INFOTC 3850: Computer System Administration
Spring 2019

FINAL PROJECT

I. Objectives.

So far, we mainly worked on our local infrastructure, in this project we will work on the cloud through AWS public resources.

II. Material Required.

An AWS account enabled for the Computer System Administration course, to use free cloud resources.

III. Activity and requirements.

You are hired by a company to deploy and configure instances and have them ready for services migration process from local infrastructure to the cloud. The company has a strict policy that you will need to follow, some company's requirements might not be recommended but are still required by them.

1. Instances to be deployed.

Instance type	User accounts	AWS instance to use & initial requirements
Red Hat	usr_redhat_w usr_redhat_m usr_redhat_s	Use: **Red Hat Enterprise Linux 7.6 (HVM) SSD Volume Type - ami-011b3ccf1bd6db744 (64-bit x86) / ami-0e3688b4a755ad736 (64-bit Arm)** Details: t2.micro type, 10 GB storage, SSH and HTTP ports opened accesible from anywhere.
FTP	usr_ftp_w usr_ftp_m usr_ftp_s	Use: **Red Hat Enterprise Linux 7.6 (HVM) SSD Volume Type - ami-011b3ccf1bd6db744 (64-bit x86) / ami-0e3688b4a755ad736 (64-bit Arm)** Details: t2.micro type, 10 GB storage, SSH port opened accesible from anywhere.
WordPress	usr_wp_w usr_wp_m usr_wp_s	Use: **bitnami-wordpress-5.0.3-1-linux-debian-9-x86_64-hvm-ebs-frontend-aurora-nami - ami-004a480137b810c98** instance from **Community**

		AMIs Details: t2.micro type, 10 GB storage, SSH, HTTP and HTTPS ports opened accesible from anywhere. [1]
Windows 2016	usr_mw_s	Use: **Microsoft Windows Server 2016 Base - ami-00a20f508263efd30** Details: t2.large type, 70 GB storage, RDP port opened accesible from anywhere.

2. Network connectivity

    a. All the AWS instances need to be connected to each other using an IP address from the 192.168.100.32/27 range (TIP: create a custom VPC). [2]
        i. **VPC name:** vpc-sysadmin, IPv4 CIDR block: 192.168.100.0/24
        ii. **Subnet**: Subnet name: subnet-sysadmin, IPv4 CIDR block: 192.168.100.32/27
        iii. **Gateway:** Gateway name: gateway-sysadmin, attached to vpn-sysadmin
        iv. **Routes:** Destination 0.0.0.0/0, target: gateway-sysadmin
    b. Make sure the IP address assigned to the instances are in the range of 192.168.100.32/27 and that the instances can reach to each other by using the ping command.
    c. All instances must be publicly accessible by using a public IP, not DNS (TIP: Select 'Auto-assign Public IP=Enabled' at the time of deploying the instances).

3. Users accounts.

    a. User accounts usr_redhat_w and usr_redhat_m don't use a private/public key to ssh to the instance, they use only username and password.
    b. The user account usr_redhat_s uses a private and public key to ssh to the instance.
    c. User accounts usr_redhat_w, usr_redhat_m and usr_redhat_s have root privileges.
    d. User account usr_mw_s has Administrator privileges.

4. Users passwords.

    a. Passwords for user accounts that end in "**w**" (i.e. usr_redhat_w, usr_ftp_w and usr_wp_w) must have exactly 8 random characters (use only lower and upper case letters from the English alphabet).

[1] Word Press https://docs.bitnami.com/aws/how-to/get-started-wordpress-aws-marketplace-beginner/
[2] AWS VPC https://miketabor.com/create-a-custom-vpc-with-private-and-public-subnets-on-aws/

b. Passwords for user accounts that end in "**m**" must have exactly 10 random characters (combine lower and upper case letters from the English alphabet and numbers).
c. Passwords for user accounts that end in "**s**" must have exactly 12 random characters (combine lower and upper case letters from the English alphabet and numbers and special characters).

5. [Bonus points 10%] In the Red Hat instance create a MySQL database with the following fields: id, email, monthly_salary, phone_number, assign a 10-character password for the root MySQL account using a combination of letters and numbers only. Fill out the database with 3 registers with fake information. Use the usr_redhat_m user account to complete this task.

6. [Bonus points 10%] Make a backup of the database created in the Redhat instance (have one backup file) and publish it on the WordPress instance using the usr_wp_w user account.

7. In the Red Hat instance enable a static website, using a template from https://www.html5webtemplates.co.uk/templates.html. Use the usr_redhat_w user account to complete this task.

8. Make a backup of the index.html file (have one backup file) of the website created in the Red Hat instance and publish it on the WordPress instance using the usr_wp_m user account.

9. Make sure that the usr_mw_s user can RDP (or access remotely) to the Windows instance. Make the user account part of the *Administrators* groups.

10. Make sure your instances are accessible from "anywhere" using all the user accounts created in '1. Instances to be deployed' table (TIP. configure correctly the Security Group), in the case of the FTP server, test accessibility by using MobaXterm or similar software to allow FTP connections.

11. FTP users accounts.
    a. User usr_ftp_w uploads a file with the 'Course Description' section from the course's syllabus,
    b. User usr_ftp_m uploads a file with the 'Course Topics' section from the course's syllabus,
    c. Use usr_ftp_s uploads a file with the 'Grading Scale' section from the course's syllabus.

12. Fill out the following table

Instance	Share the public IP	Share also...
Red Hat	[. . .]	The password for the usr_redhat_s account.
FTP	[. . .]	---
Word Press	[. . .]	---
Windows 2016	[. . .]	Share the 'Remote Desktop' File and password for usr_mw_s account, that will allow us to RDP to the instance.

IV. What to submit?

Create a report with screenshots + short explanation that demonstrate your work for **'III Activity and requirements'** section, include the table with the required information for the 4 instances and the file to RDP to the Windows 2016 instance.

V. Final notes

1. Don't upload any personal or sensitive information on the instances.
2. You must keep all the instances running for at least 4 weeks, once we grade your work, we will notify you so you will be able to shut down your instances. *Don't shut down your instances before we notify you.*
3. Is your responsibility to check if you are running out of AWS credit to request additional credit to bazanantequerar@missouri.edu.
4. Start working on this Project early.
5. Use the Discussion Board to share findings and seek guidance.