WORKPLACE TECHNOLOGY

Digital Literacy
for the Modern Workplace

Helping You Succeed in a Connected World

Course 7505

Build Digital Confidence

Work Productively

Communicate Effectively

Stay Safe Online

CCI Learning™
Igniting Possibilities

Digital Literacy for the Modern Workplace

Using Windows 11 & Microsoft® 365

Computing Fundamentals

Key Applications

Living Online

Lesson 1: Operating Systems

Lesson Objectives

In this lesson, you will learn about the features and functions of modern operating systems. You will also learn how to start the computer and how to access various features of the operating system. Upon completion of this lesson, you will be familiar with:

- ☐ the function of an operating system
- ☐ using the taskbar
- ☐ popular desktop operating systems
- ☐ accessing the Settings app
- ☐ user accounts and profiles
- ☐ accessing the Control Panel
- ☐ power on and power off procedures
- ☐ customizing the Windows Desktop
- ☐ power options
- ☐ the features of mobile operating systems
- ☐ using the Start button
- ☐ operating system updates
- ☐ navigating the Windows Desktop

What is an Operating System?

Throughout this course, you will learn about using computers. A computer is essentially a collection of electrical and mechanical parts referred to as *hardware*. Each hardware part performs its own function, and for all the parts to work together, they must be able to communicate. Instead of communicating directly with one another, the various components communicate via an operating system.

- The *operating system* (or OS) is a computer program.
- A *program* is a sequence of instructions that guides the computer through the performance of a specific task or sequence of tasks.
- The individual lines of instruction are referred to as *code*.
- The term *software* refers to any program that makes a computer run – including operating systems and application programs.

Note: Software developers write source code for their programs in a human-readable format. In order to prepare a program to be installed and used on a computer, the source code is converted

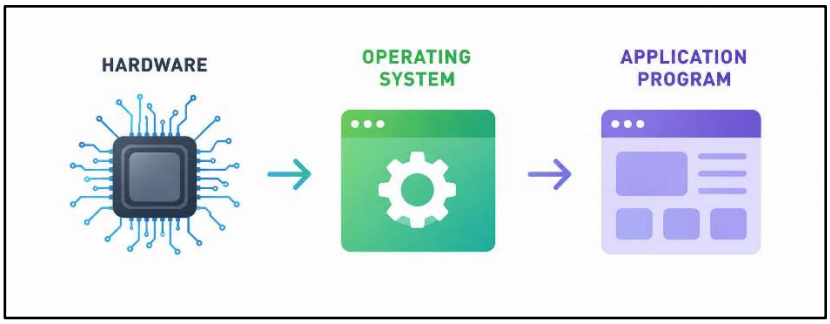
into an executable format through a process called *compiling*. Compiling changes source code into machine code.

Every computer requires an operating system in order to function. Think of an operating system as the central manager of communication, coordination, and control.

Application programs, on the other hand, allow you to be productive – to create documents or complete specific tasks such as creating a budget, removing red-eye from a photograph, searching the Internet or scheduling a meeting.

Application programs use the operating system to control the hardware functions of the computer, and you, as a computer user, interact with the operating system whenever you log on to the computer, use the keyboard, tap on a touchscreen, or use an application program such as an email program or a word processor.

It works like this:



As you work in an application program, the program interacts with the operating system behind the scenes.

The operating system:

- manages hardware devices, and
- controls communication among hardware devices, and
- controls communication between application programs and hardware devices, and
- manages files stored on the computer.

Evolution of the Modern OS Interface

Since the early days of personal computing, operating systems have evolved from basic monochrome text screens to full-color point-and-click (or tap) interfaces.

An interface is a point where two systems (or people, or networks, or devices) meet and exchange information. Anytime you use a computer, join a network, or plug in a device, you communicate with it through an interface.

Today's modern operating systems communicate with you through a graphical user interface (GUI), or "gooey." A *GUI* lets you use menus and clickable buttons or icons to start programs, move files, or perform other tasks. This makes it straightforward for users to work with the operating system and get things done.

