Create Apache Server Instance via AWS of amazon.com

http://ec2-52-23-162-119.compute-1.amazonaws.com/index.html

A. Initial Setup for creating instance

Launch Instance: Create new instance

Step 1. Choose amazon Linux free tier Ubuntu 14.04 64 bit

Step 2. MicroInstance ,then Choose Next: Configure Instance Details

Step 3. Next: Configure Instance Details

- Number of Instances: 1
- Advanced Details: use Defaults for now

Step 4. Add Storage

- Volume Type: choose General Purpose (slowest ...sufficient enough for demo hopefully)
- DeleteOnTermiation: click (Let's keep it clean)

Step 5. Next: Tag Instance

You can leave it alone or choose something simple

I tried the followings:

- Key: danbohelloworld
- Value: danboaws1

Step 6. Next: Configure Security Group

Choose "Create a new Security group" with value as the followings:

- Security group name: test
- List of Types: I kept and created the followings
  - Type-Protocol-Port-Range
  - SSH-TCP-22
  - HTTP-TCP-80

Step 7. (Almost there) : Review and Launch

- Review
- Launch (Let's create a pair of keys so we can use to ssh)

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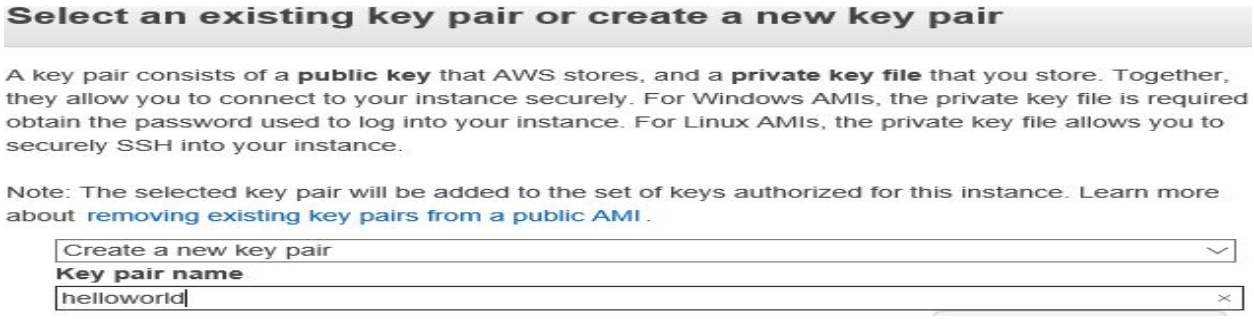
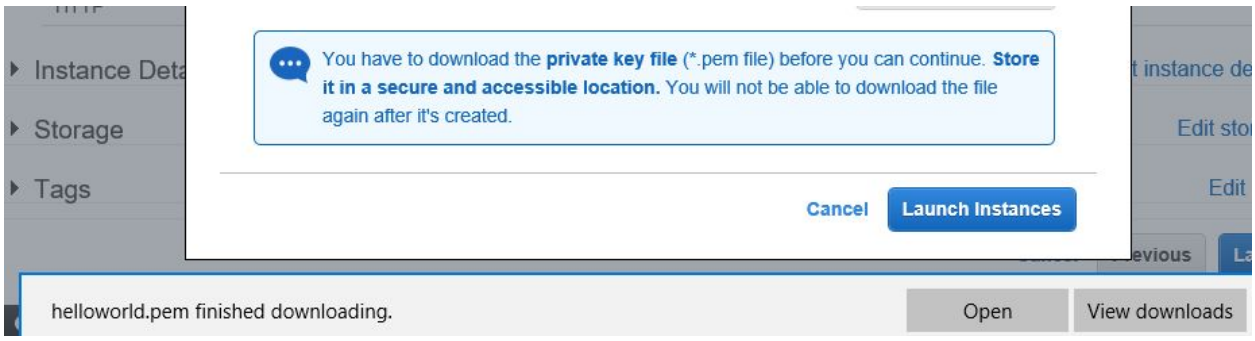


Note:Use the above values, Click Download Key Pair and Save the private key file (helloworld.pem)

