

Rhys_Evans_Assignment_1

by Rhys Ieuan Evans

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Assignment 1

Title Page

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Table of Contents

<u>Introduction</u>	<u>Page 2</u>
<u>Key Functions of General Operating Systems</u>	<u>Page 3</u>
<u>Different types of operating systems used today</u>	<u>Page 5</u>
<u>Use of CLI commands in a Windows</u>	<u>Page 7</u>
<u>Use of CLI commands in a Linux</u>	<u>Page 12</u>
<u>Use of batch scripts in a Windows</u>	<u>Page 18</u>
<u>Use of batch scripts in a Linux</u>	<u>Page 27</u>
<u>Conclusion</u>	<u>Page 31</u>
<u>Reference List</u>	<u>Page 32</u>

Introduction

This assignment is going to partially focus on the different Operating systems that is used today. It's going to mainly focus on CLI commands and batch scripting in both Windows and Linux. It's important to be aware of the different Operating Systems that's used today because Operating systems are the most important software that runs on a computer. Knowing how to use CLI commands is an advantage because it allows for greater control of an OS or application and faster management of many operating systems. It also allows for scripts to be stored in order to automate regular tasks. Finally, basic command line interface knowledge can help with troubleshooting such as networking issues. Batch scripting is important because they are always suitable for tasks where similar steps need to be repeated in sequence. I will approach this assignment by highlighting the key functions of the general Operating Systems. I will also document my use of CLI commands in Windows and Linux by screenshotting the code and briefly describing it. Finally, I will document the use of batch scripting in Windows and Linux by screenshotting the code and briefly describing it.

Key functions of General Operating Systems

Bootting up the computer

Bootting up the computer is the process of the computer's operating system starting up the computer. It checks the computer and makes sure it's ready and working.

Memory management

The operating system manages the computer's memory. Without the operating system, the data would get mixed together and the system wouldn't be able to work properly.

Loading and execution

The operating system oversees running applications and executes and cancels processes. The operating system allows for programs to be loaded and executed easier. Without the operating system, the system would take longer to load everything.

Data Security

Obviously, data is an important part of a computer system and the user's life. The operating system protects the data stored from any illegal use, modifications or deletion by providing user accounts and passwords.

Disk management

Operating systems manage the stored files, folders and directories in a proper way by creating a file system . Without a operating system, the folders and files would unorganised and cluttered.

Process Management

The operating system oversees process management. It organises tasks that need doing in order of importance, so that the most important can be completed first. Without an operating system, the tasks would be unorganised, or the system would try and complete them all at the same time.

Device Controlling

The operating system controls all devices connected to the computer. The hardware attached to the computer are operated with the support of miniature software called device drivers.

Printing controlling

The operating system is also in charge of printing functions. If there is more than one print command at a time, the files won't be mixed, and they'll be printed separately.

Providing interface

The operating system is responsible for the user interface that is shown on the screen of the computer. The operating system offers two types of the interface to the user;

1. Graphical line interface: This is the interface that uses windows, icons, menus and other graphical objects to issue commands that the user can use to communicate with the system.
2. Command line interface: This provides an interface to communicate with the computer by typing commands.

Error detection

Operating system constantly monitors the system to detect errors and avoid malfunctions.

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

[Operating systems - Operating systems - GCSE Computer Science Revision - BBC Bitesize](#)

Different types of Operating systems that's used today

Real time operating systems;

These operating systems are designed to execute real time apps. They primarily use special scheduling algorithms in order to achieve a determined type of conduct. The main point of real time operating systems is their swift and inevitable response to events. They will either have an event driven design which switches between tasks based on their priorities, or a time sharing one which switches tasks based on clock interruptions.

Multituser and single user operating systems;

These allow several people to access a computer system concurrently. Time sharing systems can be categorized as multituser systems as they allow multiple users to access a computer through time sharing. With a unix like operating system, it is likely for two users to log in at a time which makes it a multituser operating system.

Multi-tasking and Single-tasking Operating Systems

When only one program can run at one time, the system is classed as a single-tasking system category. While if the system allows for more than one program to run at one time, it is categorized as a multi-tasking OS. There are two types of multitasking, which are pre-emptive and co-operative. With pre-emptive multitasking, the operation system slices the CPU time and dedicates one slot to each of the programs. Operating systems such as solaris and linux support pre-emptive multitasking. Cooperative multitasking is accomplished by relying on each process to give time to the other processes in a distinct way. MS windows before windows 95 used to support cooperative multitasking.

Distributed Operating System

An operating system that oversees a cluster of separate computers and makes them appear to be a single computer is known as a distributed operating system. Distributed computing was created because of the advancement of networked computers that were able to link and communicate with each other. Distributed computations are carried out on more than one machine. When computers in a group work in cooperation, they make a distributed system.

Embedded System

Embedded Operating systems are primarily used in embedded computer systems. They are usually designed to operate on small machines like PDAs with less independence. They are capable to operate with limited number of resources.

Mobile Operating System

Mobile operating systems are not functionally distinct, but they are still important and widely used. They control a mobile device, and its design can support wireless communication and mobile applications. They have mobile multimedia format support. Devices such as tablets and smartphones run on mobile operating systems.

Batch Processing and Interactive Systems

Batch processing describes the implementation of computer programs in batches without manual intervention. Programs are collected, grouped and processed on a later date. There is no prompting the user for inputs as the input data is collected in advance for future projects. The Input data is collected and processed in batches, hence the name batch processing.

Online and Offline Processing

With online processing of data, the user stays in contact with the computer and processes are completed under the control of the computer's central processing unit. When processes are not finished under direct control of the CPU, the processing is described as offline.

[Computer Operating Systems: OS Families for Computers \(techlila.com\)](#) Computer operating systems: OS families for computers, Rajesh Namase, December 6, 2020

[Types of Operating Systems - GeeksforGeeks](#)

Use of CLI commands in Windows

I typed in “dir” and my computers directory popped up.

```
Microsoft Windows [Version 10.0.18363.1379]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Theje>dir

Volume in drive C is Acer
Volume Serial Number is 1486-E120

Directory of C:\Users\Theje

28/01/2021 15:01 <DIR> .
28/01/2021 15:01 <DIR> ..
03/11/2020 22:28 <DIR> .idlerc
15/02/2021 17:03 <DIR> 3D Objects
15/02/2021 17:03 <DIR> Contacts
03/11/2020 15:48 <DIR> Documents
04/11/2020 11:06 <DIR> Downloads [\\F:\C:\Users\Theje\Dropbox\My PC (LAPTOP-K2V3H486)\Downloads]
04/11/2020 11:06 <DIR> Dropbox
15/02/2021 17:03 <DIR> Favorites
15/02/2021 17:03 <DIR> Links
15/02/2021 17:03 <DIR> Music
08/02/2021 14:59 <DIR> OneDrive
15/02/2021 17:03 <DIR> Saved Games
15/02/2021 17:03 <DIR> Searches
28/01/2021 15:01 <DIR> source
15/02/2021 17:03 <DIR> Videos
0 File(s) 0 bytes
16 Dir(s) 873,066,315,776 bytes free

C:\Users\Theje>
```

