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Github link - [Code](#)

Assignment name -Basics of Data Analytics

1. Define the role of a Data Analyst in your own words. What value do they bring to an organization?

A Data Analyst turns raw data into clear insights. They clean, study, and visualize data to find trends and answers. Their value is helping companies make smart, evidence-based decisions to improve and grow.

2. List three tools commonly used by Data Analysts and explain what each is mainly used for.

Excel: For basic data cleaning, calculations, and simple charts.

SQL: To extract and manage data from large databases.

Power BI/Tableau: To create interactive dashboards and visual reports.

3. Write the end-to-end analytics workflow in the correct order and briefly explain each step.

Collect: Get data from various sources.

Clean: Fix errors and prepare data for analysis.

Analyze: Use tools to find patterns and insights

Visualize: Create charts and graphs for clarity.

Decide: Use the insights to make business decisions.

4. What is Prompt Engineering, and explain any two types of prompts used in Generative AI?

Prompt Engineering is the skill of designing effective questions for AI to get the best output.

Two prompt types:

Instruction Prompt: A direct command (e.g., Summarize this article.

Context Prompt: Provides background first (e.g., am a learner. Explain Data analytics simply

5. What are the key differences between a Business Analyst and a Data Analyst in terms of roles, responsibilities, and focus?

- **A Business Analyst** focuses on business needs and solutions, defining problems and requirements to determine what to do.
- **A Data Analyst** focuses on data itself, cleaning and analyzing it to find patterns and answer what does the data say. One defines the business problem, the other provides the data evidence.

6. Explain any three AI-powered ETL (Extract, Transform, Load) tools and how they are used in analytics.

ETL means Extract, Transform, Load data. AI tools automate this.

Talend: Uses AI to automatically find and fix data errors.

Informatica: Uses AI (CLAIRE) to map data relationships faster.

Azure Data Factory: Has built-in AI to transform data, like detecting sentiment in text.

7 Give three applications of Data Analytics across different industries and explain how it creates value.

E-commerce: Product recommendations. Increases sales.

Healthcare: Predicting disease risk. Enables early treatment.

Banking: Fraud detection. Protects customers and the bank.

8. Explain the evolution of analytics, highlighting the different stages from Descriptive to Generative AI.

- 1. Descriptive: What happened? (Reports on past sales).*
- 2. Diagnostic: Why did it happen? (Found the cause for a sales drop).*
- 3. Predictive: What will happen?(Forecasting next month's sales).*
- 4. Prescriptive: What should we do? (Suggests actions to improve sales).*
- 5. Generative AI: Create something new. (Generates new text, code, or designs).*