



CS6006 – CLOUD COMPUTING AWS PROJECT

**StockWatch: Real-Time Stock Alert System
Using AWS**

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AGENDA

- **Project Overview**
- **Why AWS?**
- **Architecture**
- **AWS Services Used**
- **Implementation**

PROJECT OVERVIEW

- **Real-Time Alerts for immediate action on price dips.**
- **Automation to monitor multiple stocks without manual effort.**
- **Supports Investment Strategies like buying during dips for cost-effective investing.**

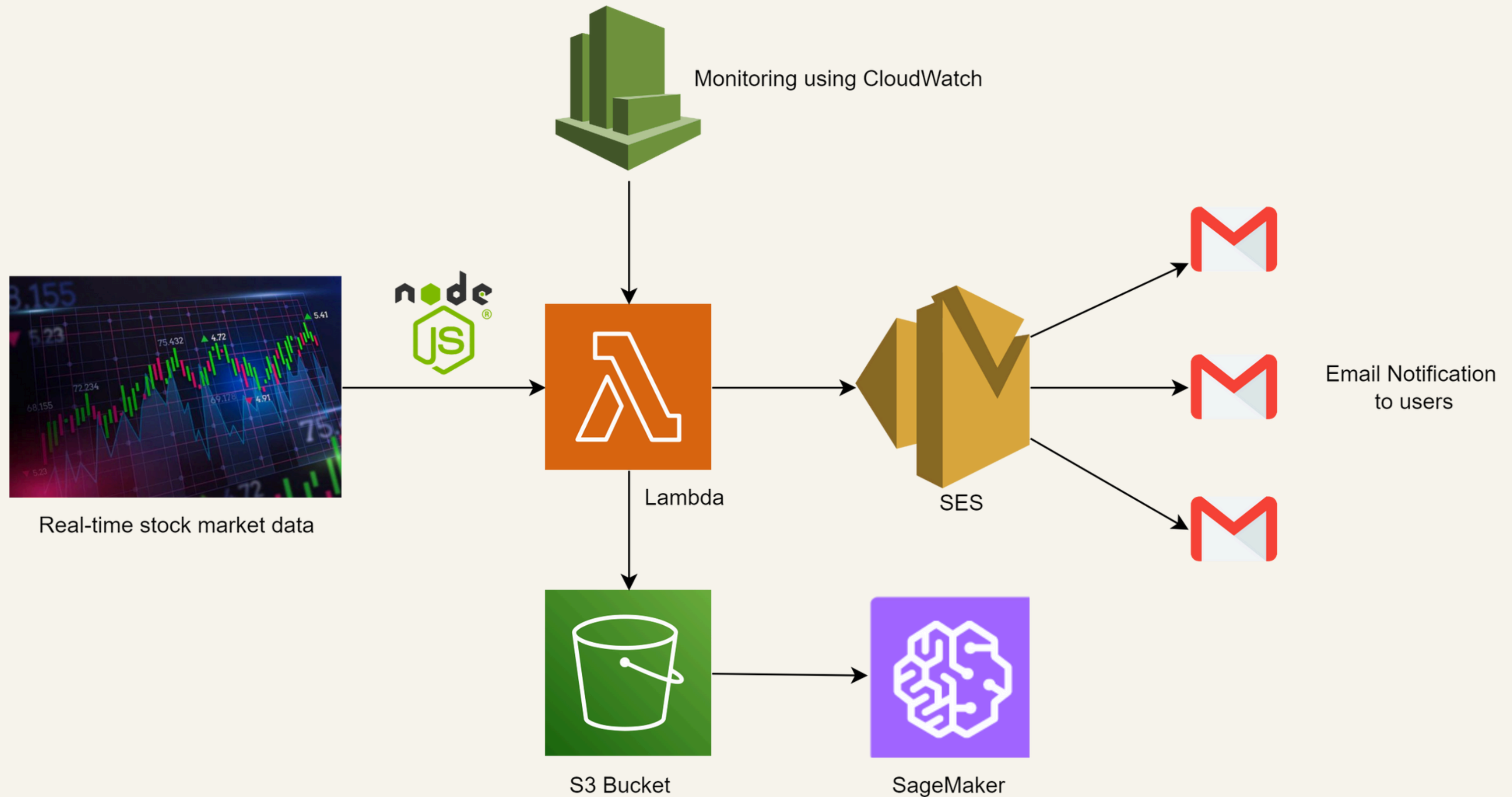


WHY AWS?

