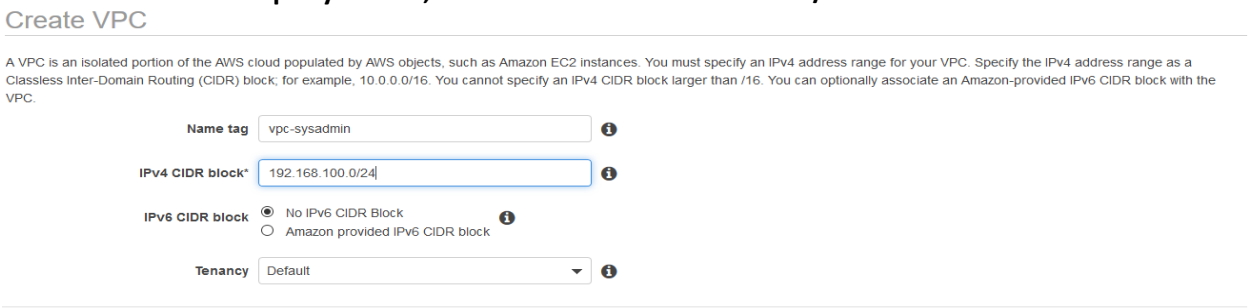
2. Network connectivity

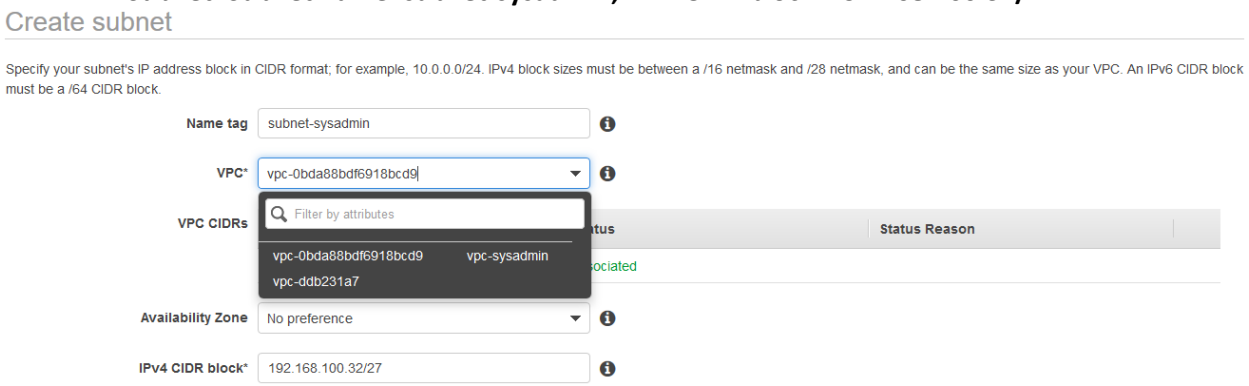
Create the custom VPC first because it is utilized in the deployment of the instances.
Section 2.a is straightforward; follow the instructions and set everything up on AWS Educate according to the instructions.

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

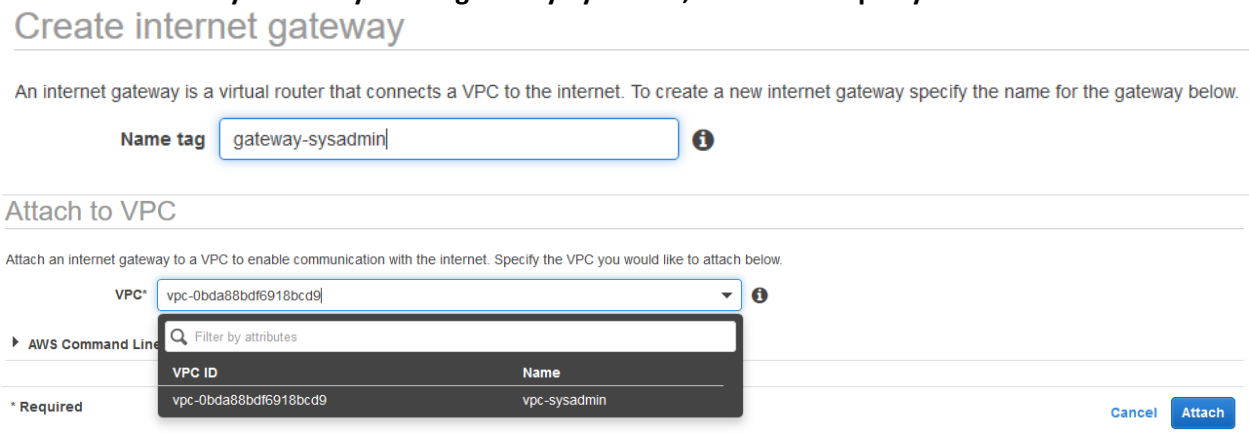
i. VPC name: vpc-sysadmin, IPv4 CIDR block: 192.168.100.0/24



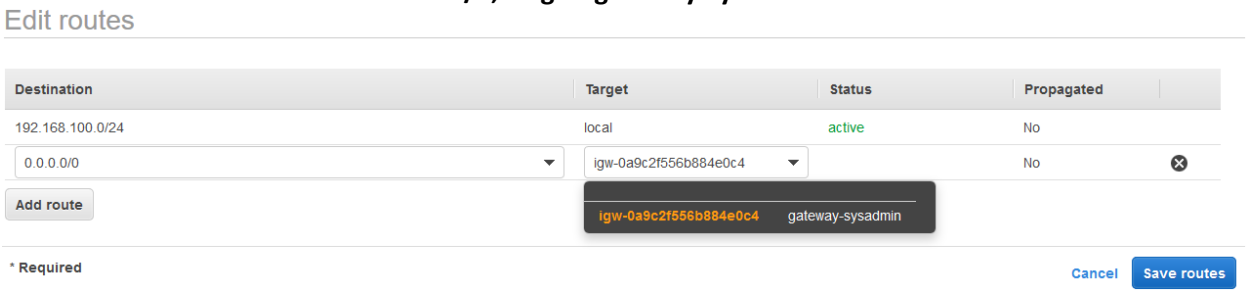
ii. Subnet: Subnet name: subnet-sysadmin, IPv4 CIDR block: 192.168.100.32/27



iii. Gateway: Gateway name: gateway-sysadmin, attached to vpn-sysadmin



iv. Routes: Destination 0.0.0.0/0, target: gateway-sysadmin

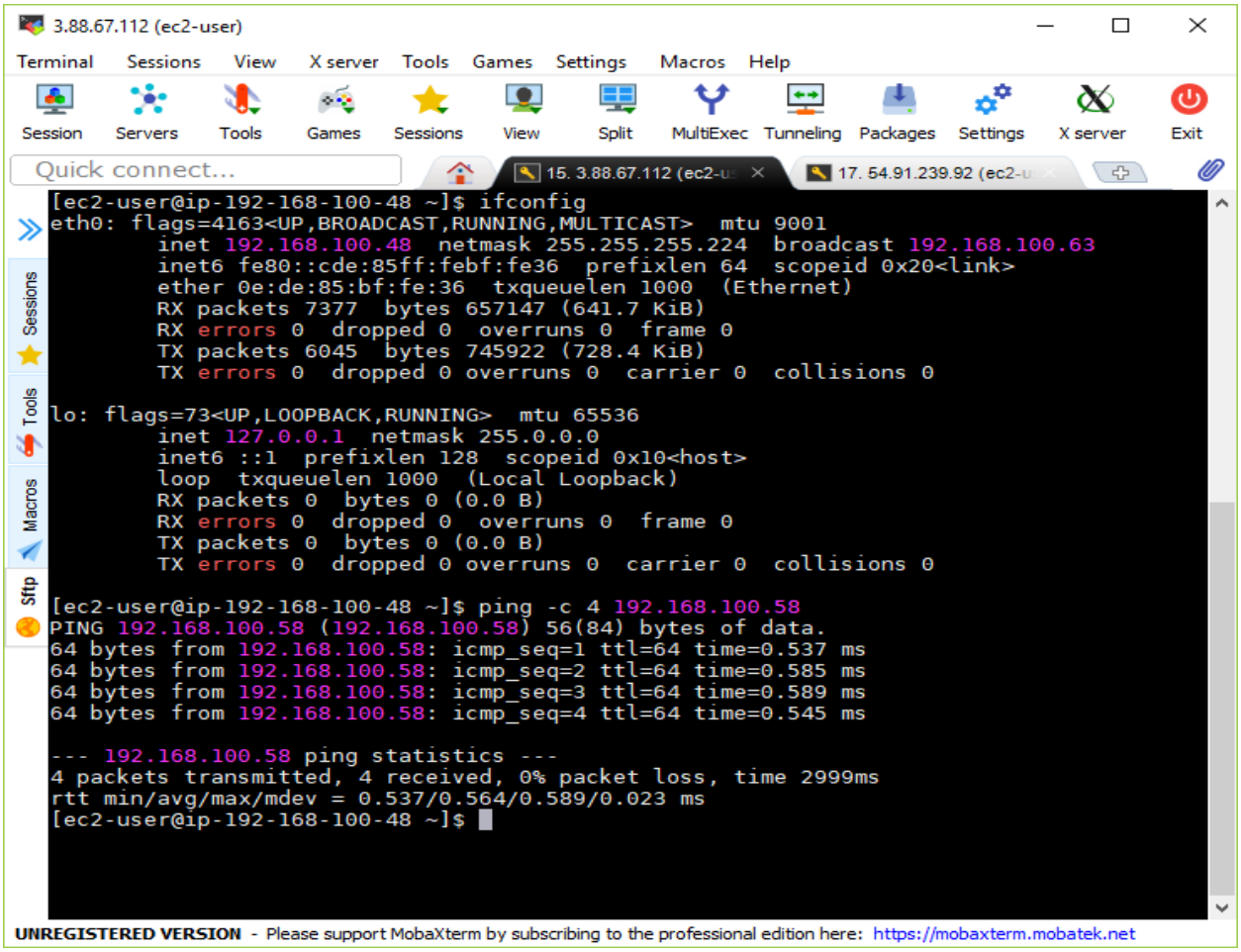


b. Make sure the IP address assigned to the instances are in the range of 192.168.100.32/27 and that the instances can reach to each other by using the ping command.

For section 2.b edit the security group attached to the instances to allow ICMP to ping to each other.

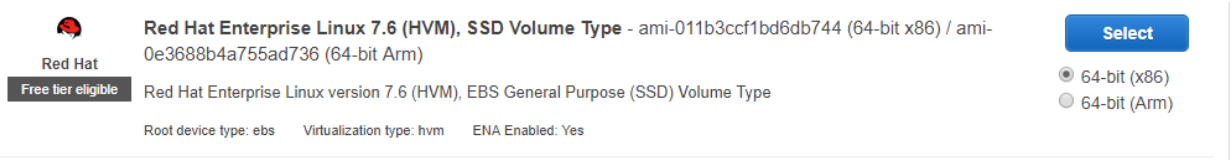
c. All instances must be publicly accessible by using a public IP, not DNS (TIP: Select 'Auto-assign Public IP=Enabled' at the time of deploying the instances).

This is a demonstration of selecting 'Auto-assign Public IP=Enabled' at the time of setting up the instances. Here is the connection to the Red Hat instance through its IP, and pinging the FTP instance's IP.

