Problem Title:

Smart Expiry Monitor: Barcode-Driven Inventory Tracking System

Problem Statement: Proactive Expiry Monitoring in Supermarkets

Supermarkets often face the challenge of managing expired or soon-to-expire products, leading to potential financial loss, customer dissatisfaction, and regulatory risks. Many of these products already carry **barcodes containing essential metadata** such as:

- **Product ID**

- **Batch Number**

- **Manufacture Date**

- **Expiry Date**

However, without a proactive monitoring system, inventory with near or past expiry dates can be overlooked during billing, stocking, or audits.

Proof of Concept (PoC) Objective
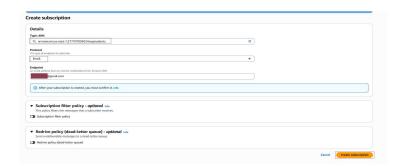
This PoC demonstrates how to:

- **Upload a product inventory CSV** containing expiry dates.

- **Automatically flag products that are expiring today**.

- **Send email alerts** to the operations team when such products are detected.

- Provide a **web-based dashboard** to visualize: (Optional)

    o   Total number of products uploaded

    o   Products expiring in <30, <45, and <60 days

Step 1

1. Create a bucket
2. Provide a bucket name: supermarket-inventory-alert
3. Click on create bucket
4. Create a product-invetory.csv file which will contain the following columns
    a. product_id
    b. product-name
    c. expiry_date
    d. quantity

Step 2

1. Go to SNS console
2. Create a Topic
    a. Topic Name: expiryalerts
    b. Type: Standard
    c. Click on create topic
3. Create a subscription
4. Go to your email and confirm the subscription

Step 3

1. Create a Lambda Function
2. Create a IAM Role with the following permissions
    a. sns:publish
    b. s3:getobject
3. Select Author from scratch
4. Provide a function name
5. Select runtime as python
6. Select IAM role – Use an existing role
7. Click on create function
8. Deploy the python code

Step 4

1. Upload a csv with items expiring today or tomorrow
2. Run the lambda function manually
3. Check your email for the alert
4. Manually modified the dates as shown and upload into S3 bucket

5. Go to Test button in the Lambda Function
6. Create a new test event
7. Click template Hello World
8. In the Event type the following code

```
{

  "bucket": "supermarket-inventory-alert",

   "key": "product_inventory.csv"

}
```

9. Click on Test

Step 5: Email Alert

⚠️ Expiring Items Notification ➤ Inbox × Updates ×

🖨 ⧉

expiryalerts <no-reply@█████████>

11:27 AM (0 minutes ago) ☆ ☺ ↩ ⋮

to me ▾

🔔 Expiring Items Alert:

Whole Milk 1L (Qty: 20) - Expiry: 10-06-2025
Bell Peppers (Qty: 15) - Expiry: 10-06-2025
Multigrain Bread (Qty: 14) - Expiry: 10-06-2025
Still Water 1L (Qty: 30) - Expiry: 10-06-2025

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