Lab 02 Requirements

- Internet connectivity & VMware Workstation version 14.0.0 or above

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Part 01: Install a text editor on the Windows 10 VM & create a Basic Webpage

You are free to download an editor of your choice. The default for this course is Notepad++

You can download a copy of Notepad++ from http://notepad-plus-plus.org
- Select "Custom" installation type and select all the options except "Localization"
- Select "Create Shortcut on Desktop" option

Create a Basic Webpage

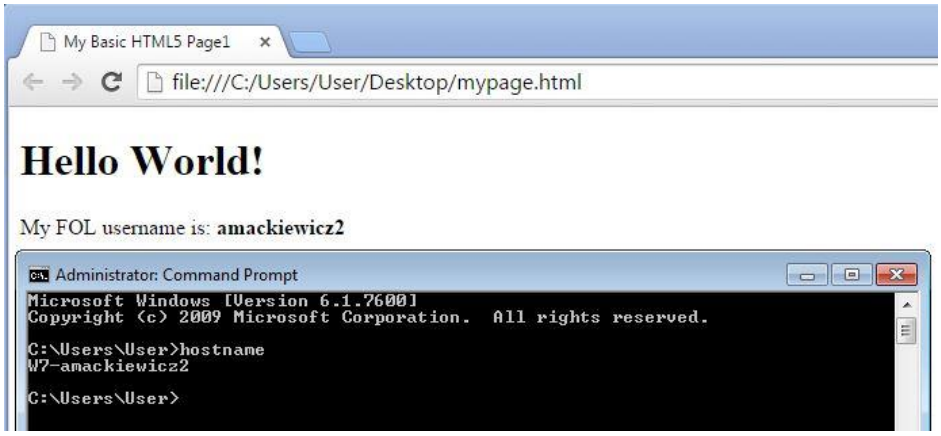
Open **Notepad++**. Enter the following text into your Notepad++ document (use 'tab' key to create spaces):

```
<!doctype html>
<html lang="en">
     <head>
          <meta charset="UTF-8" />
          <title>My Basic HTML5 Page</title>
     </head>
     <body>
          <h2>Hello World!</h2>
          <p>My FOL username is: <b>FOLusername</b></p>
     </body>
</html>
```

Choose HTML as the language (Use upper menu: **Language -> H -> HTML**).
Notice that you can now collapse the **<html>** and **<body>** elements.

Go to **File -> Save as** and save the text as file **mypage.html** on the desktop
Note: "file name" should be **mypage** and "Save as type": **Hyper Text Markup Language file**

Open the HTML5 file you just created in a browser by double clicking it**.** Take note of what is listed in the URL address bar on the browser.



Slide 01:

- **Take a screenshot showing the above information, including a command prompt showing your hostname**

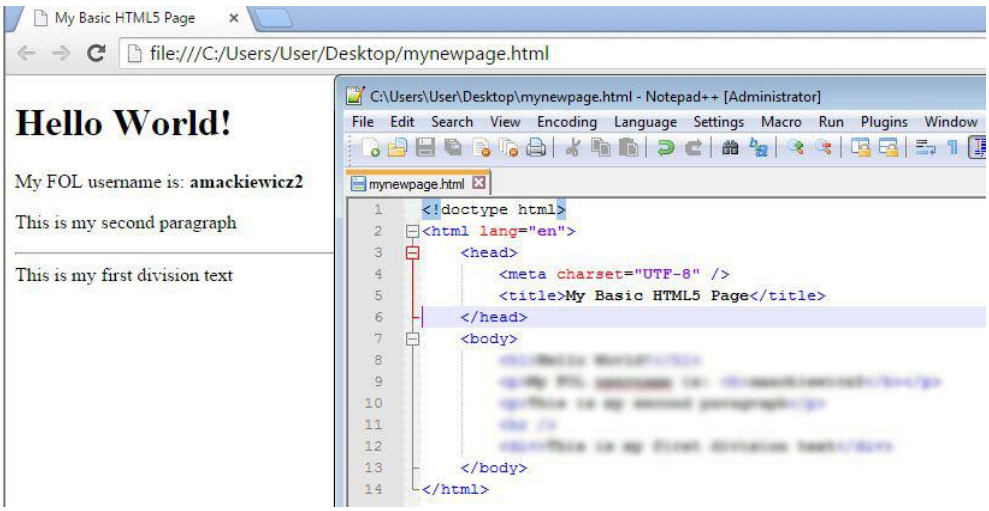
Modify your HTML5 page

Your first HTML5 page has one paragraph (…) and one heading (<h2>...</h2>). We want to improve it Go back to your HTML5 page in the Notepad++ and modify it as follows:

- Change h2 heading to h1
- Make your FOLusername in the first paragraph bold with the **<b>** tag
- Add a second paragraph element with the tag and text: **This is my second paragraph**
- Add a horizontal line after the second paragraph with the **<hr />** tag
- Add a division element with the ** ** element and text: **This is my first division text**

Hint: don't forget to use closing tags!