I searched for any files starting with the letter a by typing in “dir a *”. I have no files that start with the letter a so nothing was found.

```
Microsoft Windows [Version 10.0.18363.1379]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Theje>dir a*

Volume in drive C is Acer
Volume Serial Number is 1486-E120

Directory of C:\Users\Theje

28/01/2021 15:01 <DIR> .
28/01/2021 15:01 <DIR> ..
03/11/2020 22:28 <DIR> .idlerc
15/02/2021 17:03 <DIR> 3D Objects
15/02/2021 17:03 <DIR> Contacts
03/11/2020 15:48 <DIR> Documents
04/11/2020 11:06 <DIR> Downloads [\\F:\C:\Users\Theje\Dropbox\My PC (LAPTOP-K2V3H486)\Downloads]
04/11/2020 11:06 <DIR> Dropbox
15/02/2021 17:03 <DIR> Favorites
15/02/2021 17:03 <DIR> Links
15/02/2021 17:03 <DIR> Music
08/02/2021 14:59 <DIR> OneDrive
15/02/2021 17:03 <DIR> Saved Games
15/02/2021 17:03 <DIR> Searches
28/01/2021 15:01 <DIR> source
15/02/2021 17:03 <DIR> Videos
0 File(s) 0 bytes
16 Dir(s) 873,066,315,776 bytes free

C:\Users\Theje>dir a*

Volume in drive C is Acer
Volume Serial Number is 1486-E120

Directory of C:\Users\Theje

File Not Found

C:\Users\Theje>
```

I typed “help” and a list of commands came up

```
C:\Users\Thejesh>help
For more information on a specific command, type HELP command-name.
ASSOC      Displays or modifies file extension associations.
ATTRIB     Displays or changes file attributes.
CHKDsk     Sets or clears extended CHKDsk checking.
CHKDSK     Sets properties in boot database to control boot loading.
CLS        Displays or modifies access control lists (ACLs) of files.
CALL       Calls one batch program from another.
CD         Displays the name of or changes the current directory.
CLOCK     Displays or sets the active code page number.
CMD        Displays the name of or changes the current directory.
CMDK      Checks a disk and displays a status report.
CHKDSK     Displays or modifies the checking of disk at boot time.
CLS        Clears the screen.
CMD        Starts a new instance of the Windows command interpreter.
COLOR      Sets the default console foreground and background colors.
COMP       Compares the contents of two files or sets of files.
COMPACT    Displays or alters the compression of files on NTFS partitions.
CONVERT    Converts FAT volumes to NTFS. You cannot convert the
            current drive.
COPY       Copies one or more files to another location.
DATE       Displays or sets the date.
DEL        Deletes one or more files.
DIR        Displays a list of files and subdirectories in a directory.
DISKPART   Displays or configures Disk Partition properties.
DOSKEY     Edits command lines, recalls Windows commands, and
            creates macros.
DRIVERQUERY Displays current device driver status and properties.
ECHO       Displays messages, or turns command echoing on or off.
ENVLOCAL   Tools localization of environment changes in a batch file.
ERASE      Deletes one or more files.
EXIT       Quits the CMD.EXE program (command interpreter).
FC         Compares two files or sets of files, and displays the
            differences between them.
FIND       Searches for a text string in a file or files.
FINDSTR    Searches for strings in files.
FOR        Runs a specified command for each file in a set of files.
FORMAT     Formats a disk for use with Windows.
FSUTIL     Displays or configures the file system properties.
FTYPE      Displays or modifies file types used in file extension
            associations.
GOTO       Directs the Windows command interpreter to a labeled line in
            a batch program.
GROUPPOLICY Displays Group Policy information for machine or user.
GRAPHICAL  Enables Windows to display an extended character set in
            graphics mode.
HELP       Provides Help information for Windows commands.
XCACLS     Display, modify, backup, or restore ACLs for files and
            directories.
```

I typed in “Date” and today's date popped up.

```
PATH       Displays or sets a search path for executable files.
PUSHD     Suspends processing of a batch file and displays a message.
POPD      Restores the previous value of the current directory saved by
            PUSHD.
PRINT     Prints a text file.
PROMPT    Changes the Windows command prompt.
RD        Removes a directory.
RECOVER   Recovers readable information from a bad or defective disk.
REN       Renames a file or files.
Rmdir     Removes a file or files.
RENAME    Renames a file or files.
REPLACE   Replaces files.
RM        Removes a directory.
ROBOCOPY  Advanced utility to copy files and directory trees.
SET       Displays, sets, or removes Windows environment variables.
SETLOCAL  Begins localization of environment changes in a batch file.
SC        Displays or configures services (background processes).
SCHEDTASK Schedules commands and programs to run on a computer.
SHIFT     Shifts the position of replaceable parameters in batch files.
SHUTDOWN Allows proper local or remote shutdown of machine.
SORT      Sorts input.
START     Starts a separate window to run a specified program or command.
TASKLIST  Associates a path with a drive letter.
SYSTEMINFO Displays machine specific properties and configuration.
TASKKILL  Displays all currently running tasks including services.
TIME      Kill or stop a running process or application.
TITLE     Displays or sets the window title.
TREE      Sets the window title for a CMD.EXE session.
TYPE      Graphically displays the directory structure of a drive or
            path.
TYPE      Displays the contents of a text file.
VER       Displays the Windows version.
VERIFY    Tells Windows whether to verify that your files are written
            correctly to a disk.
VOL       Displays a disk volume label and serial number.
XCOPY     Copies files and directory trees.
XDEL      Displays MUI information inside interactive command shell.

For more information on tools see the command-line reference in the online help.

C:\Users\Thejesh>date
The current date is: 16/02/2021
Enter the new date: (dd-mm-yy) _
```

I typed “time” and the current time was shown.

```
For more information on tools see the command-line reference in the online help.  
C:\Users\theje>date  
The current date is: 10/02/2021  
Enter the new date: (dd-mm-yy)  
C:\Users\theje>time  
The current time is: 12:58:19.58  
Enter the new time:
```

I typed in “finddocuments” and “findassignment1” but they couldn’t be recognised, but the syntax and the parameter format was correct.

```
For more information on tools see the command-line reference in the online help.  
C:\Users\theje>date  
The current date is: 10/02/2021  
Enter the new date: (dd-mm-yy)  
C:\Users\theje>time  
The current time is: 12:58:19.58  
Enter the new time:  
C:\Users\theje>find  
FIND: Parameter format not correct  
C:\Users\theje>find assignment 1  
FIND: Parameter format not correct  
C:\Users\theje>findassignment1  
'findassignment1' is not recognized as an internal or external command,  
operable program or batch file.  
C:\Users\theje>find assignment1  
FIND: Parameter format not correct  
C:\Users\theje>finddocuments  
'finddocuments' is not recognized as an internal or external command,  
operable program or batch file.  
C:\Users\theje>
```

I typed "RenameAssignment1" and although nothing could be found, the syntax and parameter format is correct.

```
For more information on tools see the command-line reference in the online help.

C:\Users\Theje>date
The current date is: 10/02/2021
Enter the new date: (dd-mm-yy)

C:\Users\Theje>time
The current time is: 12:58:19.58
Enter the new time:

C:\Users\Theje>find
FIND: Parameter format not correct

C:\Users\Theje>find assignment 1
FIND: Parameter format not correct

C:\Users\Theje>findassignment1
'findassignment1' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Theje>find assignment1
FIND: Parameter format not correct

C:\Users\Theje>finddocuments
'finddocuments' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Theje>rename
The syntax of the command is incorrect.

C:\Users\Theje>renameassignment1
'Renameassignment1' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Theje>
```

I typed "typeassignment1" and although I could not find anything, the syntax and parameter format is correct.

```
C:\Users\Theje>time
The current time is: 12:58:19.58
Enter the new time:

C:\Users\Theje>find
FIND: Parameter format not correct

C:\Users\Theje>find assignment 1
FIND: Parameter format not correct

C:\Users\Theje>findassignment1
'findassignment1' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Theje>find assignment1
FIND: Parameter format not correct

C:\Users\Theje>finddocuments
'finddocuments' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Theje>rename
The syntax of the command is incorrect.

C:\Users\Theje>renameassignment1
'Renameassignment1' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Theje>type
The syntax of the command is incorrect.

C:\Users\Theje>typeassignment1
'typeassignment1' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Theje>typemathassignment1
'typemathassignment1' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Theje>
```

I typed "Tasklist" and a massive list of every task and service that was running was shown.