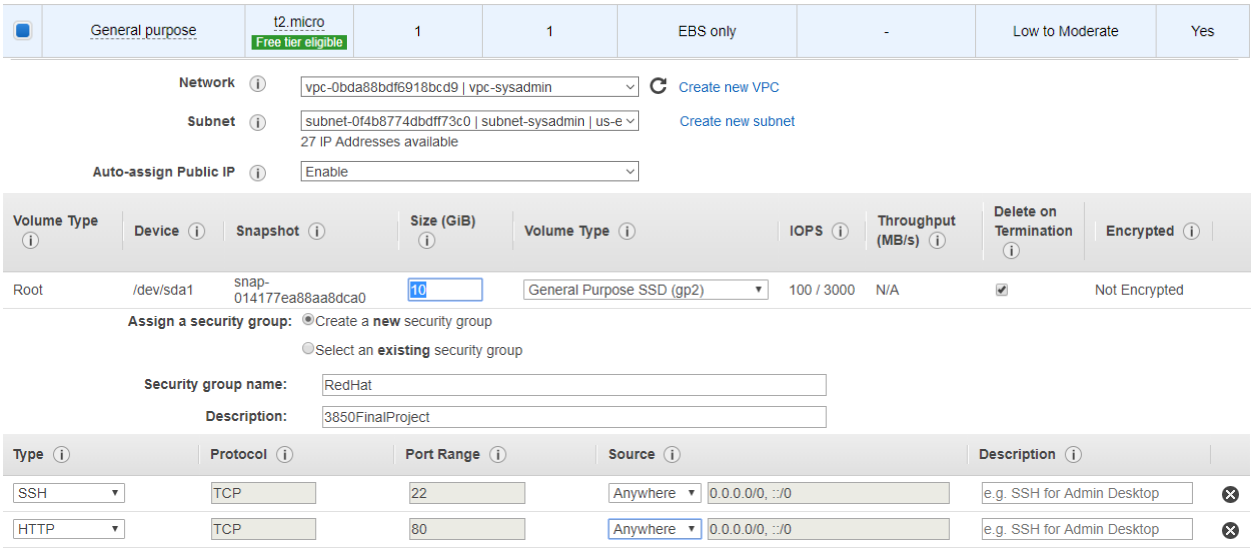


1. Instances to be deployed.

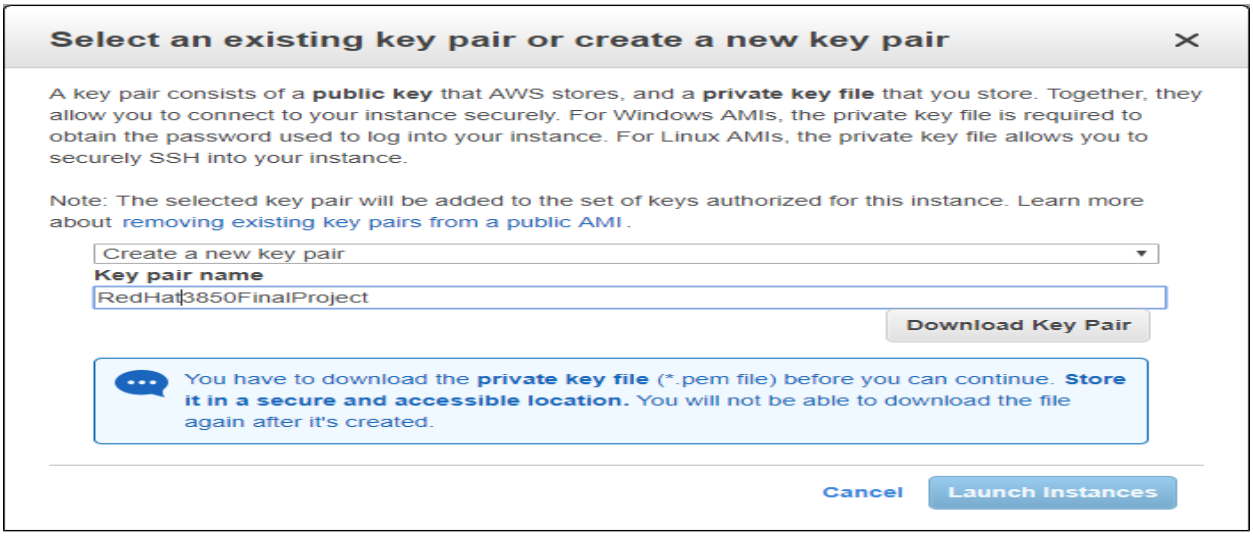
All four instances are set up in the same manner, so only the Red Hat instance will be included. First, select the instance.



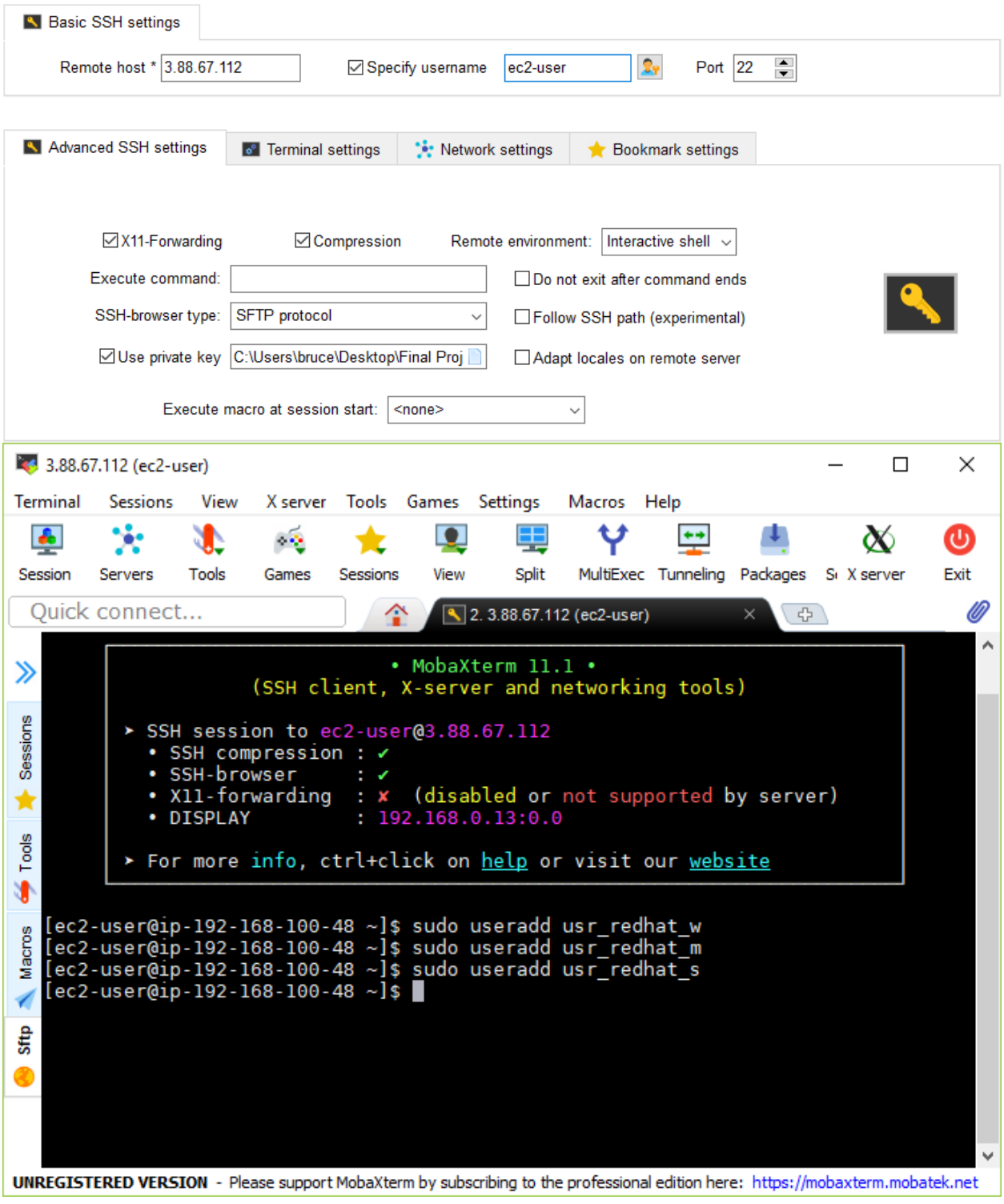
Next, select the initial requirements according to the instructions. Also, create separate security groups for each instance as each one has individual security requirements.



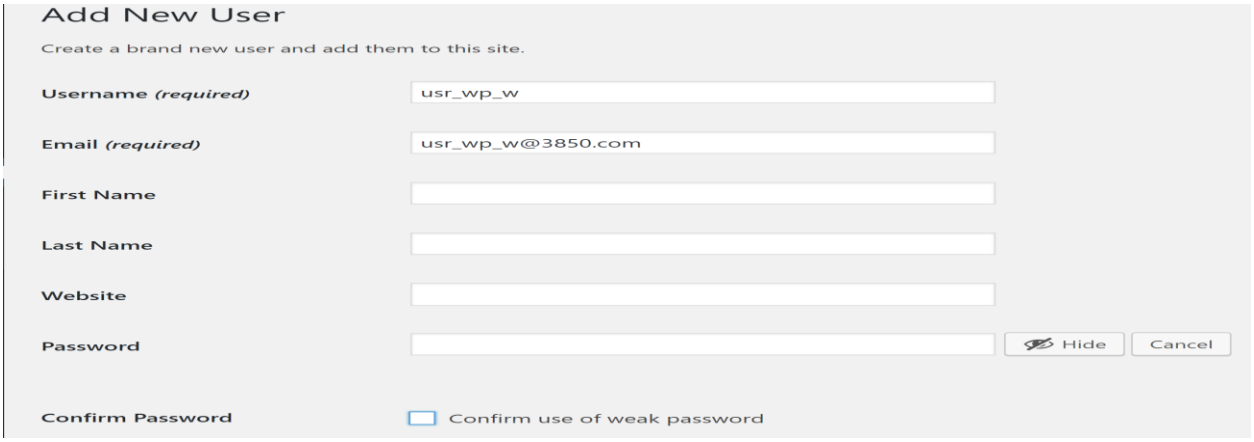
Create separate key pairs for each instance as well because if one key is compromised then other instances will not be at risk because the key is not shared.



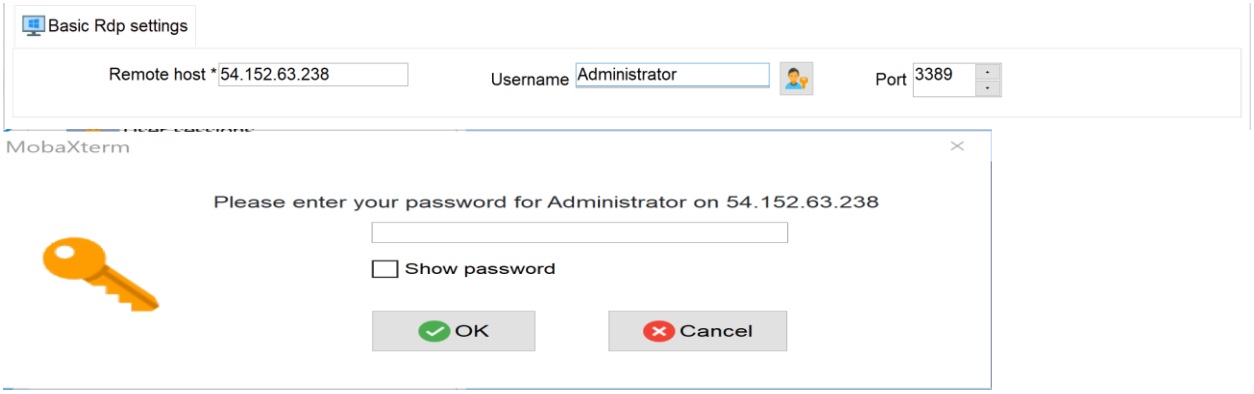
The following is User account creation:
The Red Hat and FTP are similar. In the ‘Remote host’ field you would enter the IPv4 Public IP of each instance and in the ‘Use private key’ field the respective private key.



