- Shin’s Lab -

# Python for Data Visualization

# Python for Data Visualization

## -Chapter.4 Bar Plot -

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### 4-04. Horizontal Bar Plots

1. ax.barh
2. ax.barh Examples

# 1. ax.barh

## matplotlib.pyplot.barh

`matplotlib.pyplot.barh(y, width, height=0.8, left=None, *, align='center', **kwargs)` [source]

Make a horizontal bar plot.

The bars are positioned at *y* with the given *align*ment. Their dimensions are given by *width* and *height*. The horizontal baseline is *left* (default 0).

Many parameters can take either a single value applying to all bars or a sequence of values, one for each bar.

**Parameters:**

**y** : float or array-like

The y coordinates of the bars. See also *align* for the alignment of the bars to the coordinates.

**width** : float or array-like

The width(s) of the bars.

**height** : float or array-like, default: 0.8

The heights of the bars.

**left** : float or array-like, default: 0

The x coordinates of the left sides of the bars.

**align** : {'center', 'edge'}, default: 'center'

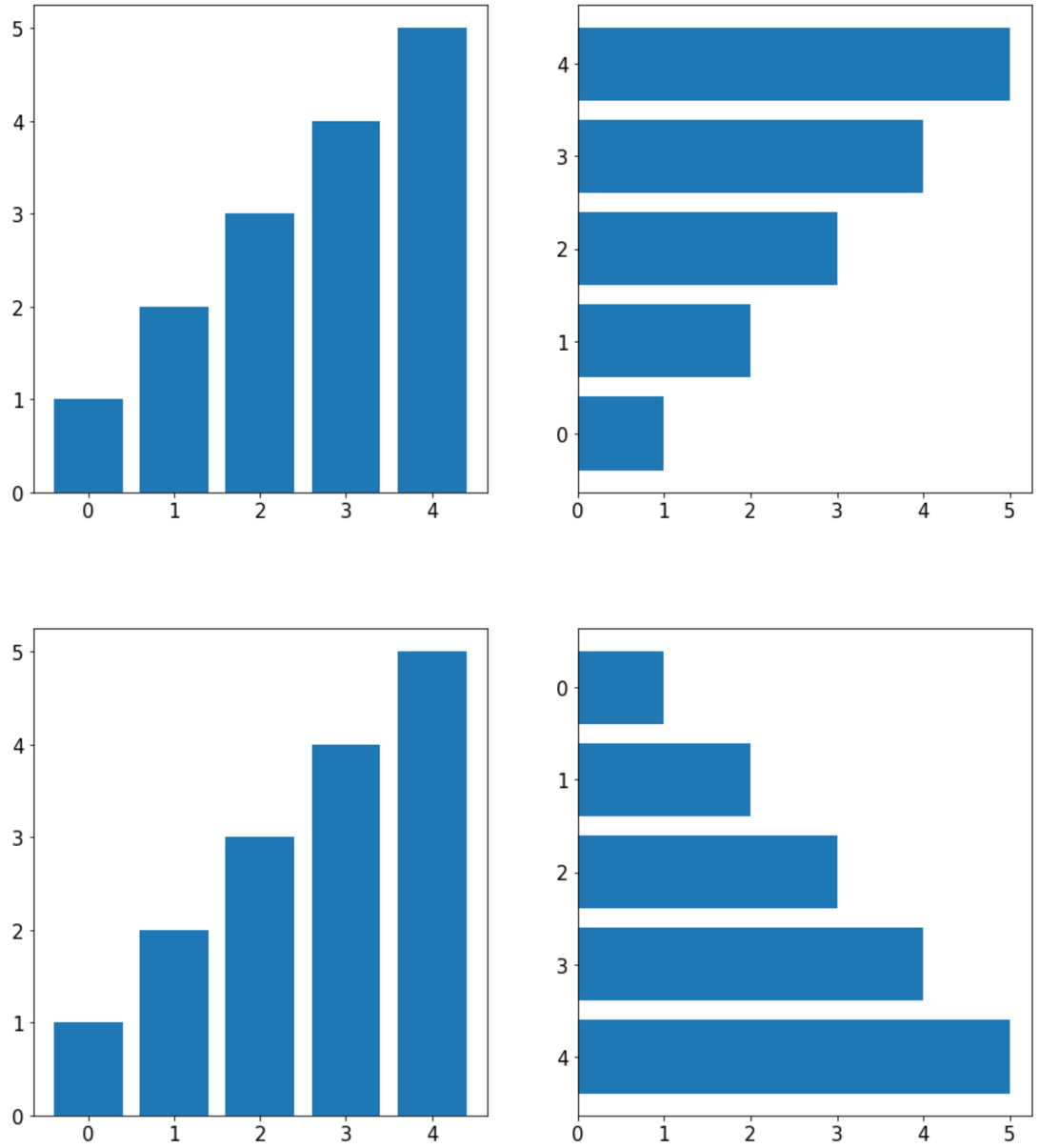
Alignment of the base to the *y* coordinates*:

- 'center': Center the bars on the *y* positions.
- 'edge': Align the bottom edges of the bars with the *y* positions.

To align the bars on the top edge pass a negative *height* and `align='edge'`.

# 1. ax.barh

```
import matplotlib.pyplot as plt
import numpy as np

np.random.seed(0)

data = np.array([1, 2, 3, 4, 5])
data_idx = np.arange(len(data))

fig, axes = plt.subplots(1, 2, figsize=(14, 7))
axes[0].tick_params(labelsize=15)
axes[1].tick_params(labelsize=15)

axes[0].bar(data_idx, data)
axes[1].barh(data_idx, data)

-----------------------------
axes[1].invert_yaxis()
```

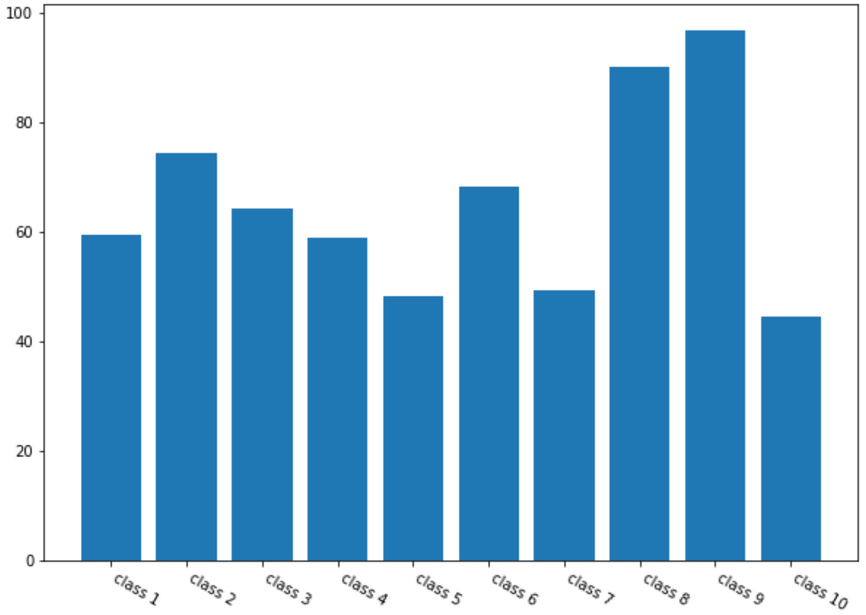


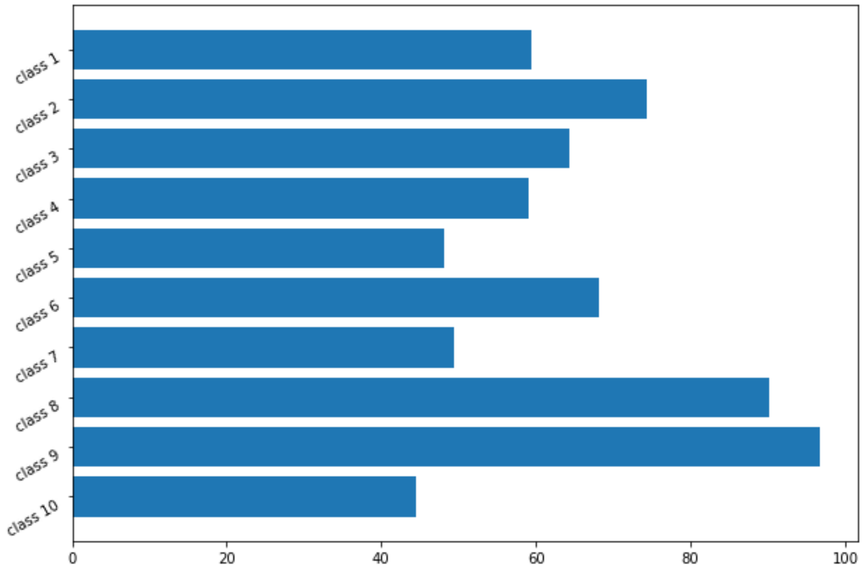
## 2. ax.barh Examples

```
import matplotlib.pyplot as plt
import numpy as np

np.random.seed(0)

n_data = 10
data = np.random.uniform(10, 100, (n_data))
data_idx = np.arange(n_data)
data_label = ['class ' + str(i+1) for i in range(n_data)]

fig, ax = plt.subplots(figsize=(10, 7))
ax.bar(data_idx, data)
ax.set_xticks(data_idx)
ax.set_xticklabels(data_label,
                   rotation=-30,
                   ha='left')
```

---

```
fig, ax = plt.subplots(figsize=(10, 7))
ax.invert_yaxis()
ax.barh(data_idx, data)
ax.set_yticks(data_idx)
ax.set_yticklabels(data_label,
                   rotation=30,
                   va='top')
```



