Metropolitan State University
ICS 432 - 01: Distributed and Cloud Computing
Fall 2021

Lab 03: Cloud Storage
Total points: 25
Out: Saturday, September 18, 2021
Due: 11:59 PM on Friday, September 24, 2021

Objective

The objective of this lab is to practice two types of cloud storage, namely block storage and object storage. The first two exercises focus on AWS storage as follows:

Exercise 1: Working with Amazon **E**lastic **B**lock **S**torage (Amazon EBS) which is a block storage.
Exercise 2: Hosting a static web site on Amazon **S**imple **S**torage **S**ervice (Amazon S3) which is an object storage

The third exercise focus on object storage on GCP

Exercise 3: Qwiklab: Cloud Storage: Qwik start – Cloud Console

What to submit?

The objective of this lab is to practice using one type of cloud storage. To complete this lab:

- Read this lab assignment carefully.
- At various parts of the lab, you are asked to take screen shots of your work. Open a word document and paste the screen shots in this document in the same order as mentioned in the lab. Make sure to highlight the screen shot number.
- After you complete all the lab exercises, upload the word document to the designated D2l folder by 11:00 PM on Friday, September 14, 2021.

NOTE: On Windows machines, you may consider using Snip & Sketch for screenshot handling.
NOTE: Make sure your screenshots are clear and the text inside the image is easily readable. You will lose the point for a screenshot if I cannot read what is written inside the screenshot.

Part 1: Storge on AWS

Exercise 1: Working with EBS

In this exercise, you will complete Lab 4: Working with EBS from Module 7 of the AWS Academy Cloud Foundations course. In this lab, you will learn how to create an Amazon EBS volume, attach it to an instance, apply a file system to the volume, and then take a snapshot backup.

1- Task 1:
   a. In step 9, for instead of using My Volume as the volume name, use your last name instead of My. For example, my volume will be called Ghanem Volume.
   b. After step 10, take **lab report screenshot #1** to show the list volumes.
2- Task 2:
   a. After step 14, take **lab report screenshot #2** to show the volume with status in-use.
3- Task 3:
   a. After step 29, take **lab report screenshot #3** to show the command window after connecting to the instance.
4- Task 4:
   a. After step 34, take **lab report screenshot #4** to show the output of the `cat` command.
   b. In step 36, change the command to include your name. For example, my command will be as follows. Use your name instead of my name in the following command. Note that, in this command you write you name inside the file and use your name in the file name.

```
sudo sh -c "echo some text has been written by Thanaa Ghanem > /mnt/data-store/thanaaghanem.txt"
```

   c. After step 37, take **lab report screenshot #5** to show the contents of the text file.
5- Task 5:
   a. In step 40, change **Value:** My Snapshot to include your last name instead of My. For example, I will use **Value:** Ghanem Snapshot
   b. After step 41, take **lab report screenshot #6** to show the list of snapshots including your recently created snapshot.
6- Task 6:
   a. In step 47, change **Value:** Restored Volume to include your last name. For example, I will use **Value:** Ghanem Restored Volume.
   b. After step 55, take **lab report screenshot #7** to show the output of the `ls` command showing your text file.
   c. Run the following command (use your name instead of my name for the file name) to display the context of the .txt file and take **lab report screenshot #8** of the contents of the file. Note that the output should include your name.

```
cat /mnt/data-store/thanaaghanem.txt
```

Exercise 2: Hosting a static web site on S3

The goal of this exercise is practice using Amazon S3 Buckets. Basically, you will use Amazon S3 to host a static web site for this course, namely ICS 432 – Fall 2021.