Save the modified HTML5 page as file **mynewpage.html** on the desktop and open it by double clicking the file



Slide 02:

- **Take a screenshot showing the above information**
- **Your slide should show Notepad++ window, Browser output, URL and File name**

Modify your HTML5 page using CSS

So far we used the default browser settings (fonts and colors) for all the HTML tags.
Now we want to change the font and color for **<h1>** and ** ** tags.

Add the following code in the **<head>** section of your HTML5 page, after the **</title>** tag:

```
<style type="text/css">
      h1    { font: 40px Arial; color:#0000FF; }
      div   { font-family Courier color red}
      </style>
```

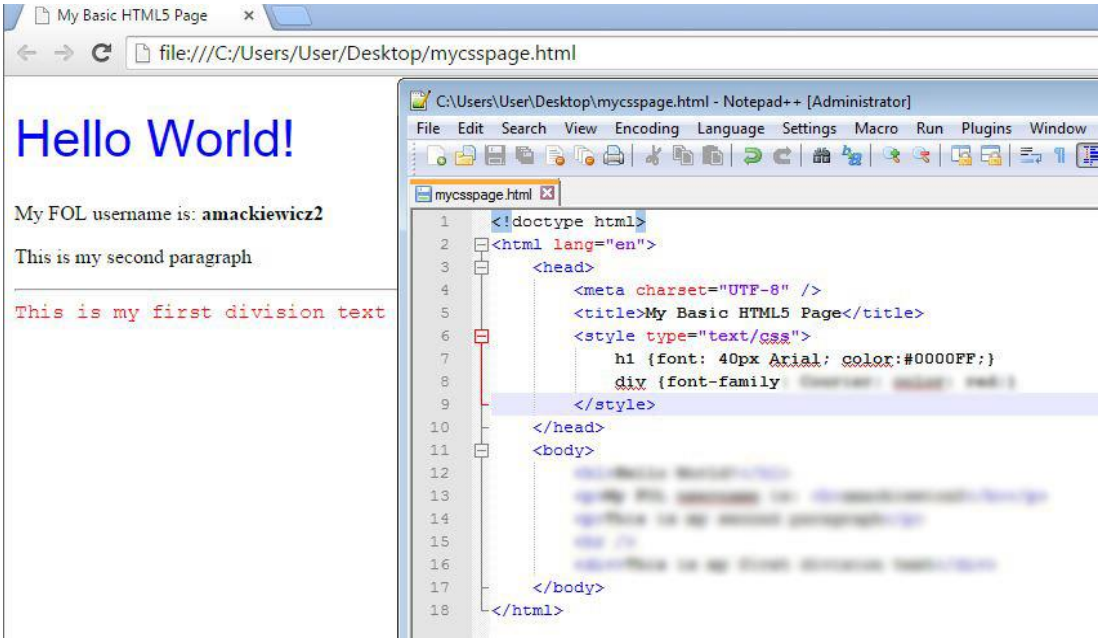
Save the modified HTML5 page as file **mycsspage.html** on the desktop and open it by double clicking the file

If you made no mistakes in the previous mynewpage.html file, you should notice that the heading section (<h1> tag) is now bigger and in blue color. However, the division text (tag) hasn't changed. Why?

Take a look at the **div { }** CSS declaration above.
It has properties: **font-family** and **color** and values: **Courier** and **red**

Do you see any errors in the CSS code above for the ** ** element?
If you are not sure, please check the lecture notes (or CSS declaration for the **<h1>** tag)

You need to correct all the error(s), save **mycsspage.html** file and open it in the browser again.