- **Serverless with AWS Lambda for scalable, event-driven architecture.**
- **Amazon SES for instant notifications via email.**
- **Seamless API Integration with Lambda for real-time stock data.**
- **Pay only for what you use with automatic scaling**



ARCHITECTURE

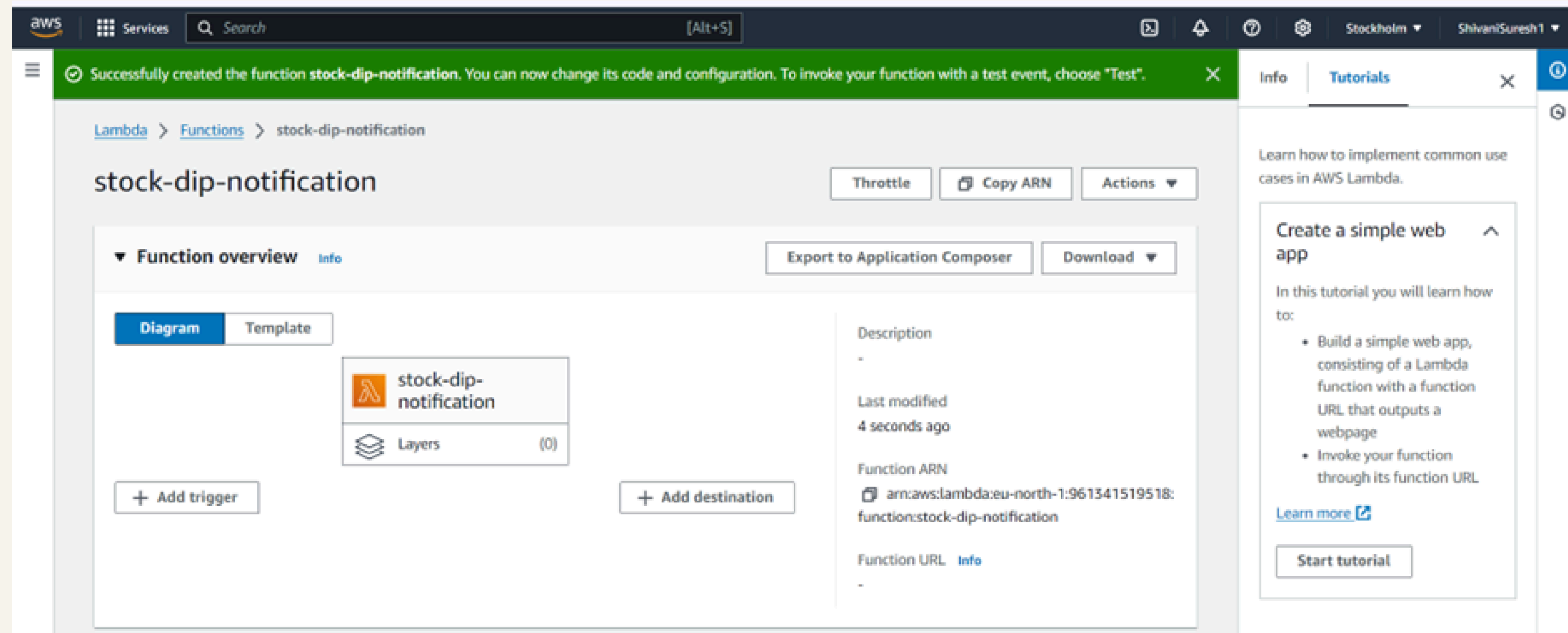


AWS SERVICES USED

- **Amazon CloudWatch**
- **AWS Identity and Access Management (IAM)**
- **AWS Lambda**
- **Amazon S3 (Simple Storage Service)**
- **Amazon SES (Simple Email Service)**
- **AWS SDK (Software Development Kit)**
- **AWS SageMaker**

