**2nd Semester B. Tech**

**DSE 1271 Data Visualization [1 0 3 2]**

**Week 10 & 11 Assignment: Marks(10)**

**Task:** For the dataset given (SET 8), answer the questions with a report that contains a story, visuals, and data summaries to provide actionable insights into the data.

**SET 8**: NVDIA stock market dataset

This dataset contains historical stock market data, with each row representing a trading day. This dataset can be used for analyzing stock price trends, volatility, and trading volume over time.

The dataset nvidia\_stock\_data includes the following columns:

* **Date**: The specific date of the trading day (YYYY-MM-DD format).
* **Open**: The stock's price at the start of the trading day.
* **High**: The highest price the stock reached during the trading day.
* **Low**: The lowest price the stock reached during the trading day.
* **Adj Close (Adjusted Close)**: The closing price after adjustments for corporate actions such as dividends, stock splits, etc. It provides a more accurate reflection of the stock's value over time.
* **Volume**: The total number of shares traded during the trading day.

**Questions:**

1. **Perform exploratory analysis using Numpy, Pandas, Matplotlib and Seaborn. (2M)**
2. **Perform the necessary preprocessing and cleaning. Are there any missing values in the dataset? If so** handle them appropriately**. (2M)**
3. **Use Python and libraries like Pandas, Matplotlib and Seaborn to create insightful tabulations and visualization for the following:**

**(4 M for analysis and 2 M for report and notebook submission) (6 M)**

1. What is the overall trend of NVIDIA's stock price over the years?
2. Identify the highest and lowest stock prices in the dataset.
3. Compute the 50-day and 200-day moving averages and plot the moving averages
4. Calculate the daily percentage change in stock price, plot a daily returns histogram, and interpret the results.
5. Generate a scatter plot to visualize the correlation between trading volume and stock price movements.

**Submission on LMS**

* Python notebook to showcase the process of exploring, cleaning, and analysis of the dataset. From the data summaries, charts/plots and analysis of the dataset, gather the insights and write as markdown (in text) in the notebook.
* A report (in pdf) containing a narrative considering the audience is the Sales manager. You are presenting the findings and insights from the data analysis of the NVIDIA stock market dataset.
* The report should contain sections on
  1. Objective of the analysis
  2. Data Exploration
  3. Data Cleaning
  4. Analysis and Insights
  5. Conclusion