Slide 03:

- **Take a screenshot showing the above information**
- **Your slide should show Notepad++ window, Browser output, URL and File name**

NOTE: You opened the HTML5 page directly in the browser. We didn't use Apache web server that we installed in LAB-01. In order for us to be able to use the web server, we must upload our newly created .html file to it. We will install an FTP server on our Ubuntu VM by doing the following procedure:

Part 02: Setup vsFTPd server

Install VsFTPD

```
apt-get install vsftpd
```

Check to see if you are now listening on port 21

```
netstat -tuna
```

Are you able to telnet from your Windows VM to the server on 10.0.0.200 over port 21?
If so, did you receive any information?

Create a backup copy of the original config file

```
cp /etc/vsftpd.conf /etc/vsftpd.conf.BACK
```

Open the vsftpd config file with following command

```
nano /etc/vsftpd.conf
```

Configration of vsFTPd file – Open /etc/vsftpd.conf file and search with Ctrl+W and make changes as it is shown below. Remove comments if they exist or add any missing lines

```
anonymous_enable=NO
local_enable=YES
write_enable=YES
allow_writeable_chroot=YES
chroot_local_user=YES
file_open_mode=0777
local_umask=022
```

In order to secure FTP access, we can create a list of users who are allowed to connect using FTP

A few additional lines need to be added to vsftpd.conf and a user list file needs to be created (later)

Create access for users who are explicitly added to a user list for vsftpd

```
userlist_enable=YES
userlist_file=/etc/vsftpd.userlist
userlist_deny=NO
```

When finished, save and exit the file

Create a new user

```
sudo adduser FOLusername-ftp
```

Select **Ubuntu1** as the user's password and hit enter for default selections for the rest

Create a directory on the web server for the new user and set permissions

```
sudo mkdir /var/www/html/FOLusername-ftp
sudo chown nobody:nogroup /var/www/html/FOLusername-ftp
sudo chmod a-w /var/www/html/FOLusername-ftp
```

Verify permission settings

```
sudo ls -la /var/www/html/FOLusername-ftp
```

```
root@folusername-uws:/var/www/html# ls -la /var/www/html/folusername-ftp/
total 8
dr-xr-xr-x 2 nobody nogroup 4096 Sep  4 00:31 .
drwxr-xr-x 4 root   root    4096 Sep  4 00:31 ..
root@folusername-uws:/var/www/html#
```

Our next step is to create a new directory inside the existing **/var/www/html/FOLusername-ftp** directory where the user can upload files using FTP

```
sudo mkdir /var/www/html/FOLusername-ftp/files
sudo chown FOLusername-ftp:FOLusername-ftp /var/www/html/FOLusername-ftp/files
```

Verify the new permission settings

```
sudo ls -la /var/www/html/FOLusername-ftp
```

```
root@folusername-uws:/var/www/html# ls -la /var/www/html/folusername-ftp/
total 12
dr-xr-xr-x 3 nobody          nogroup         4096 Sep  4 00:39 .
drwxr-xr-x 4 root            root            4096 Sep  4 00:31 ..
drwxr-xr-x 2 folusername-ftp folusername-ftp 4096 Sep  4 00:39 files
```

Now create a test file in the newly created directory so we can verify our settings later on

```
sudo echo "testing FTP access" | sudo tee /var/www/html/folusername-ftp/files/ftp_test.txt
```

Verify that the file was created properly and contains our intended data

```
cat /var/www/html/folusername-ftp/files/ftp_test.txt
```

Add your FOLusername-ftp user to the vsftpd.userlist file

```
echo "folusername-ftp" | sudo tee -a /etc/vsftpd.userlist
```

Verify that the user has been added to the file

```
cat /etc/vsftpd.userlist
```

