Chapter 02
Operating System

- An Operating system is system software that controls the execution of computer programs and may provide various services. Nowadays, there are various operating systems that are available such as UNIX, Linux, and Windows. Also, they are the most widely used system software for Web servers. Let's study the subjects related to the operating systems in this chapter.

Section 01 Introduction to Operating System(1)

Operating System 운영체제

- An Operating System (OS) controls all the operations that take place in a computer. In other words, the OS manages all the resources of a computer such as various software and hardware devices. The operating system is also responsible for security. For example, it protects the system from unauthorized users by allowing only authorized users to access the computer. The operating systems such as UNIX, Linux, and Windows are the most widely used systems for computers.

Functions of Operating Systems

- Provide a user interface
- Run programs
- Manage hardware devices
- Organized file storage

Types of Operating Systems

- Single user/Single tasking OS
  - One user works on the system
  - Performs one task at a time
  - MS-DOS and Palm OS
  - Take up little space on disk
  - Run on inexpensive computers

Types of Operating Systems

- Single user/Multitasking OS
  - User performs many tasks at once
  - Most common form of OS
  - Windows and OS X
  - Require expensive computers
  - Tend to be complex

Types of Operating Systems

- Multi user/Multitasking OS
  - Many users connect to one computer
  - Each user has a unique session
  - UNIX, Linux, and VMS
  - Maintenance can be easy
  - Requires a powerful computer

Providing a User Interface

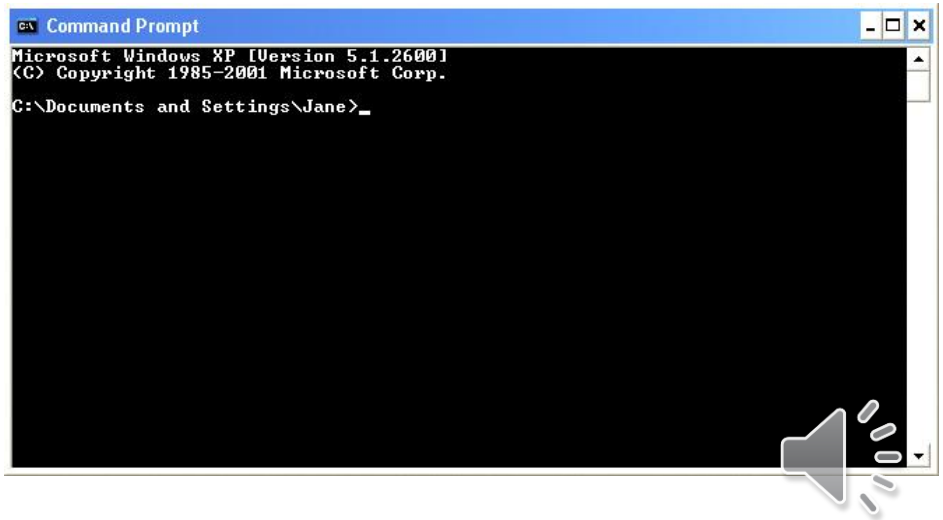
- User interface
  - How a user interacts with a computer
  - Require different skill sets

Providing a User Interface

- Graphical user interface (GUI)
  - Most common interface
    - Windows, OS X, Gnome, KDE
  - Uses a mouse to control objects
  - Uses a desktop metaphor
  - Shortcuts open programs or documents
  - Open documents have additional objects
  - Task switching
  - Dialog boxes allow directed input

Providing a User Interface

- Command line interfaces
  - Older interface
    - DOS, Linux, UNIX
  - User types commands at a prompt
  - User must remember all commands
  - Included in all GUIs



Running Programs

- Many different applications supported
- System call
  - Provides consistent access to OS features
- Share information between programs
  - Copy and paste
  - Object Linking and Embedding

Managing Hardware

- Programs need to access hardware
- Interrupts
  - CPU is stopped
  - Hardware device is accessed
- Device drivers control the hardware

Organizing Files and Folders

- Organized storage
- Long file names
- Folders can be created and nested
- All storage devices work consistently

Enhancing an OS

- Anti-virus software
  - Crucial utility
  - Finds, blocks and removes viruses
  - Must be updated regularly
  - McAfee and Norton Anti-Virus

Enhancing an OS

- Firewall
  - Crucial utility
  - Protects your computer from intruders
  - Makes computer invisible to hackers
  - Cisco sells hardware firewalls