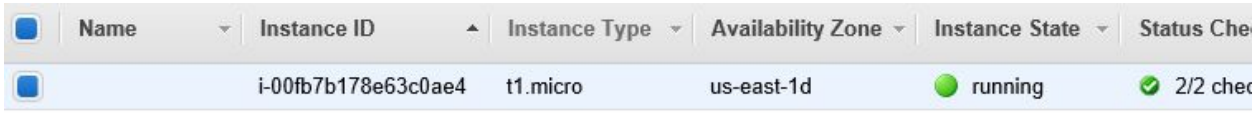


Note: don't lose the helloworld.pem!

Step 8. (Last Step, Yeh!) Launch the instance

B. Install the Apache2 and PHP5

Step 1. Locate the instance we created from A via the tag



Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Che
	i-00fb7b178e63c0ae4	t1.micro	us-east-1d	running	2/2 chec

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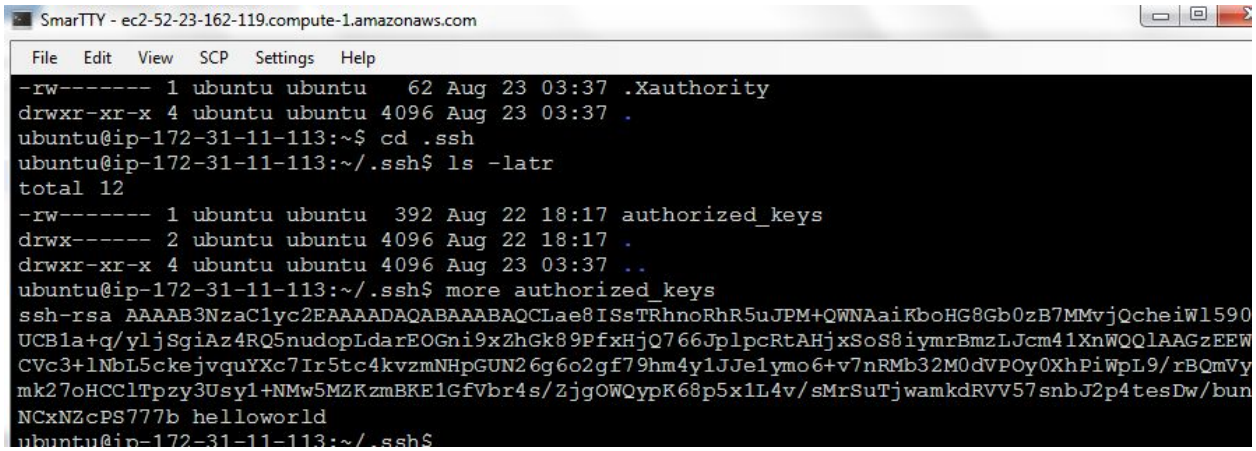
Step2. Ssh to the instance via using SmarTTY

Hostname : **ec2-52-23-162-119.compute-1.amazonaws.com**

Username : ubuntu

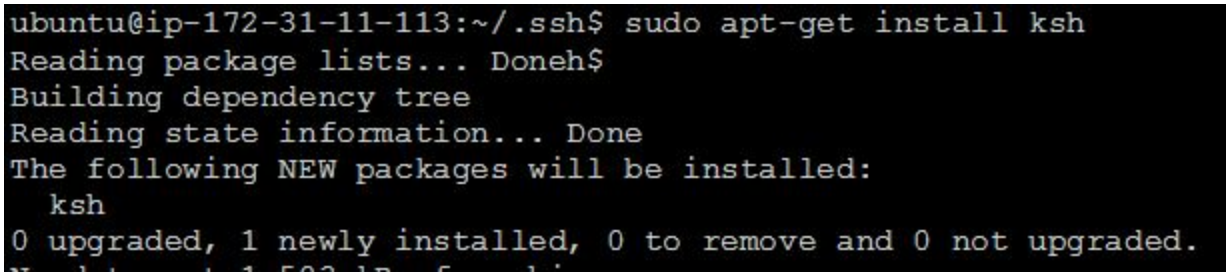
OpenSSH keyfile : helloworld.pem

Or if having ssh terminal client, then use this cmd “ssh -I helloworld.pem ubuntu@52.23.162.119”



Step3. After ssh to the AWS instance virtual host, Let’s get the Korn Shell installed!

