Windows OS Concepts

DevOps Training

OPERATING SYSTEM FUNDAMENTALS

1. Components of an OS
2. Functions of an OS
3. Types of OS
4. Command-line tools

THE THREE ELEMENTS OF AN OS

- User Interface – The part of the OS that you interface with.

- Kernel – The core of the OS. Interacts with the BIOS (at one end), and the UI (at the other end).

- File Management System – Organizes and manages files.

OPERATING SYSTEM KEY FUNCTIONS

- File Management

- Application Management

- Built-in Utility Programs

- Control of Computer Hardware

OPERATING SYSTEM SUPPORTS

- Multiuser – Two or more users work with the computer at the same time

- Multitasking – Two or more processes running at the same time.

- Multithreading – Two or more parts of the same process running at the same time.

OPERATING SYSTEM TYPES EXAMPLES

- Microsoft Windows

- MacIntosh OS

- Linux

Journey of Windows OS

Home (Non-Professional) Versions & Professional (Business) Versions

Windows 95

Windows 98

Windows Me

Windows NT

Windows 2000

Windows XP (2001), Windows Vista, Windows7 , Windows8, **Windows10**

With **windows server 2019** as latest server version

DISK OPERATING SYSTEM (DOS)

- The first PC Operating System (1981)

- Not a Multitasking OS, only one program could run at a time

- A command-line interface, no GUI.

- Early versions of Windows sat on top of DOS and used it to communicate with the BIOS.

- Windows XP communicates directly with the BIOS, but allows commands to be entered via a command prompt.

WINDOWS REGISTERED FILE TYPES

- A particular file extension can be **registered** and **associated** with a particular program.

    .docx files are associated with MS Word

    .xlsx files are associated with MS Excel

    .txt files are associated with Notepad

    .html files are associated with IE

This is how Windows knows what to do when you double-click a file in My Computer.
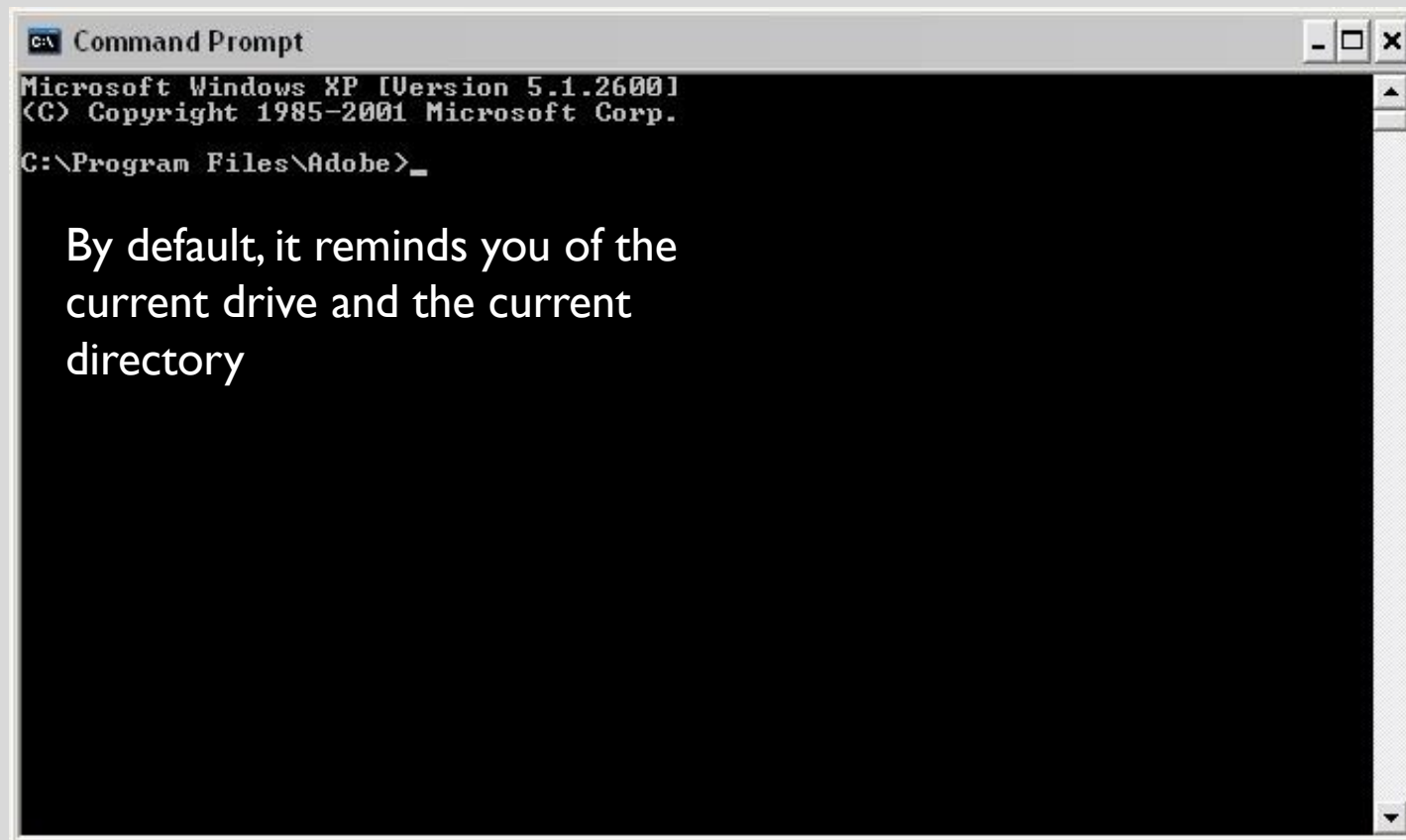
DOS COMMANDS