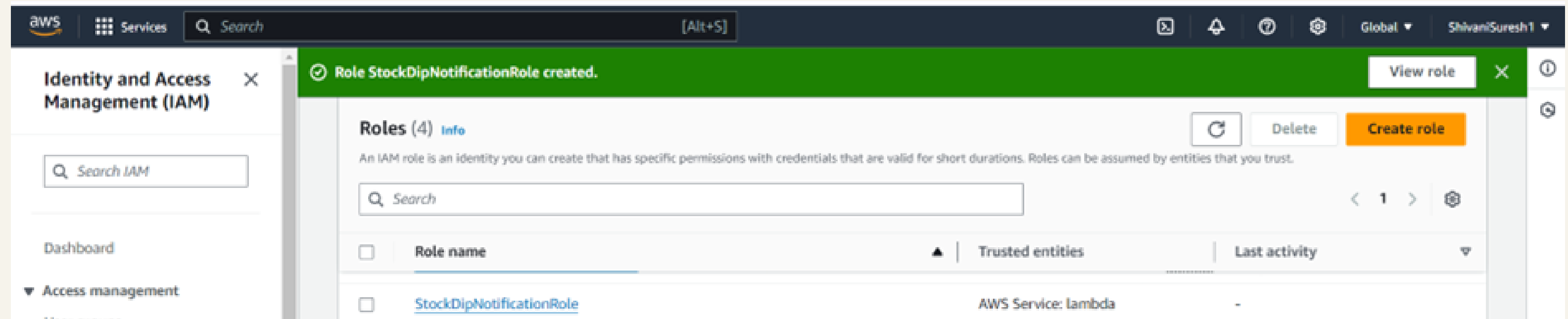
IMPLEMENTATION

Creation of AWS Lambda Function



IMPLEMENTATION

Creation of IAM Role for AWS Lambda Function



IMPLEMENTATION

Activation of AWS SES

The screenshot shows the AWS Management Console interface for creating a new identity in Amazon SES. The breadcrumb trail indicates the path: Amazon SES > Configuration: Identities > Create identity. The main heading is 'Create identity', followed by a descriptive paragraph: 'An identity is a domain, subdomain, or email address you use to send email through Amazon SES. Identity verification at the domain level extends to all email addresses under one verified domain identity.'

The 'Identity details' section is expanded, showing the 'Identity type' options. The 'Email address' option is selected, indicated by a blue dot. Below this, a blue information box states: 'Sending email from an email address identity without having the domain identity verified will result in your message being quarantined or rejected depending on the domain's DMARC policy. [Learn more about DMARC and how to look up a domain's DMARC policy.](#)'

The 'Email address' field is populated with 'shivani.0309@gmail.com'. A note below the field states: 'Email address can contain up to 320 characters, including plus signs (+), equals signs (=) and underscores (_).' At the bottom of the form, there is an unchecked checkbox labeled 'Assign a default configuration set'.

The footer of the console shows 'CloudShell', 'Feedback', and copyright information: '© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences'.

IMPLEMENTATION

Testing Lambda Function using AWS CloudWatch

The screenshot displays the AWS CloudWatch console interface. The left sidebar shows the navigation menu with options like Dashboards, Alarms, Logs, Metrics, X-Ray traces, Events, Application Signals, Network monitoring, Insights, Settings, and Getting Started. The main content area shows the 'Log events' page for a specific log group. The breadcrumb trail indicates the path: CloudWatch > Log groups > /aws/lambda/stock-dip-notification > 2024/10/04/[\$LATEST]8e1a60f5bfc14c7b96a15690799b3daf. The 'Log events' section includes a search bar, a filter bar, and a table of log events. The table has two columns: 'Timestamp' and 'Message'. The messages show the function's execution details, including the runtime version, request ID, and the data retrieved for AAPL and AMZN stock prices.