Enhancing an OS

- Intrusion detection
  - Often part of a firewall package
  - Announces attempts to breach security
  - Snort is a Linux based package

Section 01 Introduction to Operating System(2)

The History of the Window Operating System 윈도우 역사

- Microsoft works on the first version of a new operating system. Interface Manager is the code name and is considered as the final name, but Windows prevails because it best describes the boxes or computing "windows" that are fundamental to the new system. Windows is announced in 1983, but it takes a while to develop. Skeptics call it "vaporware."
- On November 20, 1985, two years after the initial announcement, Microsoft ships Windows 1.0. Now, rather than typing MS-DOS commands, you just move a mouse to point and click your way through screens, or "windows." Bill Gates says, "It is unique software designed for the serious PC user."
- There are drop-down menus, scroll bars, icons, and dialog boxes that make programs easier to learn and use. You're able to switch among several programs without having to quit and restart each one. Windows 1.0 ships with several programs, including MS-DOS file management, Paint, Windows Writer, Notepad, Calculator, and a calendar, card file, and clock to help you manage day-to-day activities. There's even a game-Reversi.

Section 01 Introduction to Operating System(3)

Network Operating System 네트워크 운영체제

- A Network Operating System (NOS) is an operating system that includes special functions for connecting computers and devices into a local-area network (LAN). Some operating systems, such as UNIX and the Mac OS, have networking functions built in. The term network operating system, however, is generally reserved for software that enhances a basic operating system by adding networking features.

Section 02 Most Popular Operating System(1)

UNIX 유닉스

- Unix, pronounced yoo-niks, is a popular multi-user, multitasking operating system developed at Bell Labs in the early 1970s. UNIX was designed to be a small, flexible system used exclusively by programmers. UNIX was one of the first operating systems to be written in a high-level programming language, namely C. Bell Labs distributed the operating system in its source language form. So anyone who obtained a copy could modify and customize it for his own purposes.
- By the end of the 1970s, dozens of different versions of UNIX were running at various sites. After its breakup in 1982, AT&T began to market UNIX in earnest. It also began the long and difficult process of defining a standard version of UNIX.
- Historically, it has been less popular in the personal computer market. However, due to its portability, flexibility, and power, UNIX has become a leading operating system for workstations.

Unix Yesterday

- Received National Medal of Technology in 1999

Section 02 Most Popular Operating System(2)

Linux 리눅스

- Linux is pronounced lih-nucks and it is a freely-distributable open source operating system that runs on a number of hardware platforms. The Linux kernel was developed mainly by Linus Torvalds. Because it's free, and because it runs on many platforms, including PCs and Macintoshes, Linux has become an extremely popular alternative to proprietary operating systems.

Window 윈도우

- Windows is a family of operating systems for personal computers. Windows dominates the personal computer world, running on 90% of all personal computers. The remaining 10% is mostly Macintosh computers. Like the Macintosh operating environment, Windows provides a graphical user interface (GUI), virtual memory management, multitasking, and support for many peripheral devices.

Section 03 Mobile Operating System(1)

Android 안드로이드

- Android OS is a Linux-based platform for mobile phones. Android was released under the Apache v2 open source license. Ensure you choose the best server OS for your organization by reviewing a breakdown of Linux vs. Windows vs. other alternatives.
- Android began its life as a Palo Alto based startup company, founded in 2003. That company was subsequently acquired by Google in 2005. The Android platform includes an operating system based upon Linux, a GUI, a Web browser and end user applications that can be downloaded. Although the initial demonstrations of Android featured a generic QWERTY smart phone and large VGA screen, the operating system was written to run on relatively inexpensive handsets with conventional numeric keypads.
- Android runs on both of the most widely deployed cellular standards, GSM/HSDPA and CDMA/EV-DO. Android will also support:
- Bluetooth, EDGE, 3G communication protocols, like EV-DO and HSDPA, SMS messaging, WiFi, MMS, video/still digital cameras, touchscreens, GPS, compasses, accelerometers, accelerated 3D graphics

Section 03 Mobile Operating System(2)

iOS

- iOS is Apple's mobile operating system used to run the popular iPhone, iPad and iPod Touch devices. Formerly known as the iPhone OS, there are over 900,000 iOS applications available for download in the Apple app store, the most popular app store of any mobile device. The iOS utilizes a multi-touch interface where simple gestures are used to operate the device, like swiping your finger across the screen to move to the next page or pinching your fingers to zoom out.
- Since its release, iOS has gone through multiple updates, with updates adding the ability to create folders for app icons and the ability to multitask. The updates are generally free for iPhone and iPad users, while iPod Touch users are sometimes required to pay a nominal fee. Updates to the iPhone, iPad and iPod Touch can be done wirelessly through the settings or through the iTunes software package, which is a free download for Mac OS and Windows.

