

# Welcome to week 1; Introduction to operating systems

How many times a week do you use a computer?

For some of us, the answer might be "a lot"!

They are incredible machines that let us do everything from using specialized applications when completing a task at work to sending emails to loved ones in a distant place.

Have you ever thought about how computers can do all of this?

Well, that's where operating systems come in.

In this section, we'll learn about common operating systems, and we'll explore the main functions of an operating system.

Then, we'll learn the relationship between operating systems, applications, and hardware.

Finally, we'll compare graphical user interfaces and command-line interfaces.

The command-line interface will be an essential part of your job as a security analyst.

Understanding operating systems is an important foundation for your career in security.

There's so much to explore. Let's begin.

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Devices like computers, smartphones, and tablets all have operating systems.

If you've used a desktop or laptop computer, you may have used the Windows or MacOs operating systems. Smartphones and tablets run on mobile operating systems like Android and iOS.

Another popular operating system is Linux.

Linux is used in the security industry, and as a security professional, it's likely that you'll interact with the Linux OS.

So what exactly is an operating system?

It's the interface between the computer hardware and the user.

The operating system, or the OS as it's commonly called, is responsible for making the computer run as efficiently as possible while also making it easy to use.

Hardware may be another new term.

Hardware refers to the physical components of a computer.

The OS interface that we now rely on every day is something that early computers didn't have.

In the 1950s the biggest challenge with early computers was the amount of time it took to run a computer program. At the time, computers could not run multiple programs simultaneously.

Instead, people had to wait for a program to finish running, reset the computer, and load up the new program.

Imagine having to turn your computer on and off each time you had to open a new application!

It would take a long time to complete a simple task like sending an email.

Since then, operating systems have evolved, and we no longer have to worry about wasting time in this way.

Thanks to operating systems and their evolution, today's computers run efficiently.

They run multiple applications at once, and they also access external devices like printers, keyboards, and mice.

Another reason why operating systems are important is that they help humans and computers communicate with each other.

Computers communicate in a language called binary, which consists of 0s and 1s.

The OS provides an interface to bridge this communication gap between the user and the computer, allowing you to interact with the computer in complex ways.

Operating systems are critical for the use of computers. Likewise, OS security is also critical for the security of a computer.

This involves securing files, data access, and user authentication to help protect and prevent against threats such as viruses, worms, and malware.

Knowing how operating systems work is essential for completing different security related tasks. For example, as a security analyst, you may be responsible for configuring and maintaining the security of a system by managing access.

You may also be responsible for managing and configuring firewalls, setting security policies, enabling virus protection, and performing auditing, accounting, and logging to detect unusual behavior.

All these tasks require a deep understanding of operating systems, and as we continue this course, we'll explore operating systems in greater detail.

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