Proprietary and Open-Source Operating Systems

Software is sold and/or distributed with a particular type of software license. When you purchase a program, you are purchasing the right to use it. The ways in which you can legally use it are defined by the license that comes with it.

Proprietary Software

Most commercial software programs are proprietary. That means they are owned by an individual or a company, usually the person or company that created it. The owner sells an executable copy of the software to users for use on their own systems and includes a license with the program.

The owner also controls how the software can be used, if and how the source code can be inspected and/or modified, and under which conditions (if any) it can be redistributed.

Additionally, most commercial software is closed-source. The software is released only in a compiled form, and the source code is not released or made available. (However, sometimes vendors will release sections of the source code to third-party developers who create enhancement routines or add-ons.)

When you install software, you must agree to the terms of the end user license agreement (EULA). In most cases the license agreement is quite restrictive. For example, the license determines the number of systems on which you can install the software, and it usually prohibits you from copying and distributing the software to other users. You are also restricted from attempting to de-compile or reverse-engineer the code back into a human-readable format. You are restricted from making changes of any kind to the software.

All versions (including mobile versions) and editions of Windows, macOS and UNIX are proprietary.

Open-Source Software

In contrast to the restrictive licensing terms of proprietary programs, an open-source software license makes the source code of the software freely available. Users are permitted to study, change, and distribute the software to anyone for any purpose.

Most open-source software is distributed freely without charge, although open-source software does not necessarily need to be free. It is considered open-source because the source code is freely available.

Linux, FreeBSD, OpenBSD, and ReactOS are examples of open-source operating systems. Mobile operating systems based on Linux (for example, various versions of Android) are open-source but are often bundled with a substantial amount of proprietary software as well.

Desktop Operating Systems

There are many types of operating systems in wide use today because there are many types of devices. In this course, you will focus on desktop operating systems and mobile operating systems.

A desktop operating system is one that is used on desktop and laptop computers. A desktop operating system is a large and robust program. It offers many features and provides a great deal of power and control over how the computer runs.

Operating System Versions and Editions

Operating systems are released in various versions and editions. An operating system version refers to the specific code base that was used to develop the operating system. For example, Windows 11 and Windows 11 are different versions of the Windows operating system. An operating system edition determines which features are available. For example, various versions of the Windows operating system are released in varying editions such as Home, Pro, Enterprise or Education.

Popular Desktop Operating Systems

Today, you can choose from several operating systems. You might like Windows, while your friend prefers macOS, and your teacher or colleague likes Linux.

Almost all operating systems include a *Desktop* which is the screen that opens once you log on and are ready to begin working. Operating system Desktops usually include colorful backgrounds, icons or buttons for accessing commands, and a status bar to indicate which programs are open and running. The Desktop is the central place from which a user interacts with the computer.

Some of the most popular operating systems include:

Windows

Windows operating systems are designed by Microsoft. Recent versions are:

- Microsoft Windows 10 (not supported any longer)
- Microsoft Windows 11

macOS

macOS designed by Apple for Macintosh computers. Recent versions are:

- macOS 26 Tahoe
- macOS 15 Sequoia

Linux

Linux is a free and open-source operating system. You can find Linux installed on supercomputers – such as those used by Google and NASA. But it is also installed on millions of home and business computers. Because anyone who uses Linux can modify it, it is very popular with programmers.

Versions of Linux are called distributions – or "distros" for short. Some popular distros are:

- Ubuntu
- Debian
- Linux Mint

UNIX

UNIX was one of the earliest operating systems and was first designed for use on large mainframe computers and servers. Modern versions are available for desktop systems and include a GUI; however, the GUI is separate from the operating system.

Common Operating System Features

No matter which operating system you use, certain features are common among all of them.

User Accounts

In addition to managing communication, devices, and file storage, an operating system keeps track of who is using the computer. This is accomplished through user accounts.

