## Crop Yield Data Storage and Management Solution on AWS

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**Abstract:**

In the modern agricultural landscape, farmers and agribusinesses face increasing challenges in managing vast amounts of seasonal data and optimizing crop productivit. This **Crop Yield Data Storage and Management Solution** is a cloud-based platform designed to centralize agricultural data, providing farmers and researchers with a reliable system for recording, monitoring, and analyzing crop performanc. The platform facilitates the logging of seasonal yields, soil health metrics, and harvesting schedules—all powered by a robust AWS infrastructure that ensures data integrity, scalability, and real-time alerts.

## Objective

The primary objective is to develop a secure and scalable agricultural data management platform where:

* **Farm Operators** can log seasonal yield data, track crop health trends, and maintain long-term digital records of farm productivity.
* **System Administrators** can manage user access, oversee data storage, and ensure the delivery of time-sensitive field updates.

## Architecture Overview

The platform leverages AWS services for maximum reliability, high-speed data retrieval, and secure information sharing. Core AWS integrations include:

* **Amazon EC2:** Serves as the primary web server hosting a **Flask application** built with **HTML, CSS, and JavaScript**, providing a responsive user interface.
* **Amazon DynamoDB:** Functions as the centralized NoSQL database for managing **user authentication (Signup/Signin)**, crop profiles, and historical yield records with millisecond response times.
* **AWS IAM:** Implements granular **Role-Based Access Control (RBAC)**, granting the EC2 instance the necessary permissions to interact with SNS and DynamoDB, and enabling the secure **cloning of the project from GitHub**.
* **Amazon SNS:** Handles automated **notifications for all platform activities**, including user login alerts, yield data updates, and harvest reminders.

## Workflow and User Interactions

* **Users (Farmers/Researchers):** Create accounts via the secure Sign-in/Sign-up portal, submit seasonal yield reports, and receive automated activity notifications via SNS.
* **System (Backend):** The Flask application on EC2 processes data requests, communicates with DynamoDB for persistent storage, and triggers SNS alerts based on user interactions.

## Conclusion

The **Crop Yield Data Storage and Management Solution** transforms traditional agricultural record-keeping by harnessing AWS cloud capabilities. The integration of **Amazon EC2, DynamoDB, IAM, and SNS** creates a robust ecosystem that delivers secure, efficient, and responsive data services—ensuring improved food security and optimized operations for the modern agricultural sector.

Submission Date :