# **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']]
```

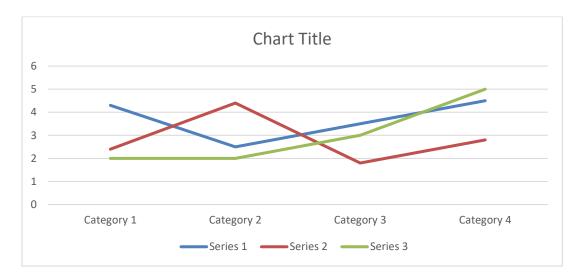
8. Select rows [3, 4, 8] and columns ['animal', 'age'].

9. Select rows where visits > 3.

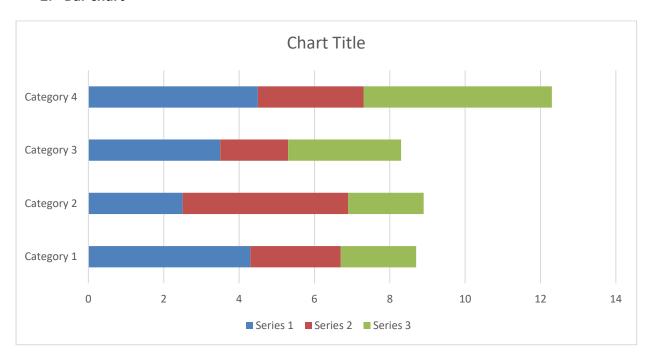
10. Select rows where age is missing (NaN).

Matplotlib

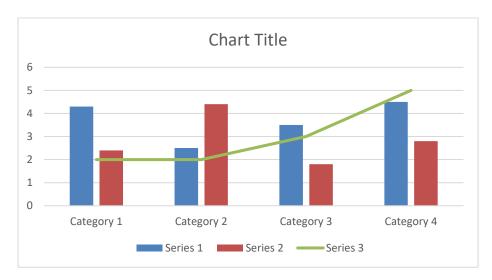
#### 1. Line graph



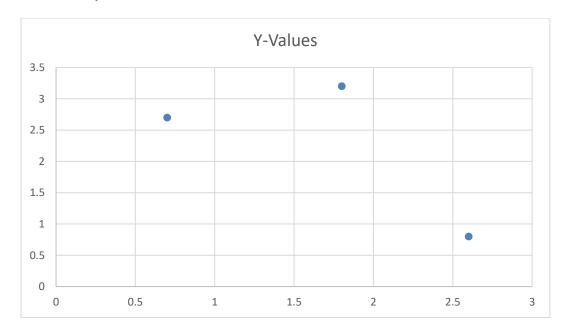
#### 2. Bar chart



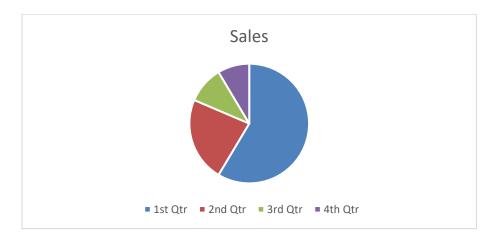
## 3. Histogram



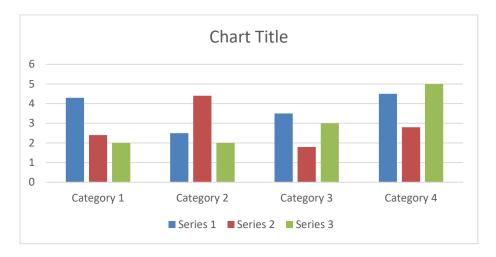
## 4. Scatter plot



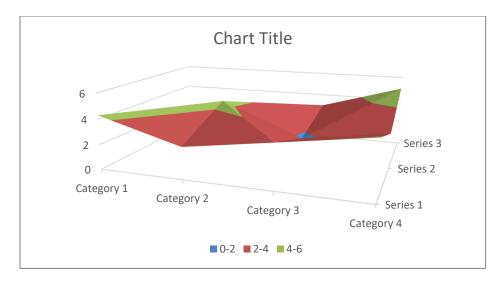
#### 5. Pie chart



## 6. Box plot

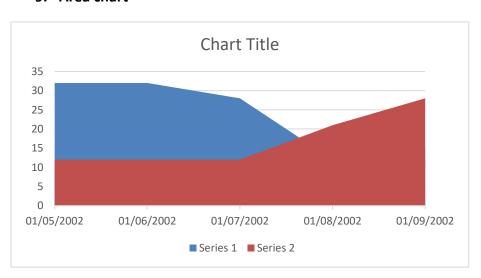


## 7. Heatmap



#### 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**