You can think of an account as a special area on the computer where you can work and keep your files separate from other users. For example, an entire family can share a Windows PC, and each family member would have a distinct account with his or her own username, password, and account settings.

An account name (and usually a password) is associated with each account. Before you can run programs, open files or use the computer to accomplish any type of work, you must log on using a valid user account.

When you first power on a Windows computer, one of two things can happen:

- If you are the only user on the computer and your user account does not require a password, then you will automatically be logged in to your account and the Desktop appears.
- If you are using a computer on which multiple user accounts have been set up, or if your user account requires a password, then Windows displays an icon and account name for each user account, and you must log on to your account by selecting your account icon and entering your password.

Account Types

Operating systems allow for the creation of different types of user accounts. In Windows, there are two readily-available account types: standard user accounts and administrator accounts.

Administrator account	Enables you to make changes to the system that will affect other users. Administrators can change security settings, install and uninstall software and hardware, and create or make changes to other user accounts on the system.
Standard user account	Enables you to use most of the capabilities of the computer. You can use most programs that are installed on the computer and change settings that affect your user account. However, you can't install or uninstall some software and hardware, you can't delete files that are required for the computer to work, you can’t access other users' files stored on the computer, and you can't change settings that affect other users or the security of the computer.

Each type of account has a specific level of permission associated with it. *Permissions* are rules associated with objects on a computer, such as files, folders and settings. Permissions determine whether you can access an object and what you can do with it. Everyone has permission to read/write (create, edit, view or print) files for their own account; however, only someone with an Administrator account can view files created by other users on the system.

An administrator account is created automatically when Windows is installed on a computer. If you are using your own computer, the account you create the first time you start up your computer is an administrator account. You can then create additional administrator and standard user accounts.

If you use a computer at your school or office, the system administrator will likely have already created an account for you. Your account may be an administrator account or a standard user account.

Note: Computers you use in a school, library, or workplace are usually part of a computer domain. A *domain* is a network of computer systems that are controlled by a network administrator. Your ability to perform certain tasks (such as installing software, changing your password, or installing updates) on a domain system can be tightly controlled by the administrator, regardless of your account type.

Account Options

It is considered best practice to protect your computer and documents if you are going to be away from the system for any length of time. Two recommended practices are signing out of your account or locking your computer whenever you are away so that other people passing by cannot view or access any of your files.

You can perform either of these tasks by selecting your user icon or the Power button in the Start menu and then selecting the desired option.

If you select Lock, Windows displays an image on the monitor, and you must enter the password before you can resume working. Locking the system is different than logging off (signing out). When you lock the system, all your programs and files remain open and ready so you can resume working quickly.

If you select Sign out, all your programs and files are closed, and you return to the Windows log on screen.

User Profiles

Each user account is associated with a profile. A *profile* is a collection of settings that make the computer display and function in a particular manner.

A profile includes settings for elements such as the Desktop background, lock screen, screen saver, pointer preferences, date and time format, and so on.

When you log on to a user account, the settings in the associated profile are loaded and affect what is displayed on the Desktop.

When you make customizations, such as changing the Desktop background or applying a sound scheme, those changes are saved in your profile so that the next time you log on to your account, all of your customizations are in effect. You will customize your profile later in this lesson.

Built-In Power Off Procedures

Powering on and powering off a computer are two different processes. When you first power on (start) the computer, you select the power button. The computer runs a set of self-diagnostic programs to ensure that critical hardware is working properly, and then it loads the operating system into memory. Once the operating system is loaded, you are either logged on to your account automatically or you log on manually.

Although you select the power button to turn the system on, you should never select the power button to turn the system off. You should always use the operating system's Power Off or Shut Down option. This option ensures that any changes you have made to the system are properly saved, and that any temporary files which are no longer needed are deleted.

Starting a Windows Computer

On many desktop computers, the power switch is located at the front or top of the system case. Do not try to feel for the power button the first time you want to start the computer – locate it visually.