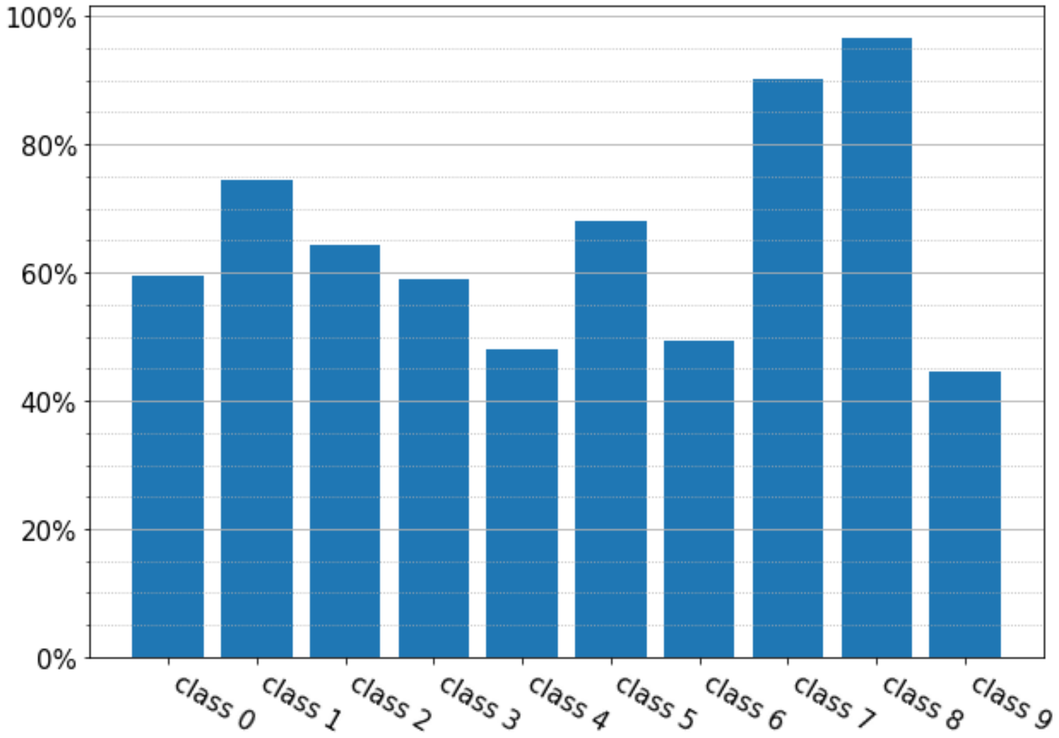



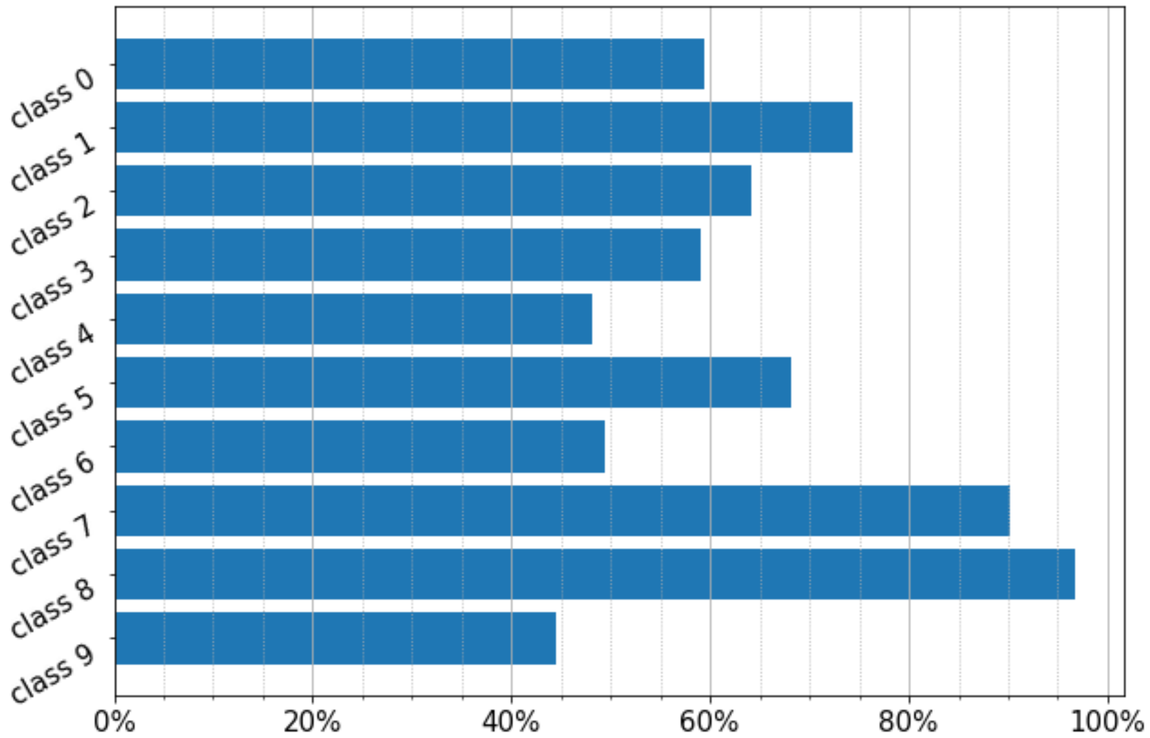
# 2. ax.barh Examples

```
fig, ax = plt.subplots(figsize=(10, 7))
ax.tick_params(labelsize=15)

ax.bar(data_idx, data)
ax.set_xticks(data_idx)
ax.set_xticklabels(data_labels,
                   rotation=-30,
                   ha='left')


major_yticks = np.arange(0, 101, 20)
major_yticklabels = [str(p) + '%' for p in major_yticks]
minor_yticks = np.arange(0, 101, 5)

ax.set_yticks(major_yticks)
ax.set_yticklabels(major_yticklabels)
ax.set_yticks(minor_yticks,
              minor=True)

ax.grid(axis='y',
        which='major')
ax.grid(axis='y',
        which='minor',
        linestyle=':')
```

```
fig, ax = plt.subplots(figsize=(10, 7))
ax.tick_params(labelsize=15)

ax.invert_yaxis()
ax.barh(data_idx, data)
ax.set_yticks(data_idx)
ax.set_yticklabels(data_labels,
                   rotation=30,
                   va='top')

major_xticks = np.arange(0, 101, 20)
major_xticklabels = [str(p) + '%' for p in major_xticks]
minor_xticks = np.arange(0, 101, 5)

ax.set_xticks(major_xticks)
ax.set_xticklabels(major_xticklabels)
ax.set_xticks(minor_xticks,
              minor=True)

ax.grid(axis='x',
        which='major')
ax.grid(axis='x',
        which='minor',
        linestyle=':')
```

