Naincy Goyal

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.**

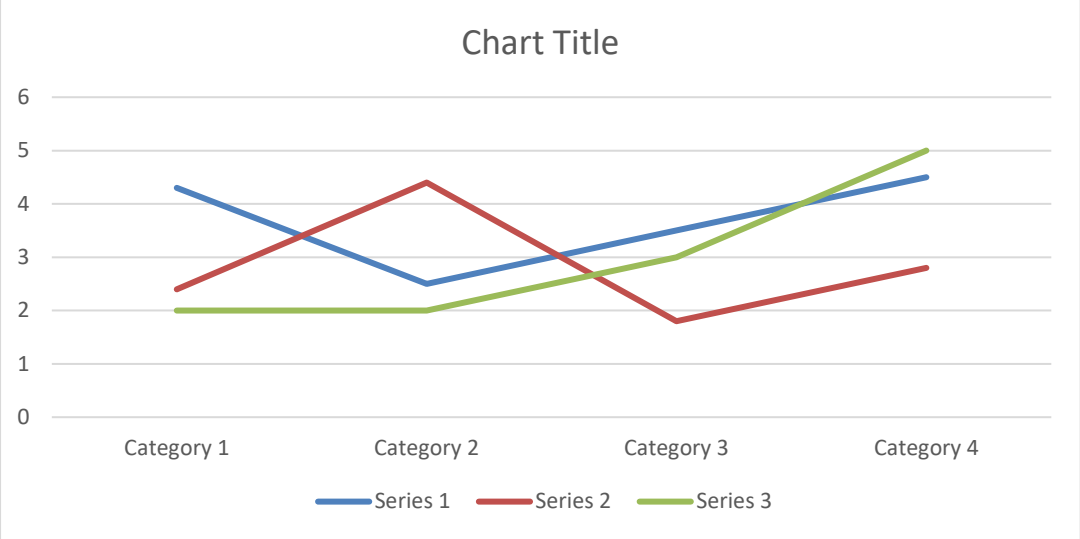
```
df[df['visits'] > 3]
```

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

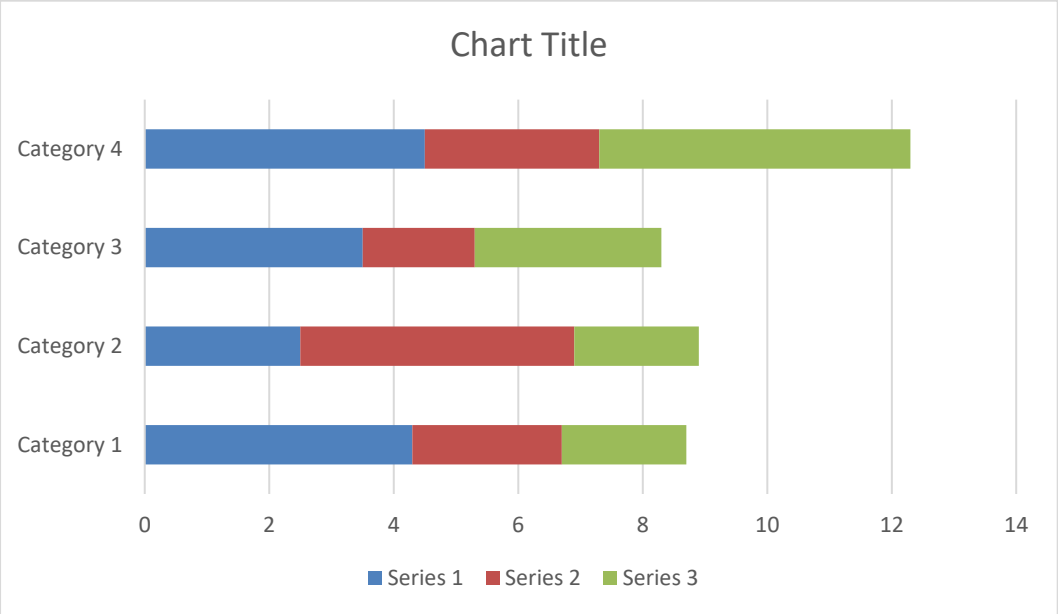
```
df[df['age'].isna()]
