COS80001 - Software Development for Cloud Computing

Assignment 1 - part A

Creating and deploying a simple web page

Due date to ESP: 9 am Wednesday 15 August 2018 (Week 3)
Contribution to final assessment: 10%, graded as pass/fail.

Before you start this Assignment

Make sure you have completed ACF Labs 1 & 2.
You will also need to create your own key pair and be able to access your EC2 instance via SSH using utilities like PuTTY and/or WinSCP. See the notes on **Remote Access to your EC2 Instance** on Blackboard.

Objectives

This assignment has the following objectives:

1. Get familiar with the AWS management console.
2. Launch your own EC2 instance.
3. Deploy your first PHP web page (PhotoAlbum) on Apache web server on your EC2 instance.

Important:
In your COS800001 assignments, all AWS resources you create (e.g. EC2 instances, Security groups, RDS database instances, etc.) should have the following additional tags added:

- StudentName (with a value of your name)
- StudentID (with a value of your id)

These tags are in addition to any other tags that are appropriate to add to the resource.
These tags will be used to assist in the assessment of your work

Core tasks

You should apply for AWS education credit grant before working on the assignments, make sure to keep track of your AWS services usage (using Billing & Cost Management Dashboard) throughout the semester to avoid paying extra fees.

Task 1 – Launch your own Linux EC2 instance

Before launching an EC2 instance, a key pair is required for logging in to your instance in the future, follow the '*AWS Remote Access Tutorial*' on how to create one. Then launch an EC2 instance from the AWS management console in **Asia Pacific – Sydney region**. It must have the following properties:

- Amazon Machine Image: *Amazon Linux AMI 2018.03.0 (HVM)*
- Instance type: *t2.micro*
- Advanced Details – User data: enter the following script to automatically set up the Apache server at launch (a copy is on Blackboard under the **How to…** menu):

```
#!/bin/bash
yum update -y
yum install -y httpd24 php70 mysql56-server php70-mysqlnd
service httpd start
chkconfig httpd on
usermod -a -G apache ec2-user
chown -R ec2-user:apache /var/www
chmod 2775 /var/www
find /var/www -type d -exec sudo chmod 2775 {} \;
find /var/www -type f -exec sudo chmod 0664 {} \;
echo "<?php echo '<h2>Welcome to COS80001. Installed PHP version: ' .
phpversion() . '</h2>'; ?>" > /var/www/html/phpinfo.php
```

- New security group named "*WebServer-SG*" that allows only necessary traffic types (SSH, HTTP, HTTPS) to reach the instance from anywhere. Do not allow every traffic types.

Other configurations should be left as default such as default Virtual Private Cloud (VPC), default subnet, etc.

Allow a few minutes for the instance to launch and execute the commands in the above script, the Instance State and Status Check should change to '*running*' and '*2/2 checks passed*', respectively. After that, visit *http://your.public.dns.amazonaws.com/phpinfo.php*, if you see a welcome page, that means the EC2 instance and Apache server have been installed correctly.

Note: Due to the pay-as-you-go pricing approach, the longer your instances run the more you pay; therefore, you are advised to stop the instances after each working session.

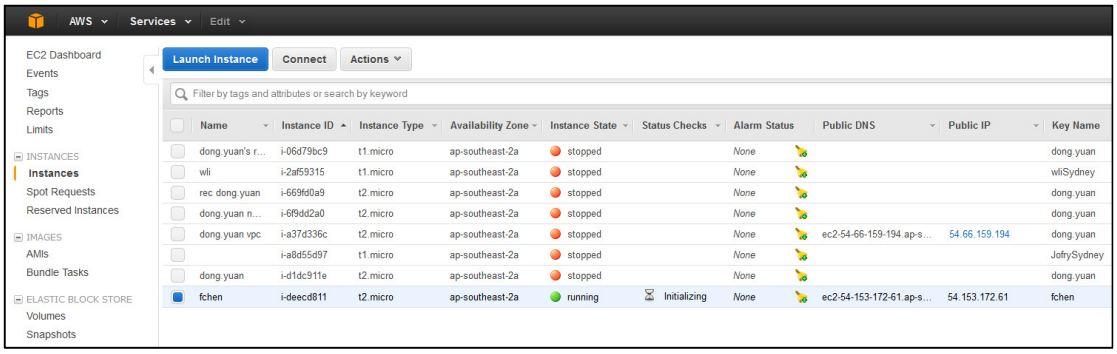

Figure 1 - AWS management console - EC2

Hint: Don't forget file and directory names in Linux are case sensitive

Task 2 – Create a PHP web page (PhotoAlbum)

Create a PHP web page (*upload.php*) visualized as below:

Figure 2 - Photo uploader page (upload.php)

The directory structure of your website is described below. You can create additional HTML, CSS, JavaScript files if needed. The Apache HTTP server serves files located in a directory called Apache document root (/var/www/html); thus the *cos80001* folder must be in the Apache document root folder. Follow the '*AWS Remote Access Tutorial*' to learn how to transfer files to the Linux EC2 instance.

```
cos80001/
        . . . AWS SDK, other support libraries
        photoalbum/
                upload.php
                . . . other PHP, HTML, CSS, JavaScript files
```

You do not need to implement any upload functions at this stage. After having the website deployed on the Apache server on your instance, your web page should be accessible from anywhere on the Internet via this URL:

http://your.public.dns.amazonaws.com /cos80001/photoalbum/upload.php

You should try accessing your website from different devices on different networks to make sure it works correctly.

Task 3 – Create a CloudFormer JSON template of your AWS resource stack

Once you have successfully got your Web site running on AWS you need to create a JSON representation of the resources and include it in your submission.

This file must be called **`assign1a.json`**

Instructions for doing this are on Blackboard under the **How to…** menu.

Portfolio Document

You are required to submit a report to ESP:

1. The document must contain your name, student ID, unit code and a title (Assignment 1 report).
2. A screenshot of AWS EC2 instance page similar to Figure 1 to show your EC2 instance created.
3. A screenshot of your running PhotoAlbum web page deployed on your EC2 instance via a web browser similar to Figure 2.

The report is assessed in the lab session with feedback if any. You are expected to incorporate the feedback (esp. if changes are required) and submit the changed report as part of the final portfolio.
Note: This is a formative assignment. That is, an assignment designed to provide feedback. If your assignment submission fails this time, you have 1 week to make corrections and resubmit to pass.

Demonstration

To be marked you are required to demonstrate your assignment in your allocated lab.

FAQ

What happens if assignment submission is graded as a 'fail'?
You will have to repeat the task and submit in the following week's lab session. Students can repeat the task and submit for feedback again. If your submission is graded as 'fail' twice then you may fail this unit.

What happens if a student is unable to submit or demonstrate the assignment?
If you are unable to submit due to medical reasons, then a doctor certificate will have to be shown. In normal conditions, ***all students are expected to make a submission and demonstrate by the due date, otherwise the assignment is graded as a fail***.

COS80001 SDCC
Assignment 1a Checklist

May sure all the following are completed.

Submission Checklist

Student Name: ……..

Student Id: …….

Tutorial time: ……

Date of submission: .....

Submit a zip file called **`assign1a.zip`** containing

- ☐ A completed copy of this checklist.
- ☐ Your CloudFormer JSON file **`assign1a.json`**
- ☐ PHP file **`upload.php`** plus any other associated files (e.g. CSS) you have used to create your web site.
- ☐ Portfolio document as described above.

Requirements Checklist

- ☐ The web page **`upload.php`** is served from your EC2 instance and correctly displayed on a browser.