ITS120L- Application Development and Emerging Technologies (Laboratory)

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Project Title	WeatherWise: AI Powered Inventory Scheduling App Using Weather Data to Predict Supply Surplus and Deficits
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Client (Organization Name, Department)	
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During the heatwave that permeated throughout the region of Southeast Asia (Chen, 2024), schools were forced to shift to online learning. The lack of customers left many small businesses vulnerable to income drops, with some small businesses whose income rely on the foot traffic of students losing almost 70-80% of the income they typically earn (Vicencio, 2024).

Retail businesses, particularly small and medium-sized enterprises, face significant challenges in predicting customer demand and managing inventory efficiently. Weather conditions often play a major role in influencing consumer behavior, sales of products such as umbrellas, jackets, or hot beverages tend to increase during rainy and cold seasons, while cold drinks, ice cream, or summer goods are in higher demand during hot weather. However, many retail owners lack the tools and systems to anticipate these changes accurately, resulting in overstocking, stockouts, and financial losses.

At the same time, existing retail systems are either too complex or costly for SMEs to adapt. Inventory systems and sales records often contain sensitive business information that can leave businesses vulnerable to unauthorized access, data tampering, or data breaches.

Objectives:
- To develop an application that integrates AI-powered weather forecasting.
- To implement an AI model that predicts supply surplus and deficits based on weather conditions.
- To provide personalized product recommendations for customers according to real-time weather.
- To ensure data security in inventory records through encryption and role-based access control.

By leveraging real-time weather data and artificial intelligence in forecasting product demand and optimizing inventory levels, WeatherWise provides retailers with an intelligent and secure app-based platform that empowers data-driven decision-making. The system not only helps minimize losses due to overstocking and stockouts but also ensures that sensitive business information remains protected. Through features such as demand prediction, inventory monitoring, product recommendations, and robust cybersecurity measures, WeatherWise seeks to deliver a cost-effective solution tailored to the needs of small and medium-sized enterprises, ultimately enhancing operational efficiency, customer satisfaction, and business resilience.

References:

Chen, H (2024, April 10). Searing heat is back across Southeast Asia and it's not going away anytime soon | CNN News. CNN.

https://edition.cnn.com/2024/04/10/asia/southeast-asia-extreme-heat-climate-intl-hnk/index.html

Vicencio, L. (2024, November 20). Small businesses suffer income drop amid extreme heat | ABS-CBN News. *ABS-CBN*.

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