Two types – Internal and External

    Internal commands are resident in the main kernel file: command.com (or **cmd.exe**)

    External commands are separate little programs.

It's important to learn DOS commands because you can write scripts to execute a set of commands automatically.
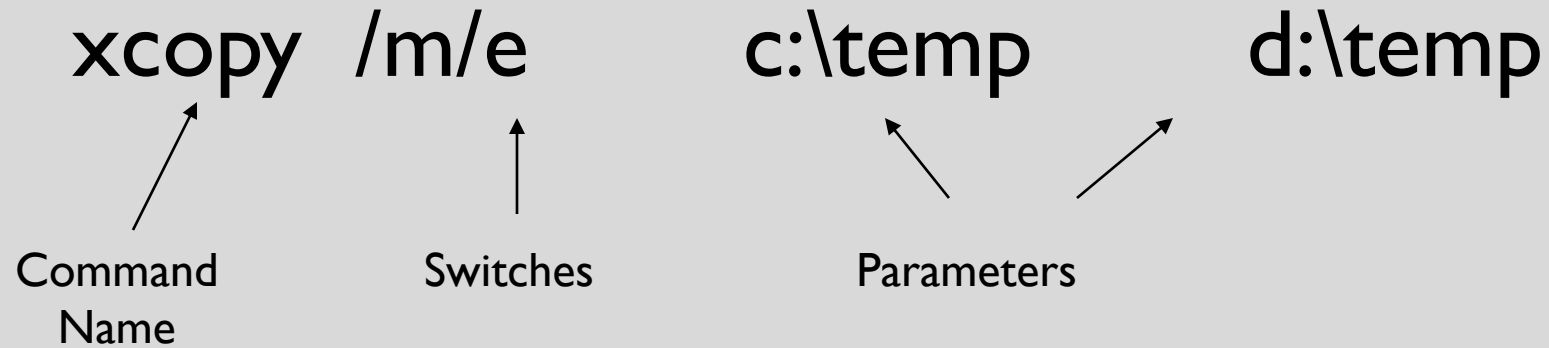
DOS COMMANDS

```
Command Prompt                                    _ □ ×
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Program Files\Adobe>_
```

By default, it reminds you of the current drive and the current directory

THREE PARTS OF A DOS COMMAND

xcopy /m/e   c:\temp   d:\temp

Command   Switches   Parameters
Name

DOS WILDCARD CHARACTERS

The "*" wildcard replaces any number of characters.

copy c:\temp\notes.* d:\temp
(copy all files with the name "notes" and any extension.)

copy *.doc c:\temp
(copy all files with a "doc" extension in the current directory.)