```

Matplotlib

1. **Line graph**



2. **Bar chart**



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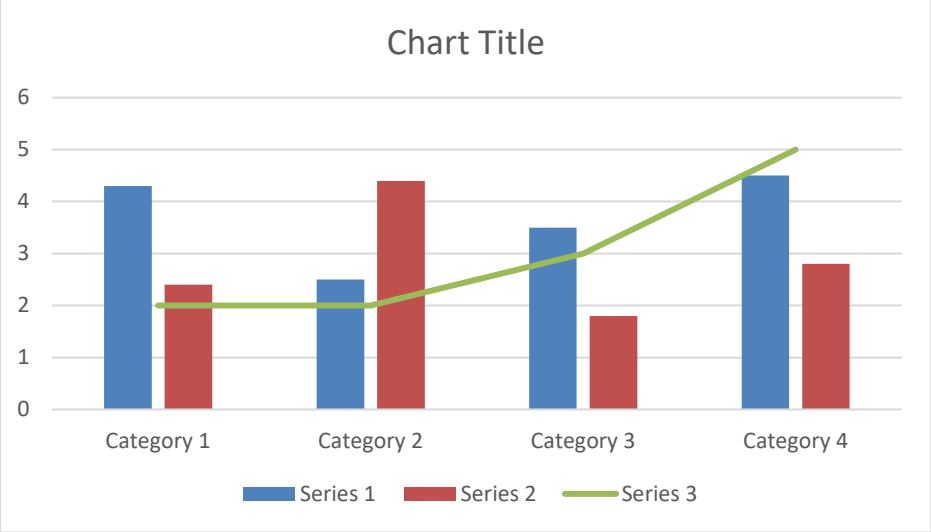
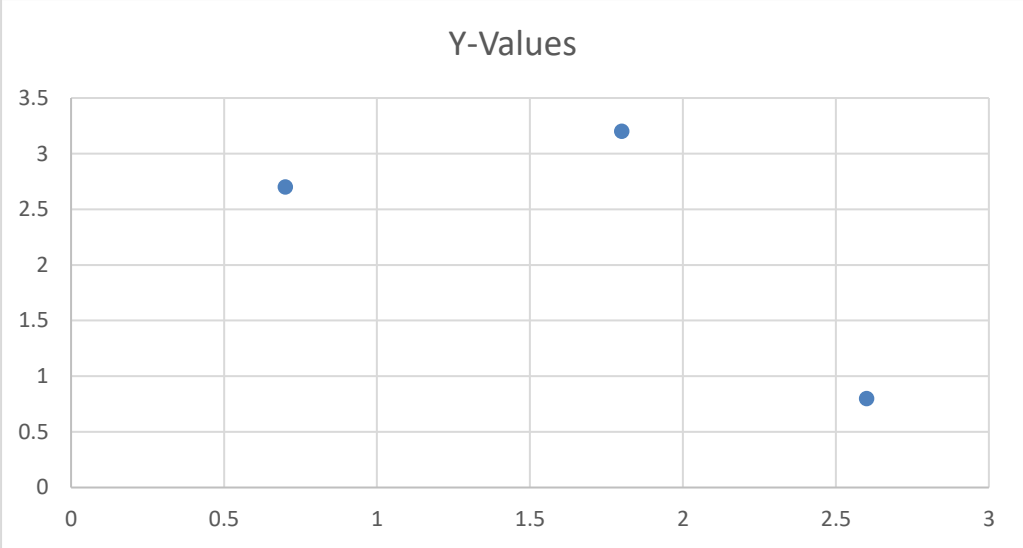
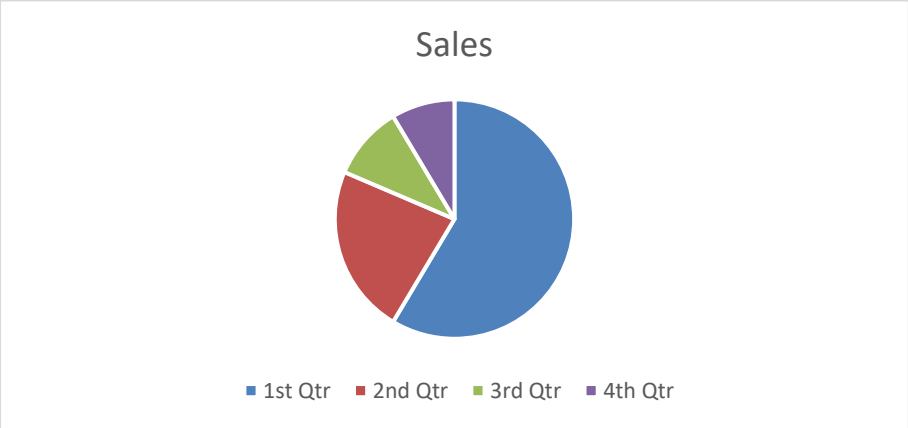
3. Histogram