Image Name	PID	Session Name	Session#	Mem Usage
System Idle Process	0	Services	0	8 K
System	4	Services	0	5,080 K
Registry	144	Services	0	18,196 K
smss.exe	724	Services	0	1,028 K
svchost.exe	812	Services	0	6,860 K
csrss.exe	916	Services	0	6,700 K
services.exe	988	Services	0	13,548 K
lsass.exe	1088	Services	0	12,712 K
svchost.exe	120	Services	0	1,716 K
svchost.exe	1880	Services	0	31,132 K
svchost.exe	1888	Services	0	2,676 K
svchost.exe	1288	Services	0	18,100 K
svchost.exe	1312	Services	0	8,180 K
svchost.exe	1452	Services	0	5,628 K
svchost.exe	1528	Services	0	9,280 K
svchost.exe	1536	Services	0	10,488 K
svchost.exe	1544	Services	0	11,992 K
svchost.exe	1628	Services	0	10,272 K
svchost.exe	1636	Services	0	11,728 K
svchost.exe	1776	Services	0	8,188 K
svchost.exe	1812	Services	0	8,168 K
svchost.exe	1884	Services	0	16,424 K
svchost.exe	2036	Services	0	14,988 K
svchost.exe	912	Services	0	9,948 K
svchost.exe	1388	Services	0	7,768 K
svchost.exe	2084	Services	0	7,212 K
svchost.exe	2084	Services	0	15,132 K
svchost.exe	2128	Services	0	10,944 K
svchost.exe	2136	Services	0	9,888 K
svchost.exe	2276	Services	0	3,548 K
svchost.exe	2284	Services	0	10,948 K
svchost.exe	2292	Services	0	12,788 K
svchost.exe	2388	Services	0	7,236 K
svchost.exe	2324	Services	0	15,148 K
svchost.exe	2388	Services	0	15,228 K
svchost.exe	2528	Services	0	253,488 K
svchost.exe	2584	Services	0	9,288 K
svchost.exe	2640	Services	0	8,468 K
svchost.exe	2692	Services	0	8,808 K
svchost.exe	2788	Services	0	7,956 K
svchost.exe	2724	Services	0	7,312 K
svchost.exe	2836	Services	0	8,536 K
svchost.exe	2868	Services	0	17,896 K
svchost.exe	2908	Services	0	13,548 K
svchost.exe	2988	Services	0	7,888 K
svchost.exe	2996	Services	0	7,648 K

I typed in exit and the command prompt window closed.

PowerShell.exe	1788	Console	2	5,912 K
ProdatorSense.exe	3852	Console	2	96,212 K
ACLS64.exe	1728	Console	2	17,532 K
AcpiRegistrationBackground	4184	Console	2	47,962 K
msedge.exe	8888	Console	2	170,532 K
msedge.exe	11364	Console	2	7,288 K
msedge.exe	10744	Console	2	254,732 K
msedge.exe	11764	Console	2	52,624 K
msedge.exe	2016	Console	2	18,496 K
msedge.exe	14488	Console	2	98,888 K
msedge.exe	11792	Console	2	21,548 K
svchost.exe	1376	Services	0	21,636 K
lsass.exe	12724	Console	2	11,692 K
cmd.exe	10840	Console	2	4,244 K
svchost.exe	10724	Console	2	18,672 K
msedge.exe	11644	Console	2	102,632 K
cmd.exe	12120	Console	2	253,468 K
svchost.exe	1144	Services	0	7,568 K
msedge.exe	6848	Console	2	94,432 K
msedge.exe	7280	Console	2	44,232 K
msedge.exe	2996	Console	2	99,888 K
msedge.exe	9480	Console	2	39,924 K
msedge.exe	3476	Console	2	60,720 K
msedge.exe	3584	Console	2	42,468 K
msedge.exe	4072	Console	2	42,844 K
msedge.exe	14880	Console	2	38,112 K
msedge.exe	1868	Console	2	78,888 K
msedge.exe	1248	Console	2	41,688 K
msedge.exe	15160	Console	2	42,544 K
msedge.exe	15768	Console	2	85,632 K
msedge.exe	2128	Console	2	48,576 K
msedge.exe	12472	Console	2	40,268 K
msedge.exe	12948	Console	2	25,880 K
svchost.exe	16288	Services	0	9,742 K
svchost.exe	12688	Services	0	5,920 K
tasklist.exe	15648	Console	2	34,480 K
tasklist.exe	12784	Console	2	10,280 K

<https://www.computerhope.com/issues/chusedos.htm>

[What is CLI \(w3schools.com\)](https://www.w3schools.com/cli/)

CLI commands for Linux

I typed pwd and it showed an output of the current directory that I'm in.

```
Loading...
Welcome to JS/Linux (i586)

Use 'vlogin username' to connect to your account.
You can create a new account at https://vfsync.org/signup .
Use 'export_file filename' to export a file to your computer.
Imported files are written to the home directory.

localhost:~# pwd
/root
localhost:~#
```

I typed in ls and it showed the current directory.

```
Loading...
Welcome to JS/Linux (i586)

Use 'vlogin username' to connect to your account.
You can create a new account at https://vfsync.org/signup .
Use 'export_file filename' to export a file to your computer.
Imported files are written to the home directory.

localhost:~# pwd
/root
localhost:~# ls
bench.py  hello.c    hello.js   readme.txt
localhost:~#
```

I typed ls a- which brought up a list of all the content, including the hidden files

```

Loading...

Welcome to JS/Linux (i586)

Use 'vlogin username' to connect to your account.
You can create a new account at https://vfsync.org/signup .
Use 'export_file filename' to export a file to your computer.
Imported files are written to the home directory.

localhost:~# pwd
/root
localhost:~# ls
bench.py  hello.c  hello.js  readme.txt
localhost:~# ls -a
.          .ash_history  .mozilla  bench.py  hello.js
..         .cache        .wine     hello.c   readme.txt
localhost:~#

```

I typed in `ls ..` and it showed all the files in the home directory

```

Loading...

Welcome to JS/Linux (i586)

Use 'vlogin username' to connect to your account.
You can create a new account at https://vfsync.org/signup .
Use 'export_file filename' to export a file to your computer.
Imported files are written to the home directory.

localhost:~# pwd
/root
localhost:~# ls
bench.py  hello.c  hello.js  readme.txt
localhost:~# ls -a
.          .ash_history  .mozilla  bench.py  hello.js
..         .cache        .wine     hello.c   readme.txt
localhost:~# ls..
sh: ls.: not found
localhost:~# ls ..
bin  etc  lib  mnt  proc  run  srv  tmp  var
dev  home media opt  root  sbin sys  usr
localhost:~#

```

I typed in `cd ..` and it left the current directory to go back to the previous one

```
Loading...
Welcome to JS/Linux (i586)

Use 'vlogin username' to connect to your account.
You can create a new account at https://vfsync.org/signup .
Use 'export_file filename' to export a file to your computer.
Imported files are written to the home directory.

localhost:~# pwd
/root
localhost:~# ls
bench.py  hello.c  hello.js  readme.txt
localhost:~# ls -a
.          .ash_history  .mozilla  bench.py  hello.js
..         .cache        .wine     hello.c   readme.txt
localhost:~# ls..
sh: ls.: not found
localhost:~# ls ..
bin  etc  lib  mnt  proc  run  srv  tmp  var
dev  home media opt  root  sbin sys  usr
localhost:~# cd ..
localhost:/# pwd
/
localhost:/#
```

