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Cloud Computing
Assignment 1

### Assignment1 Part II: Setup an apache2 web server on the AWS

I have taken some screenshots to illustrate the installation of a web platform on the AWS:

First, I have installed a new instance(UBUNTU 14.04) to start the configuration of the webserver. This picture is showing that the instance is running with some descriptions bellow. The next step is to make sure that the instance could be launch properly.
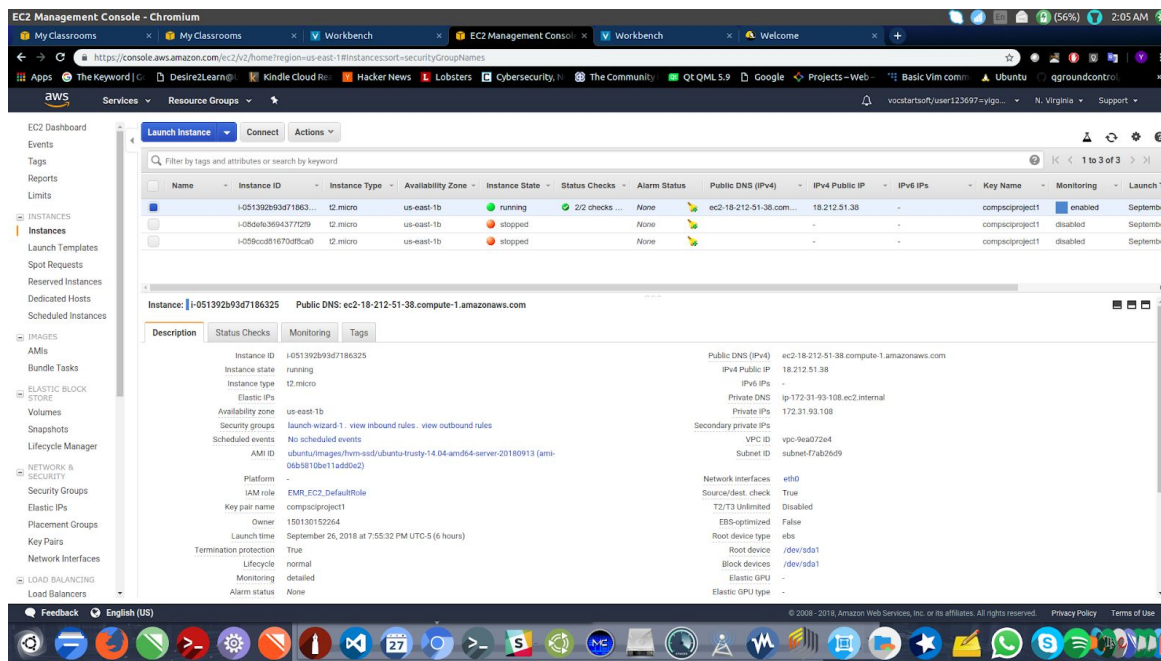
 After a

