PYTHON FILE ANSWERS:

1.

Altair:

Altair is a Python library exclusively used for statistical data visualization. It is built on top of Vega and Vega-lite grams.

Due to its simple, clear syntax, Altair is often used for tasks like Data exploration in Jupyter notebooks, Creating reports and dashboards with interactive elements, and Teaching data visualization concepts.

2.

Explanation of plots:

The scatterplot shows sales on the y-axis and advertising spending on the x-axis, with points color-coded by advertising channel (Newspaper, Radio, and TV). Investing in TV advertising appears to have the most direct impact on sales among the three channels.

The bar chart compares the average advertising spend for each channel. Businesses are spending more on TV advertising, likely due to its stronger impact on sales. Meanwhile, Radio receives the least investment on average.

3.

Understanding of the tutorial:

In this tutorial, I have done some statistical analysis on my dataset which was loaded from the gist link. I have visualized the frequency distribution of different attributes along with pair plot and heat map. I have learned to concatenate multiple plots using the Altair library in Python. I have learned to create multiple plots with one interactive legend.

4.

We use the `savefig` function in matplotlib to save a plot.

Syntax : plt.savefig('plot_name.png')

5.

Seaborn would be preferable over Matplotlib when you need to create statistically-oriented plots with simplified code. Taking my dataset as a scenario. For example, I want to plot a scatter plot for BMI vs charges, but I want to distinguish them by gender. With Seaborn, you can easily create a scatter plot with a categorical hue `(e.g., hue='gender')`, which will

automatically color the points based on the gender value, giving you an insightful and easy-to-read visualization.

6.

Choosing these elements or labels as tooltips in a visualization offers significant advantages for improving the user experience and understanding of the data.

Advantages:

Tooltips allow users to access additional details without cluttering the plot.

It enhances interactivity.

7.

Altair uses a declarative syntax, which allows you to specify what you want to visualize without manually controlling the underlying details (such as axes, scales, or positions). It's easy to add interactivity to visualizations with built-in features like zooming, panning, and tooltips.

8.

Understanding of the Assignment:

From this assignment, I have learned to load data using dataset gist links. The tutorial also walks us through basic EDA tasks like calculating basic statistics (mean, median, standard deviation, etc.), and understanding the dataset's structure. I have used the Altair library to build different visualizations in Python. This assignment also involved concatenating multiple plots and creating a single interactive legend for different plots. I have also demonstrated the importance of creating multiple chart types (e.g., scatter, bar, line, pie) to capture different perspectives on the data. Finally, the assignment emphasizes saving visualizations, an essential step for sharing results. Knowing how to export plots ensures that insights can be effectively communicated and presented.