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CPS 5745 Interactive Information Visualization:

Review Question

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Please carefully review all slides.
This review is not the exam questions, but it will help you understand the questions that will be provided for the midterm exam.

Q1: What is data visualization in Python?

A: Data visualization in Python refers to the process of creating graphical representations of data using Python programming language libraries such as Matplotlib, Seaborn, Plotly, etc. It allows for the exploration and communication of patterns and relationships within the data.

Q2: What is Matplotlib?

A: Matplotlib is a Python plotting library that provides a wide range of 2D and 3D plots for visualizing data. It is widely used for creating static, interactive, and animated visualizations in Python.

Q3: What is Seaborn?

A: Seaborn is a Python visualization library built on top of Matplotlib that provides a higher-level interface for creating statistical graphics. It is used for creating visually appealing and informative statistical graphics such as heatmaps, pair plots, etc.

Q4: How do you install Matplotlib and Seaborn?

A: Matplotlib and Seaborn can be installed using pip, a Python package installer. To install Matplotlib, run "pip install matplotlib" in the command line. To install Seaborn, run "pip install seaborn" in the command line.

Q5: How do you create a scatter plot in Matplotlib?

A: A scatter plot can be created in Matplotlib using the "scatter" function. For example, the following code will create a scatter plot of x and y coordinates:

```
import matplotlib.pyplot as plt

x = [1, 2, 3, 4, 5]

y = [2, 4, 1, 3, 5]

plt.scatter(x, y)

plt.show()
```

Q6: How do you create a line plot in Matplotlib?

A: A line plot can be created in Matplotlib using the "plot" function. For example, the following code will create a line plot of x and y coordinates:

```
import matplotlib.pyplot as plt

x = [1, 2, 3, 4, 5]

y = [2, 4, 1, 3, 5]

plt.plot(x, y)

plt.show()
```

Q7: How do you customize the appearance of a plot in Matplotlib?

A: The appearance of a plot in Matplotlib can be customized using various functions such as "title", "xlabel", "ylabel", "xlim", "ylim", "legend", "grid", etc. For example, the following code will customize the appearance of a scatter plot:

```
import matplotlib.pyplot as plt

x = [1, 2, 3, 4, 5]

y = [2, 4, 1, 3, 5]

plt.scatter(x, y)

plt.title("Scatter Plot")

plt.xlabel("X-axis")

plt.ylabel("Y-axis")

plt.xlim(0, 6)

plt.ylim(0, 6)

plt.legend(["Data"])

plt.grid(True)

plt.show()
```

Q8: How do you create a bar plot in Matplotlib?

A: A bar plot can be created in Matplotlib using the "bar" function. For example, the following code will create a bar plot of x and y values:

```
import matplotlib.pyplot as plt

x = ["A", "B", "C", "D", "E"]

y = [2, 4, 1, 3, 5]

plt.bar(x, y)

plt.show()
```