CMD: sudo apt-get install ksh



Step4. Once we have ksh, let’s put some scripts together

Step4.1 Let’s make our eyes comfortable by adjusting smarTTY’s editor’s settings.

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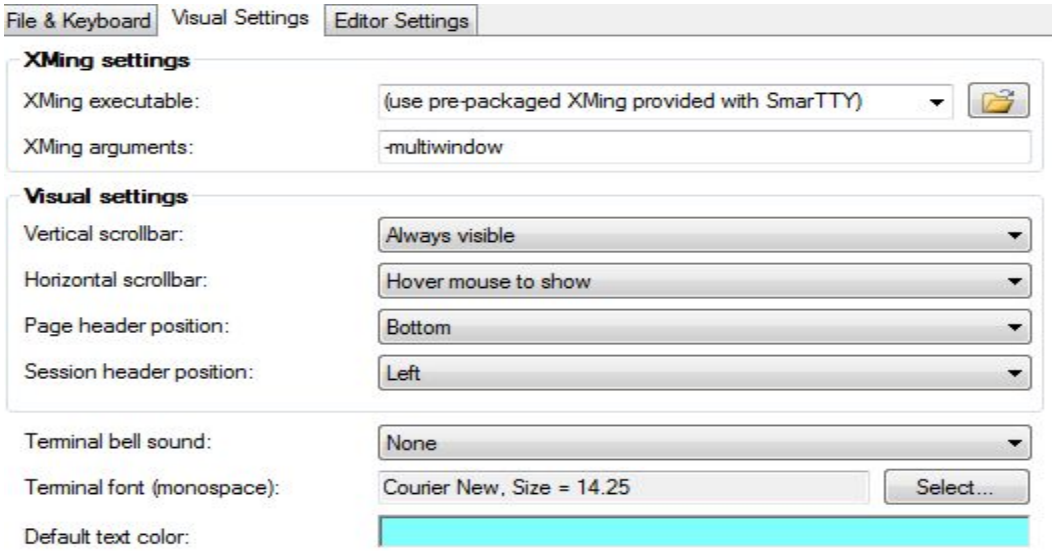

Step 4.2. Let's prepare a script to install & bounce apache2 server

```
$ more installApache.ksh
#!/bin/ksh
echo "let us install apache2 and php5"
sudo  apt-get update
sudo  apt-get install php5
sudo  apt-get update
sudo  apt-get install apache2
sudo  apt-get update
sudo  apt-get install libapache2-mod-php5
sudo  apt-get update
echo "finish installing apache2 and php5"
exit
```

```
$ ls -latr *.ksh
-rwxr-xr-x 1 ubuntu ubuntu  71 Aug 23 04:06 startApache.ksh
-rwxr-xr-x 1 ubuntu ubuntu 282 Aug 23 04:10 installApache.ksh
-rwxr-xr-x 1 ubuntu ubuntu  69 Aug 23 04:13 stopApache.ksh
```

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```
./stopApache.ksh
let's stop apache2
 * Stopping web server apache2
 *
$ ./startApache.ksh
let's start apache2
 * Starting web server apache2
 *
$ ps -eaf |grep apache2
root      4781     1  0 04:13 ?        00:00:00 /usr/sbin/apache2 -k start
www-data  4784  4781  0 04:13 ?        00:00:00 /usr/sbin/apache2 -k start
www-data  4785  4781  0 04:13 ?        00:00:00 /usr/sbin/apache2 -k start
www-data  4786  4781  0 04:13 ?        00:00:00 /usr/sbin/apache2 -k start
www-data  4787  4781  0 04:13 ?        00:00:00 /usr/sbin/apache2 -k start
www-data  4788  4781  0 04:13 ?        00:00:00 /usr/sbin/apache2 -k start
ubuntu    4793  2248  0 04:13 pts/0    00:00:00 grep apache2
```

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C. Prepare the helloWorld page