successful installation, an assurance that the machine can be run is important, the figure below is showing that the machine could be launched:
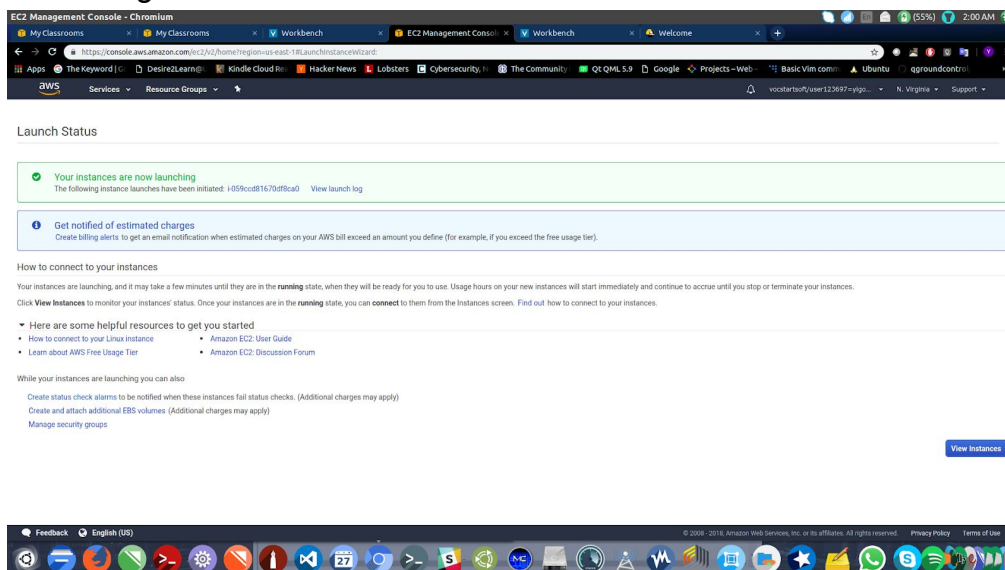
Knowing the Ubuntu system is working perfect, there is a need to create a security key to access the platform via the SSH from an external terminal. Within AWS there is a build-in function to create the private and public keys. One just needs to enter a phase, then .pem file will be created with keys using the RSA protocol. This following picture is showing this process of creating the keys:
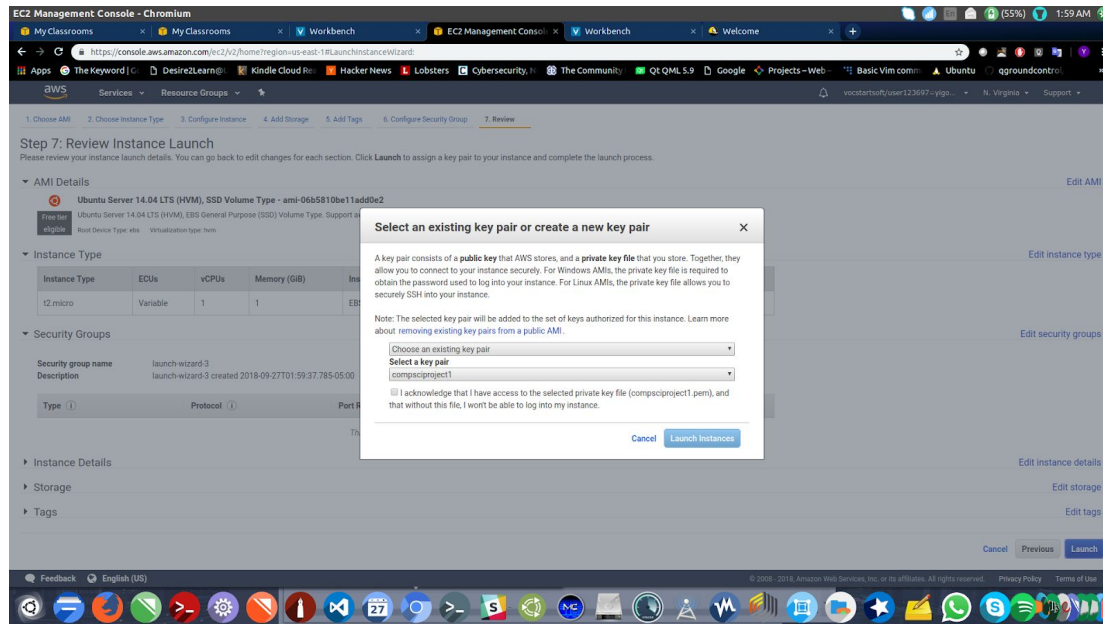
After the keys are

created, AWS allows the possibility to download the pem file I have created. Then I could use the keys to connect to the machine(instance) via SSH command. The following pictures illustrate these processes:
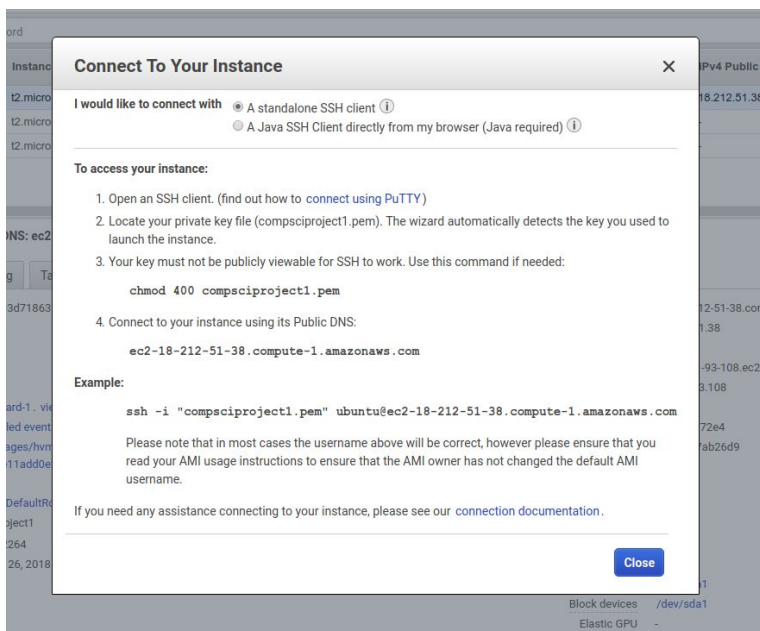
After the SSH command was executed I was able to connect to the Ubuntu machine on AWS. Since it was just an instance, there was nothing installed on the platform.

