**CAE 7123 – Big Data Analytics**

Assignment 2

**Topic: Real-Time Systems with Big Data Analytics**

Question :

"Explore the integration of Big Data Analytics with Real-Time Systems to address the modern technological challenges across various domains such as finance, healthcare, transportation, and manufacturing."

Assignment should include the following sections:

1. Introduction:

* + Define real-time systems and big data analytics.
  + Discuss the significance of integrating these two technologies.

2. Key Concepts:

* + Explain the fundamental characteristics of real-time systems (e.g., low latency, high reliability).
  + Discuss the essential components of big data analytics, such as data collection, processing, and storage.

3. Technical Requirements and Architecture:

* Describe the architecture required to combine real-time systems with big data analytics.
* Discuss relevant technologies, frameworks, and tools (e.g., Apache Kafka, Hadoop, Spark, NoSQL databases).

4. Applications across Different Domains:

* Explore at least two industry-specific applications (e.g., real-time fraud detection in finance, patient monitoring in healthcare).
* Explain how these applications benefit from real-time analytics with examples.

5. Challenges and Limitations:

* Identify technical and ethical challenges, such as data security, latency, and scalability.
* Discuss limitations and potential solutions.

6. Future Prospects:

* Provide an overview of emerging trends and innovations that could shape the future of real-time big data analytics.

Requirements:

* Minimum of 8 pages.
* Use at least 5 academic sources.
* Include diagrams or flowcharts to explain system architecture wherever applicable.
* Give proper references.