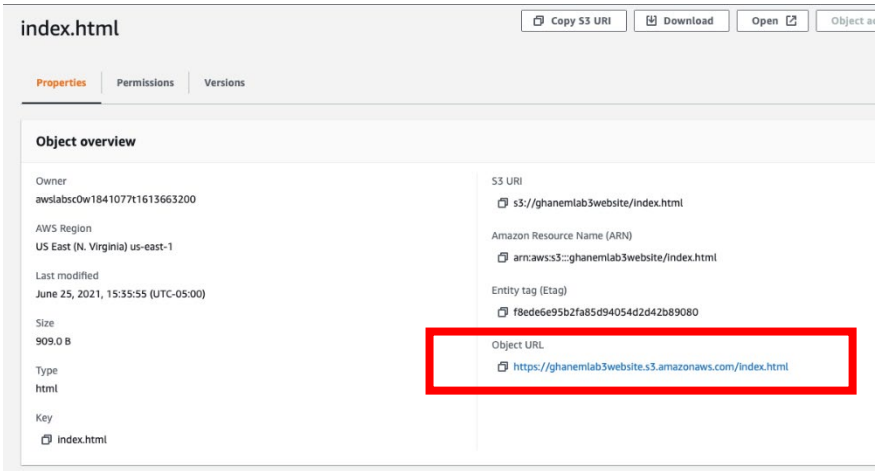
1- Download the s3-ics432-website-files.zip from D2L that includes the following three files: index.html, index.jpg, and logo.jpg
2- Login to your AWS Educate account and open the AWS Management Console.
3- From services menu, click on S3.
4- Click on Create Bucket.
5- Bucket name: <your last name>lab3website (for example, my bucket is called ghanemlab3website).
6- Keep all the defaults and scroll down and click on Create bucket.

Lab report screenshot #9: take a screenshot of the list of buckets in your S3 console and make sure your newly created bucket is listed.

7- Click on the bucket name and then click on Upload.
8- Click on Add files. Browse to the folder that include the three web site files (index.html, logo.jpg, and index.jpg). Select the three files. In the S3 dashboard, scroll down and click Upload.

Lab report screenshot #10: take a screenshot of the S3 dashboard that lists the three files. Male sure the bucket name appears in the screenshot.

9. Click on index.html in the bucket and check the Object URL which should be similar to the following.



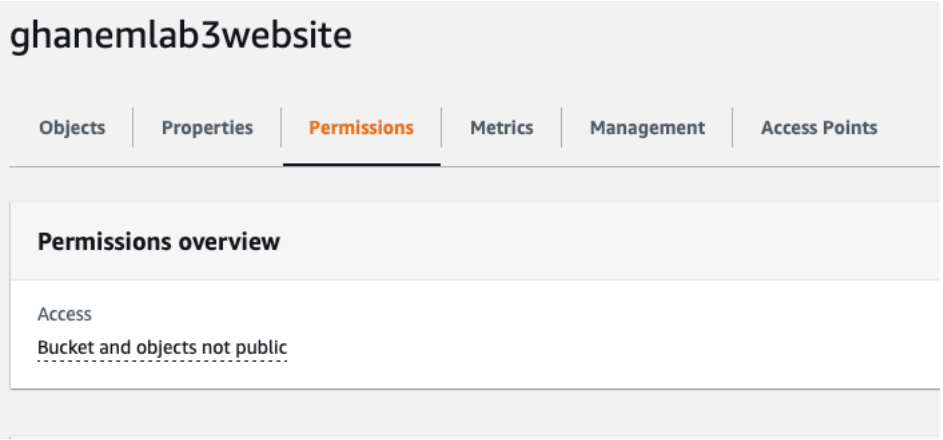
10. Copy Object URL and paste it in a new browser window. You will get an AccessDenied error due to missing permissions.

This XML file does not appear to have any style information associated with it. The document tree is shown below.

