Make a brand new document (a copy of this document will not be accepted) using the naming convention HWX-MUid.docx (example: HW12-`johnsok9.docx`).

Objective: The objective of this exercise is to:

1. Configure web server in cloud
2. Create and understand Rest Servers
3. Understand and create cloud based backups

Submit: screenshots and your word document

You **may** discuss this with your fellow students

Part #1: Set up static IP (Elastic IP)

Estimated time: 30 minutes

Exercise:

1. Shut down your ec2 instance if it is running
    a. Go to the Ec2 dashboard
    b. Select the instance
    c. Select the drop down for instance state to "Stop Instance"
2. Write down the **availability zone** of your instance in the dashboard
    a. Mine is us-east-1a for example (use yours not mine)
3. Select Elastic Ips under Network and Security (on the left)
    a. Select "Allocate Elastic IP Address" (top right)
    b. Make sure the "Network Border Group" matches your instance availability zone from step 2
    c. Click "Allocate"
    d. Should receive a message "Elastic IP Address allocated successfully"
    e. Select the displayed Elastic IP Address (may have to refresh page)
        i. Actions dropdown at top right → Associate Elastic IP Address
        ii. Resource Type – Instance
        iii. Put your cursor in the Instance text field
            1. It will show your stopped instance – select it
            2. Click "Associate"
4. Start your instance back up
    a. The IP address shown will now stay the same whenever it is started or stopped
5. Update your dynamic DNS from lab 11

Part #2: Protect web directory on your ec2-instance

Estimated time: 10-15 minutes

Exercise: Create basic access control on your web site

1. Log into ceclinux and then your ec2-instance
2. Update global apache configuration file
   a. **sudo vim /etc/httpd/conf/httpd.conf** or
      sudo nano /etc/httpd/conf/httpd.conf
   b. Find the section

```
<Directory "/var/www/html">

    AllowOverride None

    # Allow open access:

    Require all granted

</Directory>
```

And change the AllowOverride to be All

```
<Directory /var/www/html>
        AllowOverride All
        # Allow open access:
        Require all granted
</Directory>
```

   c. **sudo service httpd restart**
3. Create password file
   a. htpasswd -c ~/.htpasswd USERNAME (make up your own username)
   b. Enter the password
   c. Re-enter the password
4. Create the apache access control file (requires anyone accessing the website to need the password, except for me to grade)

   cd /var/www/html
   edit .htaccess and store the following
   edit means “sudo vim” or “sudo nano” to create the file (named .htaccess)

```
<FilesMatch ".(jpg|gif|png|php|css|tgz)$">
   Order Deny,Allow
   Allow from all
```

```
    Satisfy Any
</FilesMatch>
#Protect Directory
 #password protect excluding specific ip
 AuthName "Username and password required"
 AuthUserFile /home/ec2-user/.htpasswd
 AuthType Basic
 Require valid-user
 Order Deny,Allow
 Deny from all
 Allow from 184.58.68.186
 Satisfy Any
```

When done:
Set permissions on the files using:
sudo chmod 644 /var/www/html/.htaccess /home/ec2-user/.htpasswd

Part #3: Load Rest Server and Database into cloud

Estimated time: 15-45 minutes

Exercise:

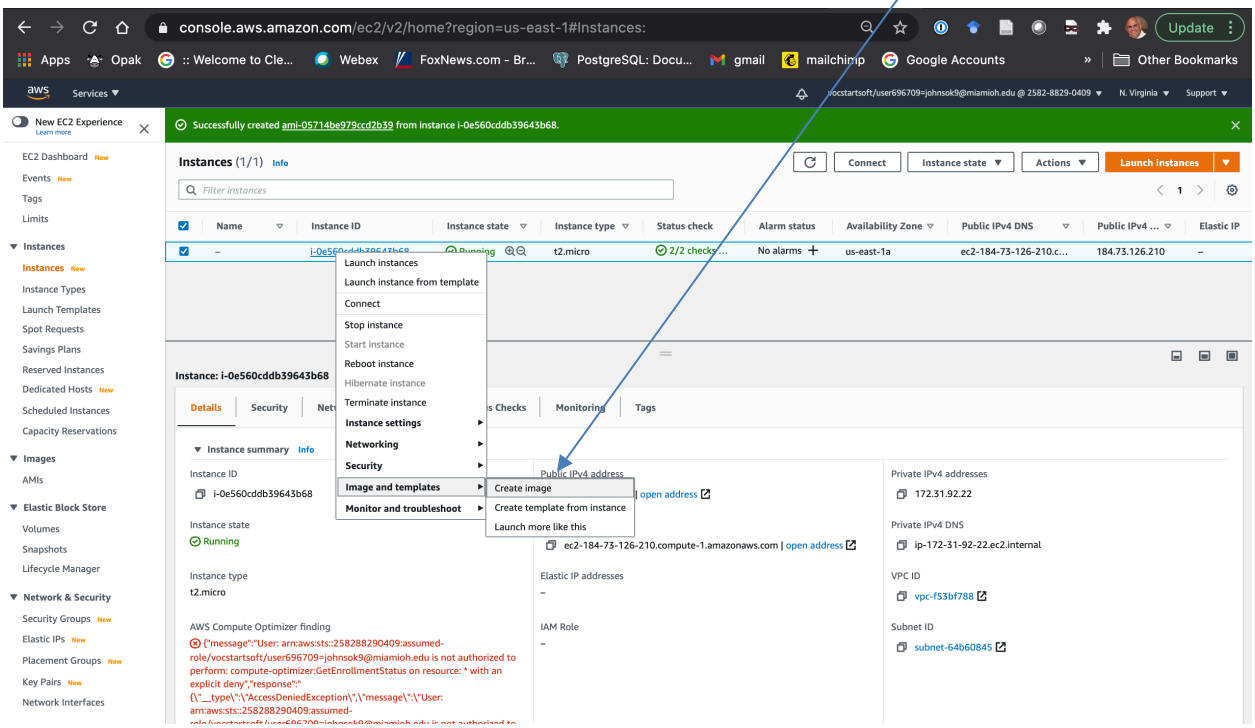
- Get archive file
  - cd /tmp
  - wget http://ceclnx01.cec.miamioh.edu/~johnsok9/cse383/ajax/hw12f21.tgz
  - cd /var/www/html
  - sudo tar xvzf /tmp/hw12f21.tgz
    - note: you must use sudo for the tar
    - move the database (db) to the ec2-user database directory and rename it cse383.db (~ec2-user/cse383/database/cse383.db)
    - **make sure you set the permissions to read/write for all** (666)
- Test the database using your web admin program
  - http://*uniqueID.aws.csi.miamioh.edu/phpliteadmin.php*
  - **Verify** that the database is accessible
  - Paste the **"Query used to create this table"** from the admin program into your canvas assignment (**Find those exact words**)
- Test the applications
  - *final.php (rest server which adds data to database)*
    - *http://uniqueID.aws.csi.miamioh.edu/final.php?method=setLookup&location=45056&sensor=1&value=49.8*
    - *paste a screen grab of the json message showing status=0*
  - ***Make sure your dynamic dns is set***