I typed `mkdir Rhys` to create a new folder named Rhys

```
Loading...
Welcome to JS/Linux (i586)

Use 'vlogin username' to connect to your account.
You can create a new account at https://vfsync.org/signup .
Use 'export_file filename' to export a file to your computer.
Imported files are written to the home directory.

localhost:~# pwd
/root
localhost:~# ls
bench.py  hello.c  hello.js  readme.txt
localhost:~# ls -a
.          .ash_history  .mozilla  bench.py  hello.js
..         .cache        .wine     hello.c   readme.txt
localhost:~# ls..
sh: ls.: not found
localhost:~# ls ..
bin  etc  lib  mnt  proc  run  srv  tmp  var
dev  home media opt  root  sbin sys  usr
localhost:~# cd ..
localhost:/# pwd
/
localhost:/# mkdir Rhys
localhost:/# ls
Rhys  dev  home media opt  root  sbin sys  usr
bin  etc  lib  mnt  proc  run  srv  tmp  var
localhost:/#
```

I decided to remove the folder Rhys so I typed rmdir Rhys

```
Use 'vlogin username' to connect to your account.
You can create a new account at https://vfsync.org/signup .
Use 'export_file filename' to export a file to your computer.
Imported files are written to the home directory.

localhost:~# pwd
/root
localhost:~# ls
bench.py  hello.c  hello.js  readme.txt
localhost:~# ls -a
.          .ash_history  .mozilla  bench.py  hello.js
..         .cache        .wine     hello.c   readme.txt
localhost:~# ls..
sh: ls.: not found
localhost:~# ls ..
bin  etc  lib  mnt  proc  run  srv  tmp  var
dev  home media opt  root  sbin sys  usr
localhost:~# cd ..
localhost:/# pwd
/
localhost:/# mkdir Rhys
localhost:/# ls
Rhys  dev  home  media  opt  root  sbin  sys  usr
bin  etc  lib  mnt  proc  run  srv  tmp  var
localhost:/# rmdir Rhys
localhost:/# ls
bin  etc  lib  mnt  proc  run  srv  tmp  var
dev  home media opt  root  sbin sys  usr
localhost:/#
```

I created a new folder named Cymru and I wanted to copy it so I typed in cp Cymru Cymruambyth.
This created a new folder named Cymruambyth. This can also work for files

```
Use 'vlogin username' to connect to your account.
You can create a new account at https://vfsync.org/signup .
Use 'export_file filename' to export a file to your computer.
Imported files are written to the home directory.

localhost:~# pwd
/root
localhost:~# ls
bench.py  hello.c  hello.js  readme.txt
localhost:~# ls -a
.          .ash_history  .mozilla  bench.py  hello.js
..         .cache        .wine     hello.c   readme.txt
localhost:~# ls..
sh: ls.: not found
localhost:~# ls ..
bin  etc  lib  mnt  proc  run  srv  tmp  var
dev  home media opt  root  sbin sys  usr
localhost:~# cd ..
localhost:/# pwd
/
localhost:/# mkdir Rhys
localhost:/# ls
Rhys  dev  home  media  opt  root  sbin  sys  usr
bin  etc  lib  mnt  proc  run  srv  tmp  var
localhost:/# rmdir Rhys
localhost:/# ls
bin  etc  lib  mnt  proc  run  srv  tmp  var
dev  home media opt  root  sbin sys  usr
localhost:/#
```

I typed in date to show today's date and time

```
/
localhost:/# mkdir Rhys
localhost:/# ls
Rhys dev home media opt root sbin sys usr
bin etc lib mnt proc run srv tmp var
localhost:/# rmdir Rhys
localhost:/# ls
bin etc lib mnt proc run srv tmp var
dev home media opt root sbin sys usr
localhost:/# mkdir Cymru
localhost:/# ls
Cymru dev home media opt root sbin sys usr
bin etc lib mnt proc run srv tmp var
localhost:/# cp Cymru Cymru am byth
cp: omitting directory 'Cymru'
cp: omitting directory 'Cymru'
cp: can't stat 'am': No such file or directory
localhost:/# cp Cymru Cymruambyth
cp: omitting directory 'Cymru'
localhost:/# ls
Cymru dev home media opt root sbin sys usr
bin etc lib mnt proc run srv tmp var
localhost:/# pwd
/
localhost:/# ls ..
Cymru dev home media opt root sbin sys usr
bin etc lib mnt proc run srv tmp var
localhost:/# date
Wed Mar 10 18:41:07 UTC 2021
localhost:/#
```

I typed in uname -a which showed the system information and kernel

```
Rhys dev home media opt root sbin sys usr
bin etc lib mnt proc run srv tmp var
localhost:/# rmdir Rhys
localhost:/# ls
bin etc lib mnt proc run srv tmp var
dev home media opt root sbin sys usr
localhost:/# mkdir Cymru
localhost:/# ls
Cymru dev home media opt root sbin sys usr
bin etc lib mnt proc run srv tmp var
localhost:/# cp Cymru Cymru am byth
cp: omitting directory 'Cymru'
cp: omitting directory 'Cymru'
cp: can't stat 'am': No such file or directory
localhost:/# cp Cymru Cymruambyth
cp: omitting directory 'Cymru'
localhost:/# ls
Cymru dev home media opt root sbin sys usr
bin etc lib mnt proc run srv tmp var
localhost:/# pwd
/
localhost:/# ls ..
Cymru dev home media opt root sbin sys usr
bin etc lib mnt proc run srv tmp var
localhost:/# date
Wed Mar 10 18:41:07 UTC 2021
localhost:/# uname -a
Linux localhost 4.12.0-rc6-g48ec1f0-dirty #21 Fri Aug 4 21:02:28 CEST 2017 i586
Linux
localhost:/#
```

I typed in whoami to show my username on my device.

```
localhost:/# rmdir Rhys
localhost:/# ls
bin  etc  lib  mnt  proc  run  srv  tmp  var
dev  home media opt  root  sbin sys  usr
localhost:/# mkdir Cymru
localhost:/# ls
Cymru dev  home  media opt  root  sbin  sys  usr
bin  etc  lib  mnt  proc  run  srv  tmp  var
localhost:/# cp Cymru Cymru am byth
cp: omitting directory 'Cymru'
cp: omitting directory 'Cymru'
cp: can't stat 'am': No such file or directory
localhost:/# cp Cymru Cymruambyth
cp: omitting directory 'Cymru'
localhost:/# ls
Cymru dev  home  media opt  root  sbin  sys  usr
bin  etc  lib  mnt  proc  run  srv  tmp  var
localhost:/# pwd
/
localhost:/# ls ..
Cymru dev  home  media opt  root  sbin  sys  usr
bin  etc  lib  mnt  proc  run  srv  tmp  var
localhost:/# date
Wed Mar 10 18:41:07 UTC 2021
localhost:/# uname -a
Linux localhost 4.12.0-rc6-g48ec1f0-dirty #21 Fri Aug 4 21:02:28 CEST 2017 i586
Linux
localhost:/# whoami
root
localhost:/#
```

I typed in grep MemTotal /proc/meminfo to show my RAM space according to my system

```
bin  etc  lib  mnt  proc  run  srv  tmp  var
dev  home media opt  root  sbin sys  usr
localhost:/# mkdir Cymru
localhost:/# ls
Cymru dev  home  media opt  root  sbin  sys  usr
bin  etc  lib  mnt  proc  run  srv  tmp  var
localhost:/# cp Cymru Cymru am byth
cp: omitting directory 'Cymru'
cp: omitting directory 'Cymru'
cp: can't stat 'am': No such file or directory
localhost:/# cp Cymru Cymruambyth
cp: omitting directory 'Cymru'
localhost:/# ls
Cymru dev  home  media opt  root  sbin  sys  usr
bin  etc  lib  mnt  proc  run  srv  tmp  var
localhost:/# pwd
/
localhost:/# ls ..
Cymru dev  home  media opt  root  sbin  sys  usr
bin  etc  lib  mnt  proc  run  srv  tmp  var
localhost:/# date
Wed Mar 10 18:41:07 UTC 2021
localhost:/# uname -a
Linux localhost 4.12.0-rc6-g48ec1f0-dirty #21 Fri Aug 4 21:02:28 CEST 2017 i586
Linux
localhost:/# whoami
root
localhost:/# grep MemTotal /proc/meminfo
MemTotal:      187244 kB
localhost:/#
```