Restart vsftpd

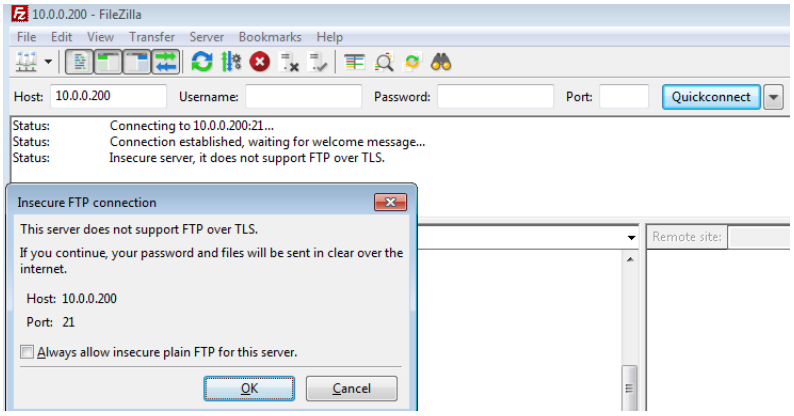
```
sudo systemctl restart vsftpd
```

Part 03: Test vsFTPd access

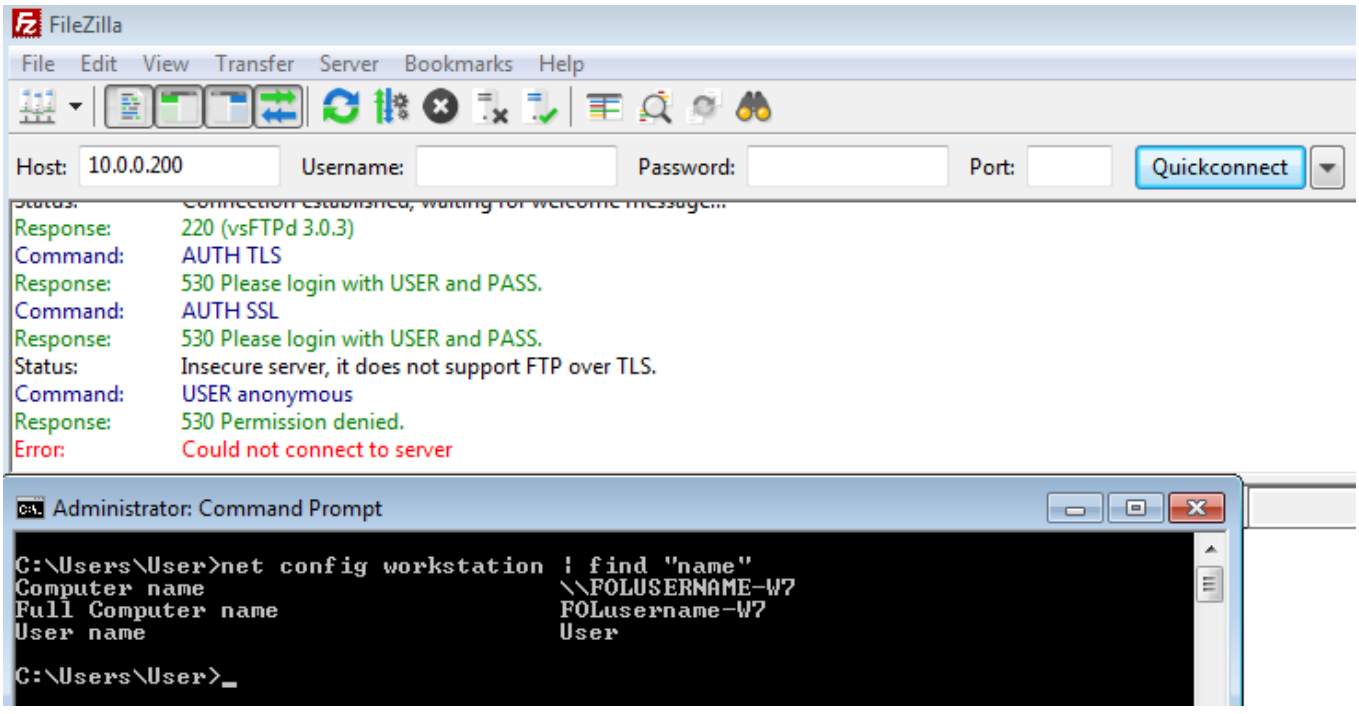
Download FileZilla copy the setup file to your Windows 10 VM (Do not connect W10 to the internet)

Run the installer using defaults. Once finished, start the FileZilla client and initiate a connection to Host **10.0.0.200** with Username **anonymous**

You should receive a warning that this server does not support FTP over TLS as shown below:



We will set up FTP over TLS in the next part of this lab. For now, click OK and see what response you receive from the server. Include the output of **net config workstation | find "name"** using the CMD prompt as shown below:



Slide 04:

- Take a screenshot showing all of the above and place it into slide 04

Now make sure that our designated user **FOLusername-ftp** is able to connect successfully

Connect using the following:

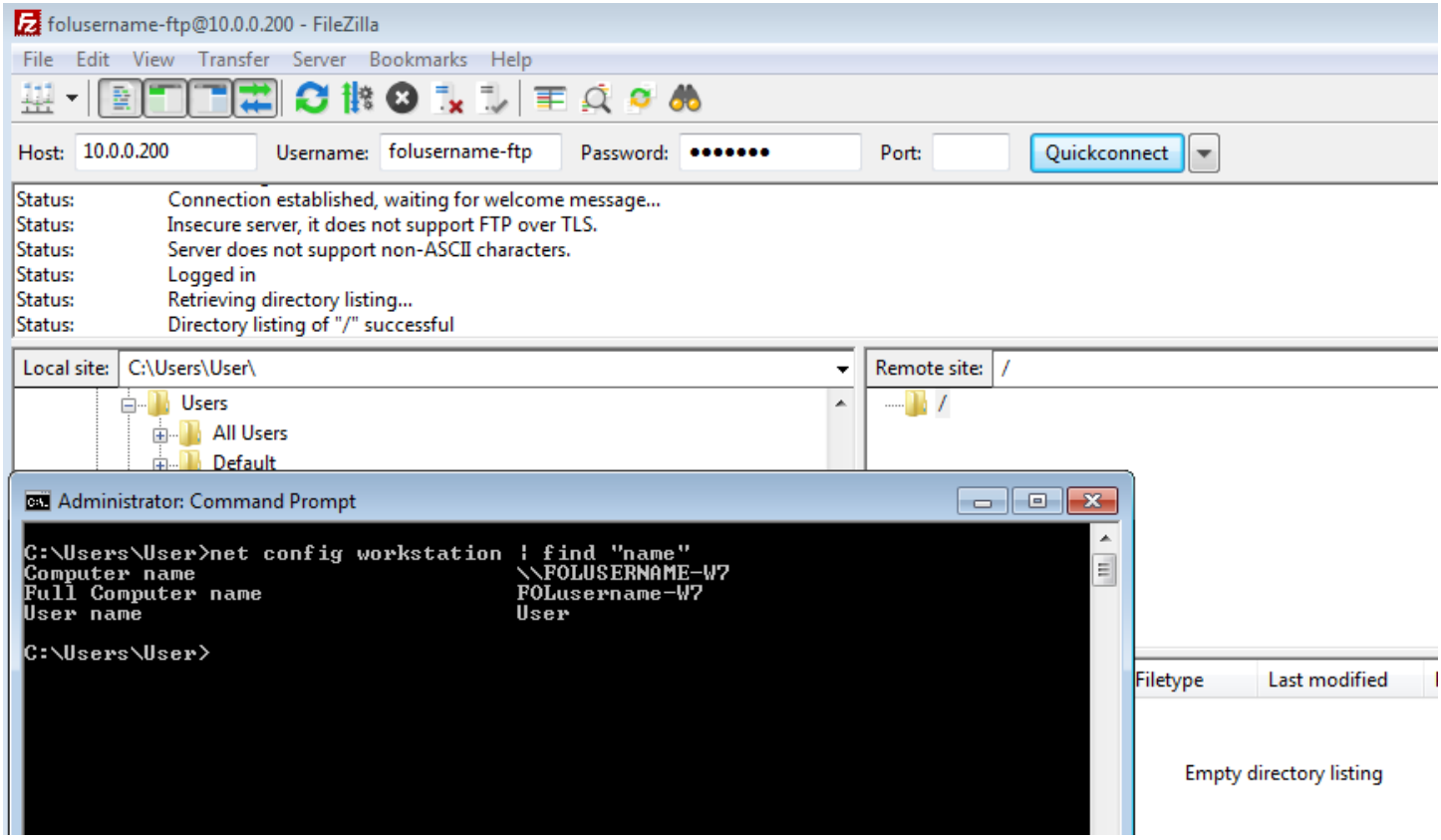
Host: **10.0.0.200**
Username: **FOLusername-ftp**
Password: **Ubuntu1**

Because we haven't configured the directory properly, the **FOLusername-ftp** user will be able to connect to the server but will not be connected to the appropriate directory.

