

Assignment: AWS Lambda Function for Monitoring S3 File Uploads

Objective

Develop an AWS Lambda function that is triggered by file upload events from an Amazon S3 bucket. The function should examine the size of the uploaded file, and if the file size exceeds 100MB, it should log an alert. This assignment aims to familiarize students with AWS Lambda, Amazon S3, event-driven architecture, and basic logging practices.

Requirements

- **AWS Account:** Students should have access to an AWS account. They can use an existing account or sign up for the AWS Free Tier.
- **Knowledge Prerequisites:** Students should have a basic understanding of AWS services, particularly AWS S3 and AWS Lambda, IAM roles, and CloudWatch Logs.
- **Tools:** Students may use the AWS Management Console, AWS CLI, or AWS SDKs based on their comfort level with these tools.

Instructions

- **S3 Bucket Setup**
 - Create a new Amazon S3 bucket in your AWS account. Take note of the bucket name, as it will be needed later.
 - Ensure the bucket is configured to log access requests for auditing purposes.
- **IAM Role Creation**
 - Create a new IAM role that the Lambda function will assume. This role must have permissions to access S3 data and write logs to Amazon CloudWatch.
- **Lambda Function Development**
 - Create a new AWS Lambda function from the AWS Management Console.
 - Assign it the IAM role created in the previous step.
 - Set the runtime to Python 3.8 or any other preferred runtime that supports S3 event processing.
 - The function should be triggered by S3 upload events. Configure the trigger appropriately within the Lambda function settings.
 - Write the Lambda function code to:
 - Be triggered upon file uploads to the specified S3 bucket.
 - Retrieve the size of the uploaded file.
 - Compare the file size against the 100MB threshold.
 - Log an alert message if the file exceeds the threshold.
- **S3 to Lambda Integration**
 - Configure the previously created S3 bucket to trigger the Lambda function upon file uploads. Specify the event type as "All object create events."
- **Testing and Validation**
 - Test the Lambda function by uploading files of various sizes to the S3 bucket. Include tests for files smaller than 100MB and larger than 100MB.

- Validate that the Lambda function executes as expected by reviewing the logs in Amazon CloudWatch. Ensure that an appropriate alert is logged for files exceeding the size threshold.
- Deliverables
 - A report documenting the creation process of the S3 bucket, IAM role, and Lambda function. Include any challenges encountered and how they were resolved.
 - Screenshots of:
 - The Lambda function configuration, particularly the trigger setup.
 - The IAM role's permissions.
 - The CloudWatch log entries for the test file uploads.