[What is CLI \(w3schools.com\)](https://www.w3schools.com/cli/)

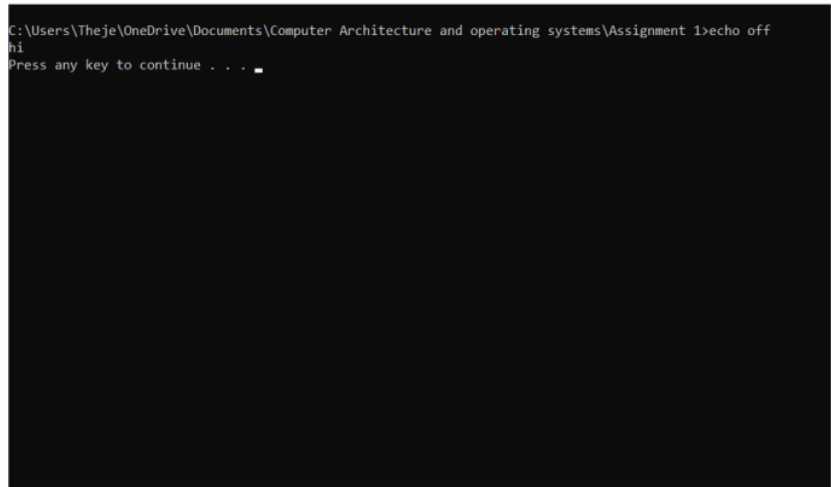
[How to Use the Linux Command Line: Basics of CLI - Linux.com](https://linux.com/how-to-use-the-linux-command-line-basics-of-cli/)

Bat Scripting for windows

I typed in “echo off, echo hi, pause” which creates a message saying hi. By typing pause, it allows for the batch file to pause

File Edit Format View Help

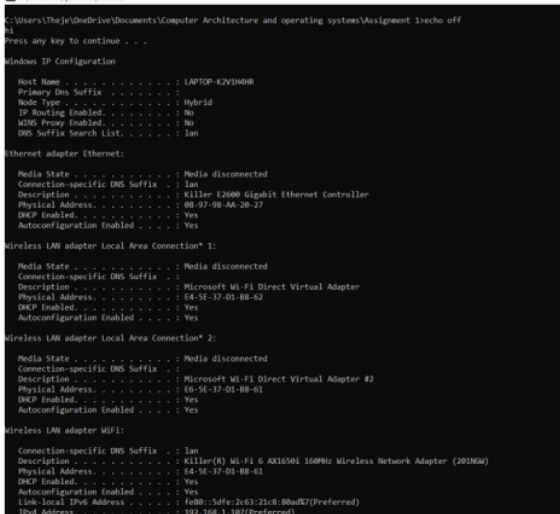
```
echo off  
echo hi  
pause
```



```
C:\Users\Theje\OneDrive\Documents\Computer Architecture and operating systems\Assignment 1>echo off  
hi  
Press any key to continue . . .
```

I typed in “ipconfig /all, pause” which gives information about the current network and some network packet information.

```
File Edit Format View Help
echo off
echo hi
pause
ipconfig /all
pause
```



```
C:\Windows\system32\cmd.exe
C:\Users\Theje\Desktop\Documents\Computer Architecture and operating systems\Assignment 1>echo off
hi
Press any key to continue . . .

Windows IP Configuration

Host Name . . . . . : LAPTOP-K2V3H6R8
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : lan

Ethernet adapter Ethernet:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . : lan
Description . . . . . : Killer E2600 Gigabit Ethernet Controller
Physical Address. . . . . : 08-97-98-AA-28-27
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 1:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
Physical Address. . . . . : 64-95-37-03-B8-02
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 2:

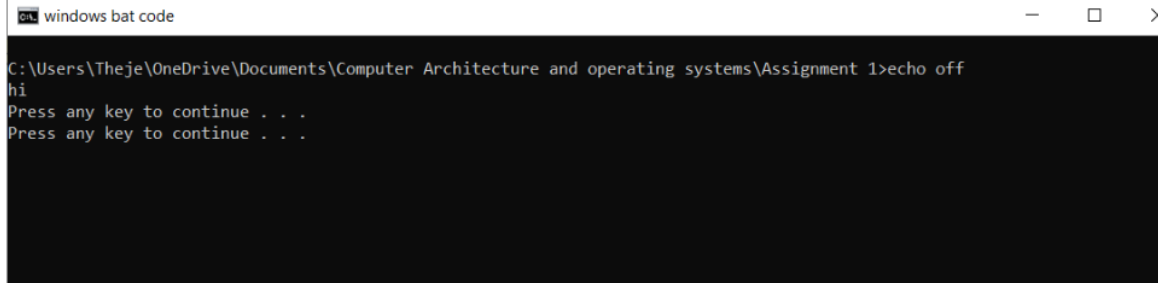
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
Physical Address. . . . . : E6-9E-37-03-B8-01
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter WiFi:

Connection-specific DNS Suffix . : lan
Description . . . . . : Killer(S) Wi-Fi 6 AX1501 160MHz Wireless Network Adapter (2019GA)
Physical Address. . . . . : 64-95-37-03-B8-03
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::5afe:2c83:23c8:88ad%2 (Preferred)
IPv4 Address. . . . . : 192.168.1.101 (Preferred)
```

I typed in "title windows bat code, pause" which changed the title of the file to windows bat code

```
File Edit Format View Help
echo off
echo hi
pause
title windows bat code
pause
```



The screenshot shows a Windows command prompt window with the title bar "windows bat code". The command prompt displays the following text:

```
C:\Users\Theje\OneDrive\Documents\Computer Architecture and operating systems\Assignment 1>echo off
hi
Press any key to continue . . .
Press any key to continue . . .
```

By typing this, I managed to set Rhys and 21 as variables

```
echo off
```

```
set name=Rhys
```

```
set /A age=21
```

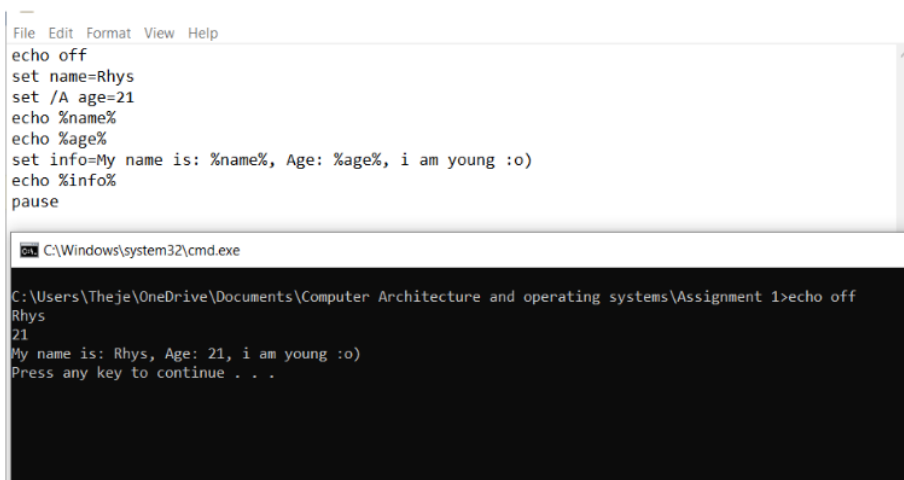
```
echo %name%
```

```
echo %age%
```

```
set info=My name is: %name%, Age: %age%, i am young :o)
```

```
echo %info%
```

```
pause
```



