Operating Computer Using GUI Based Operating System

2.0 Introduction

An operating system (OS) is an interface between hardware and user. It is responsible for the management and coordination of activities and the sharing of the resources of a computer. There are two types of operating systems:

1. **Command Line Interface (CLI)** – Here the user has to remember the commands that are to be given at the command prompt. Examples of such OS are DOS and UNIX.
2. **Graphical User Interface (GUI)** - GUI operating systems use icons and menus to carry out commands. Because of their ease of use, GUI Operating Systems have become the dominant operating system used by end-users today. Windows is the most popular GUI OS.

2.1 Objectives

In this chapter we'll learn about:

- Features of Operating System
- Functions of Operating System
- Elements of GUI

2.2 Basics of Operating System

Today most operating systems perform the following important functions:

1. **Processor management** – Assignment of processor to different tasks being performed by the computer system.
2. **Memory management** – Allocation of main memory and other storage areas to the system programs as well as user programs and data.
3. Input/output management – Co-ordination and assignment of the different output and input devices while one or more programs are being executed.
4. **File management** – Storage of files of various storage devices. It also allows all files to be easily changed and modified through the use of text editors or some other files manipulation routines.
5. **Prioritization** – Establishment and enforcement of a priority system. That is, the OS determines and maintains the schedule in which jobs are to be executed in the computer system.
6. **Automatic transition** from one job to another job as directed by special control statements.
7. **Interpretation** of commands and instructions.
8. **Resource Allocation** – Coordination and assignment of compilers, assemblers, utility programs, and other software to the various users of the computer system.
9. Facilities **easy communication** between the computer system and the computer operator (human). It also establishes **data security and integrity**.

2.3 User Interface

As we discussed earlier, the Graphical User Interface has a visual environment using windows, buttons, and icons. As Microsoft Windows operating system is the most popular, we will discuss the different features of a GUI based operating systems with the help of Windows operating system.

2.3.1 Task Bar

Taskbar is a bar displayed at the bottom of the GUI desktop. It is used to launch and monitor running applications. The taskbar in Microsoft Windows may include the Start menu button, Quick Launch bar, taskbar buttons, and notification area.

Taskbar elements

- The Start menu button gives access to installed programs, recent documents and OS settings.
- The Quick Launch bar contains shortcuts to applications. Microsoft Windows XP displays the Quick Launch bar by default, so it might already be part of your taskbar. Look for the Quick Launch bar directly to the right of your Start button. If your Quick Launch bar is disabled, you can display it by right clicking your taskbar, and selecting Toolbars → Quick Launch option.

Setting Taskbar Options

In Windows, you can customize the taskbar according to your choice. To do so, right-click the Taskbar. The pop-up menu displays some of the commonly used options and the properties option. You can select the option you want by clicking on "Properties" to open the Taskbar and Start Menu properties dialog box. Some of the options are discussed below:

- **Lock the taskbar**: If selected, all sizing handles on the taskbar are hidden so you can't accidentally move or resize it.
- **Auto-hide the taskbar**: If you select this option, the taskbar will be hidden most of the time so as to not take up any space on the screen. To make it visible, move the mouse pointer to its position prior to hiding.
- **Keep the taskbar on top of other windows**: If selected, the taskbar is visible at all times, even when large maximized program windows are covering the rest of the screen.
- **Group similar taskbar buttons**: If selected, multiple taskbar buttons collapse into a single button so the buttons don't become too small on the taskbar.
- **Show Quick Launch**: If selected, Quick Launch toolbar is displayed to the right of the Start button.

2.3.2 Icons

Icon is a graphic symbol that denotes a program or a command or a data file or a concept in a graphical user interface.

There are thousands of icons in windows Operating system. Some important icons are categorized into six groups as follows:

1. **File management** icons are used for storing and retrieving files and folders within the system. E.g. My Computer, My Document, etc.
2. **Database management** icons are used for accessing different types of databases.
3. **Office Icons** are used for accessing office applications. E.g. Word, Excel, etc.

4. **Internet** access icons are used for upload and download files from the internet. E.g. Internet Explorer, FTP, etc.
5. **Multimedia icons** are used for accessing audio and video files. E.g. Windows Media Player, Sound Recorder, etc.
6. **Utility Icons** are used for managing the system. E.g. Backup, Control Panel, etc.

2.3.3 Menu

2.3.4 Running an Application

Running an application in GUI based operating system is quite easy and can be done in many ways. Some of the ways are mentioned below:

1. If the application icon is available on the desktop, double-click it
2. Click on the Start Menu to open the list of applications installed. Choose the application you want to run and double-click it.
3. Click on Start Menu then click on Run and type the name of the application in the textbox and press enter.