## 2. ax.barh Examples



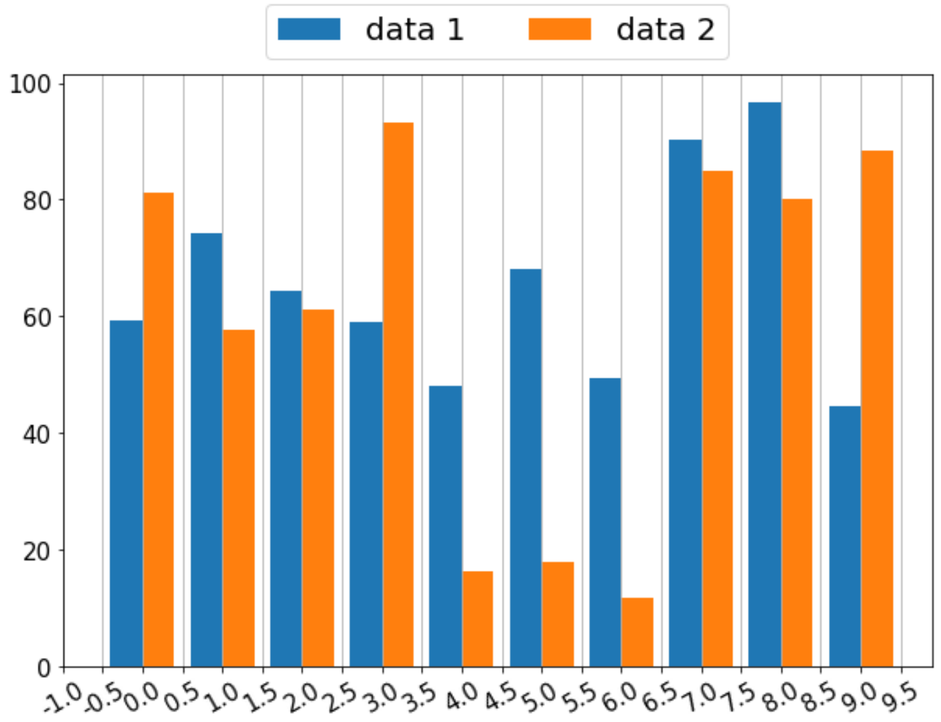
# 2. ax.barh Examples

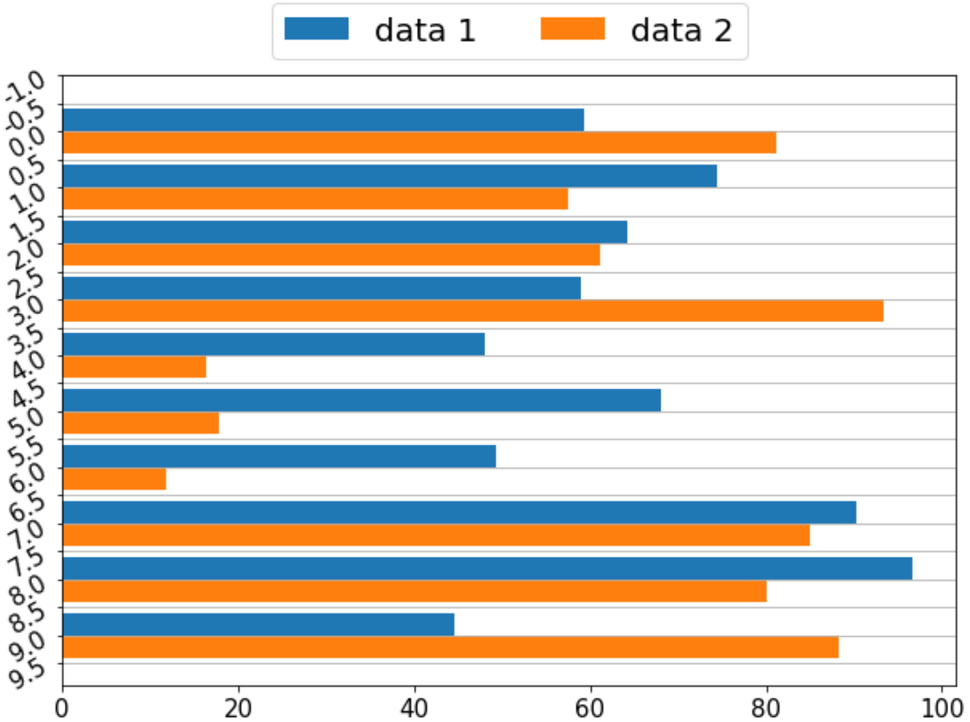
```
import matplotlib.pyplot as plt
import numpy as np
np.random.seed(0)

N = 2
WIDTH = 0.8
BAR_WIDTH = WIDTH/N

n_data = 10
data1 = np.random.uniform(10, 100, (n_data,))
data2 = np.random.uniform(10, 100, (n_data,))
data_idx = np.arange(n_data)
```

```
fig, ax = plt.subplots(figsize=(10, 7))
ax.bar(data_idx - BAR_WIDTH/2, data1,
       width=BAR_WIDTH,
       label='data 1')

ax.bar(data_idx + BAR_WIDTH/2, data2,
       width=BAR_WIDTH,
       label='data 2')


ax.legend(loc='lower center',
          bbox_to_anchor=(0.5, 1),
          fontsize=20,
          ncol=2)

xticks = np.arange(-1, 10, 0.5)
ax.set_xticks(xticks)
ax.set_xticklabels(xticks,
                   rotation=30)
ax.grid(axis='x')
ax.tick_params(labelsize=15)
```

```
fig, ax = plt.subplots(figsize=(10, 7))
ax.invert_yaxis()
ax.barh(data_idx - BAR_WIDTH/2, data1,
        height=BAR_WIDTH,
        label='data 1')

ax.barh(data_idx + BAR_WIDTH/2, data2,
        height=BAR_WIDTH,
        label='data 2')

ax.legend(loc='lower center',
          bbox_to_anchor=(0.5, 1),
          fontsize=20,
          ncol=2)

yticks = np.arange(-1, 10, 0.5)
ax.set_yticks(yticks)
ax.set_yticklabels(yticks,
                   rotation=30)
ax.grid(axis='y')
ax.tick_params(labelsize=15)
```