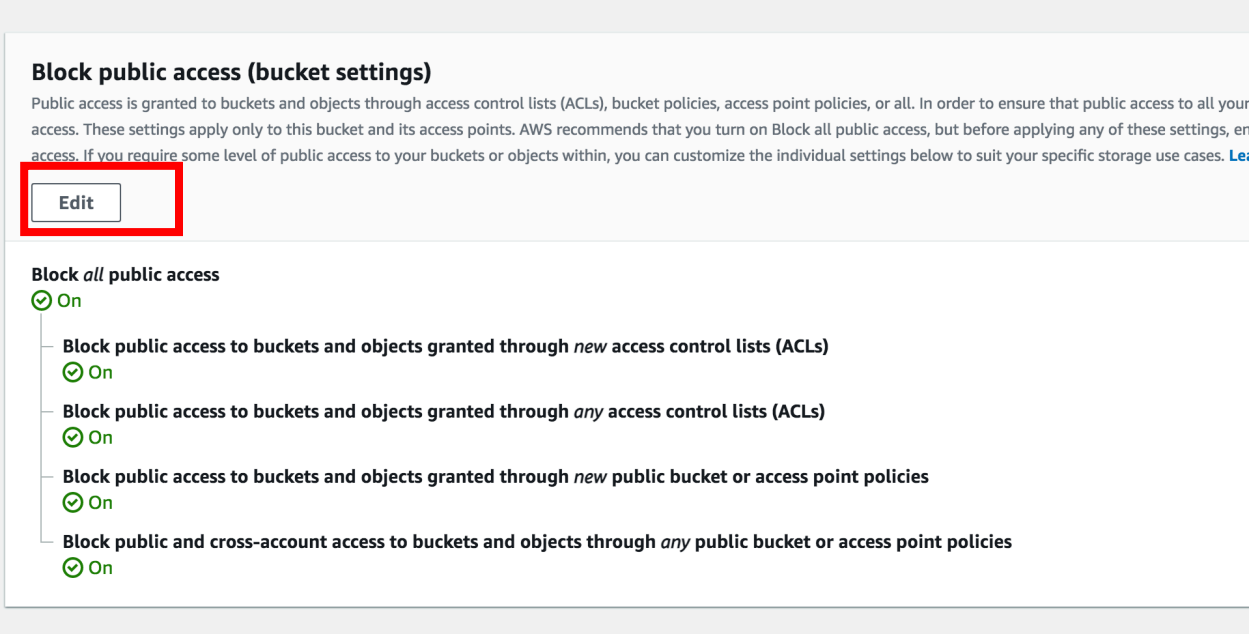

```
▼<Error>
   <Code>AccessDenied</Code>
   <Message>Access Denied</Message>
   <RequestId>7BFD69C7A1DD7911</RequestId>
   <HostId>825TQYHBQ14RJc4d4FYTgy/412Zrrhysm/Homfoyl4b/8hEfJJpv47OYPyBWlS4bxG6KDO3BnhI=</HostId>
 </Error>
```


Lab report screenshot #11: take a screen shot of the error message. Make sure to show the browser's URL bar.

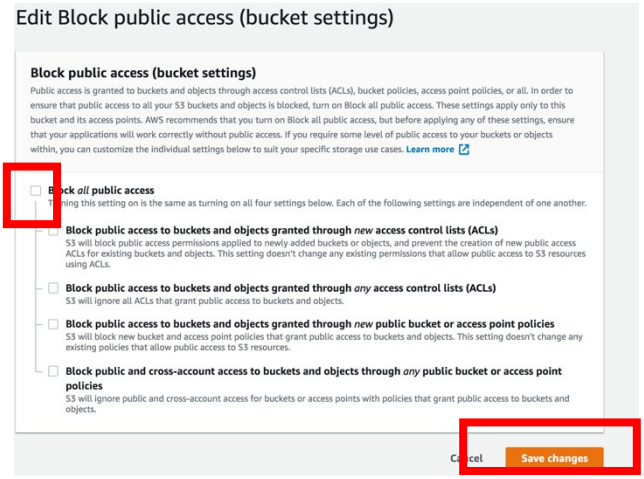
11. Go back to the bucket list and click on the Bucket name then go to the **Permissions** tab. You will see that the Bucket and objects not public.



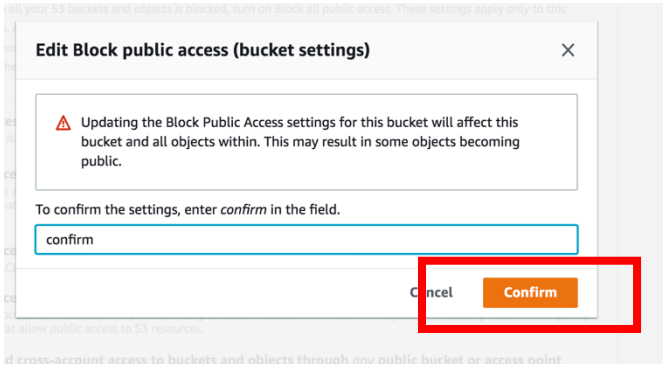
12. Click on **Edit**.