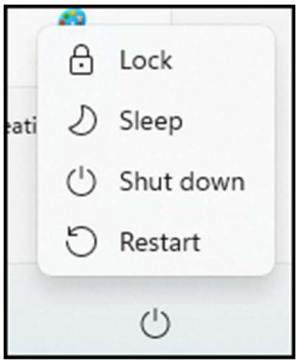
1. Turn on devices that are connected to the computer (such as the monitor, speakers and printer) first.
2. Select the power button on the computer to turn it on.

The computer performs a start-up test and then loads the operating system files into memory. This process is also referred to as *booting*.

When the operating system is loaded, Windows will display either a Welcome screen followed by the Desktop, or a logon screen from which you must select your account (and perhaps enter your password). After you log on to your account, the Desktop is displayed.

Powering Off a Windows Computer

When you are done working, you should save your work, close any open programs, and then power off the system.



Each operating system includes built-in power-off procedures which you should use to ensure that files and programs are closed and that internal services are properly exited before the electrical power is cut off. In Windows 11, various options are presented in the Power menu.

To power off a Windows11 computer:

1. Select the **Start** button, then select **Power** to display the Power menu.
2. In the Power menu, select **Shut down** to power off the system. The computer closes all files and programs, closes the operating system and turns off the power completely.

Note: In Linux, the power off option is named poweroff. In macOS, the options are the same as Windows.

Understanding Windows Power Options

Power options affect the way your computer uses energy. Because we are often called away from our computers for various periods of time which fall inside our "regular working hours," most operating systems provide options for reducing the amount of power the system uses. For example, if you take an hour for lunch, you can use one of the power options on your computer to conserve power without having to shut the system off.

Reducing power consumption is good for the environment, and it prolongs battery life on a system that is running on battery power.

Windows provides several power options from which to choose. These options include:

Sleep	Selecting *Sleep* leaves the computer on but puts it into a mode where it uses less power than when it is awake. The screen turns off and often the computer fan stops. Windows puts your work into memory. Sleep mode is similar to pausing a movie. It is useful when you won't be using your computer for a short period of time. When you wake the computer, the screen will appear exactly as it did when you put the system to sleep. On some systems you can wake the computer by moving the mouse or selecting a key on the keyboard; on others, you must select the Power button. On a desktop computer, the Sleep command may be listed as Standby.
Hibernate	This option is found on laptops only. When you select *Hibernate*, the computer writes your open files and programs to a storage location and then turns off the system. Hibernate mode uses no power. Hibernate mode is useful if you will not be using your laptop for an extended period of time, but you do not want to close your documents. When you select the power button on a laptop in hibernation, the system starts back up and puts your files and programs back into memory. You can start working again right where you left off. By default, the Hibernate option does not appear in the Power menu, but you can customize the operating system to include this option.
Shut Down	The computer closes all files and programs, closes the operating system and turns off the power.
Restart	Windows closes all open files and programs, exits the operating system and restarts the computer without turning off the power. Sometimes when a computer starts to behave strangely or seems to get "lost" or "stuck" restarting it will make it run properly again. Restarting clears the memory and reloads the operating system but does not cause the computer to perform the start-up tests again.

