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COURSE NAME: DATA SCIENCE PROFESSIONAL CERTIFICATION

Assignment 2

Topic: Why is Data Science called the new electricity?

Introduction:

In today's digital era, Data Science is frequently described as the "new electricity." Just as electricity in the 19th and 20th centuries revolutionized industries, homes, and societies, Data Science in the 21st century is transforming how decisions are made, how businesses function, and how individuals interact with technology. The comparison is fitting because electricity was once a novel innovation, but quickly became a foundational utility powering modern civilization. Likewise, Data Science has evolved into a critical resource driving innovation across industries.

Timeline of Evolution

- **1960s–1970s** – Birth of Data Analysis: Early developments in statistics and computing enabled the first applications of quantitative analysis in business and research.
- **1980s** – Databases and Structured Data: The invention of relational databases (SQL) allowed structured data storage and efficient retrieval, giving rise to decision support systems.
- **1990s** – Business Intelligence: Data Warehousing and BI tools allowed organizations to analyze historical data, monitor trends, and generate reports.
- **2000s** – Big Data Era: The rapid expansion of the internet, e-commerce, and social media generated enormous datasets. Technologies like Hadoop and MapReduce enabled distributed storage and large-scale data processing.
- **2010s** – Machine Learning & AI: Advances in algorithms, computing power, and cloud technology allowed predictive and prescriptive analytics. Machine learning became central in automating insights and decision-making.
- **2020s** – AI Everywhere: Data Science now underpins Artificial Intelligence systems such as ChatGPT, recommendation engines, self-driving cars, and personalized medicine. It has become an essential utility, much like electricity.

Real-World Applications

1. Healthcare:

Data Science helps detect diseases early, predict patient outcomes, and personalize

treatments. For instance, predictive models for heart disease use patient history, lifestyle, and medical records to reduce risks. Machine learning is also applied in drug discovery and medical imaging.

2. Finance:

Financial institutions rely on Data Science for fraud detection, credit scoring, and risk analysis. For example, credit card fraud detection systems continuously analyze transaction patterns to identify anomalies in real time, protecting customers and banks.

3. Marketing & Government:

In marketing, Data Science powers customer segmentation, targeted advertising, and recommendation systems (e.g., Amazon, Netflix). Governments use Data Science for urban planning, monitoring air quality, and optimizing public services. During the COVID-19 pandemic, governments relied on predictive modeling to plan healthcare resources and enforce timely interventions.

Conclusion

Electricity was revolutionary because it enabled industries to grow and societies to modernize. Today, Data Science plays a similar role by enabling organizations to unlock insights, make better decisions, and innovate in unprecedented ways. It is no longer just a technological tool but a fundamental driver of the digital economy. Much like societies that lacked electricity were left behind in the industrial revolution, organizations that ignore Data Science risk being left behind in the information age. Thus, Data Science is rightly called the “new electricity” of the 21st century.