Log events

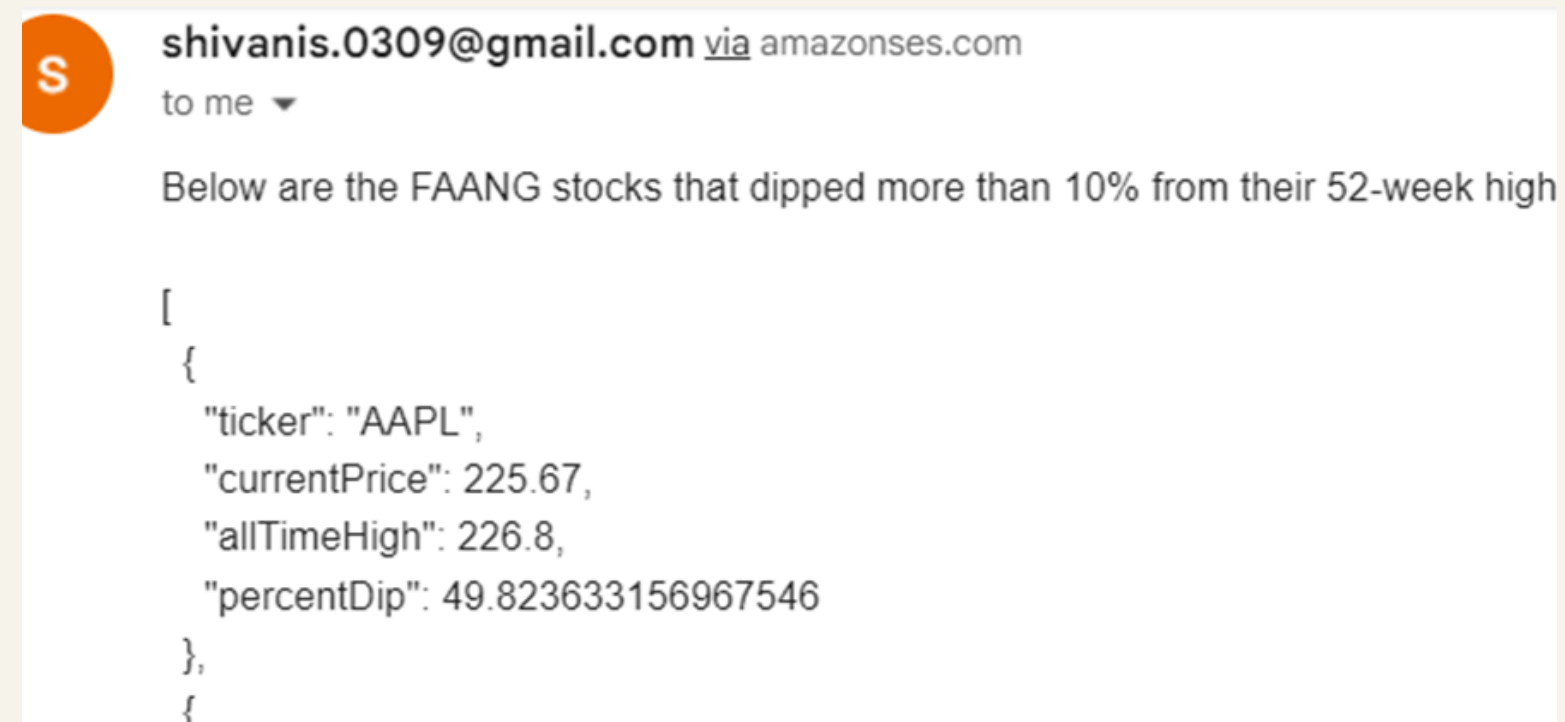
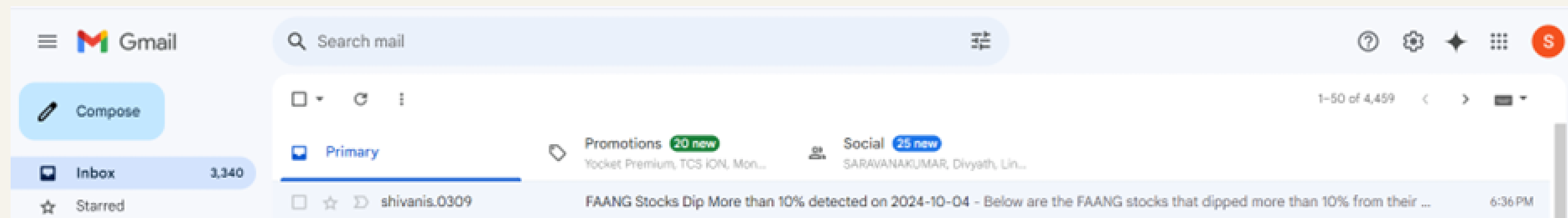
You can use the filter bar below to search for and match terms, phrases, or values in your log events. [Learn more about filter patterns](#)

