[version_1.0]

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Exercise: Storage

*The exercises are designed to be completed in your AWS account, and **will have an associated cost.** For this reason, in addition to the written instructions, this course includes video recordings of the exercises. If you intend to attempt the exercises, familiarize yourself with AWS pricing, specifically Amazon EC2 pricing, Amazon S3 pricing, and Amazon DynamoDB pricing and the AWS Free Tier.*

For this scenario, you will create the S3 bucket where the employee photos will be housed. You will also update the EC2 User Data to use the S3 bucket you create.

In this exercise, you will create a S3 bucket and upload some objects. Then, you will modify the bucket policy and launch an EC2 instance. Finally, you will stop the EC2 instance to prevent future costs.

Lab Steps

Stage 1 - Create an S3 bucket

1. Search for **S3** in the search bar at the top. Choose **S3**.
2. Choose **Create bucket**.
3. For the **Bucket name** name it `employee-photo-bucket-` then use your initials and a unique number.

   Example:

   ```
   employee-photo-bucket-al-007
   ```

4. Make sure the **Region** is the region where you have created the other services. Again, this can be found at the top right.
5. Choose **Create bucket**.

Stage 2 - Upload a photo

1. Choose your newly created bucket by clicking on the name of your bucket.
2. Choose **Upload**.
3. Choose **Add files**. Choose a photo of your choice on your computer.
4. Choose **Upload**.
5. At the top, you should see **Upload succeeded** in green. Choose **Exit**.

Stage 3 - Modify the S3 bucket policy

1. Choose the **Permissions** tab. Scroll down to **Bucket policy**.

2. Choose **Edit**. Paste in the following policy:

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "AllowS3ReadAccess",
            "Effect": "Allow",
            "Principal": {
                "AWS": "arn:aws:iam::<INSERT-ACCOUNT-
NUMBER>:role/S3DynamoDBFullAccessRole"
            },
            "Action": "s3:*",
            "Resource": [
                "arn:aws:s3:::<INSERT-BUCKET-NAME>",
                "arn:aws:s3:::<INSERT-BUCKET-NAME>/*"
            ]
        }
    ]
}
```

3. Replace the `<INSERT-BUCKET-NAME>` value with your bucket name.
4. Replace the `<INSERT-ACCOUNT-NUMBER>` value with your account number. This can be found by choosing your username at the top right and copying down the value next to **My Account**.

   Example:

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "AllowS3ReadAccess",
            "Effect": "Allow",
            "Principal": {
                "AWS":
"arn:aws:iam::000000000000:role/S3DynamoDBFullAccessRole"
            },
            "Action": "s3:*",
            "Resource": [
                "arn:aws:s3:::employee-photo-bucket-al-007",
                "arn:aws:s3:::employee-photo-bucket-al-007/*"
            ]
        }
    ]
}
```

5. Choose **Save changes**.

Stage 4 - Modify the application to use the S3 bucket

1. Search for **EC2** in the search bar at the top. Choose **EC2**.
2. Choose **Instances** under **Instances** at the left side panel.

3. Select the `employee-directory-app` instance. Which should be in the **Stopped** state.
4. Choose **Actions**. **Image and templates** and **Launch more like this**.
5. At the top, choose **3. Configure instance**.
6. Next to **Auto-assign Public IP**, choose **Enable**.
7. Scroll down to **Advanced Details**. And next to **User data**. You will update the **PHOTOS_BUCKET** and **AWS_DEFAULT_REGION** variable.

```
#!/bin/bash -ex
wget https://aws-tc-largeobjects.s3-us-west-2.amazonaws.com/DEV-AWS-MO-
GCNv2/FlaskApp.zip
unzip FlaskApp.zip
cd FlaskApp/
yum -y install python3 mysql
pip3 install -r requirements.txt
amazon-linux-extras install epel
yum -y install stress
export PHOTOS_BUCKET=<INSERT-BUCKET-NAME-HERE>
export AWS_DEFAULT_REGION=<INSERT-REGION-NAME-HERE>
export DYNAMO_MODE=on
FLASK_APP=application.py /usr/local/bin/flask run --host=0.0.0.0 --port=80
```

Change the following line to match your bucket name:

Example:

```
export PHOTOS_BUCKET=employee-photo-bucket-al-007
```

8. Choose **5. Add Tags** at the top. Append `s3` to the **Value**.

   Example:

```
employee-directory-app-s3
```

9. Choose **Review and Launch**. Choose **Launch**.
10. Leave the `app-key-pair` selected under **Select a key pair**. Select the acknowledgement.
11. Choose **Launch Instances**.
12. Choose **View Instances**. The instance should now show up under **Instances**. Wait for the **Instance state** to change to **Running** and the **Status check** to change to green.
13. Next to **Name**, choose the checkbox to select the `employee-directory-app-s3` instance. Under the **Details** tab copy down the **Public IPv4 address**.

    Note: Do not use the link to open the IPv4 address. Instead, copy only the address and paste it into a new browser.
14. Paste it into a new browser tab/window. You should see a **Employee Directory** placeholder. Right now you will not be able to interact with it as it's not currently connected to the database.

Stage 5 - Delete your object

1. Search for **S3** in the search bar at the top. Choose **S3**.

2. Select your `employee-photo-bucket-`. Select your object.
3. Choose **Delete**. Confirm deletion by typing in the words ***permanently delete***.
4. Choose **Delete objects**. Choose Exit.

Stage 6 - Stop your EC2 instance

Congrats! You've launched an EC2 instance that uses the S3 bucket you created. To prevent future costs, you will now stop the instance. (Note: do not terminate it, as the next lab will use this instance.)

1. Search for **EC2** in the search bar at the top. Choose **EC2**.
2. Choose **Instances** in the left side panel and select the `employee-directory-app-s3`.
3. Choose **Instance state** and **Stop instance**. Choose **Stop**. The **Instance state** will eventually go into the **Stopped** state.

Lab Complete

Congratulations! You have completed the lab.

For feedback, suggestions, or corrections, please contact us at:https://support.aws.amazon.com/#/contacts/aws-training