Since the instance is well installed, it is required to create security groups for then load balancer, the web-server, and the database to filter traffics within those instances. For instance, creating security groups is about opening some ports to ensure secure traffic. The following picture is showing how those instances are connected.
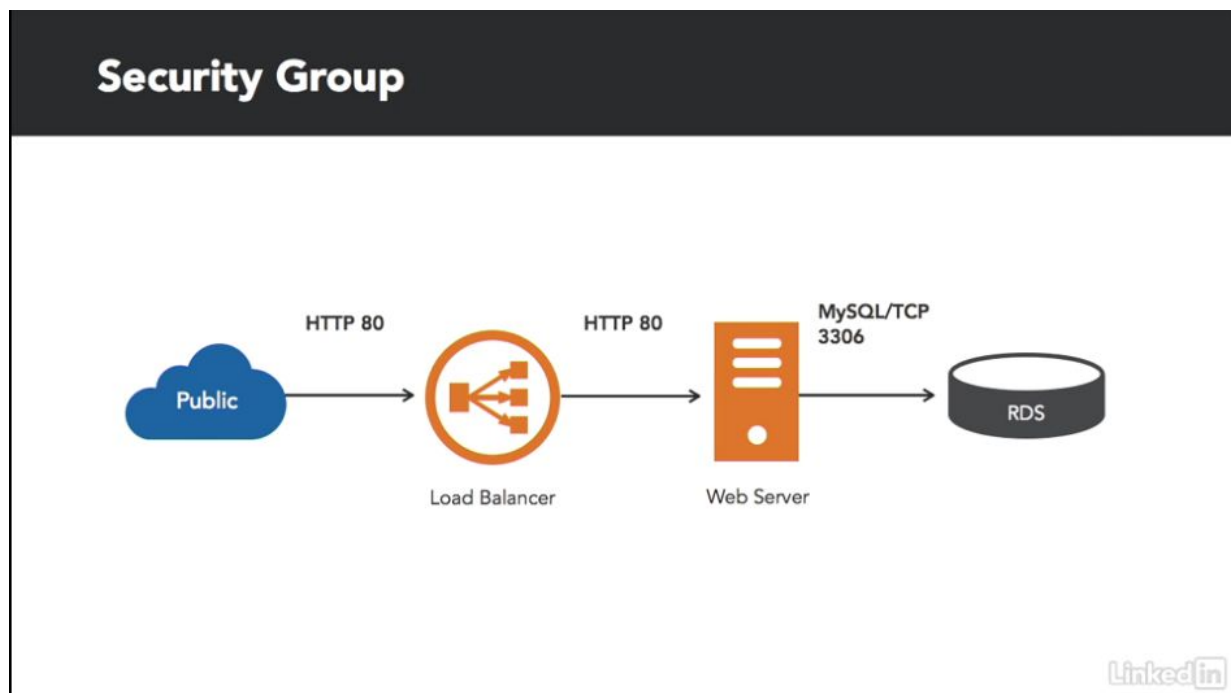
Therefore, I have created a security group for the load balancer, the web, and the database. The following pictures are showing these processes:

Web Server Security group

Load Balancer security group

Create Security Group   ✕

Security group name ⓘ	load_balancer_traffic
Description ⓘ	security group for load balancer
VPC ⓘ	vpc-9ea072e4 (default) ▼

Security group rules:

[**Inbound**] [Outbound]

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ	Description ⓘ	

This security group has no rules

Add Rule

Cancel **Create**

Database Security group

Create Security Group   ✕

Security group name ⓘ	db-tier
Description ⓘ	traffic into the database
VPC ⓘ	vpc-9ea072e4 (default) ▼

Security group rules:

[**Inbound**] [Outbound]

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ		Description ⓘ
MYSQL/Aurora ▼	TCP	3306	Custom ▼	sg-0d8326b5c0d4e46bb	e.g. SSH for Admin Desktop

Add Rule

Cancel **Create**

During the configuration, you should make sure that the security groups are related. For instance, the security group for the webserver should be related to the database security group.