Section 04 Steve Jobs

- Steve Jobs was an American entrepreneur, marketer, and inventor, who was the cofounder and chairman of Apple Inc. Through Apple, he is widely recognized as a charismatic and design-driven pioneer of the personal computer revolution and for his influential career in the computer and consumer electronics fields. Jobs served as chief executive of Pixar Animation Studios. He played a role in introducing the LaserWriter, the first laser printer to feature vector graphics that started desktop publishing to the market.

Section 05 Self Check

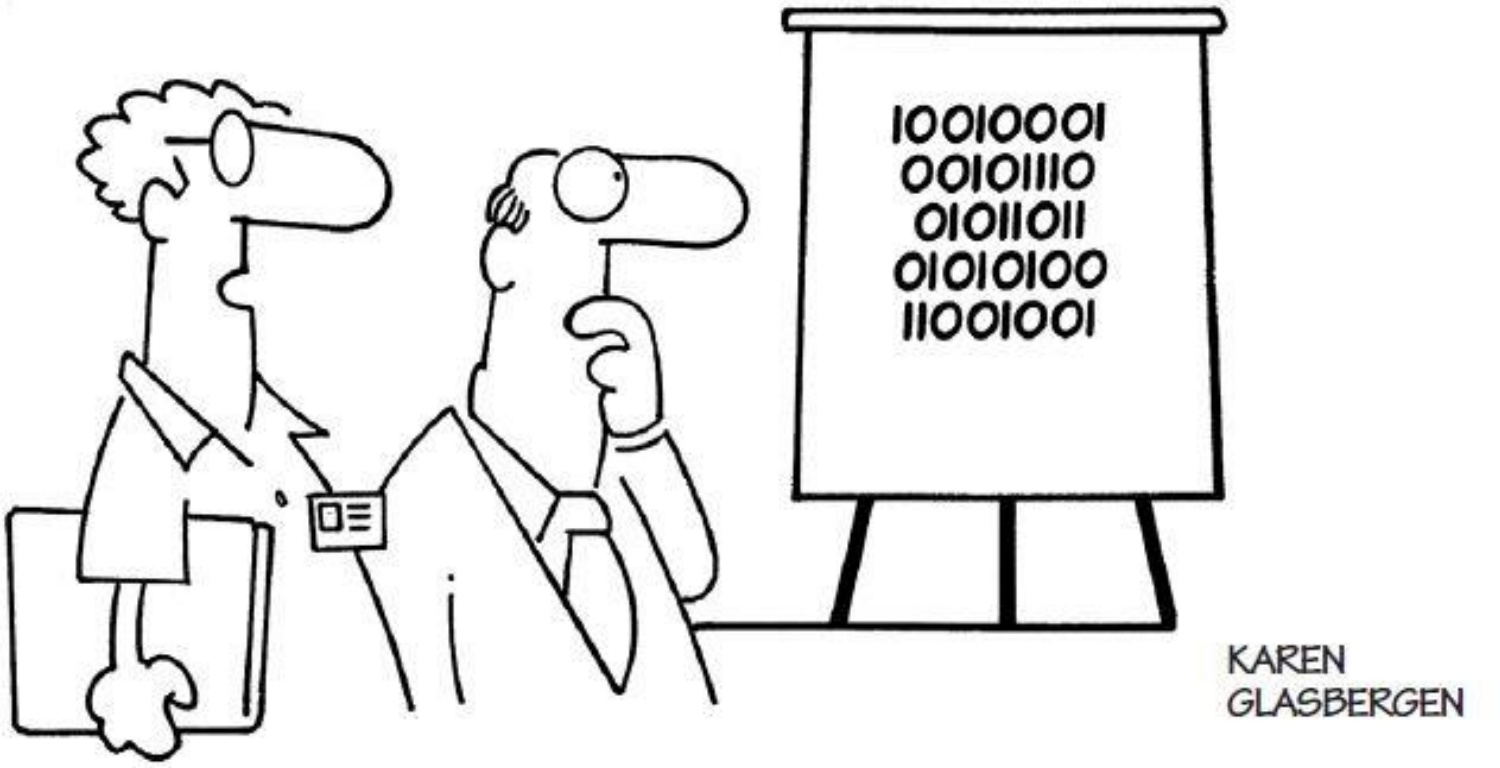
- An operating system is the program that, after being initially loaded into the computer by a boot program, manages all the other programs in a computer. The other programs are called applications or application programs. The application programs make use of the operating system by making requests for services through a defined application programming interface(API). In addition, users can interact directly with the operating system through a user interface such as a command language or a graphical user interface(GUI).

