**Assignment - 23**

Q1. If you have any, what are your choices for increasing the comparison between different figures on the same graph?

Ans: To increase the comparison between different figures on the same graph, you can adjust the scale of the axes, use different colors or patterns for each figure, add labels or annotations, and utilize gridlines or reference lines. Another option is to normalize the data or use relative values instead of absolute values.

Q2. Can you explain the benefit of compound interest over a higher rate of interest that does not compound after reading this chapter?

Ans: Compound interest allows for exponential growth of savings over time by reinvesting earned interest, resulting in higher overall returns compared to simple interest. With compound interest, interest is calculated not only on the initial principal but also on the accumulated interest from previous periods.

Q3. What is a histogram, exactly? Name a numpy method for creating such a graph.

Ans: A histogram is a graphical representation of the distribution of numerical data. It consists of a series of contiguous bars, where the height of each bar represents the frequency or relative frequency of data within a specific interval or bin. One numpy method for creating a histogram is numpy.histogram().

Q4. If necessary, how do you change the aspect ratios between the X and Y axes?

Ans: You can change the aspect ratios between the X and Y axes by adjusting the figure size or using the aspect parameter in plotting functions such as matplotlib.pyplot.subplots() or matplotlib.pyplot.imshow()

Q5. Compare and contrast the three types of array multiplication between two numpy arrays: dot product, outer product, and regular multiplication of two numpy arrays.

Ans: The dot product of two numpy arrays is a scalar product resulting in a single value, the outer product produces a matrix by computing the cross product of each element, and regular multiplication performs element-wise multiplication. Dot product is used for matrix multiplication, outer product for combining vectors, and regular multiplication for element-wise operations.

Q6. Before you buy a home, which numpy function will you use to measure your monthly mortgage payment?

Ans: Before buying a home, you can use the numpy function numpy.pmt() to calculate the monthly mortgage payment, considering parameters such as loan amount, interest rate, and loan term.

Q7. Can string data be stored in numpy arrays? If so, list at least one restriction that applies to this data.

Ans: Yes, string data can be stored in numpy arrays, but there are restrictions such as fixed-size strings or padding for variable-length strings. Additionally, operations on string data in numpy arrays may be less efficient compared to numerical data.