```
$ pwd
/var/www
$ sudo chmod -R 777 html
$ cd html
$ ls -latr
total 20
drwxr-xr-x 3 root root  4096 Aug 23 04:11 ..
-rwxrwxrwx 1 root root 11510 Aug 23 04:11 index.html
drwxrwxrwx 2 root root  4096 Aug 23 04:11 .
```

http://ec2-52-23-162-119.compute-1.amazonaws.com/index.html

Create Apache Server Instance via AWS of amazon.com

D. Now let's clone the instance and set up ssl on the cloned instance.

Step 5: Tag Instance

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. Learn more about tagging your Amazon EC2 resources.

Key (127 characters maximum)	Value (255 characters maximum)
danbohelloworldssl	danboaws2

Create Tag (Up to 50 tags maximum)

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. Learn more about Amazon EC2 security groups.

Assign a security group: Create a **new** security group

Select an **existing** security group

Security group name: testssl

Description: aws2 instance with ssl

Type	Protocol	Port Range	Source	
SSH	TCP	22	Anywhere	0.0.0.0/0
HTTP	TCP	80	Anywhere	0.0.0.0/0
HTTPS	TCP	443	Anywhere	0.0.0.0/0

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about removing existing key pairs from a public AMI.

Create a new key pair

Key pair name

helloworldssl

Download Key Pair

Computer ▸ OS (C:) ▸ Users ▸ danbo ▸ Downloads ▸

Open Share with Burn New folder

Name	Date modified	Type
helloworldssl.pem	8/23/2016 12:59 AM	PEM File
setup-x86_64	8/22/2016 11:28 PM	Application

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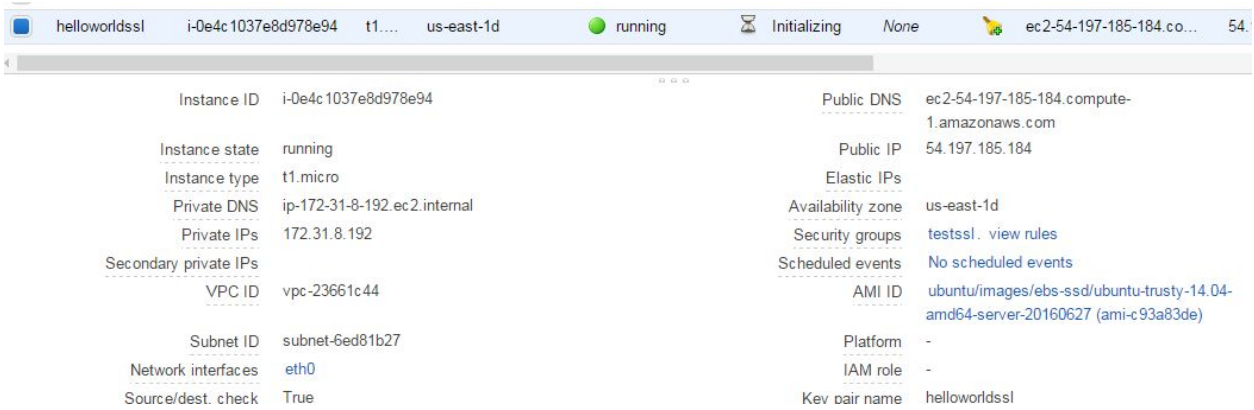


E. Let's work on helloworldssl instance

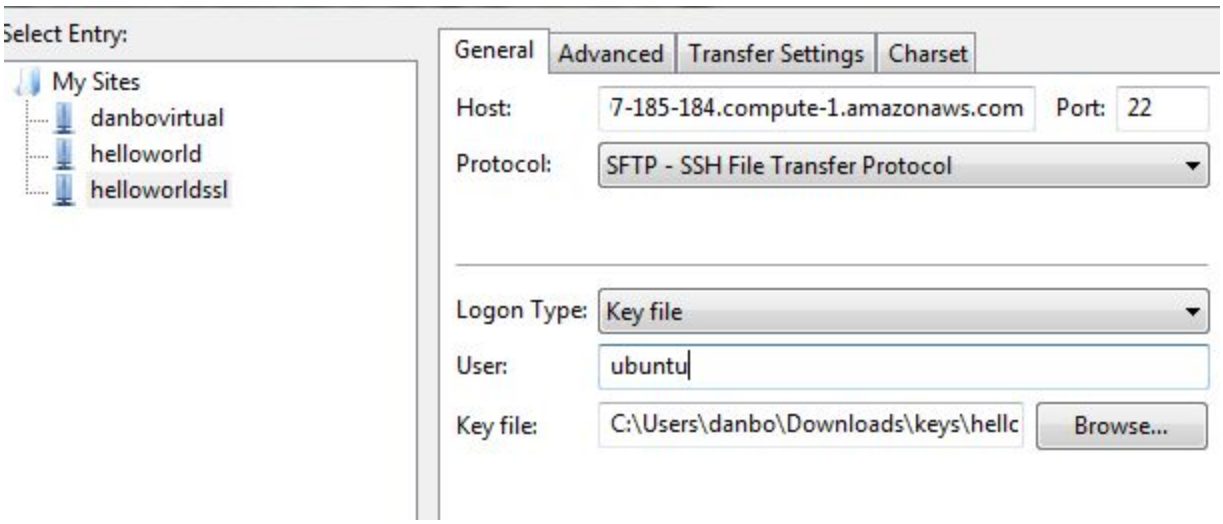
E.1 ssh to helloworldssl instance

Hostname : **ec2-54-197-185-184.compute-1.amazonaws.com**

Username : ubuntu

OpenSSH keyfile : helloworldssl.pem

E.2 use FileZilla to transfer files so we can use the scripts created for helloworld instance



Now we copied helloworld instance's script dir to helloworldssl's instance

E.3 install the apache2 and clone the index.html

Create Apache Server Instance via AWS of amazon.com

