Business requirement

The business requirements in a reliable energy consumption analysis system for energy-efficient appliances can be summarized as follows:

* Energy Usage Monitoring:
  + Collect and track real-time energy consumption data from energy-efficient appliances and devices.
  + Provide granular visibility into energy usage patterns, including consumption by individual appliances and overall household consumption.
  + Monitor and record energy usage at different time intervals (e.g., hourly, daily, monthly) for historical analysis and comparison.
* Data Analysis and Insights:
  + Perform advanced analytics on energy consumption data to identify trends, patterns, and anomalies.
  + Generate actionable insights and recommendations for users to optimize energy consumption and improve energy efficiency.
  + Provide comparative analysis to benchmark energy usage against industry standards or similar households.
* Performance Monitoring:
  + Monitor the performance of energy-efficient appliances to ensure they are operating optimally and delivering expected energy savings.
* • Detect and alert users of any performance issues or malfunctions in appliances that may impact energy efficiency. 4. Cost Management:
  + Calculate and present accurate energy costs based on real-time energy consumption data and applicable utility tariffs.
  + Enable users to monitor and manage their energy expenses effectively.
  + Provide cost-saving recommendations and strategies to reduce energy consumption and lower energy bills.
* User-Friendly Interface:
  + Offer an intuitive and user-friendly interface to access energy consumption data, analytics, and insights.
  + Present energy usage information in visually appealing dashboards and reports.
  + Provide customizable views and personalized settings to meet individual user preferences and needs.
* Integration with Renewable Energy:
  + Support integration with renewable energy sources (e.g., solar panels) to monitor energy generation and consumption.
  + Provide insights into the contribution of renewable energy to overall energy consumption and environmental impact.
  + Enable users to make informed decisions regarding their renewable energy usage and its impact on energy efficiency.
* Regulatory Compliance:
  + Comply with energy efficiency regulations and standards imposed by governing bodies.
  + Ensure accurate reporting and adherence to energy efficiency guidelines in relevant jurisdictions
  + Provide diagnostics and troubleshooting guidance to address performance