Cloud Computing Architecture
Assignment 1 - Part A

Creating and deploying a Web Page

Due date: This assignment will be assessed by your tutor in your tutorial in **Week 4.** No submission is required. ***You must attend this demonstration to have your assignment assessed and be eligible for future assignments.***
Weighting: 5%

Preparation:

- ACF Labs 2 & 3.
- 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. For more details, see *Remote Access to an EC2.pdf* file.

All supporting materials mentioned in this document can be found in the corresponding assignment page on Canvas.

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.
4. Make cost-efficient use of your budget. Terminate any unnecessary extra resources that you created.

AWS Accounts

You have a choice of accounts/environments you can use to complete the assignments in this unit.

1. **AWS Academy Learner Lab** (**recommended**): accessible through AWS Canvas. Note that this is NOT the sandbox in ACA/ACF courses that you use for your weekly labs. This is a managed environment that allows your tutor to gain access to your AWS console so your work can be marked/troubleshooted. This class gives you **US$100 credit**. **Use it carefully**. This account is deleted at the end of the semester.

2. **Regular AWS account (NOT recommended):** new AWS accounts are eligible for a free tier. This gives you more freedom, but you need to be careful as you will be charged for the services if you go outside the free tier offering. Make sure to keep track of your AWS services usage (using Billing & Cost Management Dashboard) throughout the semester to avoid paying fees. This account is on-going, but some services are no longer free after 12 months. If you choose this option, you will need to create a (read-only) IAM user and provide its credentials to your tutor so they can mark the assignment.

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. For more details, see *Remote Access to an EC2.pdf* file. Then launch an EC2 instance from the AWS management console in **US East (N. Virginia) us-east-1 region**. It must have the following properties:

- Amazon Machine Image: *Amazon Linux 2023 AMI*
- Instance type: *t2.micro*
- Advanced Details – User data: Use the script in *Auto Setup EC2 with script.pdf* file to automatically set up and configure the Apache server, PHP, and MySQL at launch.
- 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.

Note*: In this introductory assignment you will create an EC2 Web server in the default VPC.*

In general, the default VPC is suitable only for experimental / toy deployments, and its use is considered bad practice for production resources. In the next assignments, you will create your own secure VPC.

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, it means the EC2 instance, PHP, and Apache server have been installed correctly.

NOTE: Due to the pay-as-you-go pricing, the longer your instances run the more you pay. You are advised to stop the instances after each working session to save cost.

TASK 2 – Create a PHP website (Photo Album)

Create two PHP web pages (photo*uploader.php* and *photolookup.php*) with user interfaces as illustrated in Figures 1 & 2. Feel free to individualise/style the web page as you wish.

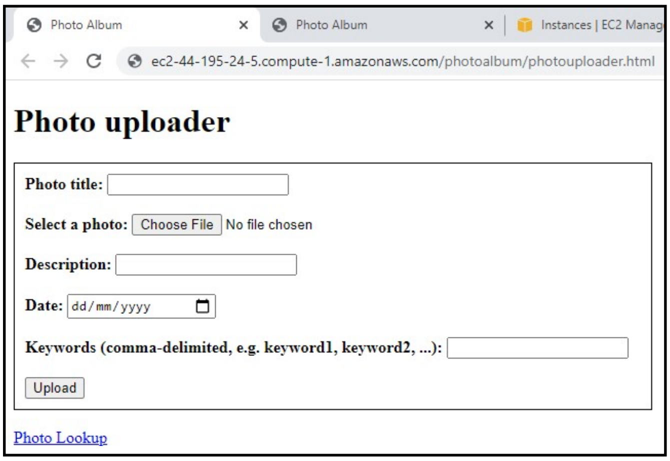
Photo Album
Photo Album
Instances | EC2 Manag
ec2-44-195-24-5.compute-1.amazonaws.com/photoalbum/photouploader.html

Photo uploader

Photo title:

Select a photo: Choose File No file chosen

Description:

Date: dd/mm/yyyy

Keywords (comma-delimited, e.g. keyword1, keyword2, ...):

Upload

Photo Lookup

Figure 1 - Photo uploader page (photouploader.php). The "Photo Lookup" hyperlink at the bottom should link to photolookup.php

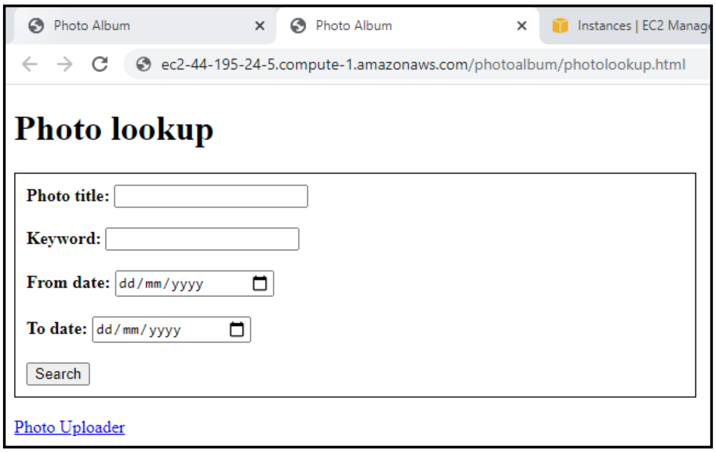
Photo Album
Photo Album
Instances | EC2 Manag
ec2-44-195-24-5.compute-1.amazonaws.com/photoalbum/photolookup.html

Photo lookup

Photo title:

Keyword:

From date: dd/mm/yyyy

To date: dd/mm/yyyy

Search

Photo Uploader

Figure 2 - Photo lookup page (photolookup.php). The "Photo Uploader" hyperlink at the bottom should link to photouploader.php

The directory structure of your website is described below. You can create additional HTML, CSS, PHP, JavaScript files if needed. The Apache HTTP server serves files located in a directory called Apache document root (/var/www/html); the *cos20019* folder must be in the Apache document root folder. Follow the instructions in *Remote Access to an EC2.pdf* file to learn how to transfer files to a Linux EC2 instance.

NOTE: File and directory names in Linux are case sensitive.

```
/var/www/html/cos20019/
        ... AWS SDK, other support libraries
        photoalbum/
                photouploader.php
                photolookup.php
                ... other PHP, HTML, CSS, JavaScript files
```

NOTE: You are not required to implement the actual functionalities of the website 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/cos20019/photoalbum/photouploader.php

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

Demonstration

To be marked students are required to demonstrate their deployment during their allocated lab in Week 4.

FAQ

What happens if a student is unable to submit or demonstrate the assignment?

Under normal conditions, ***all students are expected to make a submission and demonstrate by the due date, otherwise the assignment is graded as a fail***.

If a student is seeking an extension, they **MUST** apply **on or before** the assessment due date and **before** the due time. Otherwise, it will be considered as a late submission. Please refer to unit outline for further instructions.

IMPORTANT: Students seeking an extension for their assignments due to medical reasons must acquire **Swinburne Registered Practitioner Medical Impact Statement**.
Students should note that submitting fraudulent medical documentation could result in suspension or exclusion from the university.

Further instructions and forms can be found on Swinburne special consideration and extensions web page.

Requirements Checklist

□ The **photouploader.php** and **photolookup.php** pages are served from your EC2 instance and correctly displayed on a browser from anywhere.