## 2. ax.barh Examples



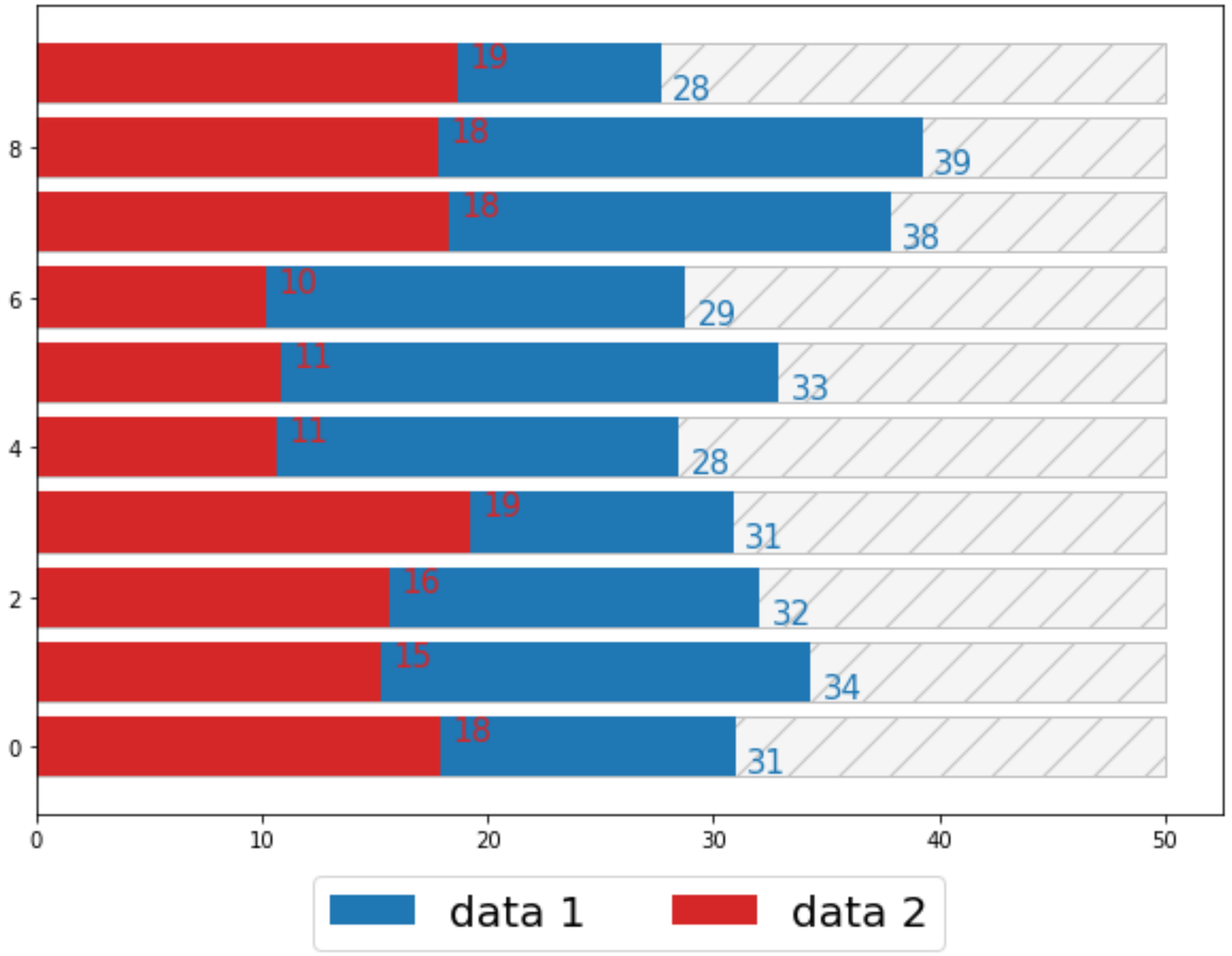



# 2. ax.barh Examples

```
import matplotlib.pyplot as plt
import numpy as np

np.random.seed(0)

n_data = 10
data1 = np.random.uniform(20, 40, (n_data,))
data2 = np.random.uniform(10, 20, (n_data,))
background = 50*np.ones(n_data)
data_idx = np.arange(n_data)
colors = ['tab:blue', 'tab:red']
labels = ['data 1', 'data 2']

fig, ax = plt.subplots(figsize=(10, 7))
ax.barh(data_idx, background,
        facecolor='whitesmoke',
        hatch='/',
        edgecolor='silver')

rects1 = ax.barh(data_idx, data1,
                 color=colors[0],
                 label=labels[0])

rects2 = ax.barh(data_idx, data2,
                 color=colors[1],
                 label=labels[1])

ax.legend(loc='upper center',
          bbox_to_anchor=(0.5, -0.05),
          fontsize=20,
          ncol=2)
```

```
xticks = ax.get_xticks()
xtick_interval = xticks[1] - xticks[0]
for rect_idx, rect in enumerate(rects1):
    y = rect.get_y()
    width = rect.get_width()
    height = rect.get_height()

    ax.text(width + xtick_interval*0.05,
            y + height/2,
            str(round(width)),
            va='top',
            fontsize=15,
            color=colors[0])

for rect_idx, rect in enumerate(rects2):
    y = rect.get_y()
    width = rect.get_width()
    height = rect.get_height()

    ax.text(width + xtick_interval*0.05,
            y + height/2,
            str(round(width)),
            va='bottom',
            fontsize=15,
            color=colors[1])
```

## 2. ax.barh Examples



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### 4-04. Horizontal Bar Plots

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