**PRACTICAL ASSIGNMENT 1: FOUNDATION OF DATA SCIENCE**

1. Scenario: Advanced data analytics and data science are used to solve complex, real-world problems and help businesses gain a competitive edge. These solutions go beyond basic data summaries and visualizations.

* Prompt: Reflect on a real-world problem you think advanced data science could solve. Then, complete the following:
* Describe a real-world problem that you believe requires advanced data analysis to solve.
* Identify one specific advanced data concept (e.g., predictive modeling, machine learning, deep learning) that would be necessary to solve this problem.
* Explain why this advanced concept is required and how it goes beyond what can be accomplished with basic data analytics tools like spreadsheets.
* Describe one potential ethical consideration or bias you might need to address when working on this problem.
* Your answer should have 4 parts and you may answer in a list or a short paragraph.

**ANS:**

* **Real-world problem**: One problem I think advanced data science could really help with is city traffic congestion. It wastes people’s time, increases stress, adds to pollution, and slows down economic activity.
* **Advanced concept**: To tackle this, I’d use predictive modeling with machine learning, which can learn from complex data sources.
* **Why it’s required**: Basic tools like spreadsheets can only show what happened in the past, but machine learning can go further by spotting patterns in real-time GPS data, weather, and even events happening in the city. This makes it possible to actually predict traffic jams before they happen and adjust signals or suggest better routes.
* **Ethical consideration**: One challenge would be protecting people’s privacy. Since traffic models often rely on location data, it’s important to anonymize it and set clear rules so individuals’ movements aren’t exposed or misused.