We will add a user_sub_token in order to ensure the user has access to the appropriate directory in the next step

At this point you should receive a notice that you have **Logged in** and have an empty directory listing in ***/***

Include the output of **net config workstation | find "name"** using the CMD prompt as shown below:



Slide 05:

- Take a screenshot showing all of the above and place it into slide 05

Edit the /etc/vsftpd.conf file to include the following lines:

```
user_sub_token=$USER
local_root=/var/www/html/$USER/files
```

Now Restart vsftpd

```
sudo systemctl restart vsftpd
```

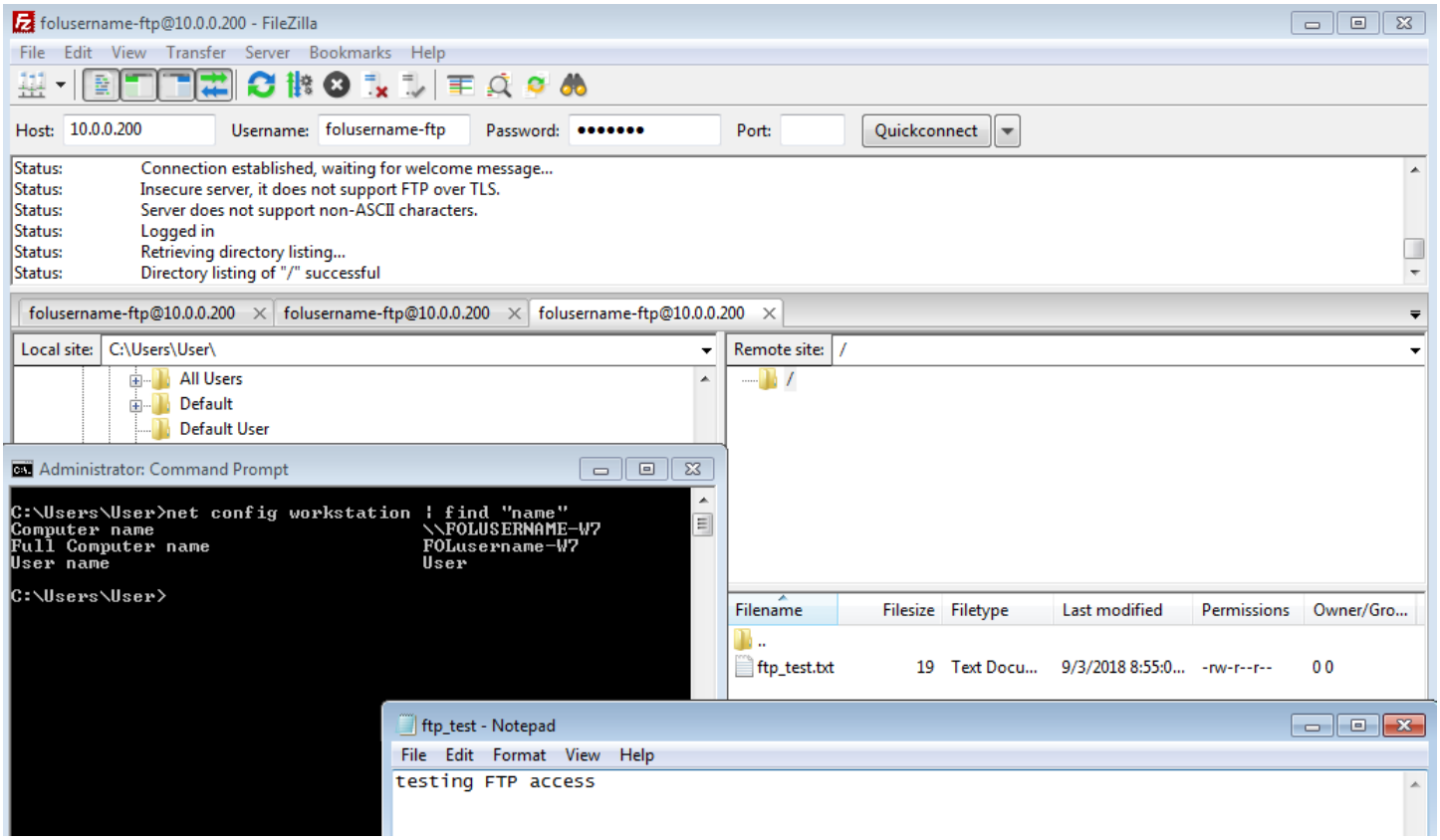
Log in again using FOLusername-ftp with FileZilla on your Windows 10 VM

Host: **10.0.0.200**
Username: **FOLusername-ftp**
Password: **Ubuntu1**

At this point you should receive a notice that you have **Logged in** and be able to see the ftp_test.txt file in the directory listing

Right click on the ftp_text.txt file and select **View/Edit**

Include the output of **net config workstation | find "name"** using the CMD prompt as shown below:



Slide 06:

- Take a screenshot showing all of the above and place it into slide 06

*** Take a snapshot of all the VMs named **After Lab 02** ***