

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)
 - Total number of products uploaded
 - 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-inventory.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

Create subscription

Details

Topic ARN:

Protocol:

Endpoint:

☐ After your subscription is created, you must confirm it. [info](#)

Subscription filter policy - optional [info](#)

☐ Subscription filter policy

Redrive policy (dead-letter queue) - optional [info](#)

☐ Redrive policy (dead-letter queue)

[Cancel](#) [Create subscription](#)



Simple Notification Service

Subscription confirmed!

You have successfully subscribed.

Your subscription's id is:

arn:aws:sns:us-east-1:[redacted]:expiryalerts:[redacted]
f452042c9ac1

If it was not your intention to subscribe, [click here to unsubscribe](#).

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

product_id	product_name	expiry_date	quantity
1001	Wheeler Milk 1L	11-06-2024	20
1002	Demond Loaf	11-06-2024	20
1003	Demond Yogurt	11-06-2024	20
1004	Chickadee Chicken	01-06-2025	10
1005	Beetles 200g	01-06-2025	20
1006	Orange Juice 1L	05-07-2025	10
1007	Apple Juice 1L	05-07-2025	20
1008	Apple 12 pack	01-01-2026	40
1009	Strawberry Jam	01-01-2026	12
1010	Horley	05-05-2027	6
1011	Almond Milk 1L	20-06-2025	10
1012	Demond Turkey	11-06-2025	10
1013	Chickadee Venisonage	11-06-2025	10
1014	Veggie Burger Pack	11-07-2025	0
1015	Luft 200g	11-06-2025	0
1016	Salmon Pkg	11-06-2025	10
1017	Cherry Tomatoes 500g	11-06-2025	12
1018	Cucumber	11-06-2025	14
1019	Bull Peppers	11-06-2025	10
1020	Chickadee	11-06-2025	10
1021	Cornmeal Bread 500g	11-06-2025	0
1022	Pork Chop 500g	11-06-2025	0
1023	Redmond Curry 400g	11-06-2025	0
1024	Vaseline Ice Cream 500ml	01-06-2025	10
1025	Chickadee Ice Cream 500ml	01-06-2025	10
1026	Demond 1kg	11-06-2025	10
1027	Demond 500g	11-06-2025	14
1028	Demond 1kg	11-06-2025	20
1029	Demond 1kg	11-06-2025	20
1030	Demond 1kg	11-06-2025	20
1031	Demond 1kg	11-06-2025	20
1032	Demond 1kg	11-06-2025	20
1033	Demond 1kg	11-06-2025	20
1034	Demond 1kg	11-06-2025	20
1035	Demond 1kg	11-06-2025	20
1036	Demond 1kg	11-06-2025	20
1037	Demond 1kg	11-06-2025	20
1038	Demond 1kg	11-06-2025	20
1039	Demond 1kg	11-06-2025	20
1040	Demond 1kg	11-06-2025	20
1041	Demond 1kg	11-06-2025	20
1042	Demond 1kg	11-06-2025	20
1043	Demond 1kg	11-06-2025	20
1044	Demond 1kg	11-06-2025	20
1045	Demond 1kg	11-06-2025	20
1046	Demond 1kg	11-06-2025	20
1047	Demond 1kg	11-06-2025	20
1048	Demond 1kg	11-06-2025	20
1049	Demond 1kg	11-06-2025	20
1050	Demond 1kg	11-06-2025	20

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 x

Updates x

expiryalerts

<no-reply@>

to me

11:27 AM (0 minutes ago)

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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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