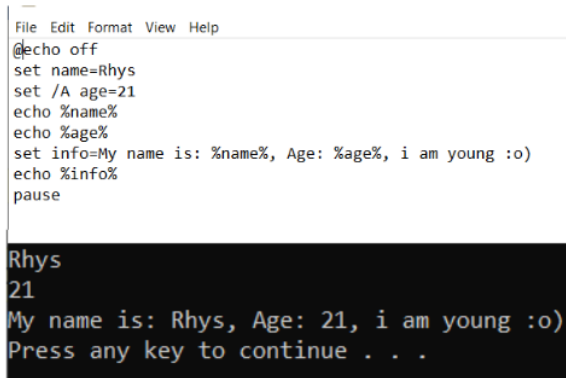
The image shows a Notepad++ editor window with a menu bar (File, Edit, Format, View, Help) and a text area containing the following code:

```
echo off
set name=Rhys
set /A age=21
echo %name%
echo %age%
set info=My name is: %name%, Age: %age%, i am young :o)
echo %info%
pause
```

Below the editor is a Windows Command Prompt window titled "C:\Windows\system32\cmd.exe". The prompt shows the execution of the batch script, with the following output:

```
C:\Users\Theje\OneDrive\Documents\Computer Architecture and operating systems\Assignment 1>echo off
Rhys
21
My name is: Rhys, Age: 21, i am young :o)
Press any key to continue . . .
```

By typing @ before the “echo off” command, it stopped it from showing in the code



The image shows a Notepad++ editor window with a menu bar (File, Edit, Format, View, Help) and a text area containing the following code:

```
@echo off
set name=Rhys
set /A age=21
echo %name%
echo %age%
set info=My name is: %name%, Age: %age%, i am young :o)
echo %info%
pause
```

Below the editor is a Windows Command Prompt window. The prompt shows the execution of the batch script, with the following output:

```
Rhys
21
My name is: Rhys, Age: 21, i am young :o)
Press any key to continue . . .
```

By typing GOTO xxxx and then a :Label, I created a GOTO command to skip a part of the code.

```
File Edit Format View Help
@echo off
GOTO CodeJump
Echo this won't output
:CodeJump
Echo jump success
pause
```

C:\Windows\system32\cmd.exe

```
jump success
Press any key to continue . . .
```

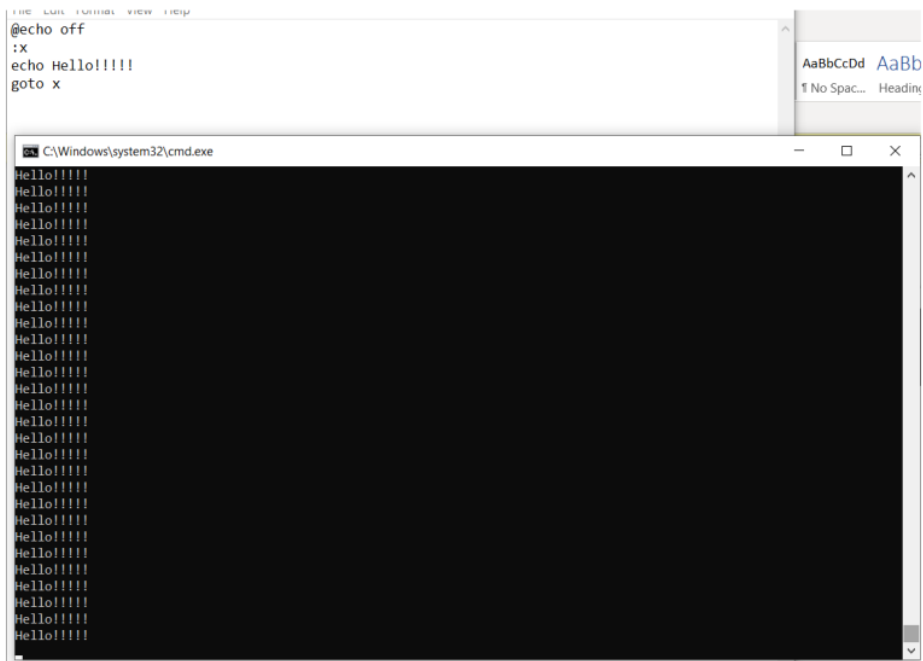
This is an example of an if else statement

```
File Edit Format View Help
@echo off
SET /A a = 5
SET /A b = 10
SET /A c = %a% + %b%
if %c%==15 (echo "The value of variable c is 15") else (echo "Unknown value")
if %c%==10 (echo "The value of variable c is 10") else (echo "Unknown value")
pause
```

Select C:\Windows\system32\cmd.exe

```
"The value of variable c is 15"
"Unknown value"
Press any key to continue . . .
```

This is an example of a loop statement

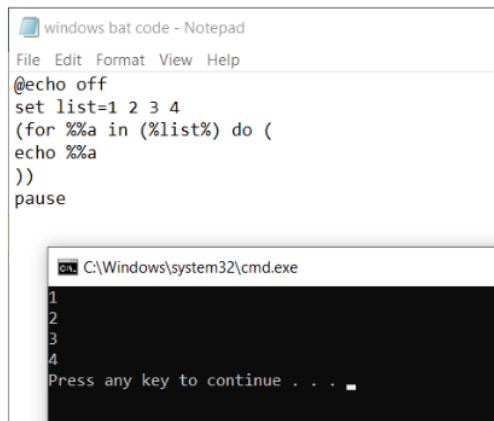


The image shows a Notepad window with the following code:

```
@echo off
:x
echo Hello!!!!
goto x
```

Below the Notepad window is a Command Prompt window titled "C:\Windows\system32\cmd.exe". It displays the output of the batch script, which is a continuous loop of "Hello!!!!" printed 20 times.

This is an example of an array

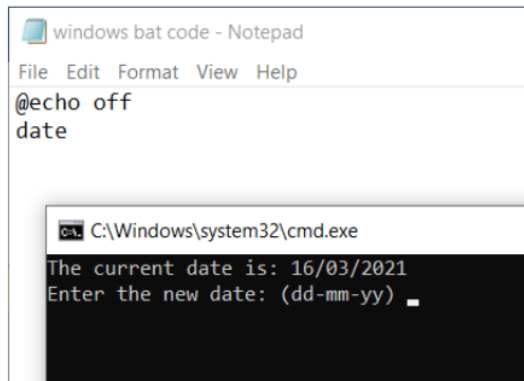


The image shows a Notepad window titled "windows bat code - Notepad" with the following code:

```
@echo off
set list=1 2 3 4
(for %%a in (%list%) do (
echo %%a
))
pause
```

Below the Notepad window is a Command Prompt window titled "C:\Windows\system32\cmd.exe". It displays the output of the batch script, which is the numbers 1, 2, 3, and 4, each on a new line, followed by the prompt "Press any key to continue . . .".

