Exercises on Load Balancing and Auto Scaling

Please complete the following three exercises as a checkpoint that you are able to carry out some basic configuration tasks on AWS. These are tasks you will need to be able to do for Assignment 2, and we want to be sure to deal with any technical problems, etc, well before the assignment deadline.

Follow the steps provided on the tutorial document "*Practical Exercise: load balancing a website*" and complete the following tasks. These are tasks you will need to do anyway for Assignment 2.

Exercise 1

- Launch an EC2 instance (*Amazon Linux 2; t2.micro*)
- Install a web server and edit the default home page in some small way – anything is fine.
- Make sure it is accessible from any browser (i.e. ensure appropriate security group config).
- Visit the modified default home page using the DNS name and provide us with a screenshot. [***screenshot1***]

Exercise 2

- Create an AMI based on the instance created in Exercise 1 with the same edited default page.
- Launch two images based on this AMI and put them in different AZs behind a load balancer.
- Visit the load balancer in your browser and provide us with a screenshot showing the modified home page is displayed. [***screenshot2***]
- Optional: provide information to the browser on the AZ the page is served from. *Tip*: You need to modify the html page to retrieve instance metadata and display this.

Follow the steps provided on the tutorial document "*Practical Exercise: scaling a simple website*" and complete the following tasks. These are tasks you will need to be able to do anyway for Assignment 2.

Exercise 3

- When you have auto scaling up and running, terminate one of your instance at the EC2 dashboard. Observe a new instance automatically starting soon afterwards.
- Take screenshots of the following:
    - Your auto scaling group configuration (including the details tab). [***screenshot3***]
    - Your load balancer Target Groups view, showing the registered targets (Targets tab). [***screenshot4***]
    - Your EC2 instances view, showing tagged auto-scaled instances running. [***screenshot5***]

Moodle Submission

- Go to this module on Moodle and locate the Week 9 Exercises Submission where you can upload the screenshots requested. Please so this by midnight on **Sunday April 7th**.
- Please upload either a single PDF containing the 5 screenshots requested in order or else a ZIP archive containing the images. Please do not upload Word documents or RAR files. If a zip archive, then please name the individual files as *screenshot1*, *screenshot2*, *screenshot3*, *screenshot4, screenshot5* with appropriate extension (.png, .gif, etc). There is no need for any accompanying text or explanation.
- When you have the exercise completed you can stop/terminate your instances and delete your load balancer (to save budget). Note to make sure your Auto Scaling group (ASG) does not keep launching instances to meet the minimum number, please set your ASG minimum/desire/maximum values to zero.

Some background tips/information

- The easiest way to install a web server on an Amazon Linux instance is to connect to it using SSH (alternatively you could use *User Data* at launch). You can connect via PuTTY or, better, from a local Linux terminal as follows:

```
ssh -i mykeyfile.pem ec2-user@public-dns-name
```

- You can install any web server. The following will install Apache and start the server:

```
sudo yum -y update                  # ensures OS patches are applied
sudo yum -y install httpd           # install server
sudo systemctl enable httpd         # start server at boot
sudo service httpd start            # start server now
```

- Having tested the above with a browser, you can add custom content to your server by placing it at /var/www/html. You will need to be root (sudo) to write to this location.

```
sudo nano /var/www/html/index.html  # edit index.html
sudo service httpd restart          # restart the server
```