- An operating system performs these services for applications:
  - In a multitasking operating system where multiple programs can be running at the same time, the operating system determines which applications should run in what order and how much time should be allowed for each application before giving another application a turn.
  - It manages the sharing of internal memory among multiple applications.
  - It handles input and output to and from attached hardware devices, such as hard disks, printers, and dial-up ports.

"Why am I going to school if my phone already knows everything?"

"Tech support says the problem is located somewhere between the keyboard and my chair."

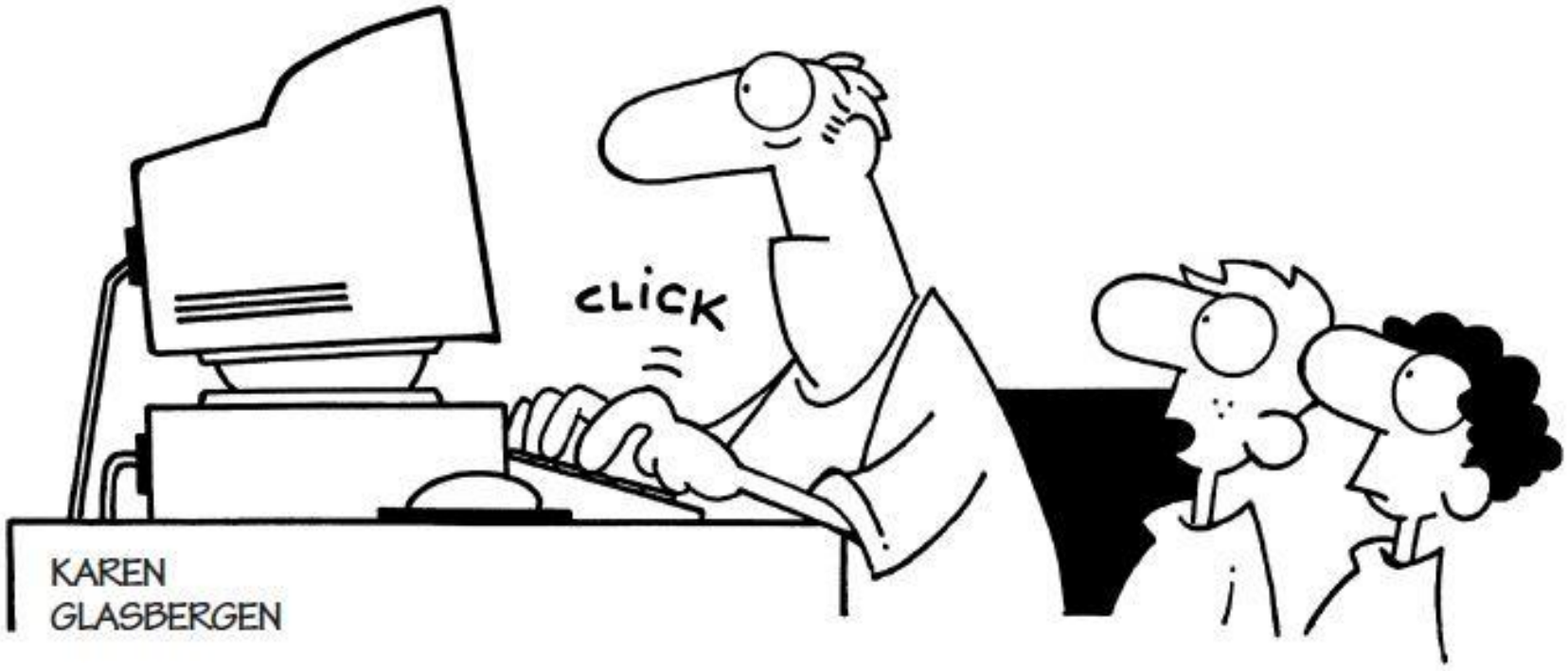
Section 06 Practical English(4)



"We've devised a new security encryption code.