Filter events - press enter to search Clear 1m 30m 1h 12h Custom UTC timezone Display

Timestamp	Message
2024-10-04T12:58:43.322Z	INIT_START Runtime Version: nodejs:20.v39 Runtime Version ARN: arn:aws:lambda:eu-north-1::runtime:ad9b28ae231dfc4c3325e183...
2024-10-04T12:58:44.425Z	START RequestId: adae3ffd-c658-41dc-b7d9-5b0b6e0d6699 Version: \$LATEST
2024-10-04T12:58:44.427Z	2024-10-04T12:58:44.427Z adae3ffd-c658-41dc-b7d9-5b0b6e0d6699 INFO Handler started. Retrieving stock dip list...
2024-10-04T12:58:44.859Z	2024-10-04T12:58:44.859Z adae3ffd-c658-41dc-b7d9-5b0b6e0d6699 INFO Starting to retrieve stock dip information for FANG st...
2024-10-04T12:58:44.859Z	2024-10-04T12:58:44.859Z adae3ffd-c658-41dc-b7d9-5b0b6e0d6699 INFO Fetching data for AAPL...
2024-10-04T12:58:46.679Z	2024-10-04T12:58:46.679Z adae3ffd-c658-41dc-b7d9-5b0b6e0d6699 INFO Price history for AAPL: { meta: { currency: 'USD', symb...
2024-10-04T12:58:46.682Z	2024-10-04T12:58:46.682Z adae3ffd-c658-41dc-b7d9-5b0b6e0d6699 INFO Dip: 49.823633156967546
2024-10-04T12:58:46.682Z	2024-10-04T12:58:46.682Z adae3ffd-c658-41dc-b7d9-5b0b6e0d6699 INFO Fetching data for AMZN...
2024-10-04T12:58:46.882Z	2024-10-04T12:58:46.882Z adae3ffd-c658-41dc-b7d9-5b0b6e0d6699 INFO Price history for AMZN: { meta: { currency: 'USD', symb...
2024-10-04T12:58:46.882Z	2024-10-04T12:58:46.882Z adae3ffd-c658-41dc-b7d9-5b0b6e0d6699 INFO Dip: 80.6803314435232
2024-10-04T12:58:46.882Z	2024-10-04T12:58:46.882Z adae3ffd-c658-41dc-b7d9-5b0b6e0d6699 INFO Fetching data for MSFT...

