**ASSIGNMENT**

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1. **List of requirements (scope) for developing a suitable technology-oriented digital solution for digital-based future energies:**

* A comprehensive understanding of various sources of renewable energy and their characteristics.
* Accurate data collection and monitoring systems for renewable energy sources such as wind, solar, geothermal, hydro, and biomass.
* Reliable and secure communication infrastructure to transmit real-time data from renewable energy sources to control centres.
* Effective data management systems that can store, organize and analyse large amounts of data.
* Advanced analytics tools and machine learning algorithms to predict future energy production, identify anomalies, and optimize energy usage.
* User-friendly interfaces and dashboards for displaying real-time data, performance metrics, and analytical insights.
* Integration with existing energy management systems and software to enable seamless operation and monitoring.

1. **Various technologies, tools and systems available in the market to support these needs:**

* IoT devices and sensors for data collection and monitoring.
* Cloud computing platforms for data storage and management.
* Big data analytics tools such as Hadoop, Spark, and Cassandra.
* Machine learning libraries such as TensorFlow, Keras, and Scikit-learn.
* Communication protocols such as MQTT, CoAP, and AMQP for data transmission.
* Data visualization tools such as Tableau, PowerBI, and D3.js.
* Energy management systems such as SCADA, EMS, and DMS for control and automation.