Each digit is printed upside down."

Section 06 Practical English(5)

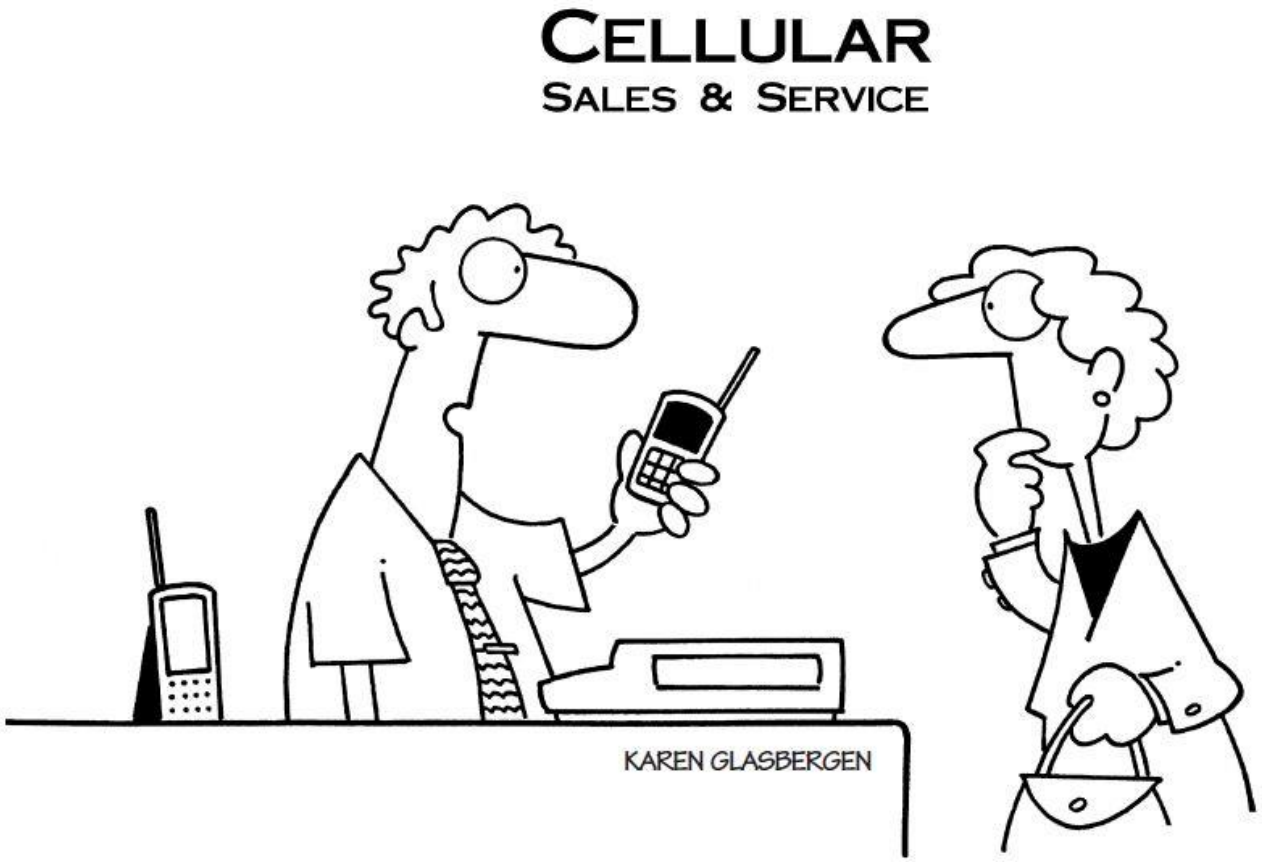


"My dad is a natural at multitasking.

He can goof up, screw up, mess up all at the same time."

"We're not getting anywhere, Mr. Johnson.
May I have a word with your computer in private?"

Section 06 Practical English(7)



"This phone won't disturb anyone at the movies.
It has a ringer that sounds like people eating popcorn!"

응용문장

- It smells like fish!
- It looks like they are having fun.

Section 06 Practical English(8)

"Ever since they invented cloud computing,
I keep getting data stuck between my toes!"

응용문장

- I will get there at 6:30.
- I get it!.