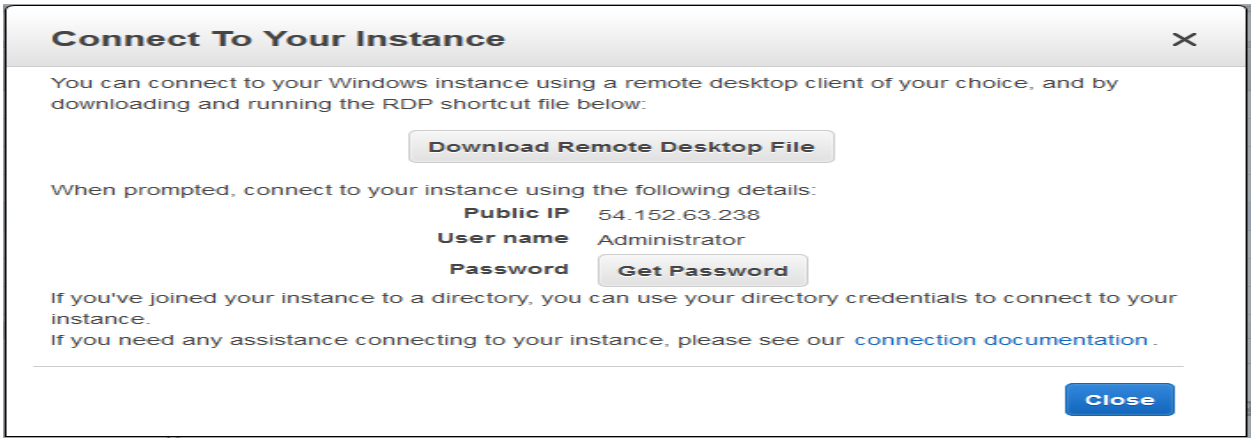
Word Press:
Login to the admin account for Word Press and create the users



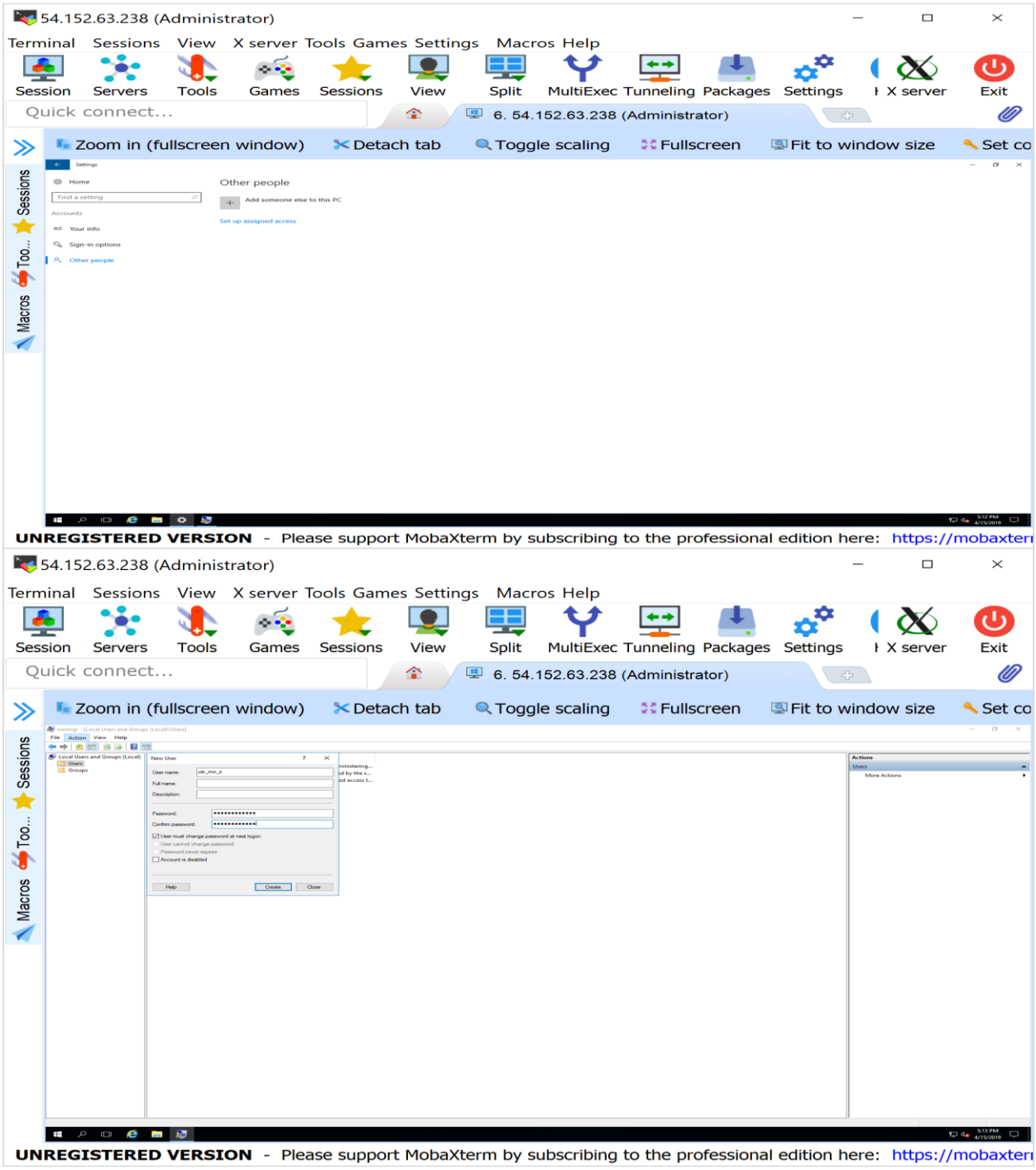
The Windows 2016:
Enter the credentials accordingly.



The username and password can be found in the aws console. To obtain the password I simply clicked ‘Get Password’ and entered the private key I downloaded when creating the instance to decrypt it.

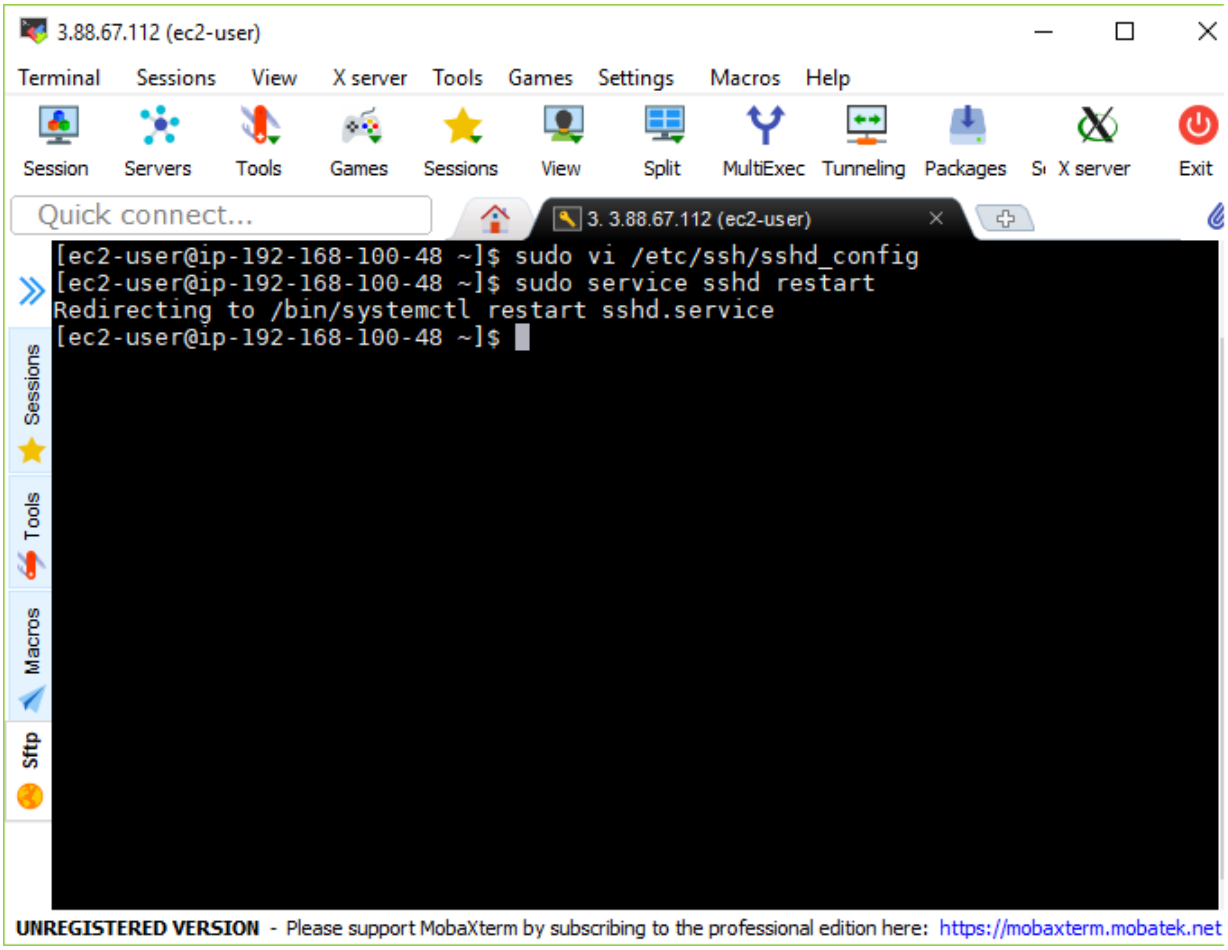


Once connected to the Windows 2016 instance, navigate to the settings and user accounts. Then, click ‘Action’ in order to add a new user



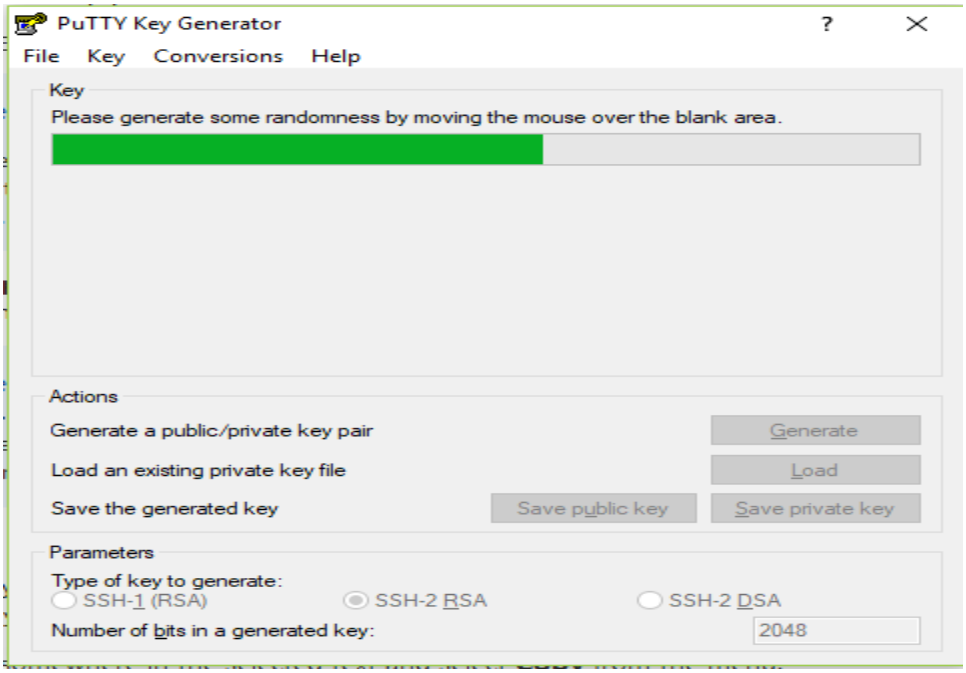
3. Users accounts.
Again, Red Hat and FTP will be similar, and Word Press and Windows 2016 are different.

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.
To enable password login, edit the sshd_config file by changing 'PasswordAuthentication no' to 'PasswordAuthentication yes'. Then, at the bottom add 'Match User usr_redhat_w, User usr_redhat_m PasswordAuthentication yes'. Finally, save the changes then restart the sshd service

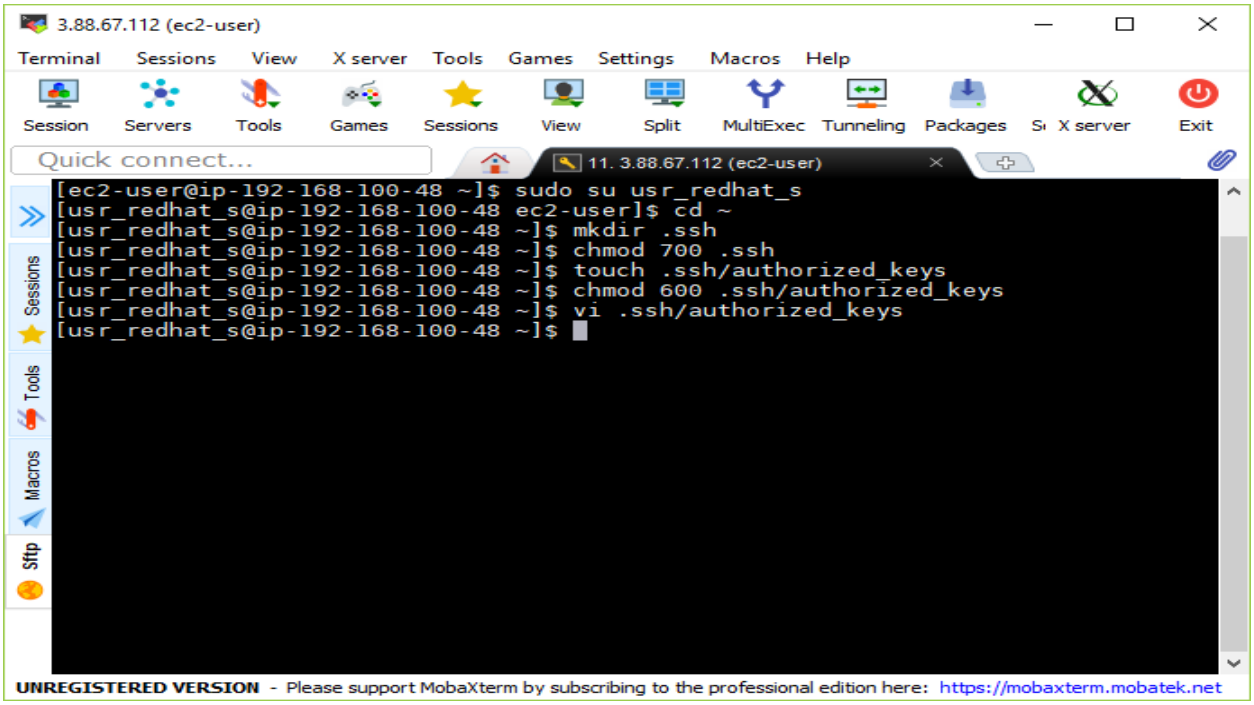


b. The user account usr_redhat_s uses a private and public key to ssh to the instance.
Similarly, edit the sshd_config file by adding 'Match User usr_redhat_s PasswordAuthentication no' to the bottom of the file. Save the changes, and restart the sshd service.

