

Assignment No - 3

Python Libraries for Data Analysis and Visualization

NumPy (Solve using `help(np)` and `help(np.function_name)`)

1. Import the numpy package under the name np.

```
import numpy as np
```

2. Print the numpy version and configuration.

```
print(np.__version__)  
np.show_config()
```

3. Create a null vector of size 10.

```
np.zeros(10)
```

4. Find the memory size of any array.

```
x = np.zeros(10)  
print(x.size * x.itemsize)
```

5. Get documentation of numpy add function from the command line.

```
python -c "import numpy as np; help(np.add)"
```

6. Create a null vector of size 10 with the fifth value as 1.

```
x = np.zeros(10)  
x[4] = 1
```

7. Create a vector with values ranging from 10 to 49.

```
np.arange(10, 50)
```

8. Reverse a vector.

```
x = np.arange(10)  
x[::-1]
```

9. Create a 3x3 matrix with values ranging from 0 to 8.

```
np.arange(9).reshape(3, 3)
```

10. Find indices of non-zero elements from [1,2,0,0,4,0].

```
np.nonzero([1, 2, 0, 0, 4, 0])
```

Pandas (Solve using help(pd) and help(pd.function_name))

1. Import pandas under the alias pd.

```
import pandas as pd
```

2. Print the pandas version.

```
print(pd.__version__)
```

3. Print version information of required libraries.

```
pd.show_versions()
```

4. Create a DataFrame from the given dictionary.

```
df = pd.DataFrame(data, index=labels)
```

5. Display a summary of the DataFrame.

```
df.info()
```

6. Return the first 3 rows.

```
df.head(3)
```

7. Select the 'animal' and 'age' columns.

```
df[['animal', 'age']]
```

8. Select rows [3, 4, 8] and columns ['animal', 'age'].

```
df.loc[df.index[[3, 4, 8]], ['animal', 'age']]
```

9. Select rows where visits > 3.

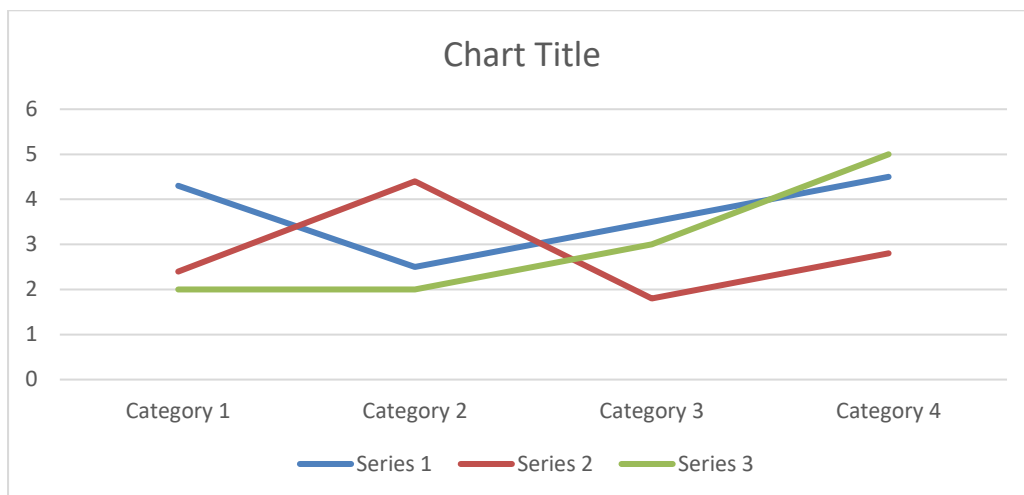
```
df[df['visits'] > 3]
```

10. Select rows where age is missing (NaN).

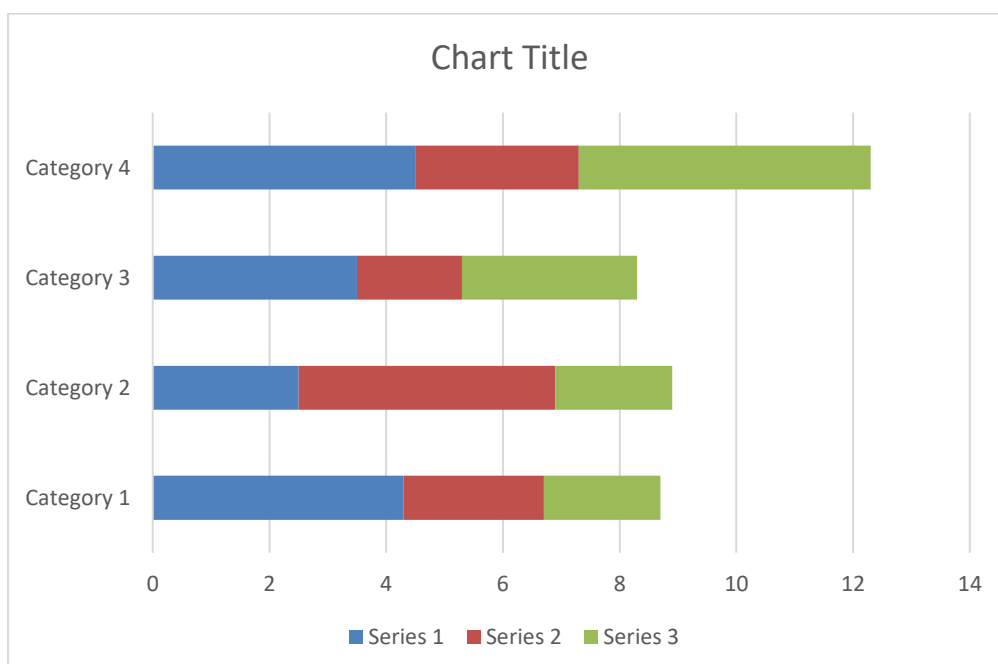
```
df[df['age'].isna()]
```

Matplotlib