Exercise 1-1: On, In, Out, and Off

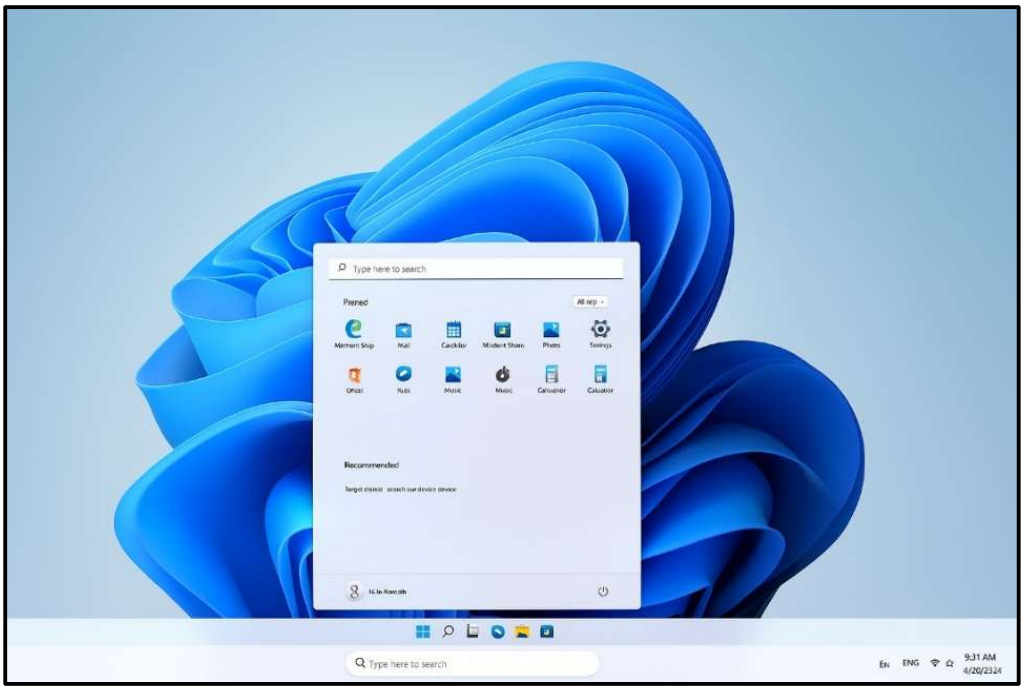
In this exercise, you will turn on the computer to start the operating system. You will also log on to Windows and explore various power options. If you require assistance finding objects on the screen, ask your teacher for help. Navigating the Desktop will be covered in detail later in this lesson. For now, you will explore power options.

1. Identify where the power buttons are located on the computer and monitor.
2. Turn on the monitor, then select the power button to turn on the computer.
3. Observe the monitor to view any messages that are displayed.
4. If a Windows log on screen appears, select the icon for your user account and enter your password. When you have successfully logged on to Windows, the Desktop will be displayed.
5. Select the **Start** button in the lower left corner of the Desktop to open the Start menu.
6. In the Start menu, select **Power** to view the power menu, then select **Sleep** to put the computer to sleep. The screen either goes dark, displays a picture or the log on screen.
7. Select a key on the keyboard or select the Power button to wake up the computer. Depending on how the computer has been set up, you may need to select the icon for your user account and/or enter your password to return to the Desktop; otherwise, you will be returned to the Desktop immediately.
8. Select the **Start** button to open the Start menu.
9. Select **Power**, then select **Restart**. Windows shuts down and then starts again without performing the startup tests that run when you first power on the computer.
10. When the log on screen displays, select the icon for your user account and enter your password to access the Desktop.
11. Select the **Start** button, select your user icon at the top of the Start menu, then select **Sign out** to log out of Windows and display the log on screen.
12. Select the icon for your user account and enter your password to return to the Desktop.
13. Select the **Start** button, select **Power**, then select **Shut down** to power off the system.
14. Select the power button on the computer to start the system.
15. Log on to Windows.

Looking at the Windows 11 Desktop

The Windows Desktop is the main screen on which program windows, icons, menus, and dialog boxes appear. Your Windows 11 Desktop should appear similar to the following screen. You will notice several objects or icons on the Desktop: these vary from one system to another, depending on how the computer is configured.

The Desktop includes several types of objects that you use to move around and get work done.



Desktop icons	The “shortcuts” you can select to open frequently used programs, folders, or files.
Mouse pointer	The arrow that follows the movement of the mouse (or touchpad) and highlights icons on the screen when you point to them.
Start button	Select to start programs, open documents, find items on your computer, and get help. You also use the Start button to power down the system.
Taskbar	The long horizontal bar at the bottom of the screen includes three main sections: the Start button and search box; the middle section (which displays the buttons for open programs and files); and the notification area (which includes a clock and icons that communicate the status of certain programs and settings). The taskbar is an integral part of Windows’ multitasking feature.

