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**Course:** CEF333 – HARDWARE AND SOFTWARE MAINTENANCE

**Assignment**

1. **How to find the MAC address on your computer? Give your MAC address and IP address**

To find your MAC address on windows, do the following:

- Right-click on the **Start button** and select **Command Prompt** from the menu

- Type in **ipconfig /all** and press **Enter**. Your network configurations will display

- Scroll down to your network adapter and look for the values next to **Physical Address**, which is your MAC address

My MAC address is **00-45-E2-26-8F-DB**

My IP address is **169.254.169.217**

1. **How to know the technical characteristics of your computer? Give the technical characteristics of your computer**

To know the technical characteristics of your computer running windows, do the following steps:

- On your keyboard, Press **Windows key + R key**, a small popup menu should appear

- Type in **dxdiag** and press **Enter**

- A window should open containing the technical characteristics of your computer

The technical characteristics of my computer are:

- BIOS: **DKCN51WW**

- System Type: **64-bit operating system, x64-based processor**

- Processor: **Intel(R) Core(TM) i3-1005G1 CPU @ 1.20GHz (4 CPUs), ~1.2GHz**

- Memory: **4096MB RAM**

- Page file: **4612MB used, 4841MB available**

- DirectX Version: **DirectX 12**

- Display Mode: **1366 x 768 (32 bit) (60Hz)**

- Display Memory (VRAM): **128MB**

- Shared Memory: **1945MB**

1. **How to reset your PC BIOS/CMOS?**

To reset your CMOS by reseating the CMOS Battery, follow the steps below:

- Turn off your computer.

- Disconnect your computer from the wall outlet.

- Press the power button multiple times to clear any capacitors.

- Find the CMOS battery on your motherboard. This is most commonly a CR2032 battery, a coin-sized battery as shown below. You’ll find it near the PCI Express slots on most motherboards.

- Gently remove the CMOS battery. If it is secured by a metal clip, slide the battery out from under the clip. Take care not to bend the clip.

- Wait a few minutes, and then replace the CMOS battery.

- Reboot your computer.

1. **How to scan and fix hard drives problem on your terminal?**

To Scan and Fix Hard Drives problems in windows 10 using the command line, follow the steps below

- Right-click the **Start menu** and select, **Windows PowerShell (Admin)**.

- The next screen to appear is a User Account Control (UAC) window which will ask for permission to launch the Windows Command Processor and let it make changes to the PC. Select **Yes**.

- Now, type **chkdsk c: /x /r**, to dismount the drive, scan it for errors, and repair it.

- The **/r** parameter performs the same tasks as **/f**, which fixes errors on the disk, and also tells **CHKDSK** to locate any bad sectors and recover any readable information it finds there. The **/x** parameter tells **CHKDSK** to dismount the drive (take it offline from the operating system) before the process begins.

- If you’re having issues with running the above command because the drive is in use by another process, that because you’re trying to scan your primary drive (boot drive), when it’s being used by the OS. Reboot into recovery mode to perform the scan or create a Windows Recovery Tool, to perform the process.

1. **How to create a bootable USB flash drive from your terminal? Describe how to install Windows and Linux in dual boot on your machine.**

To create a bootable flash in windows using just the command line, follow the steps below:

- Insert your USB flash drive into your computer.

- Open Start Menu and type **CMD** to find Command Prompt. Right click on **Command Prompt** and click **Run as Administrator**.

Alternatively, you can also open the Command Prompt by pressing **Windows + R** then, Type **CMD** then, Press **Enter**.

- Once the Command Prompt window appears, type **diskpart** and hit **enter**. Wait until the diskpart utility starts running.

- In the new diskpart window, type **list disk** and hit **enter**. It will show you all active disks on your computer.

- Most probably, you will see two Disk types.

Disk 0 is for the hard drive and,

Disk 1 is for your USB Flash Drive with its total capacity.

- Since we are going to work on to create bootable USB using CMD, we will work with Disk 1.

- Type **select disk 1** in the same window and hit Enter. You will get a message ‘Disk 1 is now the selected disk’. That means, any further operation that you do will affect your disk 1 directly.

- Type **clean** and hit Enter to remove all of the data in the USB drive. Clean command will format your bootable drive. You will get a message like ‘Diskpart succeeded in cleaning the disk’.

- Type **create partition primary** and hit **Enter**. You will get a message like Diskpart succeeded in creating the specified partition.

- Type **select partition 1** and hit **Enter**. It will choose partition 1 for setting up it as an active partition.

- Next, type **active** and hit **Enter**. It will activate the current partition.

- Now, type **format fs=ntfs quick** and hit **Enter**. This command will format your current partition as NTFS file system quickly.

- Type **exit** and hit **Enter**. Exit command will close the Diskpart program but it doesn’t close the CMD window.

- Go to Microsoft official site and download the windows 10 ISO file

Let us assume that the USB drive is the G: drive and the windows 10 ISO file is in a DVD drive has been assigned the letter E. And, you also have inserted a DVD inside the DVD drive from where you want to copy the data to create a bootable USB drive via CMD.

- Just type **E:** then hit **Enter**, and then the active directory is changed to E.

- Type **cd boot** and hit **Enter**. Now the active directory is changed to E:\boot>

- Type **bootsect /nt60 g:** and hit **Enter**. It will create the boot sector on G: drive (USB Flash drive).

- Type **exit** and hit **Enter** to close the Command Prompt.

- Type **copy e:\\*.\* /s/e/f g:** and then press **Enter**. Wait until all the files in the DVD installer are copied onto the flash drive. Please double check the drive letter of your USB and DVD. Here, here e is the drive letter of the DVD drive that holds the Windows ISO file, g is the drive letter that you assigned to the external USB Stick.

So, this is how you can make a bootable USB drive without software which is ready to be used for installing Windows 10.

To dual boot Windows and Linux on a computer running Windows, follow the steps below:

- Create a live USB or disk

- Make a new partition for the Linux distribution (advisable to be at least 30GB)

- Turn off computer

- Boot in to live USB

- Start the installation

- Prepare the partition

- This is the most important part of the whole installation. In the Installation Type window, choose Something Else

- Create root, swap and home

- Allocate at least 15GB to root

- Size of swap is same as your RAM

- Allocate rest of space to home

- Follow the trivial instructions

At this point, the Linux distribution should be installed along side windows.

1. **Write a report of your work experience during the lab evaluation**

**A Report on My Work Experience in the Lab Evaluation**

The lab evaluation was divided in to two parts; Software and Hardware. The hardware part was carried out first, I was instructed by the lecturer to disassemble the system unit of a computer in a timeframe of 5 minutes, which I successfully did. For the software part, I was instructed by the lecturer to create an administrator account with specific username and password details and then, to turn on windows defender in the created account on a computer running Windows 7 which I successfully executed.

For the hardware exercise, I was given an already disconnected and isolated system unit.

Below are the steps I did to disassemble the system unit:

* The screw on the back of the system unit was removed and the cover removed.
* The disk drive and hard disk drive were removed by unscrewing some screws and removing the front case of the system unit.
* The RAM modules were removed from their sockets by pushing the tabs, located at the end of the socket, down and away from the socket.
* The Power supply was removed by unscrewing some screws and unplugging the power cables connected to the motherboard.
* The heat sink was removed.
* The CPU fan and the Cabinet fan were removed.
* Lastly the motherboard was removed.

All parts were safely and orderly placed on a flat surface to avoid damage.

For the software exercise, I was given a computer running the Windows 7 Operating System, which was powered on and logged in to an administrator account.

Below are the steps I did to create an administrator account with specific username and password:

* **Control Panel** was opened from the **Start menu**.
* Navigated to **User Accounts**.
* Clicked **Manage another account**.
* Clicked **Add**.
* The desired username, domain and password were entered.
* Then, the **Administrator** option was selected.
* Clicked **Finish**

Below are the steps I did to log in to the created account:

* Clicked **Start**.
* In the **Start menu**, next to the Shut down button, clicked the arrow icon that points to the right.
* Selected **Switch user** from the menu.
* Entered username and password and pressed enter.

Below are the steps I did to turn on windows defender:

* Clicked **Start**.
* In the **Start menu**, searched **Computer Management** and opened it
* On the left pane, expanded the **Services and applications** option
* Double clicked **Services**
* On the right pane, Scrolled down to **Windows defender**, right clicked on it and selected **Start**.

In Conclusion, all the exercises were successfully carried out and on time.