```
ubuntu@ip-172-31-8-192:~/scripts$ ls -latr
total 24
-rw-rw-r-- 1 ubuntu ubuntu   74 Aug 23 05:19 bounceApache.ksh
-rw-rw-r-- 1 ubuntu ubuntu  282 Aug 23 05:19 installApache.ksh
-rw-rw-r-- 1 ubuntu ubuntu   71 Aug 23 05:19 startApache.ksh
drwxrwxr-x 2 ubuntu ubuntu 4096 Aug 23 05:19 .
-rw-rw-r-- 1 ubuntu ubuntu   69 Aug 23 05:19 stopApache.ksh
drwxr-xr-x 5 ubuntu ubuntu 4096 Aug 23 05:19 ..
ubuntu@ip-172-31-8-192:~/scripts$ sudo chmod -R 775 *.*
ubuntu@ip-172-31-8-192:~/scripts$ date
Tue Aug 23 05:22:28 UTC 2016
ubuntu@ip-172-31-8-192:~/scripts$ ls -latr
total 24
-rwxrwxr-x 1 ubuntu ubuntu   74 Aug 23 05:19 bounceApache.ksh
-rwxrwxr-x 1 ubuntu ubuntu  282 Aug 23 05:19 installApache.ksh
-rwxrwxr-x 1 ubuntu ubuntu   71 Aug 23 05:19 startApache.ksh
drwxrwxr-x 2 ubuntu ubuntu 4096 Aug 23 05:19 .
-rwxrwxr-x 1 ubuntu ubuntu   69 Aug 23 05:19 stopApache.ksh
drwxr-xr-x 5 ubuntu ubuntu 4096 Aug 23 05:19 ..
```

```
ubuntu@ip-172-31-8-192:~/scripts$ ./installApache.ksh
let us install apache2 and php5
Ign http://us-east-1.ec2.archive.ubuntu.com trusty InRelease
```

Issue cmd: sudo chmod -R 777 /var/www/html so we can copy the index.html