AT THE COMMAND PROMPT

A drive letter and a ":" (e.g. "f:") makes that your current drive.

CD (Change Directory)

- cd (with no parameters) reminds you what the current directory is.
- cd .. moves you to the parent of the current directory (up one level).
- cd \ moves you to the root of the current drive.
- cd <some directory> makes that your current directory.

DOS COMMANDS

- MD – Make directory.

- RD – Remove a directory or an entire directory tree.

- DIR – Display the contents of a directory.

- DEL (or ERASE) – Deletes one or more files.

- COPY – Places a copy of file(s) in a different folder.

- XCOPY – Flexible copy command used for copying large groups of files, commonly used for file backup.

DOS COMMANDS

- MOVE – Moves file(s) from one folder to another.
- REN(AME) – Renames file(s).
- ATTRIB – Displays or sets file attributes.
- FORMAT – Formats a disk.
- CHKDSK – Tests the file system on a disk, and reports status.
- DATE and TIME – Display & set the current date & time in the PC.
- TYPE – Displays the contents of a text file.

WINDOWS SERVICES

WHAT IS WINDOWS SERVICES?

Windows Services
- A.K.A NT Services
- long-running executable applications that run in their own Windows sessions
- Runs on background (no UI)
- Example services: DB Server, Anti-virus, SSH, HTTP, Printer Spooler, etc
- Configurable:
    - Runs on startup (computer boot)
    - Delay run
    - Manual / Auto run
    - Start with parameter
    - Starts for specific username
- An application can be programmable to run as a services via .NET (creating a Windows Service Application)

VIEW RUNNING SERVICES

1. Command Prompt

2. Task Manager

3. Services Manager

4. Computer Manager

C:\net start C:\net start | more

```
C:\Users\pvale>net start | more
These Windows services are started:

   Adobe Acrobat Update Service
   Application Information
   AtherosSvc
   AVCTP service
   Background Intelligent Transfer Service
   Background Tasks Infrastructure Service
   Base Filtering Engine
   Capability Access Manager Service
   CNG Key Isolation
   COM+ Event System
   Connected Devices Platform Service
   Connected Devices Platform User Service_4a1ab
   Connected User Experiences and Telemetry
   Contact Data_4a1ab
   CoreMessaging
   Credential Manager
   Cryptographic Services
```

SERVICE RUNNING STATUS

Service Status
- Started
- Pause
- Pending
- Stop

Service Start Mode
- Automatic
- Manual
- Delay Start
- Disabled

Start As/By
- Local System
- Local Service
- Network Service

SERVICE RUNNING OPTIONS

TASK LIST & PID

```
c:\devops>tasklist

Image Name                     PID Session Name        Session#    Mem Usage
========================= ======== ================ =========== ============
System Idle Process              0 Services                   0          8 K
System                           4 Services                   0        144 K
Registry                        96 Services                   0     99,152 K
smss.exe                       412 Services                   0      1,104 K
csrss.exe                      700 Services                   0      5,060 K
csrss.exe                      792 Console                    1      5,256 K
wininit.exe                    816 Services                   0      6,196 K
winlogon.exe                   856 Console                    1     12,992 K
services.exe                   936 Services                   0      8,756 K
lsass.exe                      944 Services                   0     21,592 K
svchost.exe                    544 Services                   0      3,668 K
fontdrvhost.exe                568 Console                    1      6,256 K
fontdrvhost.exe                596 Services                   0      2,684 K
svchost.exe                    652 Services                   0     31,152 K
svchost.exe                    572 Services                   0     19,452 K
svchost.exe                   1060 Services                   0      7,348 K
dwm.exe                       1128 Console                    1     64,408 K
svchost.exe                   1172 Services                   0      4,292 K
svchost.exe                   1252 Services                   0      5,768 K
svchost.exe                   1332 Services                   0      6,544 K
```

POWER SHELL

- PowerShell is a task-based command-line shell and scripting language built on .NET.

- PowerShell helps system administrators and power-users rapidly automate tasks that manage operating systems (Linux, macOS, and Windows) and processes

POWER SHELL INVOKE

it's

Q&A

TIME!

THANK YOU!