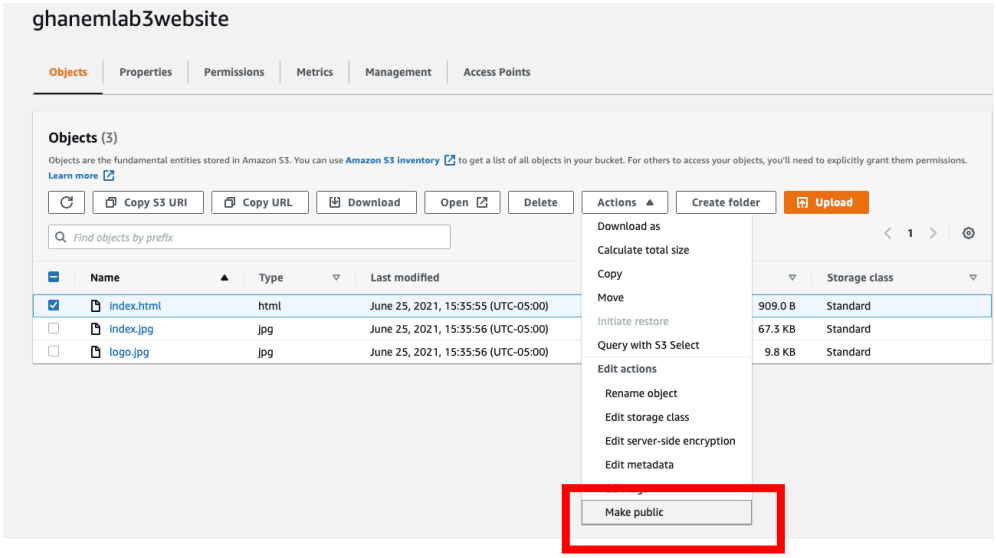
13. Uncheck the box next to Block Public Access and then click Save changes.



14. Type confirm and then click on **Confirm**.



15. Go back to the bucket list, check the box next to the index.html file, then click on the **Action** dropdown menu. Scroll down and click on **Make public**.

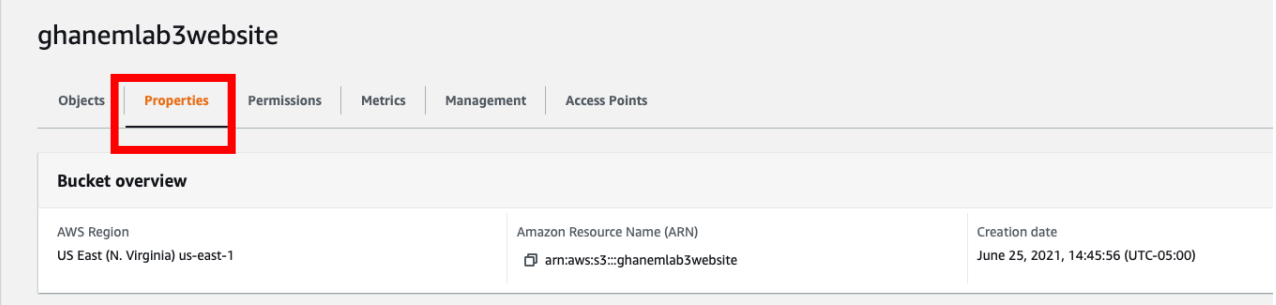


16. Repeat step 15 to make the other two files public as well.

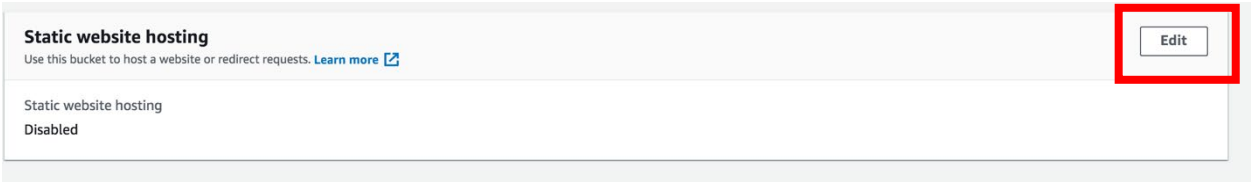
17. Copy URL of index.html and open it in a new browser window again and it should work perfectly.