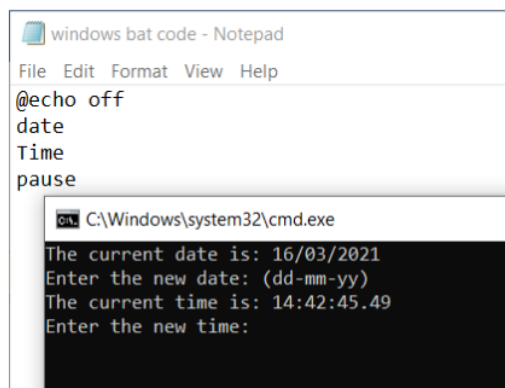
To show the current date, just type in Date



```
windows bat code - Notepad
File Edit Format View Help
@echo off
date

C:\Windows\system32\cmd.exe
The current date is: 16/03/2021
Enter the new date: (dd-mm-yy)
```

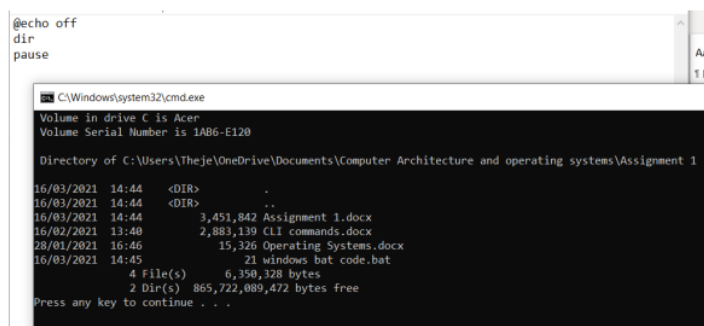
To show the current time, just type in time



```
windows bat code - Notepad
File Edit Format View Help
@echo off
date
time
pause

C:\Windows\system32\cmd.exe
The current date is: 16/03/2021
Enter the new date: (dd-mm-yy)
The current time is: 14:42:45.49
Enter the new time:
```

To show the current directory, type in dir and then pause



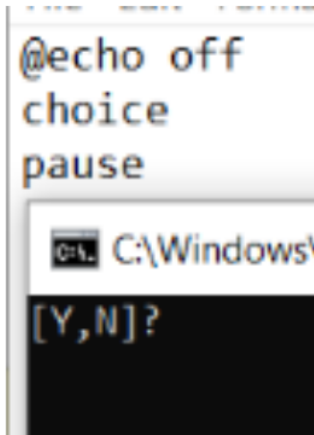
```
@echo off
dir
pause

C:\Windows\system32\cmd.exe
Volume in drive C is Acer
Volume Serial Number is 1AB6-E120

Directory of C:\Users\Theje\OneDrive\Documents\Computer Architecture and operating systems\Assignment 1

16/03/2021 14:44 <DIR> .
16/03/2021 14:44 <DIR> ..
16/03/2021 14:44 3,451,842 Assignment 1.docx
16/02/2021 13:40 2,883,139 CLI commands.docx
28/01/2021 16:46 15,326 Operating Systems.docx
16/03/2021 14:45 21 windows bat code.bat
               4 File(s)      6,350,328 bytes
               2 Dir(s)  865,722,889,472 bytes free
Press any key to continue . . .
```

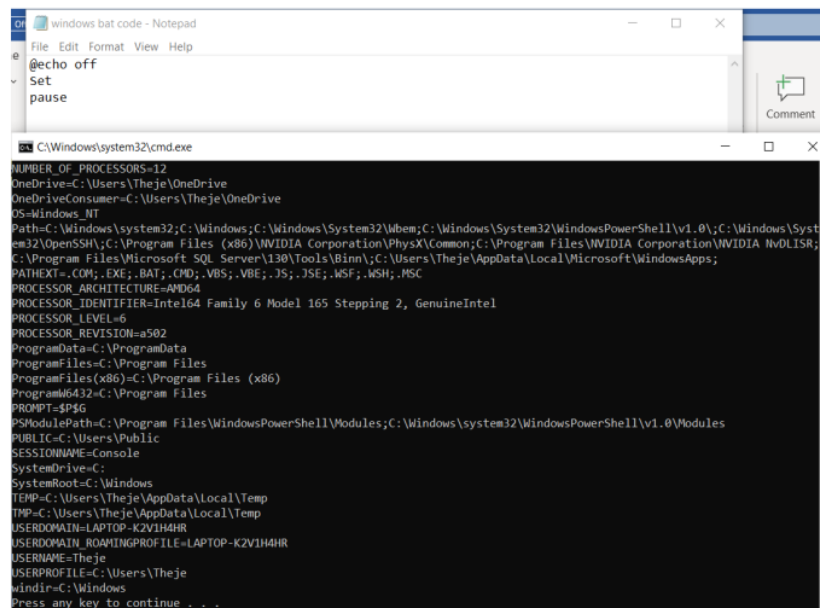
By typing in choice, I'm given the choice of yes or no



```
@echo off
choice
pause

C:\Windows\system32
[Y,N]?
```

By typing in SET, it displays a list of environment variables on the system.



```
windows bat code - Notepad
File Edit Format View Help
@echo off
Set
pause

C:\Windows\system32\cmd.exe
NUMBER_OF_PROCESSORS=12
OneDrive=C:\Users\Theje\OneDrive
OneDriveConsumer=C:\Users\Theje\OneDrive
OS=Windows_NT
Path=C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;C:\Windows\System32\WindowsPowerShell\v1.0\;C:\Windows\System32\OpenSSH\;C:\Program Files (x86)\NVIDIA Corporation\PhysX\Common;C:\Program Files\NVIDIA Corporation\NVIDIA NvDLISR;C:\Program Files\Microsoft SQL Server\130\Tools\Binn\;C:\Users\Theje\AppData\Local\Microsoft\WindowsApps;
PATHEXT=.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE=AMD64
PROCESSOR_IDENTIFIER=Intel64 Family 6 Model 165 Stepping 2, GenuineIntel
PROCESSOR_LEVEL=6
PROCESSOR_REVISION=a5b2
ProgramData=C:\ProgramData
ProgramFiles=C:\Program Files
ProgramFiles(x86)=C:\Program Files (x86)
ProgramW6432=C:\Program Files
PROMPT=$P$G
PSModulePath=C:\Program Files\WindowsPowerShell\Modules;C:\Windows\system32\WindowsPowerShell\v1.0\Modules
PUBLIC=C:\Users\Public
SESSIONNAME=Console
SystemDrive=C:
SystemRoot=C:\Windows
TEMP=C:\Users\Theje\AppData\Local\Temp
TMP=C:\Users\Theje\AppData\Local\Temp
USERDOMAIN=LAPTOP-K2V1H4HR
USERDOMAIN_ROAMINGPROFILE=LAPTOP-K2V1H4HR
USERNAME=Theje
USERPROFILE=C:\Users\Theje
windir=C:\Windows
Press any key to continue . . .
```

By typing tasklist, it brings up a list of tasks that the system needs to execute

```
File Edit Format View Help
@echo off
tasklist
pause

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

Image Name	PID	Session Name	Session#	Mem Usage
System Idle Process	0	Services	0	8 K
System	4	Services	0	3,472 K
Registry	144	Services	0	44,304 K
smss.exe	576	Services	0	1,224 K
csrss.exe	820	Services	0	6,256 K
wininit.exe	920	Services	0	7,496 K
services.exe	992	Services	0	16,264 K
lsass.exe	1012	Services	0	26,620 K
svchost.exe	1044	Services	0	3,956 K
fontdrvhost.exe	1088	Services	0	3,708 K
WUDFHost.exe	1140	Services	0	24,360 K
svchost.exe	1180	Services	0	34,024 K
svchost.exe	1272	Services	0	22,256 K
svchost.exe	1320	Services	0	9,284 K
WUDFHost.exe	1388	Services	0	5,504 K
svchost.exe	1528	Services	0	9,464 K
svchost.exe	1536	Services	0	9,744 K
svchost.exe	1544	Services	0	13,072 K
svchost.exe	1644	Services	0	10,924 K
svchost.exe	1652	Services	0	9,092 K
svchost.exe	1752	Services	0	10,088 K
svchost.exe	1868	Services	0	21,216 K
svchost.exe	1920	Services	0	8,832 K
svchost.exe	1176	Services	0	11,868 K
svchost.exe	1816	Services	0	86,736 K
svchost.exe	1952	Services	0	11,448 K
svchost.exe	2092	Services	0	8,100 K

https://www.tutorialspoint.com/batch_script/batch_script_commands.htm

<https://youtu.be/kboexp3QiUg>

Batch scripting in Linux

Here's an example of a variable