Part #4: Backup (snapshot) your ec2 volume

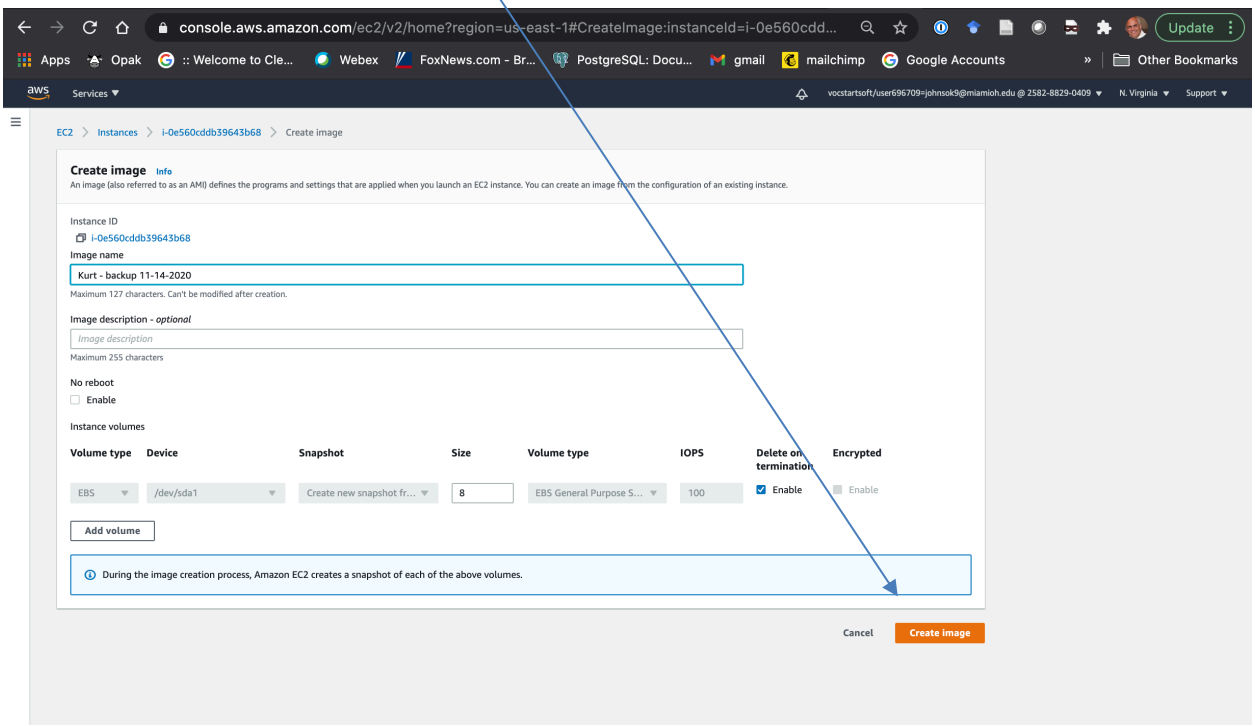
Estimated time: 10-15 minutes

Exercise:

- Log into aws academy
- Go to the ec2 instances – display your running instance
- Select the instance, and right click on the instance id → Images and Templates → Create Image



- Enter a name for this image
- Press Create Image



This is a good safeguard when you are making operating system changes.

Make a screengrab showing the backup is being made

Do this any time you make operating system changes (any time you use “sudo”)

SUBMIT:

- Screenshots
  - Updated dynamic dns setup
  - Password notice on web site
  - Php admin program showing the required query
  - Json output from rest server
  - Aws dashboard showing backup made