    Lab report screenshot #12: take a screenshot of the browser page. Make sure to include the browser URL bar in the screenshot.

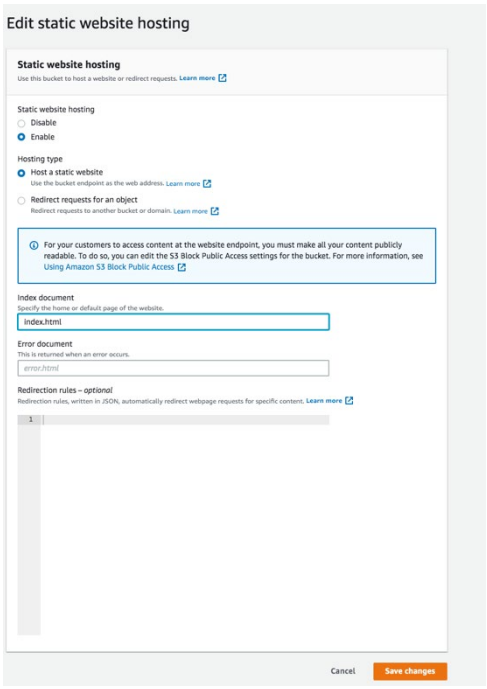
18. One issue in the URL is that it contains index.html at the end. (for example, http://ics432datafall2021ghanem.s3-website-us-east-1.amazonaws.com/index.html). This is usually not a good practice as it is not common to have index.html in URL. You may overcome this issue by enabling website hosting on your bucket. To do that, you go to the bucket console and click on **Properties**.



19. Scroll down in the Properties page until you find Static website hosting. Click on **Edit**.



20. Choose **Enable**, enter index.html in the **Index document** box, and then click **Save changes.**



21. Go back to **Properties** page from the bucket's console and scroll down to the Static website hosting section and you will find the new bucket's URL without index.html. Copy the URL and test it again from the browser.

    Lab report screenshot #13: take a screenshot of the browser page. Make sure to include the browser URL bar in the screenshot.

Part 2: Storage on GCP

Exercise 3: Qwiklab: Cloud Storage: Qwik start – Cloud Console

In this exercise, you will complete the Qwiklab titled, Cloud Storage: Qwik start – Cloud Console in which you will learn how to use the Cloud Console to create a storage bucket, then upload objects, create folders and subfolders, and make those objects publicly accessible.

1- Log in to your Qwiklabs account and open the lab using the following link: https://run.qwiklabs.com/focuses/1760?catalog_rank=%7B%22rank%22%3A2%2C%22num_filters%22%3A0%2C%22has_search%22%3Atrue%7D&parent=catalog&search_id=11737903
2- Read all the lab instructions first.
3- Click on Start Lab from the top left corner of the Screen.

Lab report screenshot #14: take a screenshot of the lab credentials that are generated for you.

Task: Create a Bucket

4- Include your name in the bucket name. For example, my bucket name will be ghanemlab3bucket.

Lab report screenshot #15: show the bucket list with your bucket displayed.

5- **Lab screenshot #16:** take a screenshot to show that you successfully completed the task and the answers to the two multiple choice questions.

Task: Upload an object into the Bucket

6- After step 5, take **lab report screenshot #17** to show that the file is successfully uploaded to the bucket.

7- **Lab report screenshot #18:** show the status of the Check my progress button after you click on it and the answer to True/False question.
8- Additional step: Upload another photo of your choice to the bucket and take **lab report screenshot #19** of your bucket dashboard showing all the files.

Task: Share an Object Publicly

9- After step 7, take **lab report screenshot #19** to show Check my progress button after to change the file permissions.

10- **Lab report screenshot #20:** Take a screen shot of your browser displaying your own image. Make sure the URL is shown in the screenshot.

Task: Create Folders

11- After step 6, take **lab report screenshot #21** to show your Google Cloud Storage dashboard with all the files and folders.

12- Upload the three ICS432 web sites files (index.html, index.jpg, and logo.jpg) to folder2. Copy the URL for index.html and paste it in the browser. Take **lab report screenshot #22** to show your browser and make sure the URL is clear in the screenshot.

13- **Lab report screenshot #23**: show the time left after you complete the lab along with your final lab grade. Make sure your lab credentials also are shown in the screenshot.