AL2002 – Artificial Intelligence Lab

Lab Task 1

Problem: 1

Question: Analyzing a Social Network Dataset

You are given a dataset representing a social network where nodes represent individuals, and edges represent connections between individuals. Additionally, everyone has attributes such as age and number of connections. The dataset is provided in CSV format.

1. **Data Loading:**
    - Load the dataset into Pandas Data Frame.
    - Check for missing values and handle them appropriately.
2. **Social Network Analysis:**
    - Use NetworkX to create a graph representation of the social network.
3. **Histogram Creation:**
    - After creating the social network graph, visualize the relationship between age and connection strength by generating a histogram. Plot age on one axis and connection strength on the other. This will provide insights into the distribution of connections across different age groups in the social network.

Problem: 2

1. **Exploring the Standard Normal Distribution in Python:**
    a. Generate a set of at least 1000 random numbers that follow a standard normal distribution (with a mean of 0 and a standard deviation of 1).
    b. Create a histogram to visually represent the distribution of the generated random numbers.
    c. Calculate and display both the sample mean and sample standard deviation of your generated dataset. Compare these values to the expected mean and standard deviation for a standard normal distribution.

Problem: 3

Write a Python program to plot two or more lines and set the line markers. The code snippet gives the output shown in the following screenshot: