

# Assignment 1

*by* Volodymyr Kovalenko

---

|                |                                                                             |                 |      |
|----------------|-----------------------------------------------------------------------------|-----------------|------|
| FILE           | 24858_VOLODYMYR_KOVALENKO_ASSIGNMENT_1_331893_1952038599.D<br>OCX (852.61K) |                 |      |
| TIME SUBMITTED | 24-MAR-2021 09:32AM (UTC+0000)                                              | WORD COUNT      | 1901 |
| SUBMISSION ID  | 147766369                                                                   | CHARACTER COUNT | 9588 |

## Contents

|                                                    |    |
|----------------------------------------------------|----|
| Introduction.....                                  | 1  |
| Operating system:.....                             | 1  |
| CLI command in Windows .....                       | 2  |
| CLI command in Linux.....                          | 5  |
| Batch scripts in a Windows.....                    | 7  |
| Bash scripts in a Linux OS.....                    | 9  |
| Conclusion.....                                    | 10 |
| Reference table: .....                             | 11 |
| Operating systems .....                            | 11 |
| CLI of Windows.....                                | 11 |
| Tips for the windows commands - Aakansha Jain..... | 11 |
| CLI of Linux .....                                 | 11 |
| Batch for Windows .....                            | 12 |
| Bash for Linux.....                                | 12 |

Sub date: - 24/03/21

## **Computer Architecture and Operating Systems – ACCA4022**

### Introduction

In this assignment I will be talking about the operating system and key and common functions of the operating system. On top of that, I will be talking about the utility of CLI commands that the operating system can bring and the use of the CLI commands in the Linux as an example of a different operating system. Also, the Batch scripts that are provided by the operating system and the Bash scripts of Linux, explaining the utility and different uses.

### Operating system:

When the computer is getting turned on, the computer will launch the current Operating system from the HDD and then with the help of CPU and memory, it will start displaying the interface on the screen of the monitor. On the interface that has been provided by the operating system will be different type of icons, such as Windows Explorer and

others and when the person double click on them, they will do different actions such as opening the internet browser and others.

Moreover, the operating system allows the person to collaborate with other compilers and assemblers. The good example of this would be the use of the email, like outlook, Gmail, and others, that allows to text and send different attached files.

Also, the Operating system has the function to track the following activities for device management. As it basically keeps attracts of all devices, in check if something crashes, the component overheats or any other problem and then based on the problem, the operating system will give out the error or completely shut down the computer for the safety purposes.

Also operating system, uses the resources from different components of the computer, such as GPU, CPU, memory and other, regulating the needed number of resources to maintain the stable progress of using different programs while being in the interface. With more utilities used, the more power and resources operating system will demand. For example, when the person is in chrome, the more tabs he will be opening, the more operating system will take resources, similarly to it, the more tabs the person will close the less operating system will be taking resources, as that will be wasting them and putting more strain on the components.

### CLI command in Windows

CLI commands is also another utility that is being provided by the operating system, that basically allows you to execute different commands, that would perform different actions on the system, such as creating the files, erasing the storage on the HDD, finding the IP addresses and plenty of other's utilities that would be impossible to use otherwise. Also, you can access the booting sequence from the start before the interface is even launch it. As shown in the screenshot below from there you can also access the CLI command from booting the computer.

```

Microsoft Windows [Version 10.0.17134.885]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Dave>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection* 3:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::a186:c0cf:ea:e1eeX20
    IPv4 Address. . . . . : 192.168.1.49
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1

Wireless LAN adapter Wi-Fi:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
1100 x 551

```

When you login into the computer, by typing the command “command prompt” you can get the same version of this, the only time when you should use the command prompt through the booting, is when the person is having troubles with the interface of the computer when he’s not able to login as an example.

When the person does login into the interface, he can try out different commands such as “whoami” which will tell who the owner of the computer is, in my case it would be “Vlad” as shown in the screenshot below.

```

Microsoft Windows [Version 10.0.18362.175]
(c) WhiteDeath - 2019 -. All rights reserved.

Report structure & tasks:
C:\Users\Vlad>whoami
vlads-pc\vlad
C:\Users\Vlad>

```

Then there is also the command which is “dir” that allows to view the list of contents in the current system as it will be shown below

```

08/03/2021 21:04 <DIR>
08/03/2021 21:04 <DIR>
18/01/2021 18:21 174 .packettracer
13/02/2021 20:18 <DIR> .prefs
17/03/2021 21:49 <DIR> .VirtualBox
18/09/2020 11:35 <DIR> .ansel
30/10/2020 11:58 <DIR> Cisco Packet Tracer 7.3.1
12/03/2021 14:21 10 images/visuals
28/01/2021 23:39 <DIR> Documents
19/03/2021 06:15 <DIR> Downloads
21/09/2020 21:48 <DIR> Favorites
23/12/2019 18:27 <DIR> Links
27/11/2020 13:38 <DIR> Music
08/07/2020 03:09 <DIR> OneDrive
02/12/2020 08:59 <DIR> Pictures
25/01/2021 12:10 <DIR> PycharmProjects
10/12/2020 01:20 <DIR> Saved Games
12/02/2021 15:48 <DIR> scenarios
25/12/2020 04:33 <DIR> Searches
18/03/2021 15:50 <DIR> Videos
30/10/2020 10:22 <DIR> VirtualBox VMS
20 Dir(s) 440,674,291,712 bytes free

```

This is my list of contents that shows the utilities that I can use in my computer, like downloads where I can store everything I have downloaded from the internet or cisco packet tracer which is a software that is used for all sorts of networking.

Finally, I will talk about another “SFC” which scan file confirmation, and as the name implies it allows to scan for the different files around the computer, to find out some corrupted or necessary software to update as an example with different command as shown in the screenshot below.

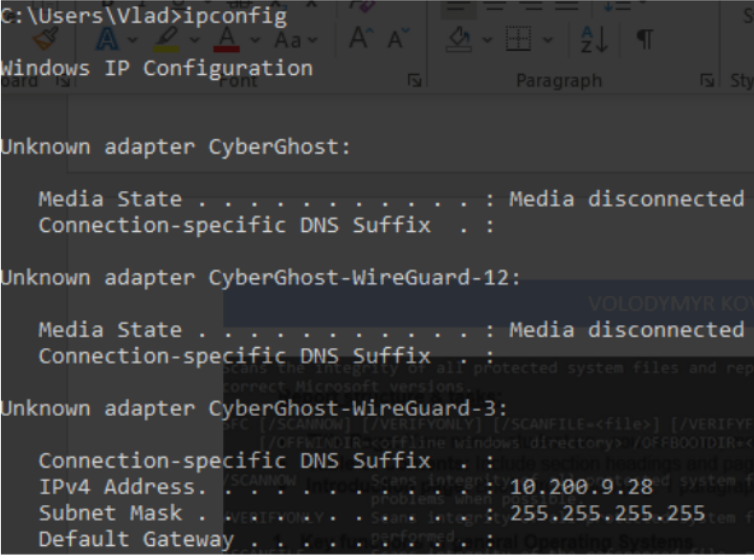
```

Scans the integrity of all protected system files and replaces incorrect versions with
correct Microsoft versions.
Report structure & tasks:
SFC [/SCANNOW] [/VERIFYONLY] [/SCANFILE=<file>] [/VERIFYFILE=<file>]
[/OFFWINDIR=<offline windows directory>] [/OFFBOOTDIR=<offline boot directory>] [/OFFLOGFILE=<log file path>]
• Table of Contents: Include section headings and page numbers.
/SCANNOW Scans integrity of all protected system files and repairs files with
problems when possible.
/VERIFYONLY Scans integrity of all protected system files. No repair operation is
performed.
1. Key functions of general Operating Systems
/SCANFILE Scans integrity of the referenced file, repairs file if problems are
identified. Specify full path <file>.
/VERIFYFILE Verifies the integrity of the file with full path <file>. No repair
operation is performed.
/OFFBOOTDIR For offline repair, specify the location of the offline boot directory
/OFFWINDIR For offline repair, specify the location of the offline windows directory
/OFFLOGFILE For offline repair, optionally enable logging by specifying a log file path
e.g.
3. Use of CLI commands in a Linux OS.
Scans the integrity of CLI commands using a Linux OS, with screenshots and accompanying
na sfc /VERIFYFILE=c:\windows\system32\kernel32.dll
sfc /SCANFILE=d:\windows\system32\kernel32.dll /OFFBOOTDIR=d:\ /OFFWINDIR=d:\windows
4. sfc /SCANFILE=d:\windows\system32\kernel32.dll /OFFBOOTDIR=d:\ /OFFWINDIR=d:\windows /OFFLOGFILE=c:\
sfc /VERIFYONLY
Document the use of batch scripts using a Windows / Mac OS, with screenshots and

```

### CLI command in Linux

Just like on the windows, Linux has its own operating system with its own CLI command but to avoid confusion among the different operating systems, Linux is a little bit different, compare to like windows or mac. For example, if the person wants to configure or establish his IP address, in windows you would type in "Ipconfig" and the result will be shown below:



```

C:\Users\Vlad>ipconfig

Windows IP Configuration

Unknown adapter CyberGhost:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Unknown adapter CyberGhost-WireGuard-12:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Unknown adapter CyberGhost-WireGuard-3:

    Connection-specific DNS Suffix  . :
    IPv4 Address. . . . . : 10.200.9.28
    Subnet Mask . . . . . : 255.255.255.255
    Default Gateway . . . . . :
  
```

Meanwhile, in the Linux it is "Ifconfig", the reason why they changed it, is to avoid the confusion, also ipconfig command displays all the currently connected network interfaces whether they are active or not. On the other hand, the ifconfig command displays only the enabled network interfaces that are connected to the system. As will be shown in the screenshot below:

```

cisco@ubuntu:~$ IPconfig
IPconfig: command not found
cisco@ubuntu:~$ ifconfig
enp0s3    Link encap:Ethernet  HWaddr 08:00:27:22:97:95
          inet addr:10.0.2.15  Bcast:10.0.2.255  Mask:255.255.255.0
          inet6 addr: fe80::ca79:647d:bf1a:21e/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:25614 errors:0 dropped:0 overruns:0 frame:0
          TX packets:12481 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:20480843 (20.4 MB)  TX bytes:1401019 (1.4 MB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:848 errors:0 dropped:0 overruns:0 frame:0
          TX packets:848 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:79939 (79.9 KB)  TX bytes:79939 (79.9 KB)

```

Another good example of the CLI command use in Linux would be “Help” this command allows to see the common commands that people would find interesting and that would help with certain actions, as will be shown in the screenshot below.

```

job_spec [&]
(( expression ))
. filename [arguments]
:
[ arg... ]
[[ expression ]]
alias [-p] [name[=value] ... ]
bg [job_spec ...]
bind [-lpsvPSVX] [-m keymap] [-f file>
break [n]
builtin [shell-builtin [arg ...]]
caller [expr]
case WORD in [PATTERN [| PATTERN]...)>
cd [-L|[-P [-e]] [-@]] [dir]
command [-pVv] command [arg ...]
compgen [-abcfgjksuv] [-o option] >
complete [-abcfgjksuv] [-pr] [-DE] >
comptop [-o|+o option] [-DE] [name ..>
continue [n]
coproc [NAME] command [redirections]
declare [-aAfFgIlNrtux] [-p] [name[=v>
dirs [-clpv] [+N] [-N]
disown [-h] [-ar] [jobspec ...]
echo [-neE] [arg ...]
history [-c] [-d offset] [n] or hist>
if COMMANDS; then COMMANDS; [ elif C>
jobs [-lnprs] [jobspec ...] or jobs >
kill [-s sigspec | -n signum | -sigs>
let arg [arg ...]
local [option] name[=value] ...
logout [n]
mapfile [-n count] [-O origin] [-s c>
popd [-n] [+N | -N]
printf [-v var] format [arguments]
pushd [-n] [+N | -N | dir]
pwd [-LP]
read [-ers] [-a array] [-d delim] [->
readarray [-n count] [-O origin] [-s>
readonly [-aAf] [name[=value] ...] o>
return [n]
select NAME [in WORDS ... ;] do COMM>
set [-abefhkmnptuvxBCHP] [-o option->
shift [n]
shopt [-pqsu] [-o] [optname ...]
source filename [arguments]
suspend [-f]
test [expr]
time [-p] pipeline

```

Based on this screenshot the person can see different commands that the person can type in, such as “exit” that would allow to return from the admin access back to the guest access.

Lastly, what I would like to talk about would be “Sudo su” which is the command that sets the user as an admin, originally when the user launches the command prompt, he will start as the guest user, which means that he will be restricted to certain commands and actions, and “Sudo su” will put the user as a root user, which is basically makes the user as the admin, as it will be shown in screenshot below:

```
cisco@ubuntu:~$ sudo su
[sudo] password for cisco: █
```

As shown in the screenshot above, when you try to enter “Sudo su” as an admin, for the security purposes Linux will ask the password for the interface, and after the person has logged into the system, he will be a root(admin) user with way more control and power. As an example, the use of “ip” which would be unavailable in guest mode now is possible, as shown in the screenshot below:

```
root@ubuntu:/home/cisco# ip
Usage: ip [ OPTIONS ] OBJECT { COMMAND | help }
       ip [ -force ] -batch filename
where  OBJECT := { link | address | addrlabel | route | rule | neighbor | ntable
|
               tunnel | tuntap | maddress | mroute | mrule | monitor | xfrm
|
               netns | l2tp | fou | tcp_metrics | token | netconf }
       OPTIONS := { -V[ersion] | -s[tatistics] | -d[etails] | -r[esolve] |
                   -h[uman-readable] | -iec |
                   -f[amily] { inet | inet6 | ipx | dnet | mpls | bridge | link
} |
                   -4 | -6 | -I | -D | -B | -0 |
                   -l[oops] { maximum-addr-flush-attempts } | -br[ief] |
                   -o[neline] | -t[imestamp] | -ts[hort] | -b[atch] [filename]
|
                   -rc[vbuf] [size] | -n[etns] name | -a[ll] | -c[olor]}
root@ubuntu:/home/cisco#
```

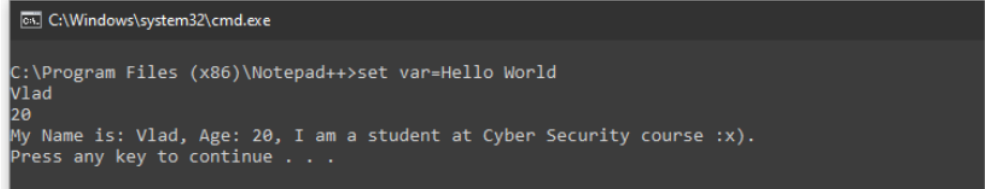
### Batch scripts in a Windows

The use of the batch scripts lies in, with helping the programs to load quicker and easier, for example batch scripting allows to put pressure of the operating system by providing different series of calculations and diagnostics at the same time, or any multiple command that might take resources from the operating system, to run something else. The way that people program and execute different batch scripts is by using

something like Notepad++ as I will show in the example below by executing the most common and helpful commands.

In the screenshot below, I have used a simple command “set” and “echo” the command set allows the Notepad to read the term that I have created and then with the help of “echo” I can display it in the command prompt, but it is only a variable, so in the command prompt the person will not be able to do anything with these variables.

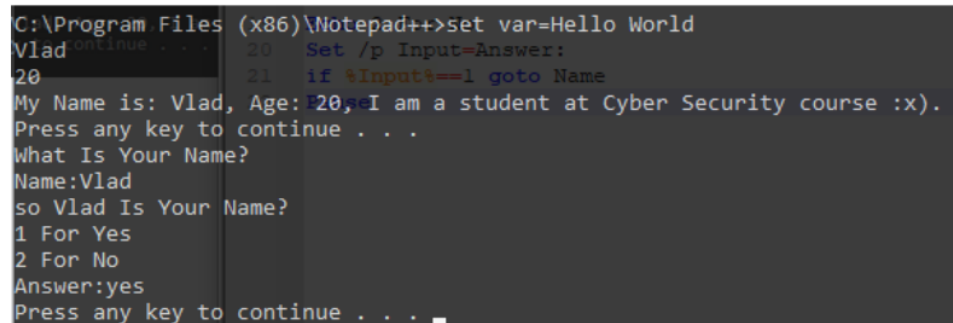
```
@echo off
set name=Vlad
set /A age=20
echo %name%
echo %age%
set info=My Name is: %name%, Age: %age%, I am a student at Cyber Security course :x).
echo %info%
pause
```



```
C:\Windows\system32\cmd.exe

C:\Program Files (x86)\Notepad++>set var=Hello World
Vlad
20
My Name is: Vlad, Age: 20, I am a student at Cyber Security course :x).
Press any key to continue . . .
```

Another use of the code in which the person can use, is to set different variables or set a Boolean which would determine a different statement which can be rejected or accepted using the “if” statement, like will be shown in the screen shot below:



```
C:\Program Files (x86)\Notepad++>set var=Hello World
Vlad
20
My Name is: Vlad, Age: 20, I am a student at Cyber Security course :x).
Press any key to continue . . .
What Is Your Name?
Name:Vlad
so Vlad Is Your Name?
1 For Yes
2 For No
Answer:yes
Press any key to continue . . .
```

This can be used by the admin, when the person will be registering, as a guest, this can be used to register the person and after that the person

can carry on doing his stuff, if the person types his name wrong and when been asked for the confirmation it would just shut down and restart the progress again.

### Bash scripts in a Linux OS

It is a bit more complicated to run the Batch/bash scripts on the interface and operating system like Linux, first when logging in and opening the command panel in Linux the person needs to login into the admin/root in the command panel, since Linux does not have Bash is not installed originally or might not be available for anyone. Also, the reason why, the person needs to login into the root, is since the guest has no rights to download the software and other. The example, will be shown in the screenshot below:

```
root@ubuntu:/home/cisco# apt-get install git
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  linux-headers-4.4.0-21 linux-headers-4.4.0-21-generic linux-headers-4.4.0-24
  linux-headers-4.4.0-24-generic linux-image-4.4.0-21-generic
  linux-image-4.4.0-24-generic linux-image-extra-4.4.0-21-generic
  linux-image-extra-4.4.0-24-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  git-man liberror-perl
Suggested packages:
  git-daemon-run | git-daemon-sysvinit git-doc git-el git-email git-gui gitk
  gitweb git-arch git-cvs git-mediawiki git-svn
The following NEW packages will be installed:
  git git-man liberror-perl
0 upgraded, 3 newly installed, 0 to remove and 358 not upgraded.
Need to get 3,939 kB of archives.
After this operation, 25.6 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu xenial/main amd64 liberror-perl all 0.17-1.2 [19.6 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu xenial-updates/main amd64 git-man all 1:2.7.4-0ubuntu1.10 [737 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu xenial-updates/main amd64 git amd64 1:2.7.4-0ubuntu1.10 [3,183 kB]
Fetched 3,939 kB in 6s (598 kB/s)
Selecting previously unselected package liberror-perl.
(Reading database ... 279732 files and directories currently installed.)
Preparing to unpack .../liberror-perl_0.17-1.2_all.deb ...
Unpacking liberror-perl (0.17-1.2) ...
Selecting previously unselected package git-man.
Preparing to unpack .../git-man_1:2.7.4-0ubuntu1.10_all.deb ...
Unpacking git-man (1:2.7.4-0ubuntu1.10) ...
Selecting previously unselected package git.
Preparing to unpack .../git_1:2.7.4-0ubuntu1.10_amd64.deb ...
Unpacking git (1:2.7.4-0ubuntu1.10) ...
Processing triggers for man-db (2.7.5-1) ...
/usr/bin/mdb: can't write to /var/cache/man/5790: No space left on device
/usr/bin/mdb: can't create index cache /var/cache/man/5790: No space left on device
Setting up liberror-perl (0.17-1.2) ...
Setting up git-man (1:2.7.4-0ubuntu1.10) ...
Setting up git (1:2.7.4-0ubuntu1.10) ...
root@ubuntu:/home/cisco# ! /bin/bash
```

After the installation, the person will still be on the root page and the access for guests is still blocked. But with this installation, you can now command like the Bat on the windows, but instead you will use the terminal to execute the commands. Like, in the example shown below:

```
root@ubuntu:/home/cisco# echo "Hello World"
Hello World
```

The reason why this command is being used often is for testing, this command is simply executable, and if it does give it the result, then the patch that has been installed is seems to be working.

Another example, I decided to use would be a random number generator and setting one of the numbers as primarily number. As will be shown in the screenshot below:

```
root@ubuntu:/home/cisco# read -p "Guess the number between 1 & 10?:" number
Guess the number between 1 & 10?:3
root@ubuntu:/home/cisco# if [$number -eq 7];
> then
> echo "Congratulations, you guessed the Magic number."
> else
> echo "$number is not the Magic number."
> fi
[3: command not found
3 is not the Magic number.
root@ubuntu:/home/cisco#
```

Finally, I would like to talk about setting different users and their passwords, for the guest users and other, this is helpful, because in business or any other circumstances the admin would not want to give administration access to the random guests and workers. As usual an example will be shown below:

```
root@ubuntu:/home/cisco# read -p "Username" vUserN
Username Doshne
root@ubuntu:/home/cisco# read -sp "Password" vPassW
Passwordroot@ubuntu:/home/cisco# echo "Your Username is" $vUserN
Your Username is Doshne
root@ubuntu:/home/cisco# echo "Your Password is" $vPassW
Your Password is Hello
root@ubuntu:/home/cisco#
```

As shown in the screenshot above the User and the Password, and then when it was set, I used the command "Echo" to display the username and the password and remember it, if needed.

## Conclusion

Overall, the Operating System of the Windows and Linux are very similar to each other. But Linux on the other hand is very different, for example the use of batch and bash between different operating system is different to each other. In windows the person can use Notepad++ and the use of the batch in command prompt is unnecessary since the

software does, meanwhile in the Linux you have install the patch with bash and then you can program like I have shown above, in the command prompt.

#### Reference table:

##### Operating systems

Functions of operating system -

<https://www.geeksforgeeks.org/functions-of-operating-system/> - 23 Dec 2020

Role of operating system - Priya Pedamkar

<https://www.educba.com/functions-of-operating-system/> - 2020

Mac functions - Jonathan Strickland

<https://computer.howstuffworks.com/mac/mac-os-x1.htm#:~:text=It's%20the%20job%20of%20the,storage%20access%2C%20among%20other%20things> – 2020

The way the operating system works -

<https://homepage.cs.uri.edu/faculty/wolfe/book/Readings/Reading07.htm> - 19 October 2019

##### CLI of Windows

IP addressing – Austin -

<https://www.groovypost.com/howto/microsoft/windows-7/find-your-local-ip-address-windows-7-cmd/> - July 25, 2019.

Tips for the windows commands - Aakansha Jain

<https://medium.com/@jainaakansha28/20-cmd-commands-all-windows-users-should-know-2addbea24a3> - Jul 3, 2020

##### CLI of Linux

Tips for Linux - Aaron Kili <https://www.tecmint.com/cool-linux-commandline-tools-for-terminal/> - February 1, 2019

Tricks for Linux - David Both <https://www.redhat.com/sysadmin/linux-guides-2020> - December 28, 2020

### Batch for Windows

Help with Batch scripts

<https://moodle.uwtsd.ac.uk/mod/resource/view.php?id=338520> – 2021

Tips for batch scripting - CHRIS

HOFFMAN <https://www.howtogeek.com/263177/how-to-write-a-batch-script-on-windows/> - JUL 5, 2017

### Bash for Linux

Tips for bash in Linux - Fahmida Yesmin -

[https://linuxhint.com/30\\_bash\\_script\\_examples/](https://linuxhint.com/30_bash_script_examples/) - 2018

Guide for bashing in Linux

<https://moodle.uwtsd.ac.uk/mod/resource/view.php?id=340587> - 2021

# Assignment 1

GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

Instructor

48/100

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

GRADING FORM: UWTSD GRADING FORM

VOLODYMYR KOVALENKO

48

## 1. RESEARCH LITERATURE

*Extent of research and/or own reading, selection of credible sources, application of appropriate referencing conventions.*



- No use of citations. + Reference list. – could be formatted using IEEE standard. Note: 1/2 books and/or academic papers could be included in the reference list for additional marks. Tip: Use citations to enhance the grade for this category.

**5.5**

## 2. KNOWLEDGE AND UNDERSTANDING

*Extent of knowledge and understanding of concepts and underlying principles associated with the discipline.*



Key functions: + Good overview of key OS functions documented. – could be extended and enhanced with citations and some additional considerations such as process management, memory management and system security. Bat Commands: + Good use of some relevant commands with accompanying narration that demonstrates a sound understanding of the commands used. – Some additional commands could be used to document further scope and understanding of the commands available. Bash Commands: + Good use of some relevant commands with accompanying narration that demonstrates a sound understanding of the commands used. – Some additional commands could be used to document further scope and understanding of the commands available. Bat Scripts: + Some good use and understanding of

**11.5**

relevant scripts documented. - could be extended with accompanying narration to demonstrate additional knowledge of the core syntax of the language (see relevant slide deck on Moodle). Bash Scripts: + Some good use and understandi

### 3. ANALYSIS

*Analysis, evaluation and synthesis; logic, argument and judgement; analytical reflection; organisation of ideas and evidence.*



Evidence of some good analysis and understanding of OS functions and the relevant languages is clearly documented. - could be extended to include additional command and script areas as mentioned above. + Conclusion. Note: Bash is usually default and standard on most if not all Linux Distro.

**5.5**

### 4. PRACTICAL APPLICATION

*Deployment of methods, materials, tools and techniques; application of concepts; formulation of innovative and creative solutions to solve problems.*



1. Bat Commands: + Good use of relevant commands. - could be extended to include some additional commands. 2. Bash Commands: + Good use of relevant commands. - could be extended to include some additional commands. 3. Bat Scripts: + Some good use of relevant scripts to demonstrate knowledge of the core syntax. - could be extended to demonstrate some additional knowledge of the core syntax (see relevant Moodle slides). 4. Bash Scripts: + Some good use of

**20**

relevant scripts to demonstrate knowledge of the core syntax. - could be extended to demonstrate some additional knowledge of the core syntax (see relevant Moodle slides).

## 5. PROFESSIONAL PRACTICE

*Attributes in professional practice: individual and collaborative working; deployment of appropriate media; presentation and organisation.*



- No title page. - Table of contents should be on a separate page to the main body. + Good report structure and presentation. - Report sections could be numbered. - Appendix: Activity 1 answer could be included. - Some minor grammar errors in places.

# 5.5