To create the key, I utilized PuttyGen. Simply click ‘Generate’, follow the instructions, and save the private key’

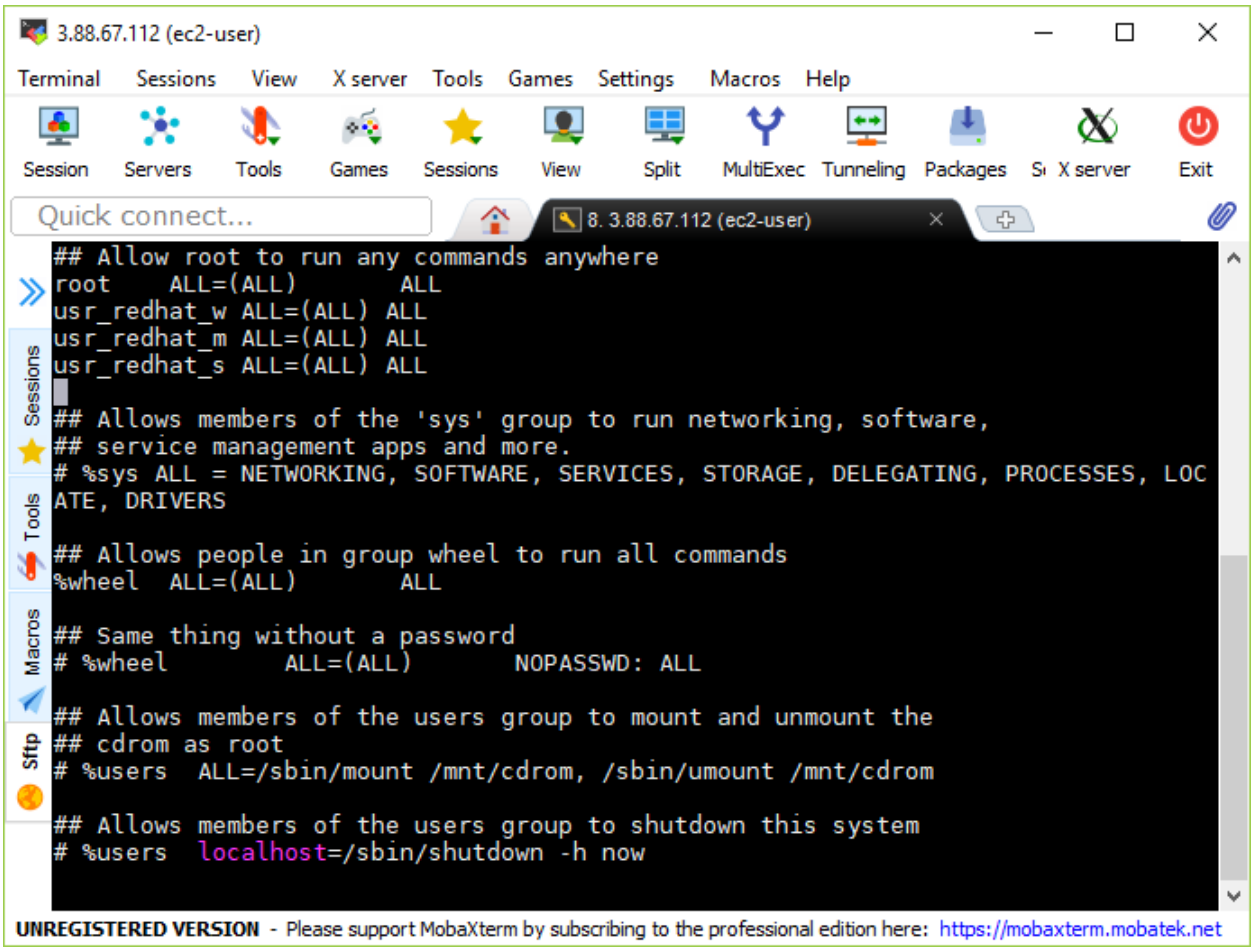


In the instance, create a file for the public key with the correct permissions to be used in coordination with the private key. (The authorized_keys file will contain the public key which is created by PuttyGen)

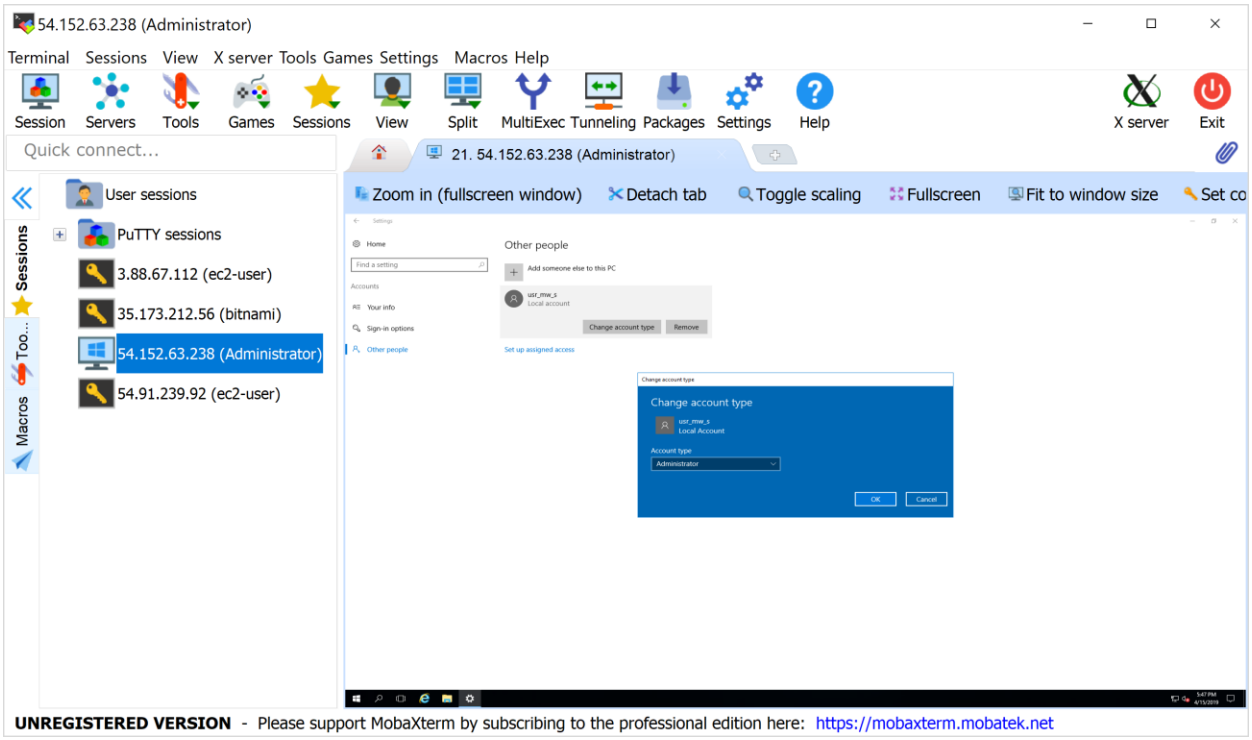


c. User accounts usr_redhat_w, usr_redhat_m and usr_redhat_s have root privileges.

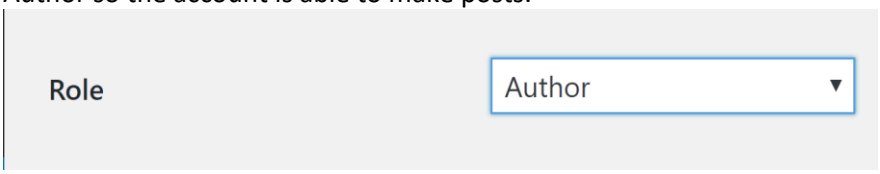
To allow root privileges, edit the sudoers file (in this case I executed 'sudo vi /etc/sudoers'). Then, add the users similar to root 'usr_redhat_w ALL=(ALL)) ALL, etc.'



d. User account usr_mw_s has Administrator privileges.
In Accounts change account typ of usr_mw_s to ‘Administrator’.



Word Press privileges:
I will also change the word press account privileges so they are able to make posts as well.
Navigate to the user you wish to update (in this case usr_wp_w and usr_wp_m) and update the role to Author so the account is able to make posts.

