Graded Assignment on Serverless Architecture

Assignment 3: Monitor Unencrypted S3 Buckets Using AWS Lambda and Boto3

Objective: To enhance your AWS security posture by setting up a Lambda function that detects any S3 bucket without server-side encryption.

Task: Automate the detection of S3 buckets that don't have server-side encryption enabled.

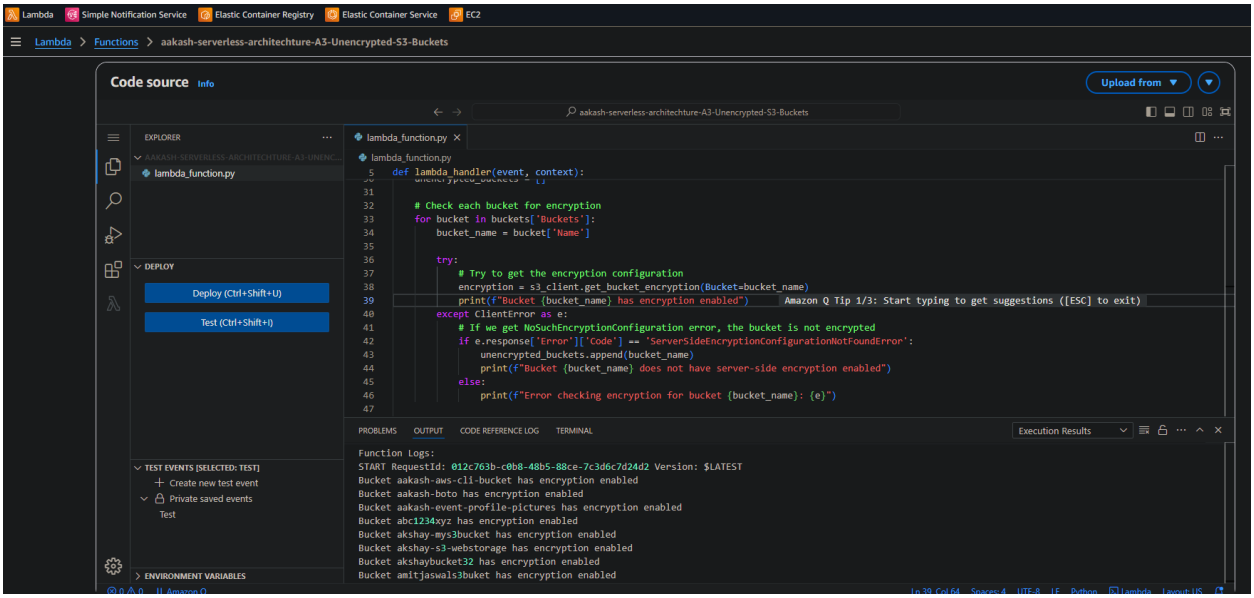
Code:

Monitor
Unencrypted S3 Buc

```
import boto3
import json
from botocore.exceptions import ClientError

def lambda_handler(event, context):
    """
    AWS Lambda function to detect S3 buckets without server-side encryption
enabled.

    Args:
        event (dict): AWS Lambda event object
        context (object): AWS Lambda context object

    Returns:
        dict: Response containing list of unencrypted buckets
    """
    # Initialize the S3 client
    s3_client = boto3.client('s3')

    # Get list of all buckets
    try:
        buckets = s3_client.list_buckets()
    except ClientError as e:
```

```
        print(f"Error listing buckets: {e}")
        return {
            'statusCode': 500,
            'body': json.dumps(f"Error listing buckets: {str(e)}")
        }

    # List to store unencrypted buckets
    unencrypted_buckets = []

    # Check each bucket for encryption
    for bucket in buckets['Buckets']:
        bucket_name = bucket['Name']

        try:
            # Try to get the encryption configuration
            encryption = s3_client.get_bucket_encryption(Bucket=bucket_name)
            print(f"Bucket {bucket_name} has encryption enabled: {encryption}")
        except ClientError as e:
            # If we get NoSuchEncryptionConfiguration error, the bucket is not
encrypted
            if e.response['Error']['Code'] ==
'ServerSideEncryptionConfigurationNotFoundError':
                unencrypted_buckets.append(bucket_name)
                print(f"Bucket {bucket_name} does not have server-side encryption
enabled")
            else:
                print(f"Error checking encryption for bucket {bucket_name}: {e}")

    # Print summary
    if unencrypted_buckets:
        print(f"Found {len(unencrypted_buckets)} unencrypted buckets: {',
'.join(unencrypted_buckets)}")
    else:
        print("All buckets have encryption enabled. Great job!")

    # Return the results
    return {
        'statusCode': 200,
        'body': json.dumps({
            'unencrypted_buckets': unencrypted_buckets,
            'count': len(unencrypted_buckets)
        })
    }
```

Output:


Lambda
Simple Notification Service
Elastic Container Registry
Elastic Container Service
EC2
Lambda > Functions > aakash-serverless-architechture-A3-Unencrypted-S3-Buckets
Code source Info
Upload from
aakash-serverless-architechture-A3-Unencrypted-S3-Buckets
EXPLORER
lambda_function.py
DEPLOY
Deploy (Ctrl+Shift+U)
Test (Ctrl+Shift+I)
TEST EVENTS [SELECTED: TEST]
Create new test event
Private saved events
Test
ENVIRONMENT VARIABLES
def lambda_handler(event, context):
# Check each bucket for encryption
for bucket in buckets['Buckets']:
bucket_name = bucket['Name']
try:
# Try to get the encryption configuration
encryption = s3_client.get_bucket_encryption(Bucket=bucket_name)
print(f"Bucket {bucket_name} has encryption enabled")
except ClientError as e:
# If we get NoSuchEncryptionConfiguration error, the bucket is not encrypted
if e.response['Error']['Code'] == 'ServerSideEncryptionConfigurationNotFoundError':
unencrypted_buckets.append(bucket_name)
print(f"Bucket {bucket_name} does not have server-side encryption enabled")
else:
print(f"Error checking encryption for bucket {bucket_name}: {e}")
Amazon Q Tip 1/3: Start typing to get suggestions ([ESC] to exit)
PROBLEMS
OUTPUT
CODE REFERENCE LOG
TERMINAL
Execution Results
Function Logs:
START RequestId: 012c763b-c0b8-48b5-88ce-7c3d6c7d24d2 Version: $LATEST
Bucket aakash-aws-cli-bucket has encryption enabled
Bucket aakash-boto has encryption enabled
Bucket aakash-event-profile-pictures has encryption enabled
Bucket abc1234xyz has encryption enabled
Bucket akshay-mys3bucket has encryption enabled
Bucket akshay-s3-webstorage has encryption enabled
Bucket akshaybucket32 has encryption enabled
Bucket amitjaswals3buket has encryption enabled