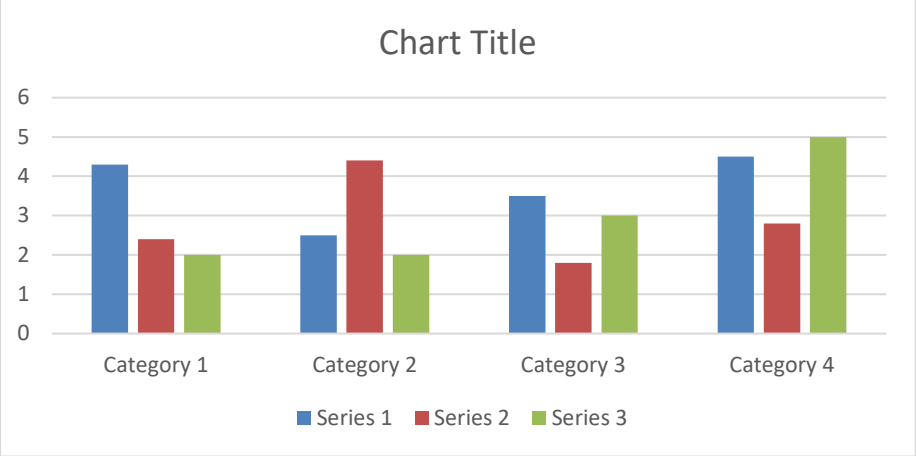
4. Scatter plot



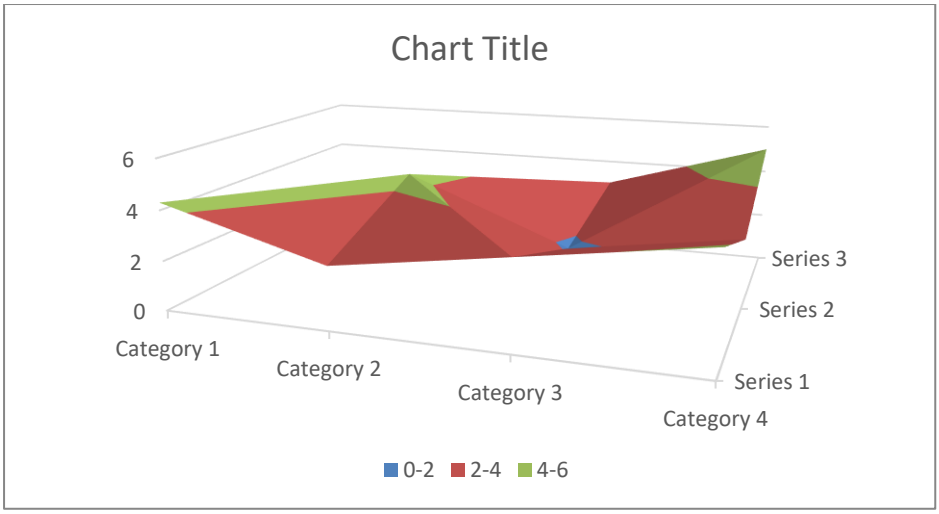
5. Pie chart



6. Box plot

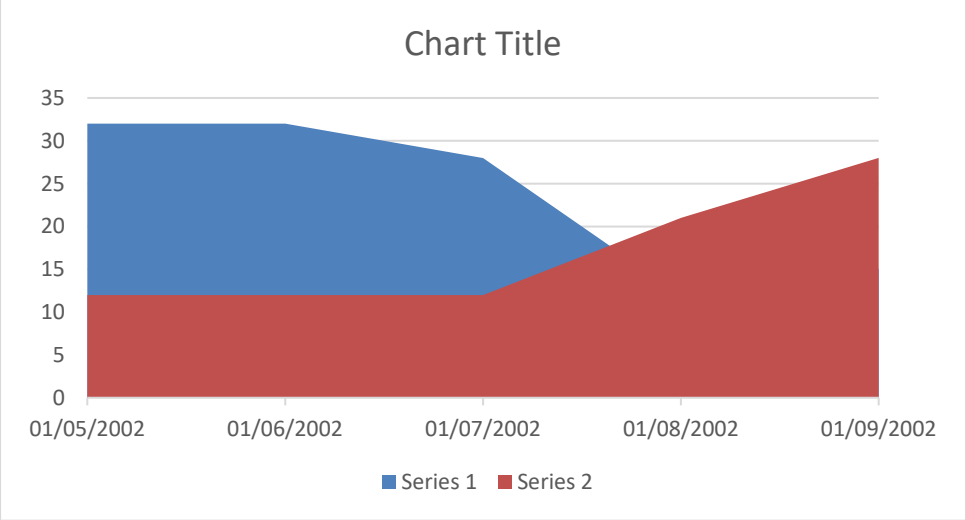


7. Heatmap



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