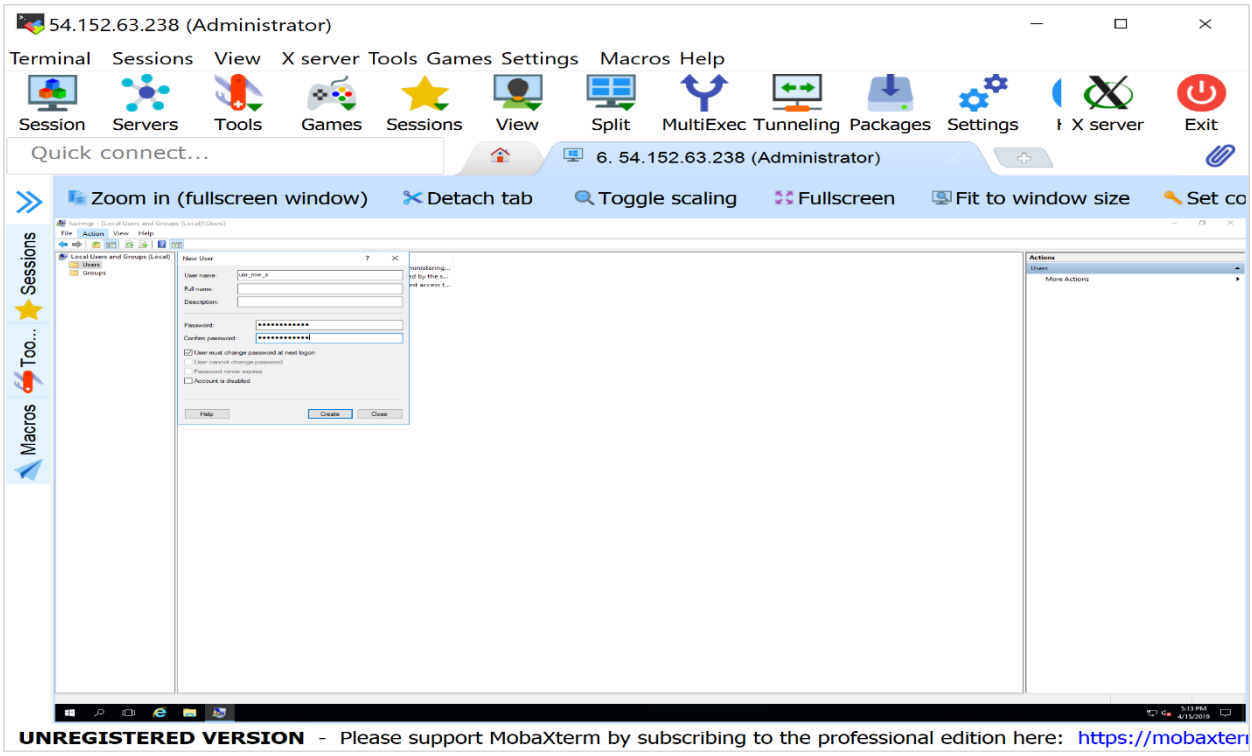


4. Users passwords.

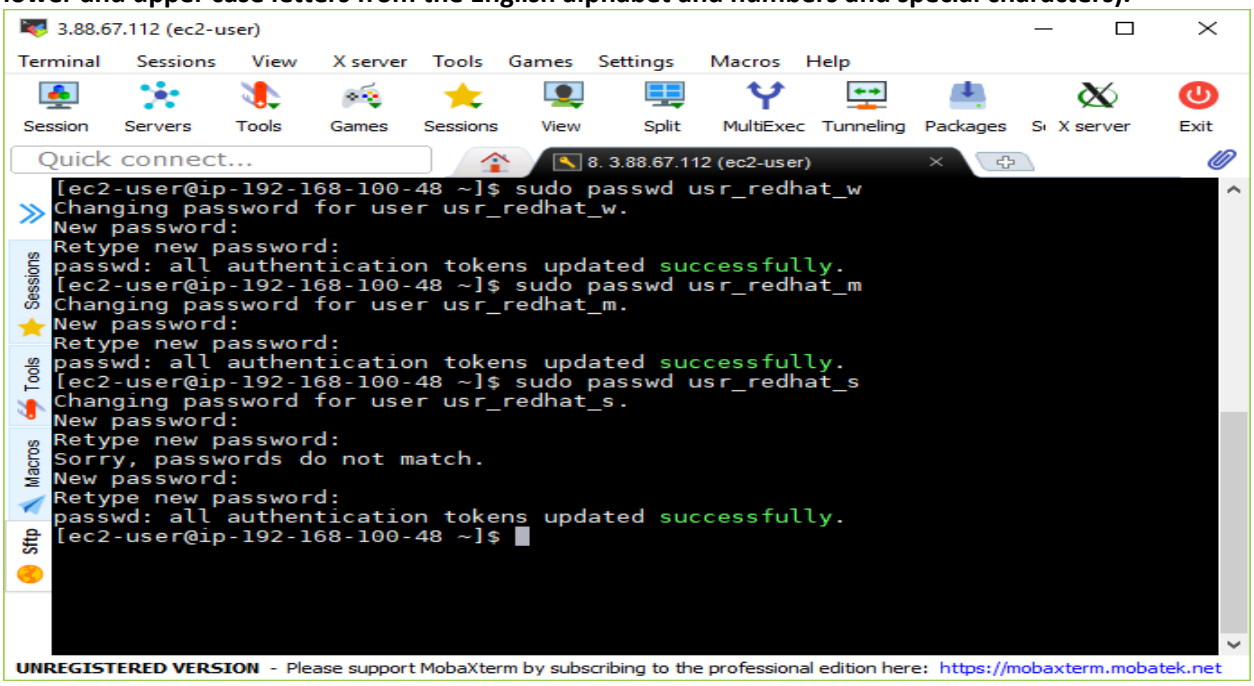
Again, Red Hat and FTP are similar, and Word Press and Windows 2016 is different. Just follow the instructions accordingly.

For Word Press the password can be created upon account creation.

For Windows 2016 the password can be created upon account creation.

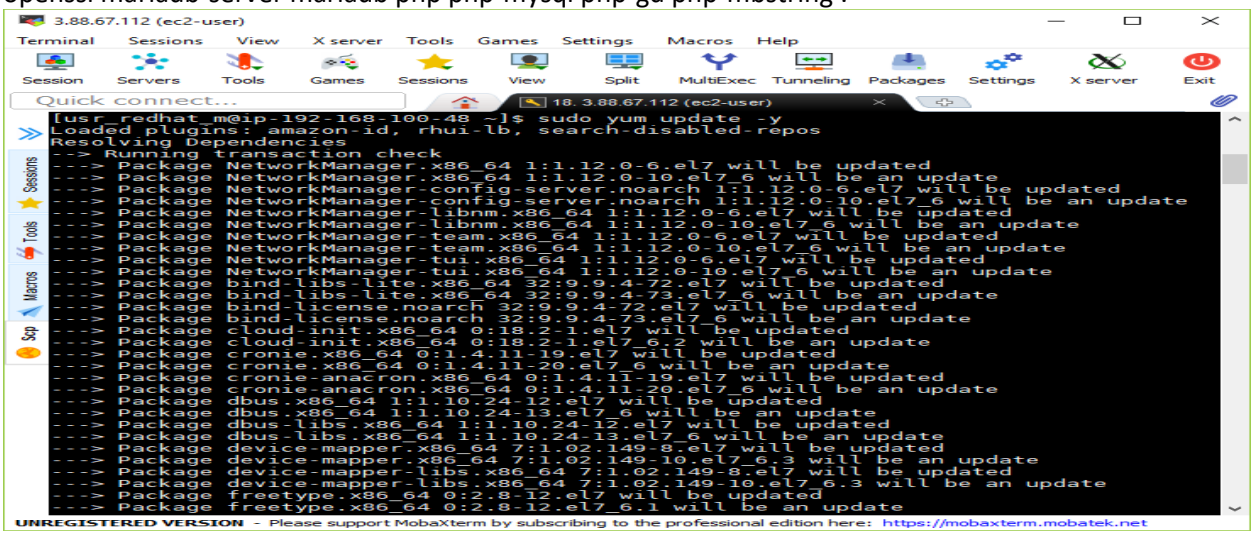


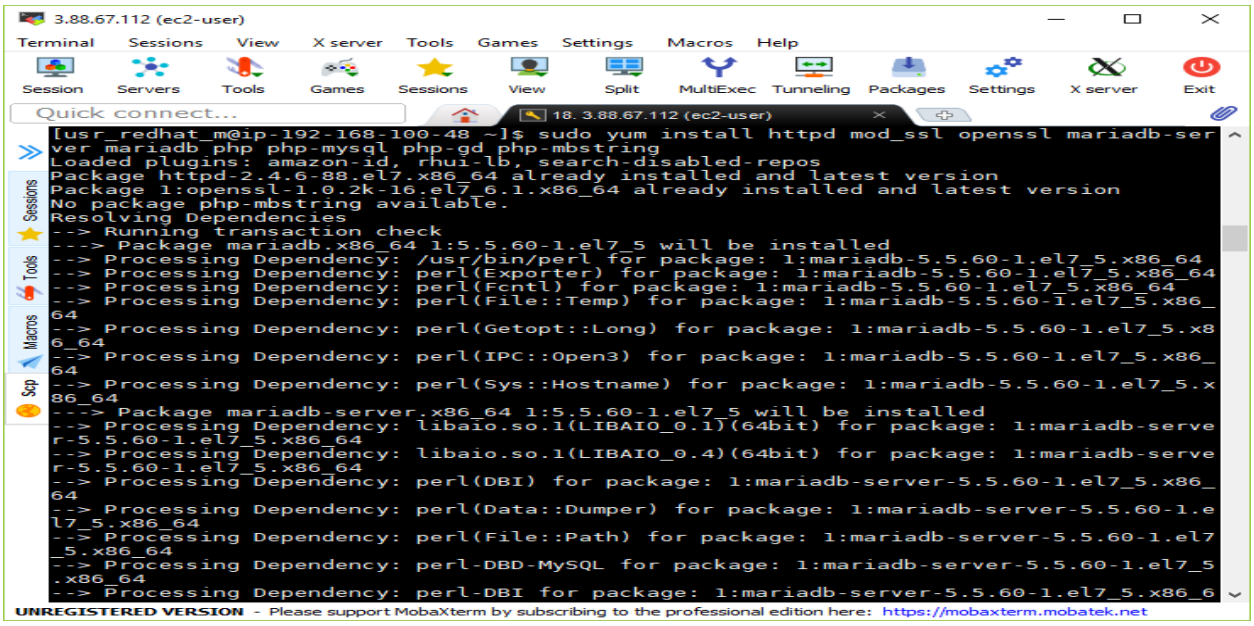
a. Passwords for user accounts that end in “w” (i.e. usr_redhat_w, usr_ftp_w and usr_wp_w) must have exactly 8 random characters (use only lower and upper case letters from the English alphabet).
b. Passwords for user accounts that end in “m” must have exactly 10 random characters (combine lower and 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).



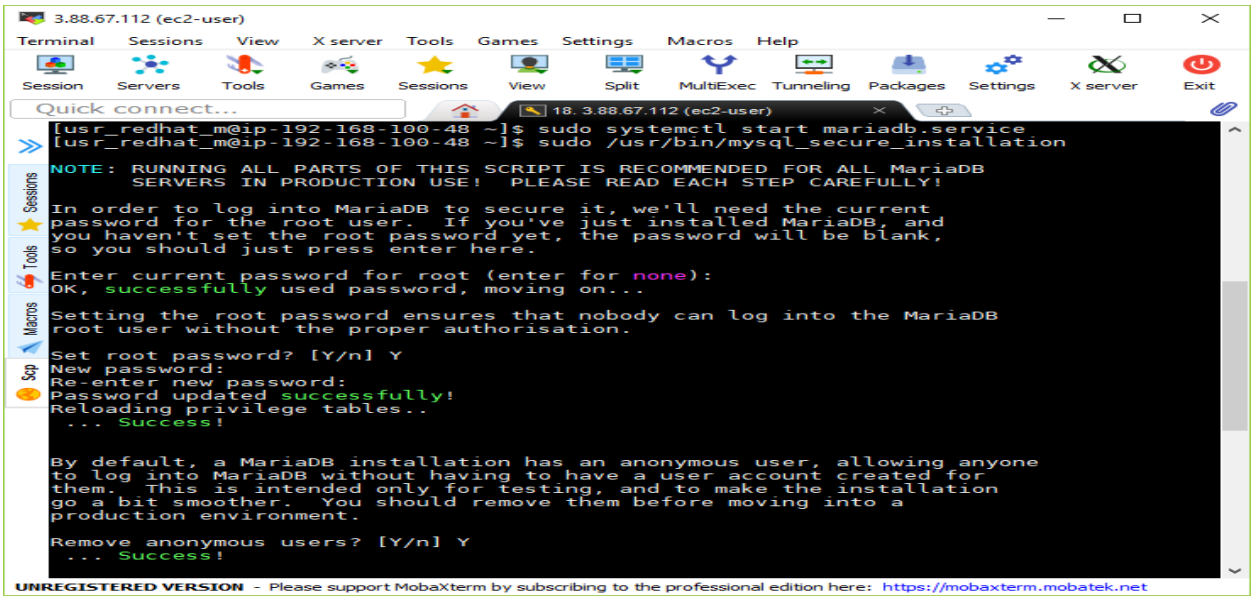
5. [Bonus points 10%] In the Red Hat instance create a MySQL database with the following fields: id, email, monthly_salary, phone_number, assign a 10-character password for the root MySQL account using a combination of letters and numbers only. Fill out the database with 3 registers with fake information.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

Install a LAMP server using the commnds: ‘sudo yum update –y’ and ‘sudo yum install httpd mod_ssl openssl mariadb-server mariadb php php-mysql php-gd php-mbstring’.

