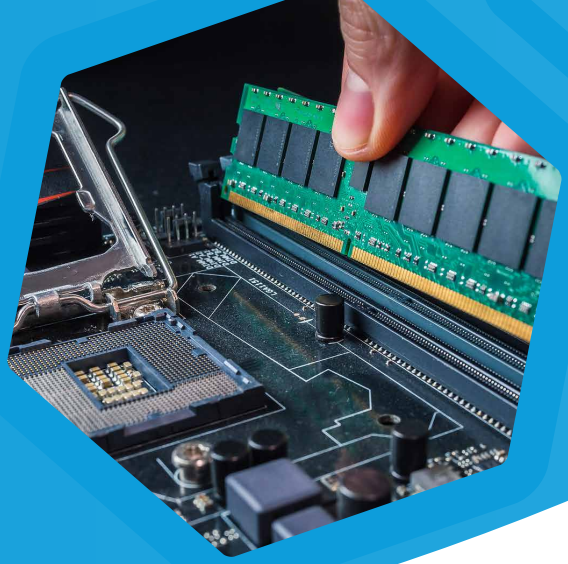

IT Fundamentals

Unit - Hardware

Lesson 3.2.4 - Operating System Components

IT Fundamentals Objectives (FC0-U61)
Objective 3.2 - Compare and contrast components of an operating system

- Services
- Processes
- Drivers
- Utilities
  - Task scheduling
- Interfaces
  - Console/command line
  - GUI

Grade Level(s)
8, 9

Cyber Connections

- **Hardware & Software**

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Teacher Notes:

Operating System Components

Components

There are many other components to an operating system outside of the file systems. While each of these are unique to certain operating systems, Windows, macOS, and Linux all have the following components. These components are mainly for the benefit of the user. This lesson focuses of the following components: services, processes, drivers, utilities, and interfaces.
Services

A ***service*** is a program that is not started by the user, but rather by the operating system when the system is started. These are also called daemons in a Linux operating system. Some common services are the user's interface, security features, input/output operations, etc. If a user has too many services, the start-up of a computer can be very slow. Most of these services can be turned on/off based on what the user wants.

Processes

A computer program is able to run by executing multiple lines of code and instruction in a certain manner. They do not all happen at once, they build upon each other and sometimes work alongside each other. A ***process*** is this execution of all these programs/instructions.

Drivers

Drivers are the software that allows the operating system to control devices that are attached to a system. For example, when a user plugs a webcam into their computer, a driver allows the computer to communicate with the webcam so the user can use the webcam. Some of these drivers come pre-installed on an operating system (like a keyboard or mouse driver) while some drivers have to be installed on an operating system (like a webcam's drivers).

Teacher Notes:

Utilities

Utility software is different from application software because utility software is meant to help the system, while application software is built for the benefit of the user. An application, like Microsoft Word, is built to allow the user to make text documents. A utility, like a file compression, is meant to save space on a computer system, which doesn't directly benefit the user. One common utility is ***task scheduling.*** Task scheduling is a program that controls all of the background programs that a user does not see or control. This is obviously an important program because it controls a lot of processes on an operating system and keeps it running efficiently.

Interfaces

Interfaces are how the user interacts with an operating system. There are only two types of interfaces, ***command line interface (CLI)*** and ***graphical user interface (GUI).*** A typical user uses a GUI, this is an interface that has a user interact with the system by images that display on a screen. For example, Microsoft Windows desktop is a GUI, if a user wants to start an application, they click on the application on their desktop. CLI is when a user interacts with an operating system through text commands. MS-DOS is one of the most common examples of a CLI. Instead of clicking on an application, a user would have to type commands to open an application.