2.4 Operating System Simple Setting

2.4.1 Changing System Date and Time

Follow these steps to adjust system date and time:

1. Click on the time that is displayed in the task bar. This will bring up the Date and Time Properties box. You can also right-click on the time by clicking on the "Adjust Date and Time" menu option. Or, click Start → Control Panel → Date and time to open the dialog box.
2. Change the date, month, year, time settings as you want.
3. Click "Apply" button to save the changes.

2.4.2 Changing Display Properties

To change the display property, right click on the desktop then select properties a new window will appear having following tabs:

1. **Theme** – Here you can change theme of the OS.
2. **Desktop** – Here you can change the background and colour scheme of the windows.
3. **Screen Saver** – Here you can change screen saver and power settings.
4. **Appearance** – Here you can change style, colour scheme, font of the windows and icons.
5. **Settings** – Here you can change screen resolution and colour scheme.

All the tabs have "**Advanced**" button that can be clicked to open more options to be adjusted.

2.4.3 To Add and Remove a Windows Component

Follow these steps to add or remove a windows component:

1. Click on Start → Settings → Control Panel → Add or Remove Programs.
2. Add/Remove Windows Program dialog box appears.
3. Select the Add/Remove Windows Component icon on the left side of the dialog box.

4. Add/Remove Windows Component dialog box opens.
5. Select the component to be removed and click on “Next”
6. A message box will appear asking you to confirm you really want to remove the component.
7. Select the OK button to remove it.

2.4.4 Changing Mouse Properties

Follow these steps to change mouse properties:

1. Click on Start → Settings → Control Panel → Mouse.
2. Mouse Properties dialog box appears.
3. Change the shape of the Mouse Pointer, Mouse Buttons configuration, Pointer Options, etc. as per your choice.

2.4.5 To Add or Remove Printers

To print, you need to connect a printer directly to your computer (when it is connected in this way, it's referred to as a local printer), or create a connection to a network or shared printer.

To Add a Local Printer

First, connect the printer to your computer following the manufacturer's instructions. Windows will attempt to automatically install the printer. If Windows can't automatically install it, or if you've previously removed the printer and want to add it again, follow these steps:

1. Click on Start → Settings → Control Panel → Printers.
2. Printer dialog box appears.
3. Click Add a printer. To open the Add Printer Wizard.
4. Select Add a local printer option to open Choose a printer port page.
5. Ensure that the Use an existing port option button and the recommended printer port are selected, and then click Next.
6. On the Install the printer driver page, select the printer manufacturer and model, and then click Next.

Remove a printer

1. Click on Start → Settings → Control Panel → Printers.
2. Printers dialog box appears.
3. Right-click the printer that you want to remove, and then choose Delete.
4. If you are prompted for an administrator password or confirmation, type the password or provide confirmation.

2.5 File and Directory Management

2.5.1 Creating and Renaming of Files and Directories

A file object provides a representation of a resource that can be managed by the I/O system. Like other objects, they enable sharing of the resources, they have names, they are protected by object-based security, and they support synchronization. The I/O system also enables reading from or writing to the resource.

A directory is a hierarchical collection of directories and files. The only constraint on the number of files that can be contained in a single directory is the physical size of the disk on which the directory is located.

Creating new files or folders

Follow these steps to create new folders:

1. Open Windows Explorer, navigate to the drive or folder in which you want to create your new folder.
2. Right click anywhere in the white space and hover the mouse over new.
3. Click on folder from the sub-menu that appears.
4. You will then be prompted to name the folder, simply type in the name and then press enter (return) key.

The same procedure may be followed for creating files.

Renaming Files and folders

Follow these steps to rename files and folders:

1. Right click on the folder or file which you want to rename.
2. Then click on the sub-menu Rename.
3. Filename gets highlighted. Write the name of the file or folder you want and press Enter.

2.6 Common Utilities

Utility software is a kind of system software designed to help analyze, configure, optimize and maintain the computer. A single piece of utility software is usually called a utility or tool. Some of the utilities of OS are:

1. **Disk defragmenters** can detect computer files whose contents are broken across several locations on the hard disk, and move the fragments to one location to increase efficiency.
2. **Backup utilities** can make a copy of all information stored on a disk, and restore either the entire disk (e.g. in an event of disk failure) or selected files (e.g. in an event of accidental deletion).
3. **Archive utilities** output a stream or a single file when provided with a directory or a set of files. Archive utilities, unlike archive suites, usually do not include compression or encryption capabilities. Some archive utilities may even have a separate un-archive utility for the reverse operation.
4. **Disk compression utilities** can transparently compress/uncompress the contents of a disk, increasing the capacity of the disk.