```
1  #!/bin/bash
2  Intro='Hello, my name is '
3  Name='Rhys'
4  Age=21
5  echo $Intro $Name and I am $Age years old
```

CPU Time: 0.00 sec(s), Memory: 3448 kilobyte(s)

```
Hello, my name is Rhys and I am 21 years old
```

This what a simple text message looks like

```
1  #!/bin/bash
2  echo "Hello"
```

Execute Mode

5.0.01

☐ In

CommandLine



Result

CPU Time: 0.00 sec(s)

```
Hello
```

This is an example of a for loop

```
15
16
17
18
19
20
21
22 #!/bin/bash
23 for var in 0 1 2 3 4 5 6 7 8 9
24 do
25     echo $var
26 done
```

CPU Time: 0.00 sec(s), Memory: 3452 kilobyte(s) executed in 0.66 sec(s)

```
0
1
2
3
4
5
6
7
8
9
```

Here's a while loop example

```
14
15 #!/bin/bash
16 n=1
17
18 while [ $n -le 5 ]
19 do
20     echo "Welcome $n times."
21     n=$(( n+1 ))
22 done
23
24
25
26
```

Exec

Result

CPU Time: 0.00 sec(s), Memory

```
Welcome 1 times.
Welcome 2 times.
Welcome 3 times.
Welcome 4 times.
Welcome 5 times.
```

The CAT command is used to show the file contents

2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

```
#!/bin/bash
cat users
```

Execute Mode, Version, Inputs & Arguments

Execute

Result

CPU Time: 0.00 sec(s), Memory: 3356 kilobyte(s)

cat: users: No such file or directory

The df command shows how much space I have in my files

11
12
13
14
15
16
17
18

```
#!/bin/bash
df
```

Execute Mode, Version, Inputs & Arguments

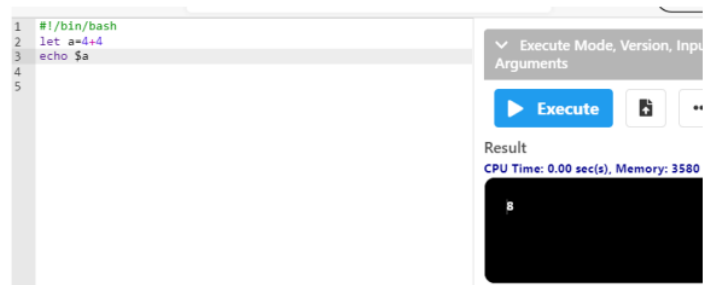
Execute

Result

CPU Time: 0.00 sec(s), Memory: 3596 kilobyte(s)

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
none	165016920	88661704	69427716	57%	/
tmpfs	4087304	0	4087304	0%	/dev
tmpfs	4087304	0	4087304	0%	/sys/fs/cgroup
10.134.28.23:/var/nfs/jd/outputs/9b55a6ad-00fd-43eb-831f-ba916248a65d/1001	50633472	12171264	38445824	25%	/myfiles
/dev/vda1	165016920	88661704	69427716	57%	/usr/lib/cache
shm	65536	0	65536	0%	/dev/shm

Here's an example of a Let command. It allows the user to do arithmetic



```
1 #!/bin/bash
2 let a=4+4
3 echo $a
4
5
```

Execute Mode, Version, Input Arguments

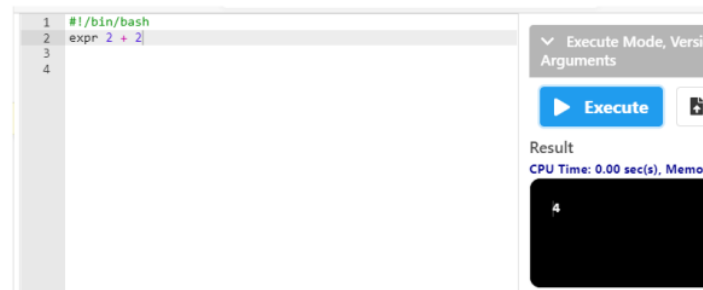
Execute

Result

CPU Time: 0.00 sec(s), Memory: 3580

8

Here's an example of an expr command. The expr command outputs the result straight to the terminal



```
1 #!/bin/bash
2 expr 2 + 2
3
4
```

Execute Mode, Version, Input Arguments

Execute

Result

CPU Time: 0.00 sec(s), Memory: 3580

4

[Shell Scripting Tutorial: How to Create Shell Script in Linux/Unix \(guru99.com\)](https://www.guru99.com/shell-scripting-tutorial-how-to-create-shell-script-in-linux-unix.html)

<https://www.howtogeek.com/67469/the-beginners-guide-to-shell-scripting-the-basics>

Conclusion

In this assignment I focused on the different types of Operating Systems that are available today. Plus, I highlighted their key functions and what they are used for. I also showed use of both CLI and batch scripting on Windows and Linux.

One of my key findings for this assignment is that there are more Operating Systems than I knew about and there are uses for each of them. It was also interesting to research the key functions of an operating system because I was unaware how much an OS does. Being aware of the key functions of an OS and the different types of Operating systems available today is information that I can use when purchasing a new pc or in my daily life.

I was also unaware of how to use CLI and Batch scripting before this assignment. Now that I know the basics for CLI and batch scripting commands, I can use them to make using my laptop easier. For example, I can check the network my system is connected to or the total RAM that my laptop has.

In summary, Operating systems control every aspect of a PC and there are many Operating systems to chose from. Also, knowing the basics for CLI and batch scripting commands can be useful to know.

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Rhys_Evans_Assignment_1

GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

Instructor

59/100

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15

PAGE 16

PAGE 17

PAGE 18

PAGE 19

PAGE 20

PAGE 21

PAGE 22

PAGE 23

PAGE 24

PAGE 25

PAGE 26

PAGE 27

PAGE 28

PAGE 29

PAGE 30

PAGE 31

PAGE 32

GRADING FORM: UWTSD GRADING FORM

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59

1. RESEARCH LITERATURE

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



Links included to represent research sources. - No use of correctly formatted citations. + formatted reference list. – Source numbers could be in

7.5

numeric sequence. - 1/2 books and/or academic papers could be included in the reference list for additional marks.

2. KNOWLEDGE AND UNDERSTANDING

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



Key functions: + Some good knowledge of key OS functions documented. - could be enhanced in places with use of citations e.g. boot process incorrect. Note: OS Types could be placed in the appendix. Bat Commands: + Some good use of relevant commands. - accompanying narration could be a bit more descriptive. Incorrect use of some commands and typos e.g. FIND command usually searches for a string within a file. Bash Commands: + Very good use of relevant commands with some narration that demonstrates a sound understanding of the commands used. Bat Scripts: + Good use and understanding of relevant scripts documented. - could be extended to include the use of functions. Bash Scripts: + Some good use and understanding of basic syntax with some commands. - could be extended with accompanying narration to demonstrate additional knowledge of the core syntax of the language (see relevant slide deck on Moodle: Linux CLI for Bash scripting).

12

3. ANALYSIS

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



Evidence of some analysis and understanding of OS functions and the relevant languages is documented. - could be extended in some areas as mentioned above. + Conclusion. Good. General note: Bash scripting on Linux, not Batch.

6

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: + Some good use of relevant commands. - could be corrected in some areas or some additional commands used instead. 2. Bash Commands: + Good use of relevant commands. 3. Bat Scripts: + Good use of relevant scripts. 4. Bash Scripts: + Use of some relevant scripts documented, - could be extended to demonstrate some additional knowledge of the core syntax.

27.5

5. PROFESSIONAL PRACTICE

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



+ Report structure and presentation is quite good. - Try to use third person in professional/academic reports. Report sections could also be numbered. - Appendix: Activity 1 answer could be included.

6