```
ubuntu@ip-172-31-8-192:/var/www$ sudo chmod -R 777 html
ubuntu@ip-172-31-8-192:/var/www$ ls -latr
total 12
drwxr-xr-x 13 root root 4096 Aug 23 05:25 ..
drwxr-xr-x  3 root root 4096 Aug 23 05:25 .
drwxrwxrwx  2 root root 4096 Aug 23 05:25 html
```

Get the index.html ready for the apache2 on helloworldssl instance

```
ubuntu@ip-172-31-8-192:/var/www/html$ ls -latr
total 24
drwxr-xr-x 3 root   root    4096 Aug 23 05:25 ..
-rwxrwxrwx 1 root   root   11510 Aug 23 05:25 index.html
drwxrwxrwx 2 root   root    4096 Aug 23 05:34 .
-rw-rw-r-- 1 ubuntu ubuntu   567 Aug 23 05:34 indexssl.html
ubuntu@ip-172-31-8-192:/var/www/html$ cp index.html index.html.orig
ubuntu@ip-172-31-8-192:/var/www/html$ mv indexssl.html index.html
```

Create Apache Server Instance via AWS of amazon.com

Now the initial page is UP

http://ec2-54-197-185-184.compute-1.amazonaws.com/index.html

F. Create the self signed certificate

F.1 Generate a Private Key

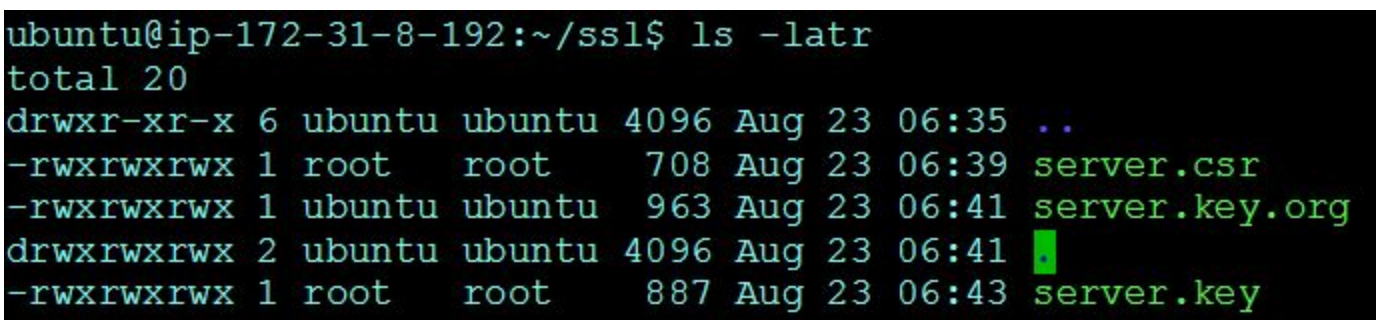
```
openssl genrsa -des3 -out server.key 1024
```

F.2 Generate a CSR (Certificate Signing Request)

```
openssl req -new -key server.key -out server.csr
```

F3: Remove Passphrase from Key

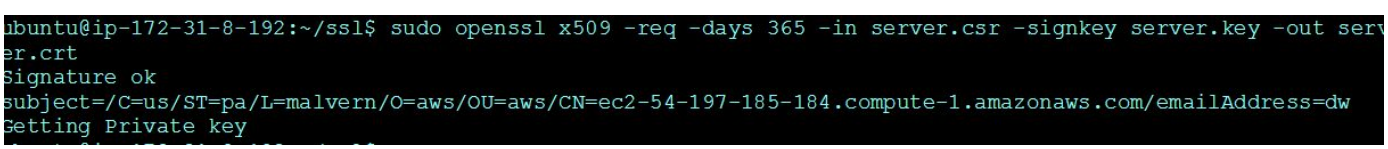
```
cp server.key server.key.org

openssl rsa -in server.key.org -out server.key
```



```
ubuntu@ip-172-31-8-192:~/ssl$ ls -latr
total 20
drwxr-xr-x 6 ubuntu ubuntu 4096 Aug 23 06:35 ..
-rwxrwxrwx 1 root   root    708 Aug 23 06:39 server.csr
-rwxrwxrwx 1 ubuntu ubuntu  963 Aug 23 06:41 server.key.org
drwxrwxrwx 2 ubuntu ubuntu 4096 Aug 23 06:41 .
-rwxrwxrwx 1 root   root    887 Aug 23 06:43 server.key
```

F.4 Generate a Self-Signed Certificate