When I was done creating the security groups, I needed to create a load balancer

1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups 4. Configure Routing 5. Register Targets 6. Review

Step 1: Configure Load Balancer

Basic Configuration

To configure your load balancer, provide a name, select a scheme, specify one or more listeners, and select a network. The default configuration is an internet-facing load balancer in the selected network with a listener that receives HTTP traffic on port 80.

Name ⓘ	web-server-load-balancer
Scheme ⓘ	◉ internet-facing
	◯ internal
IP address type ⓘ	ipv4 ▼

Listeners

✓ **Successfully created load balancer**
Load balancer Web-server-loadbalancer was successfully created.
Note: It might take a few minutes for your load balancer to be fully set up and ready to route traffic, and for the targets to complete the registration process and pass the initial health checks.

Close

Now it is the matter of associating the load balancer to the Ubuntu server, where I have installed an apache2 and MySQL servers. The following pictures are showing the association of both entities.
Now   both

Instances
To register additional instances, select one or more running instances, specify a port, and then click Add. The default port is the port specified for the target group. If the instance is already registered on the specified port, you must specify a different port.

Add to registered   on port 80

Q Search Instances   ✕

	Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR
☑	i-051392b93d7186325		● running	launch-wizard-1	us-east-1b	subnet-f7ab26d9	172.31.80.0/20

Registered targets
To deregister instances, select one or more registered instances and then click Remove.

Remove

	Instance	Name	Port	State	Security groups	Zone
☐	i-051392b93d7186325		80	● running	launch-wizard-1	us-east-1b

Instances
To register additional instances, select one or more running instances, specify a port, and then click Add. The default port is the port specified for the target group. If the instance is already registered on the specified port, you must specify a different port.

Add to registered   on port 80

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instances are connected, it is the matter of using the DNS server URL to access the webserver from the browser. However, I am getting an error message because I was not able to set up the IAM policies correctly. The following picture is showing the load balancer interface:

Load balancer: Web-server-loadbalancer

Description | Listeners | Monitoring | Tags

Basic Configuration

Name:	Web-server-loadbalancer 🔴	**Creation time:**	September 27, 2018 at 4:34:57 AM UTC-5
ARN:	arn:aws:elasticloadbalancing:us-east-1:150130152264:loadbalancer/app/Web-server-loadbalancer/27888954b330af40	**Hosted zone:**	Z35SXDOTRQ7X7K
DNS name:	Web-server-loadbalancer-1456934378.us-east-1.elb.amazonaws.com (A Record)	**State:**	provisioning
		VPC:	vpc-9ea072e4
Scheme:	internet-facing	**IP address type:**	ipv4
Type:	application	**AWS WAF Web ACL:**	An error occurred while a request was made to AWS WAF.
Availability Zones	subnet-d89117bf - us-east-1a, subnet-f7ab26d9 - us-east-1b		

Edit availability zones

Security

Security groups: sg-069c11124097cbe85, **load-balancer-traffic**
• load balancer security group

I have tried to install to create the RDS database, but the problem is that it is very costly.

◉ No

Storage type   Info

General Purpose (SSD)   ▼

Allocated storage

20   GiB

(Minimum: 20 GiB, Maximum: 16384 GiB) Higher allocated storage **may improve** IOPS performance.

ⓘ Provisioning less than 100 GiB of General Purpose (SSD) storage for high throughput workloads could result in higher latencies upon exhaustion of the initial General Purpose (SSD) IO credit balance. Click here for more details.

Estimated monthly costs

DB Instance	350.40 USD
Storage	2.30 USD
Total	**352.70 USD**

Billing estimate is based on on-demand usage as described in Amazon RDS Pricing 🗗. Estimate does not include costs for backup storage, IOs (if applicable), or data transfer.

Estimate your monthly costs for the DB Instance using the AWS Simple Monthly Calculator 🗗

For the other part of the project, we need the IAM procedure to be enabled.