Computer Science & Information Systems

**DevOps for Cloud - Lab Sheet 7 - Module 8**

**(M8: IaC and Serverless CI/CD)**

This lab sheet needs to be administered along with Module 8: IaC and Serverless CI/CD

**Notation used in the document**

* ‘>’ represents the terminal, where we type the commands.
* The text mentioned within ‘[‘ and ‘]’ brackets provides additional documentation for the step.

1. Objectives:
2. To demonstrate the direct deployment of Lambda function in AWS Cloud using IaC approach
3. To demonstrate the continuous integration and continuous deployment (CI/CD) process for Lambda function deployment in AWS Cloud using IaC approach
4. Pre-requisite:
5. Visual Studio IDE
6. Login credentials for GitHub
7. Install SAM CLI - <https://docs.aws.amazon.com/serverless-application-model/latest/developerguide/install-sam-cli.html>
8. Lab Exercise:

**Task 1: Deployment of Lambda function in AWS Cloud using IaC**

1. Open Visual Studio IDE
2. Create a new python file called “lambda\_code.py” and copy the following code.

import json

def lambda\_handler(event, context):

    return {

        'statusCode': 200,

        'body': json.dumps('Hello from Lambda!')

    }

1. Create a new file called “template.yaml” [this is the SAM / CloudFormation template] and copy the following code.

AWSTemplateFormatVersion: '2010-09-09'

Transform: AWS::Serverless-2016-10-31

Description: Simple AWS Lambda Function

Resources:

  HelloWorldFunction:

    Type: AWS::Serverless::Function

    Properties:

      Handler: lambda\_code.lambda\_handler

      Runtime: python3.9

      CodeUri: ./lambda\_code.py

      Description: AWS Lambda function that returns "Hello, world!"

      MemorySize: 128

      Timeout: 10

      Policies:

        - AWSLambdaBasicExecutionRole

1. Verify that the SAM CLI has been installed by typing the command

> sam --version

[Refer pre-requisite section for URL to install the SAM CLI]

1. In the Visual Studio Code, open a terminal and type

> sam deploy --guided

[ -- Additional information --

We can interactively provide required information for deployment. During this process, a configuration file called “samconfig.toml” will be created.

For most of the prompts, we can type just “enter”, which will take the default values. Enter “y” only for: a. Confirm changes before deploy [y/N]: y; b. Allow SAM CLI IAM role creation [Y/n]: y.

SAM will create the following resources in the AWS Cloud:

a. Lambda function [type: AWS::IAM::Role] and

b. Function Role [type: AWS::IAM::Role]

]

**Task 2: Implement CI/CD process for the deployment of Lambda function in AWS Cloud using IaC**

Code available at GitHub URL - https://github.com/shreyassureshrao/lambda

Additional Step: Setup repository secrets to access AWS Cloud from within GitHub runners. URL - https://github.com/shreyassureshrao/lambda/settings/secrets/actions

4. Outputs/Results:

Students are expected to perform the tasks provided in the lab capsule, and thereby gain a practical understanding of the concepts of Infrastructure as Code and Serverless.

References:

<https://aws.amazon.com/serverless/>

<https://docs.aws.amazon.com/serverless-application-model/>

<https://www.redhat.com/en/topics/automation/what-is-infrastructure-as-code-iac>