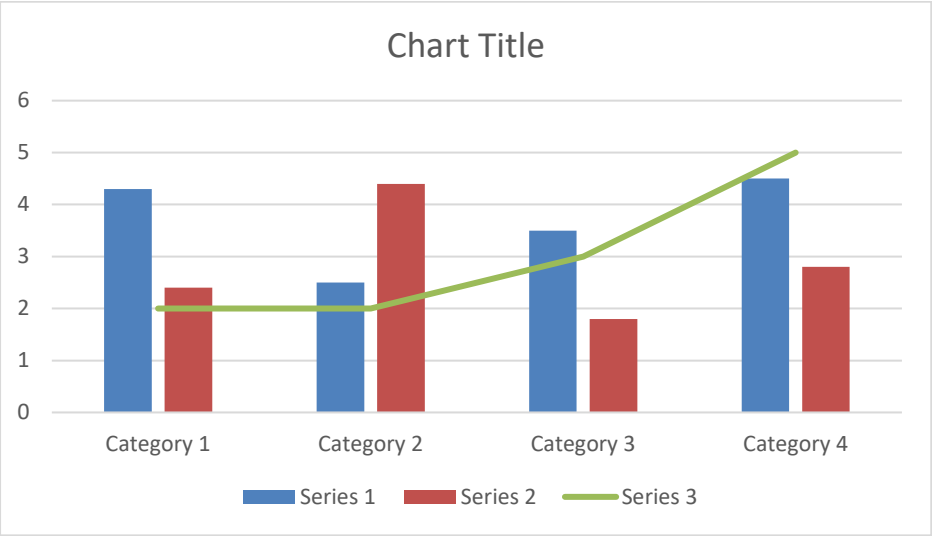
1. Line graph



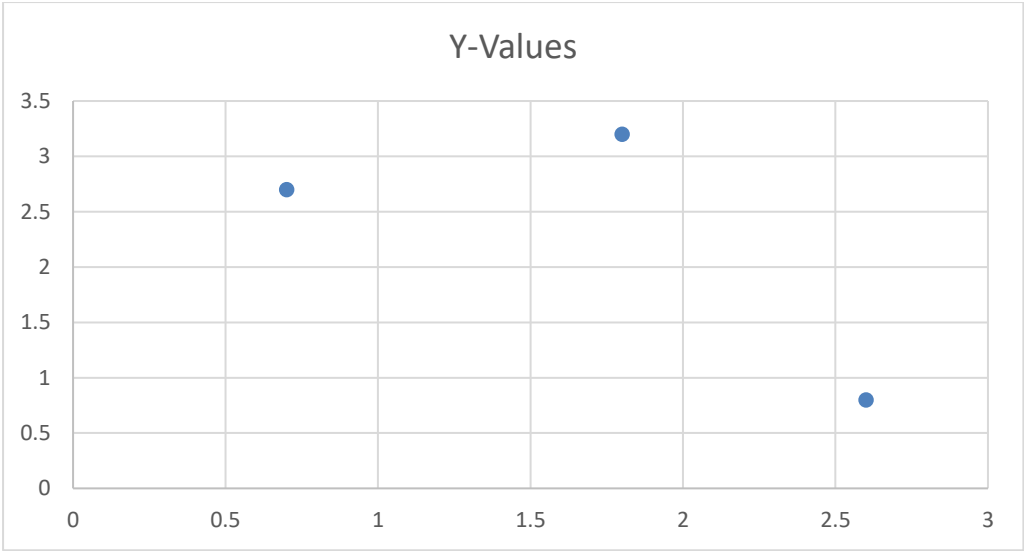
2. Bar chart



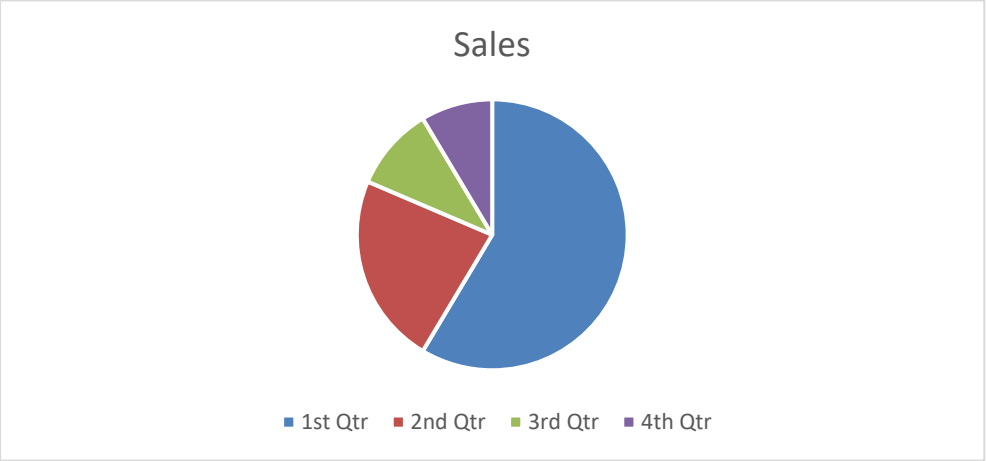
3. Histogram



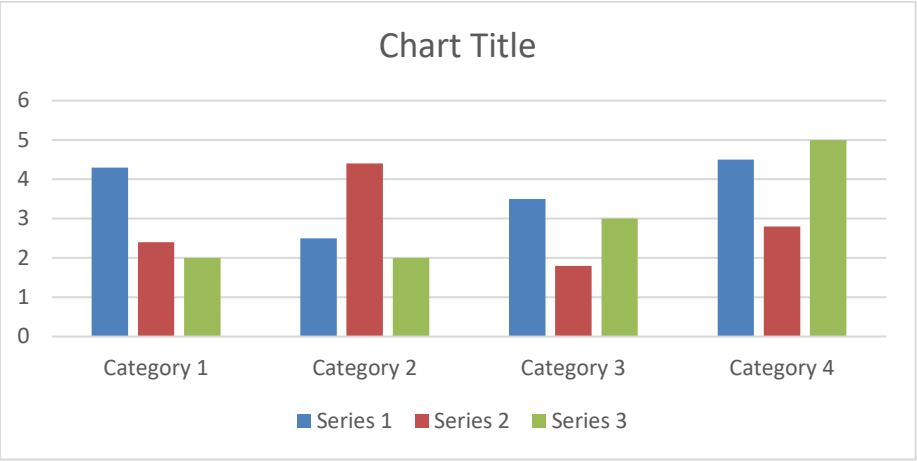
4. Scatter plot



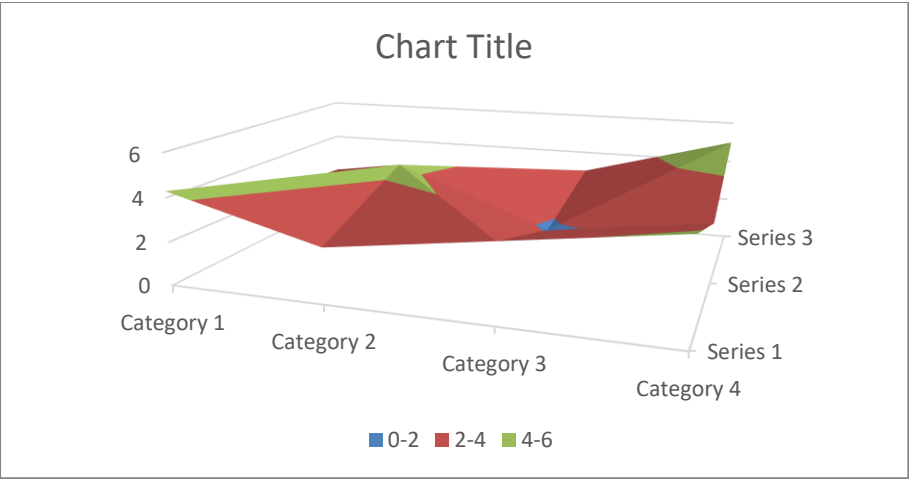
5. Pie chart



6. Box plot

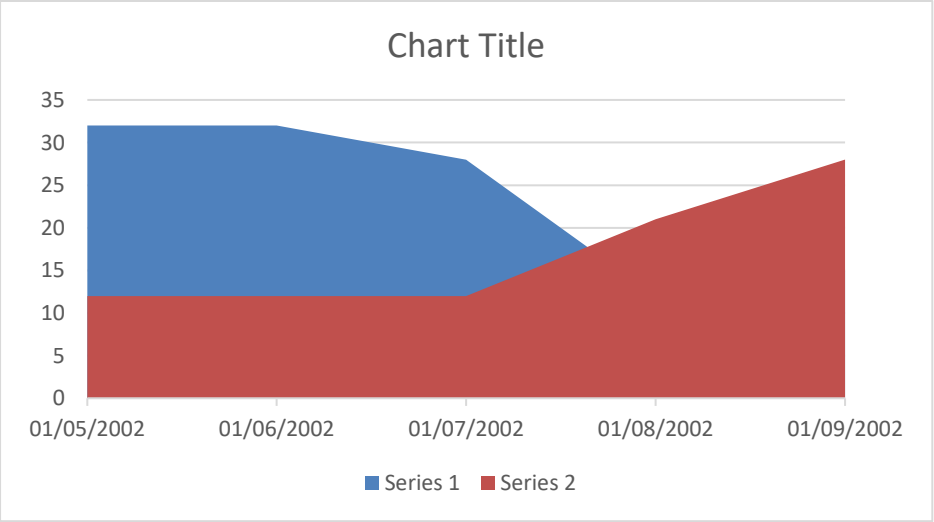


7. Heatmap



8. Stack plot

9. Area chart



10. Violin plot

Seaborn (Draw 10 graphs with proper meaning)

- 1. Distribution plot**
- 2. Count plot**
- 3. Box plot**
- 4. Violin plot**
- 5. Pair plot**
- 6. Heatmap**
- 7. Scatter plot**
- 8. Line plot**
- 9. Regression plot**
- 10. Swarm plot**

THANKYOU