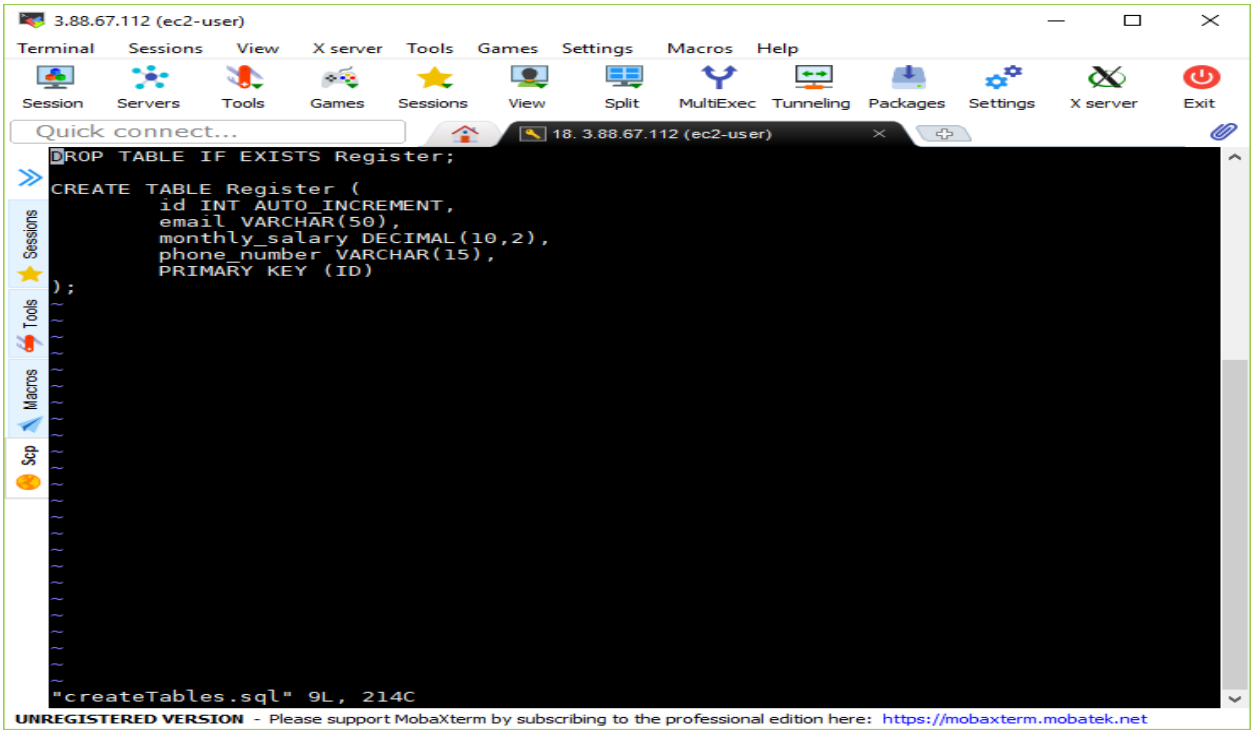




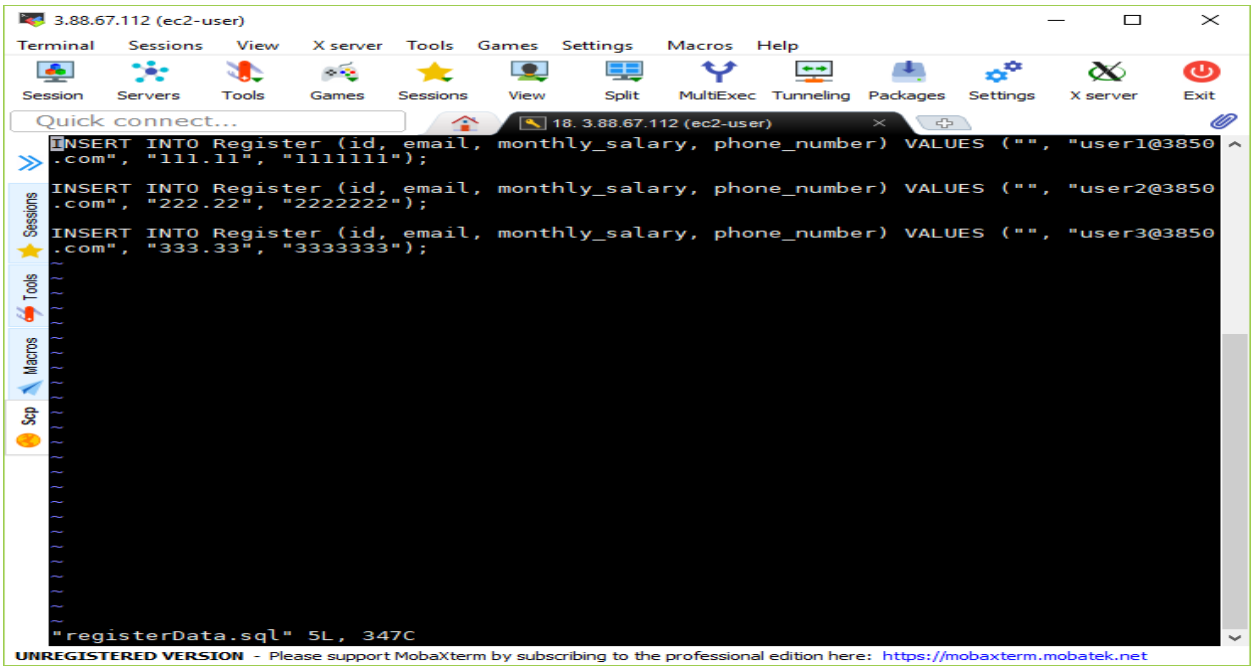
Start the database: ‘sudo systemctl start_mariadb.service’ and ‘sudo /usr/bin/mysql_secure_installation’.



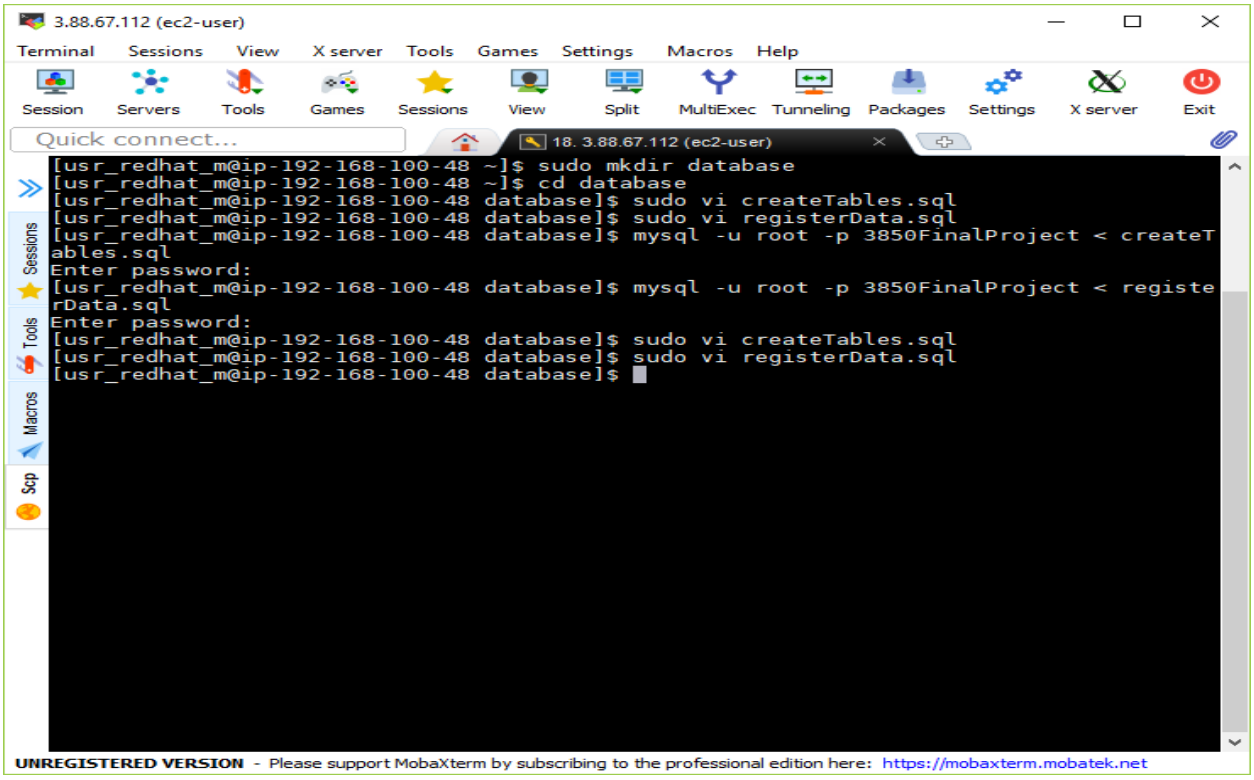
Create the sql files:
Initial database



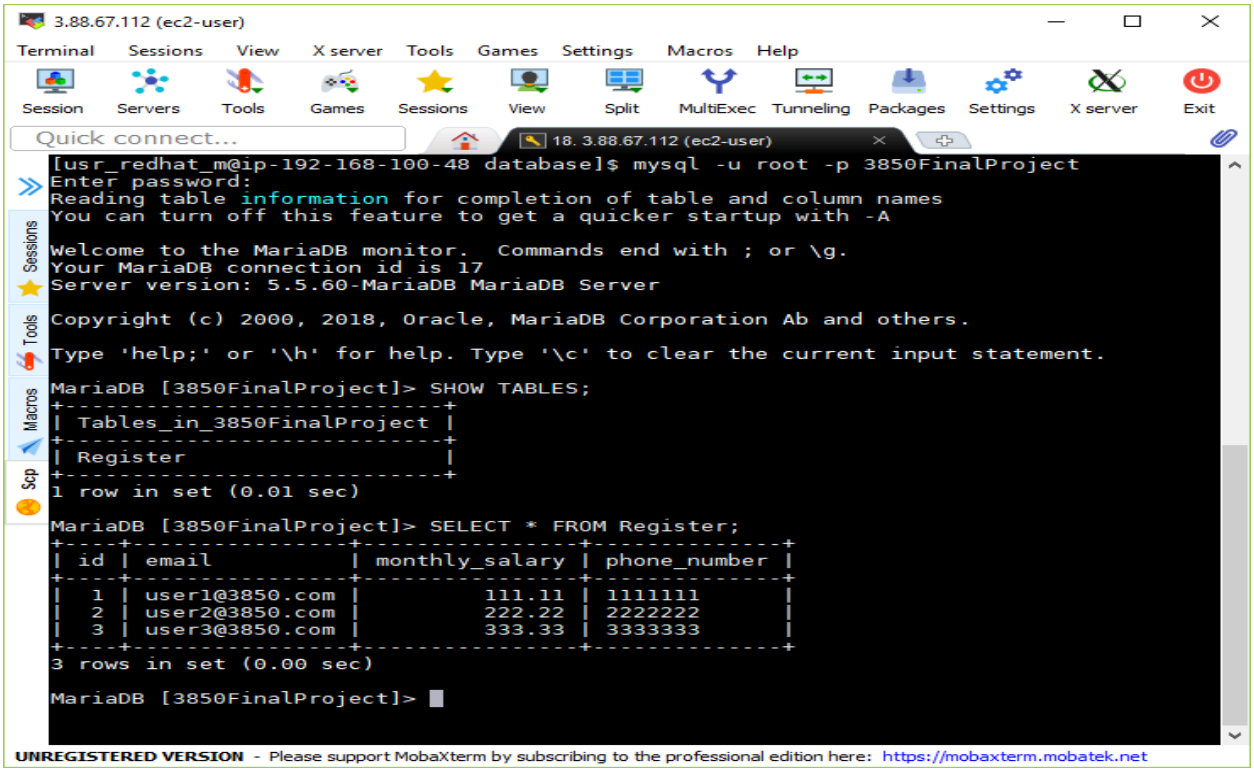
Test data



Execute the sql files so it is stored in the database: ‘mysql –u root –p 3850FinalProject < createTables.sql’ and ‘mysql –u root –p 3850FinalProject < registerData.sql’

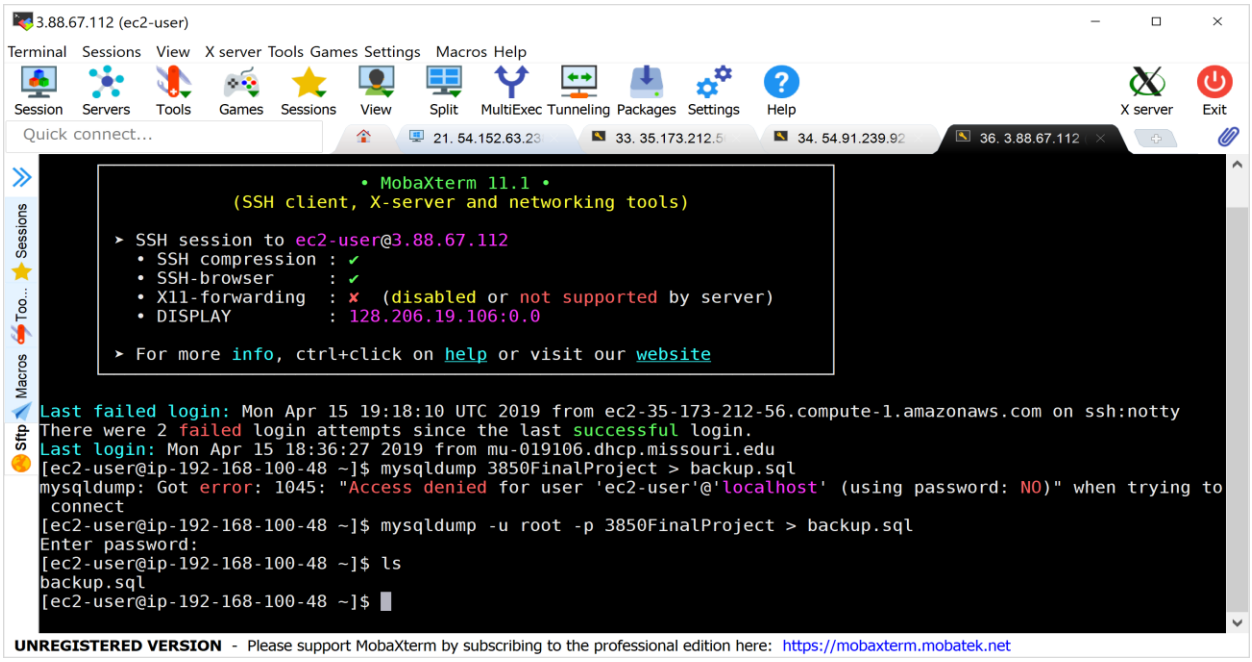


Database:

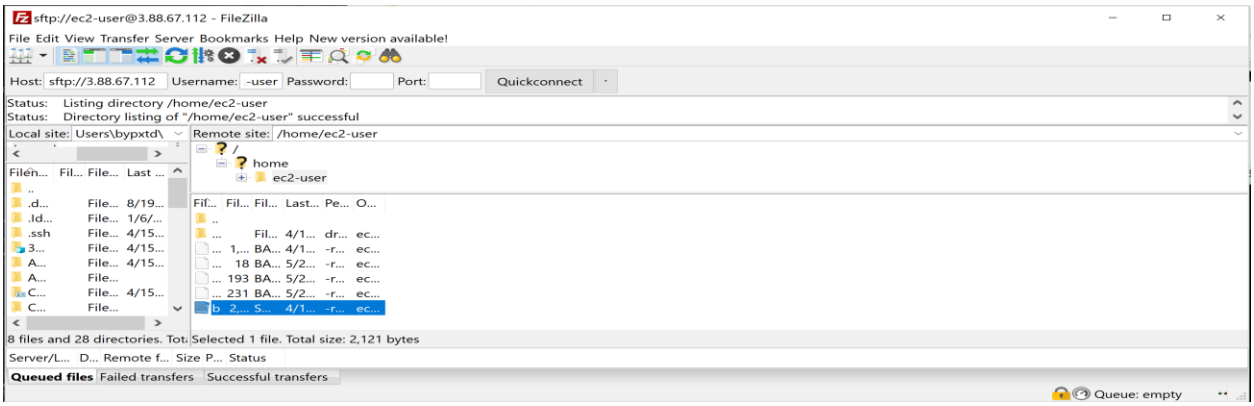


6. [Bonus points 10%] Make a backup of the database created in the Redhat instance (have one backup file) and publish it on the WordPress instance using the usr_wp_w user account.

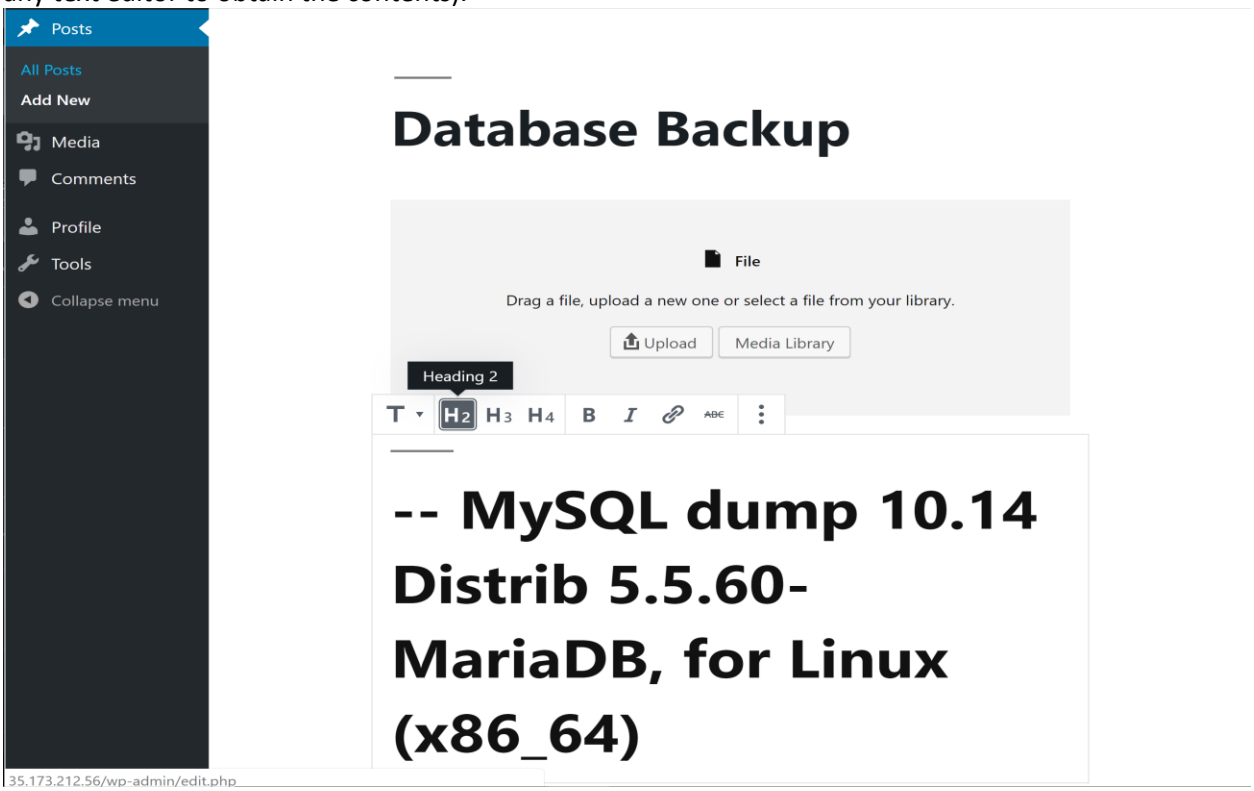
Execute mysqldump to copy the specified database.



FileZilla to transfer the backup.sql to the local machine.

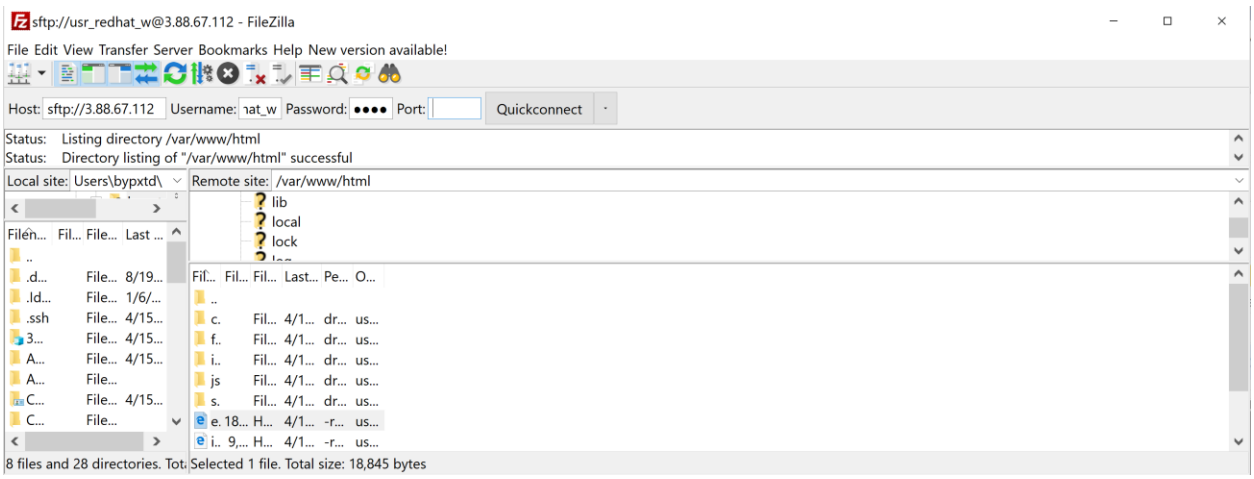


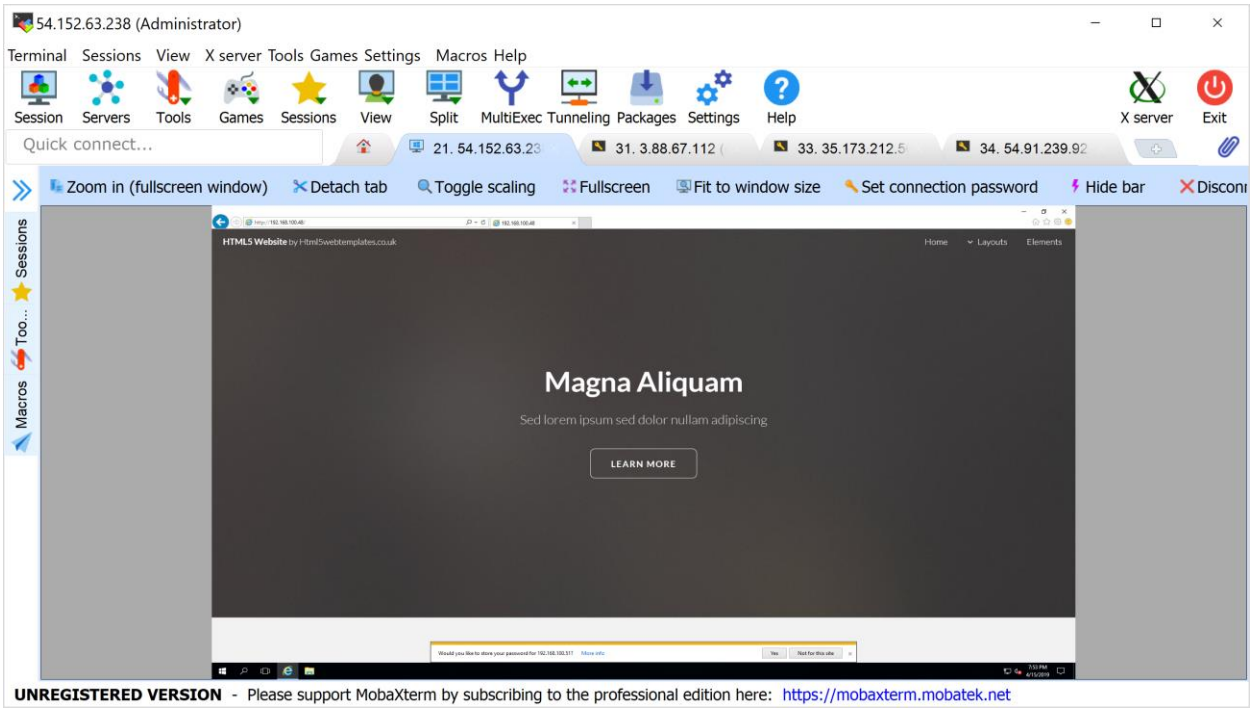
Login as usr_wp_w and create a new post with the contents within backup.sql (you can open the file in any text editor to obtain the contents).



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.

