dash-component-suites/dash/dcc/dash core components.v2_9_0m1679566557.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:02] "GET /_dash-component-suites/dash/html/dash html components.v2_0_9m1679566557.min.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:03] "GET /_dash-dependencies HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:03] "GET /_dash-layout HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:03] "GET / favicon.ico?v=2.9.1 HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:03] "GET /_favicon.ico?v=2.9.1 HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:03] "GET /_dash-component-suites/dash/dcc/async-dropdown.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:03] "GET /_dash-component-suites/dash/dcc/async-slider.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:03] "GET /_dash-component-suites/dash/dcc/async-graph.js HTTP/1.1" 304 -
127.0.0.1 - - [23/Mar/2023 06:18:03] "GET /_dash-component-suites/dash/dcc/asvnc-plot1vis.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:04] "POST /_dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:04] "POST /_dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:36] "POST / dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:36] "POST /_dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:48] "POST /_dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:48] "POST /_dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:57] "POST /_dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:18:57] "POST / dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:19:05] "POST /_dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:19:05] "POST /_dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:19:17] "POST /_dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:19:20] "POST /_dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:19:21] "POST / dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:19:24] "POST /_dash-update-component HTTP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:19:27] "POST /_dash-update-component HTTP/1.1" 200
```

```
TP/1.1" 200 -
TP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:20:42] "POST /_dash-update-component HT
TP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:20:42] "POST /_dash-update-component HT
TP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:20:48] "POST /_dash-update-component HT
TP/1.1" 200 -
127.0.0.1 - - [23/Mar/2023 06:20:49] "POST /_dash-update-component HT
TP/1.1" 200 -
[]
```

Python 3.6.9 64-bit ⊗ 0 △ 0

⑧ Go Live Ln 1, Col 1 LF UTF-8 Spaces: 4 Python ⌂ ⌚