IMPLEMENTATION

Mail Received from Lambda function via AWS SES



IMPLEMENTATION

Output of all specified stocks stored in AWS S3

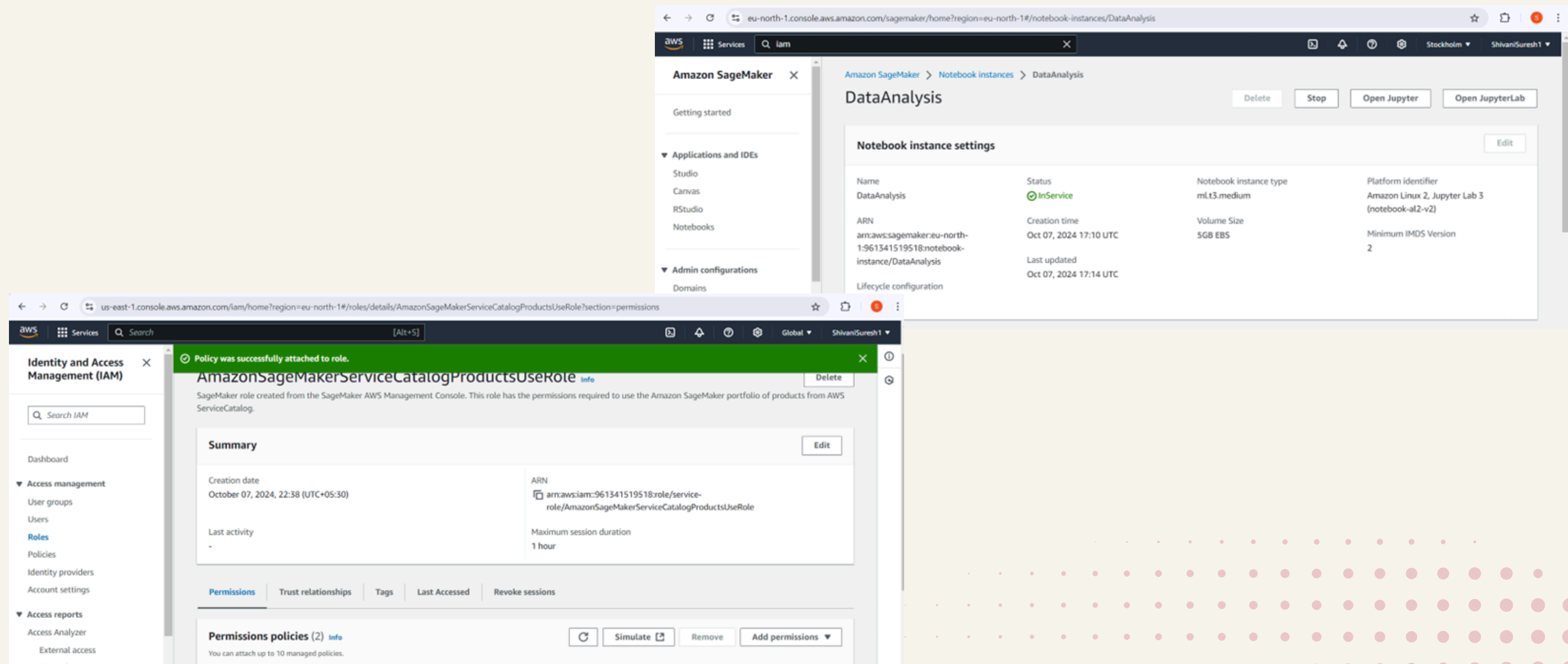
The screenshot displays the AWS S3 console interface. On the left, the 'Amazon S3' sidebar is visible, showing options like Buckets, Access Grants, and Storage Lens. The main content area shows the 'requiredlib' bucket with a tab for 'Objects'. Below the tabs, there are buttons for actions like 'Copy S3 URI', 'Copy URL', 'Download', 'Open', 'Delete', 'Actions', 'Create folder', and 'Upload'. A search bar labeled 'Find objects by prefix' is present. Below the search bar, a table lists 5 objects:

<input type="checkbox"/>	Name	Type	Last modified	Size	Storage class
<input type="checkbox"/>	AAPLoutput.csv	csv	October 4, 2024, 19:51:29 (UTC+05:30)	527.0 B	Standard
<input type="checkbox"/>	AMZNoutput.csv	csv	October 4, 2024, 19:51:29 (UTC+05:30)	568.0 B	Standard
<input type="checkbox"/>	GOOGLoutput.csv	csv	October 4, 2024, 19:51:30 (UTC+05:30)	575.0 B	Standard
<input type="checkbox"/>	MSFToutput.csv	csv	October 4, 2024, 19:51:29 (UTC+05:30)	566.0 B	Standard
<input type="checkbox"/>	output.csv	csv	October 4, 2024, 19:48:27 (UTC+05:30)	575.0 B	Standard

The footer of the console shows 'CloudShell', 'Feedback', and copyright information for Amazon Web Services, Inc. or its affiliates.

IMPLEMENTATION

Setting up notebook instance in AWS SageMaker



IMPLEMENTATION

Data Visualization using AWS SageMaker



The background features a solid orange vertical bar on the far left, followed by a thin black vertical bar, and then a wider light gray vertical bar. The right side of the image is white, decorated with two rectangular areas of a light pink dot grid pattern, one in the top right and one in the bottom right.

THANK YOU