



How to Place Matplotlib Charts on a Tkinter GUI

October 22, 2022

In this short tutorial, you'll see the steps to place [matplotlib charts](#) on a tkinter GUI.

More specifically, you'll learn how to embed the following charts on your GUI:

- Bar
- Line
- Scatter

Steps to place *matplotlib* charts on a tkinter GUI

Step 1: Prepare the datasets for the charts

Firstly, you'll need to prepare the datasets for the charts.

For illustration purposes, let's use the following 3 datasets for our charts:

Data for the Bar Chart

country	gdp_per_capita
A	45000
B	42000
C	52000
D	49000
E	47000

1920	9.8
1930	12
1940	8
1950	7.2
1960	6.9
1970	7
1980	6.5
1990	6.2
2000	5.5
2010	6.3

Data for the Scatter Diagram

interest_rate	index_price
5	1500
5.5	1520
6	1525
5.5	1523
5.25	1515
6.5	1540
7	1545
8	1560
7.5	1555
8.5	1565

Step 2: Create the DataFrames in Python

Next, capture the above data using the following [DataFrames](#):

```
import pandas as pd
```

x

```

print(df1)

data2 = {'year': [1920, 1930, 1940, 1950, 1960, 1970, 1980, 1990, 2000, 2010],
        'unemployment_rate': [9.8, 12, 8, 7.2, 6.9, 7, 6.5, 6.2, 5.5, 6.3]}
df2 = pd.DataFrame(data2)
print(df2)

data3 = {'interest_rate': [5, 5.5, 6, 5.5, 5.25, 6.5, 7, 8, 7.5, 8.5],
        'index_price': [1500, 1520, 1525, 1523, 1515, 1540, 1545, 1560, 1540, 1520]}
df3 = pd.DataFrame(data3)
print(df3)

```

Run the above code, and you'll get the following 3 DataFrames:

```

country  gdp_per_capita
0      A      45000
1      B      42000
2      C      52000
3      D      49000
4      E      47000
year  unemployment_rate
0  1920           9.8
1  1930          12.0
2  1940           8.0
3  1950           7.2
4  1960           6.9
5  1970           7.0
6  1980           6.5
7  1990           6.2
8  2000           5.5
9  2010           6.3
interest_rate  index_price
0           5.00      1500
1           5.50      1520
2           6.00      1525
3           5.50      1523
4           5.25      1515
5           6.50      1540
6           7.00      1545
7           8.00      1560

```

Next, you'll need to [create the tkinter GUI](#), so that you can place the charts on it.

To begin, you'll need to import the *tkinter* and *matplotlib* modules as follows:

```
import tkinter as tk
import matplotlib.pyplot as plt
from matplotlib.backends.backend_tkagg import FigureCanvasTkAgg
```

Then, add the charts on the GUI by using this generic template:

```
figure = plt.Figure(figsize=(6,5), dpi=100)
ax = figure.add_subplot(111)
chart_type = FigureCanvasTkAgg(figure, root)
chart_type.get_tk_widget().pack()
df = df[['First Column', 'Second Column']].groupby('First Column').sum()
df.plot(kind='Chart Type such as bar', legend=True, ax=ax)
ax.set_title('The Title for your chart')
```

Slight variations may be applied to the above template, depending on the chart that you need to plot.

Putting everything together, your full [Python](#) code would look like this:

```
import tkinter as tk
import pandas as pd
import matplotlib.pyplot as plt
from matplotlib.backends.backend_tkagg import FigureCanvasTkAgg

data1 = {'country': ['A', 'B', 'C', 'D', 'E'],
         'gdp_per_capita': [45000, 42000, 52000, 49000, 47000]}
df1 = pd.DataFrame(data1)

data2 = {'year': [1920, 1930, 1940, 1950, 1960, 1970, 1980, 1990, 2000],
         'unemployment_rate': [9.8, 12, 8, 7.2, 6.9, 7, 6.5, 6.2, 5.6]}
df2 = pd.DataFrame(data2)
```

```

root = tk.Tk()

figure1 = plt.Figure(figsize=(6, 5), dpi=100)
ax1 = figure1.add_subplot(111)
bar1 = FigureCanvasTkAgg(figure1, root)
bar1.get_tk_widget().pack(side=tk.LEFT, fill=tk.BOTH)
df1 = df1[['country', 'gdp_per_capita']].groupby('country').sum()
df1.plot(kind='bar', legend=True, ax=ax1)
ax1.set_title('Country Vs. GDP Per Capita')

figure2 = plt.Figure(figsize=(5, 4), dpi=100)
ax2 = figure2.add_subplot(111)
line2 = FigureCanvasTkAgg(figure2, root)
line2.get_tk_widget().pack(side=tk.LEFT, fill=tk.BOTH)
df2 = df2[['year', 'unemployment_rate']].groupby('year').sum()
df2.plot(kind='line', legend=True, ax=ax2, color='r', marker='o', fc
ax2.set_title('Year Vs. Unemployment Rate')

figure3 = plt.Figure(figsize=(5, 4), dpi=100)
ax3 = figure3.add_subplot(111)
ax3.scatter(df3['interest_rate'], df3['index_price'], color='g')
scatter3 = FigureCanvasTkAgg(figure3, root)
scatter3.get_tk_widget().pack(side=tk.LEFT, fill=tk.BOTH)
ax3.legend(['index_price'])
ax3.set_xlabel('Interest Rate')
ax3.set_title('Interest Rate Vs. Index Price')

root.mainloop()

```

Run the above Python code, and you'll see the [matplotlib charts](#) placed on the GUI.

For additional information about the *tkinter* module, you may check the [tkinter documentation](#).

Python

- < [How to Export Pandas DataFrame to an Excel File](#)
- > [How to Concatenate Column Values in Pandas DataFrame](#)

Create Executable

Add to Path

Schedule Script

Copy File

Read Excel

Read CSV

Create DataFrame

Sort DataFrame

DataFrame to List

List to DataFrame

Plot DataFrame

Plot Histogram

Correlation Matrix

Line Chart

Bar Chart

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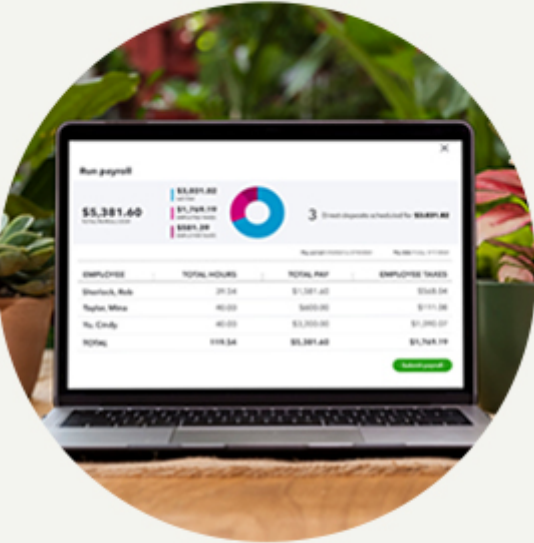
Create DataFrame

Export DataFrame

Import CSV







EMPLOYEE	TOTAL HOURS	TOTAL PAY	EMPLOYEE TAXES
Shirley, Bob	20.00	\$1,387.00	\$108.00
Nguyen, Mike	40.00	\$2,774.00	\$216.00
Nguyen, Cindy	40.00	\$2,774.00	\$216.00
TOTAL	100.00	\$6,935.00	\$540.00

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DATA TO FISH

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