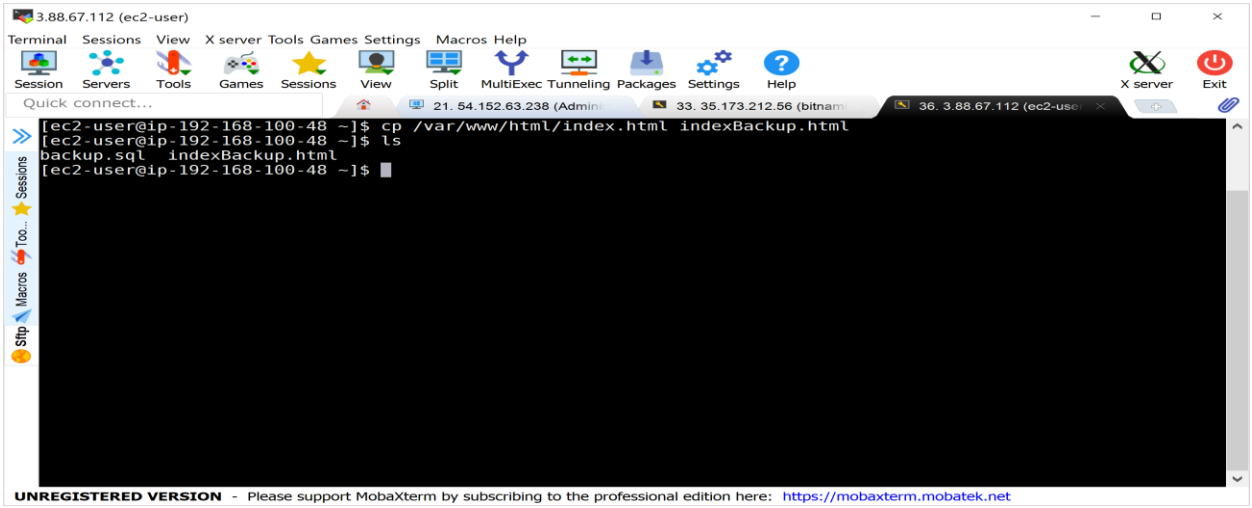
I utilized FileZilla by using according credentials and then transferring the files I downloaded over to the instance.



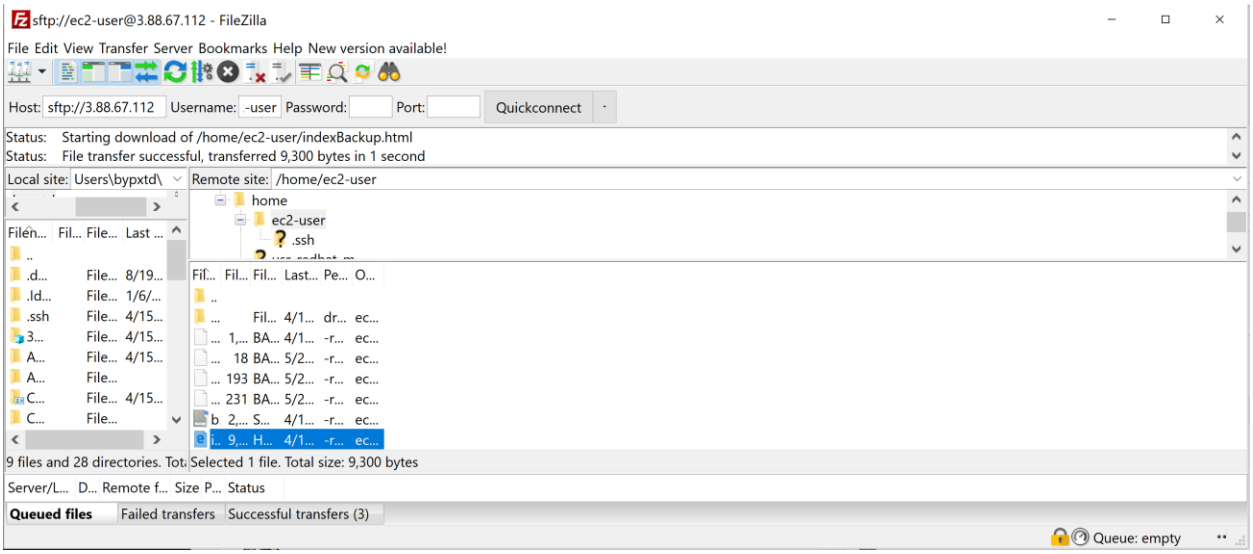


8. Make a backup of the index.html file (have one backup file) of the website created in the Red Hat instance and publish it on the WordPress instance using the usr_wp_m user account.

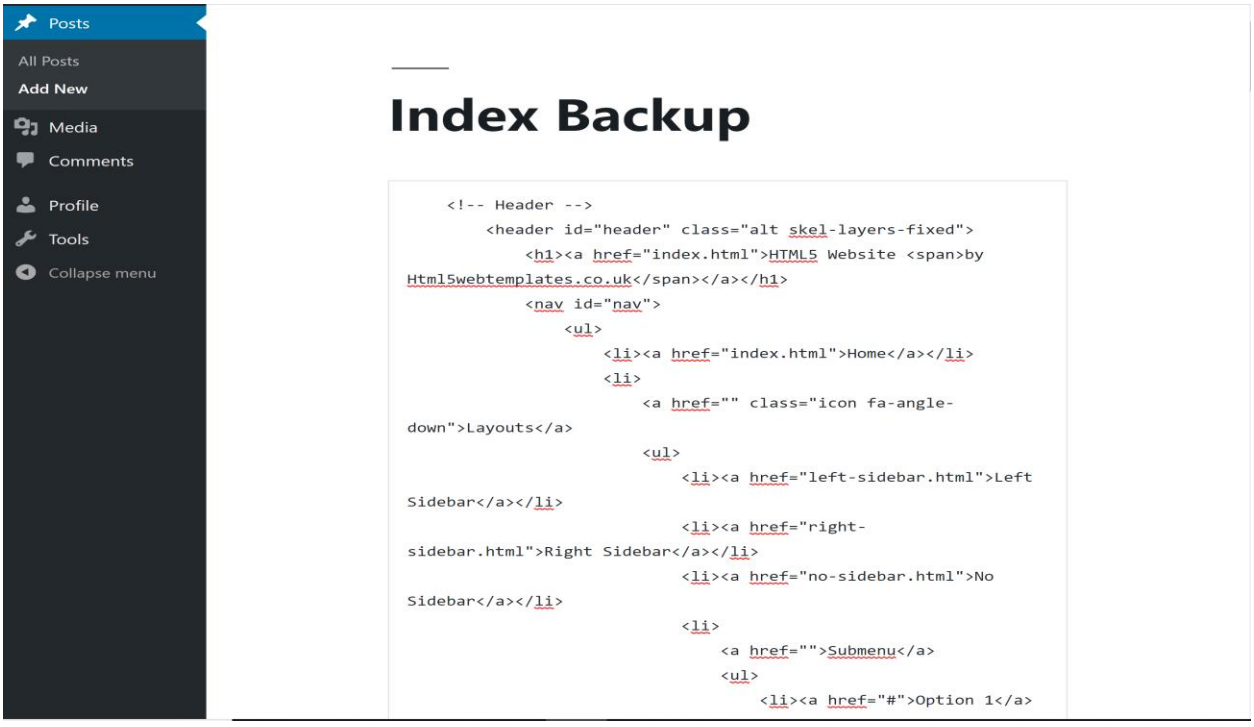
Execute the cp command to copy index.html to another file



FileZilla to transfer the file to the local machine



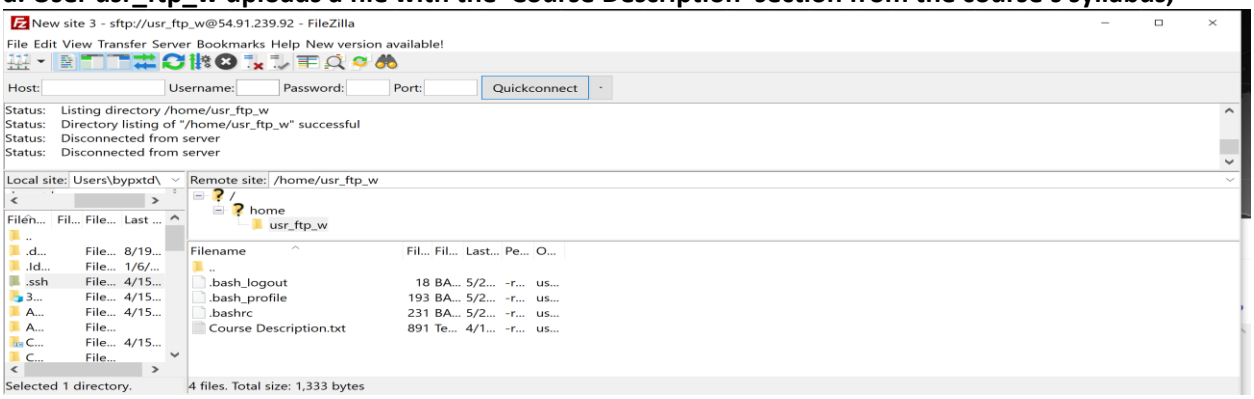
Login as usr_wp_m and post the contents of the index.html backup (Again, the contents of index.html can be obtained by opening it in a text editor)



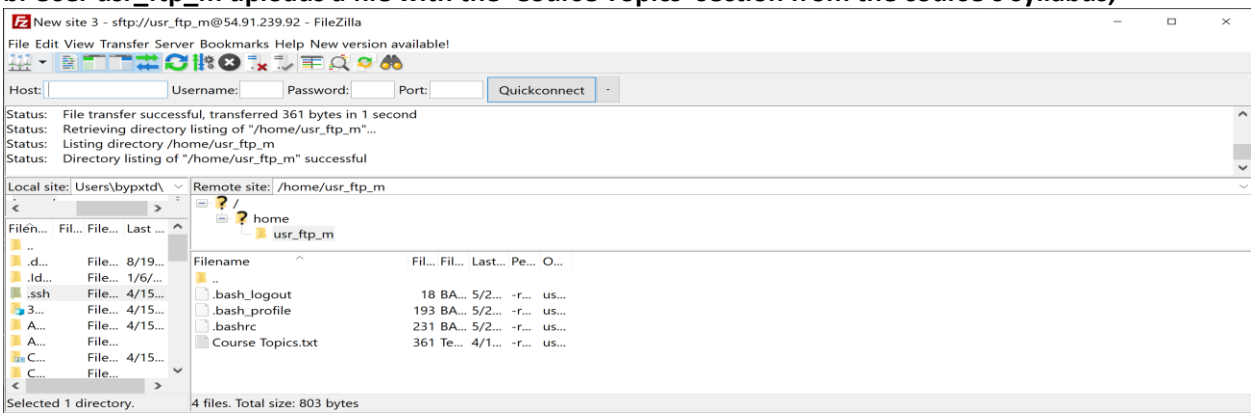
11.FTP users accounts.

Utilizing FileZilla, I logged into the user and uploaded the specified files created on the local machine.

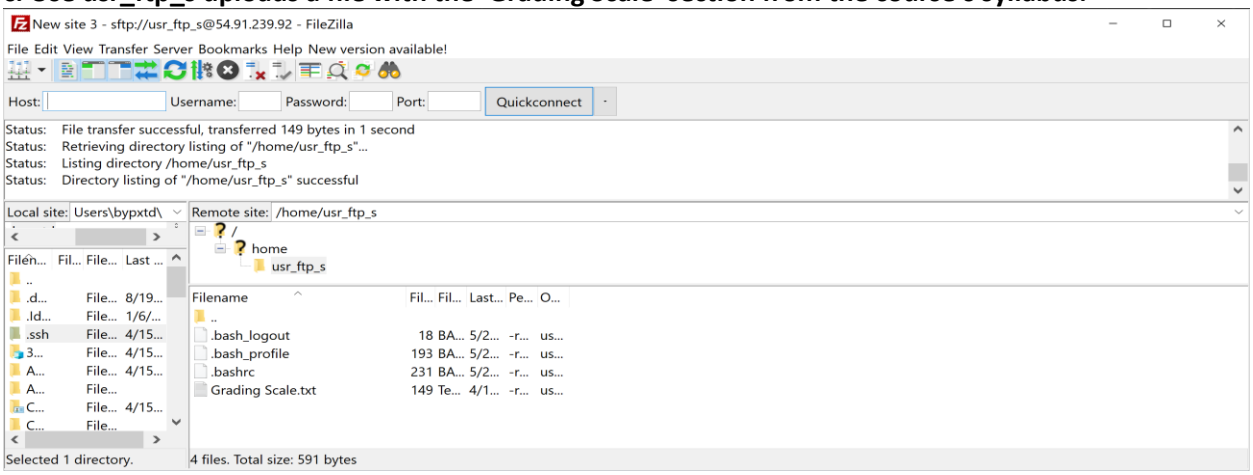
a. User usr_ftp_w uploads a file with the 'Course Description' section from the course's syllabus,



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	3.88.67.112	The password for the usr_redhat_s account
FTP	54.91.239.92	---
Word Press	35.173.212.56	---
Windows 2016	54.152.63.238	Share the 'Remote Desktop' File and password for usr_mw_s account, that will allow us to RDP to the instance.

usr_redhat_s = gO7!W4CnQYSP
usr_mw_s = asdFGH123!@#