```
sudo openssl x509 -req -days 365 -in server.csr -signkey server.key -out server.crt
```



```
ubuntu@ip-172-31-8-192:~/ssl$ sudo openssl x509 -req -days 365 -in server.csr -signkey server.key -out serv
er.crt
Signature ok
subject=/C=us/ST=pa/L=malvern/O=aws/OU=aws/CN=ec2-54-197-185-184.compute-1.amazonaws.com/emailAddress=dw
Getting Private key
```

Create Apache Server Instance via AWS of amazon.com

```
drwxr-xr-x 6 ubuntu ubuntu 4096 Aug 23 06:35 ..
-rwxrwxrwx 1 root   root    708 Aug 23 06:39 server.csr
-rwxrwxrwx 1 ubuntu ubuntu  963 Aug 23 06:41 server.key.org
-rwxrwxrwx 1 root   root    887 Aug 23 06:43 server.key
drwxrwxrwx 2 ubuntu ubuntu 4096 Aug 23 06:46 .
-rw-r--r-- 1 root   root    960 Aug 23 06:46 server.crt
```

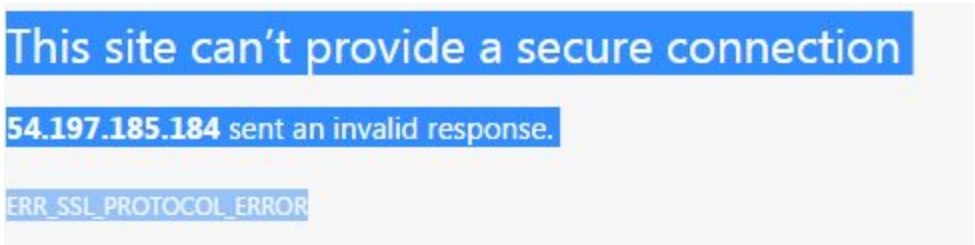
F.5 Enable mod_ssl

sudo a2enmod ssl

sudo service apache2 restart

F.6. We got an issue:

https://ec2-54-197-185-184.compute-1.amazonaws.com:443/index.html



F.7. Resolving the issue.

. Adjusted the default-ssl.conf

```
ubuntu@ip-172-31-8-192:/etc/apache2/sites-available$ egrep -i "servername|sslcertificate" default*.conf|grep -v "#"
                ServerName ec2-54-197-185-184.compute-1.amazonaws.com
                SSLCertificateFile      /etc/apache2/ssl.crt/server.crt
                SSLCertificateKeyFile   /etc/apache2/ssl.key/server.key
```

sudo a2ensite default-ssl.conf

. Added Redirect in 000-default.conf

```
<VirtualHost *:80>
        # The ServerName directive sets the request scheme, hostname and port that
        # the server uses to identify itself. This is used when creating
        # redirection URLs. In the context of virtual hosts, the ServerName
        # specifies what hostname must appear in the request's Host: header to
        # match this virtual host. For the default virtual host (this file) this
        # value is not decisive as it is used as a last resort host regardless.
        # However, you must set it for any further virtual host explicitly.
        #ServerName www.example.com

        ServerAdmin webmaster@localhost
        DocumentRoot /var/www/html
        Redirect permanent / https://ec2-54-197-185-184.compute-1.amazonaws.com/
```

. **Reload apache2 sudo service apache2 reload**

Create Apache Server Instance via AWS of amazon.com

G. Now we can access this page via https (well, it doesn't like the certificate)

https://ec2-54-197-185-184.compute-1.amazonaws.com/index.html

and it will redirect the request with port 80 to https

http://ec2-54-197-185-184.compute-1.amazonaws.com:80/index.html

verified the certificate via this link

https://www.sslshopper.com/ssl-checker.html#hostname=ec2-54-197-185-184.compute-1.amazonaws.com