Navigating Around the Desktop

Using a Pointing Device

You use a pointing device such as a mouse or the touchpad to move the mouse pointer:

- To select an item, move the mouse pointer over top the item and then select the left mouse button once; this is called a single-click.
- To activate an item, point the arrow at the item and then select the left mouse button twice quickly; this is called a double-click.
- To display a shortcut menu with more options, point the arrow at the item and then select the right mouse button once; this is called a right-click.

Using the Keyboard

Several features can be accessed through the keyboard. For example, select the WINDOWS button to open the Start menu, select ESC to cancel an action, or select TAB to move to the next field in a dialog box.

Using a Touch Screen

If you have a touch screen device, you can:

- Tap to open, select, or activate an item; like a single-click.
- Double-tap to open a file or folder; like a double-click.
- Select and hold to display information or open a short-cut menu; like a right-click.

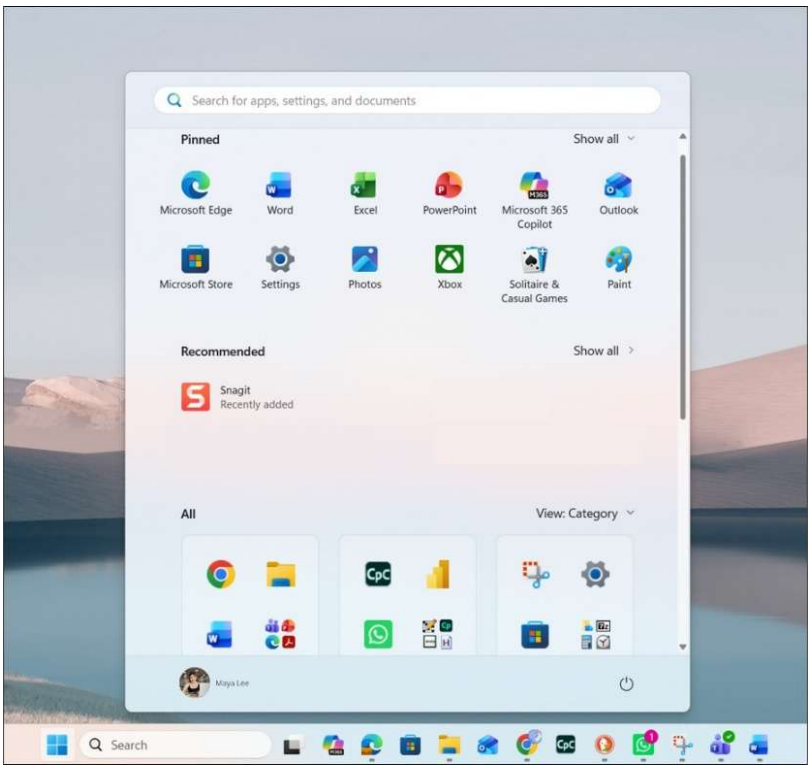
Note: Windows 11 has been designed to work with touch screen devices and provides the ability for the user to work in Tablet mode. In this course, however, you will use a mouse and keyboard.

Using the Start Button and Start Menu

To work in Windows 11, begin at the Start menu. To open the Start menu, you can:

- Select the **Start** button, or
- Use the WINDOWS key.

The Windows 11 Start menu displays a panel of application shortcuts called “tiles”.



Your user account icon (and name) is displayed at the bottom left of the Start menu. Select your username to manage your account settings.

The **Search box** appears at the top of the Start menu. You can use it to search for apps, settings, files, folders, and documents. Simply begin entering to display matching results.

The **Pinned** section contains shortcuts to frequently used apps and programs. Select an app icon to launch it. You can customize this section by pinning new apps or removing apps you no longer need quick access to.

The **Recommended** section displays recently installed applications, recently opened files, and other suggested items. Select an item to open it quickly without having to browse for it.

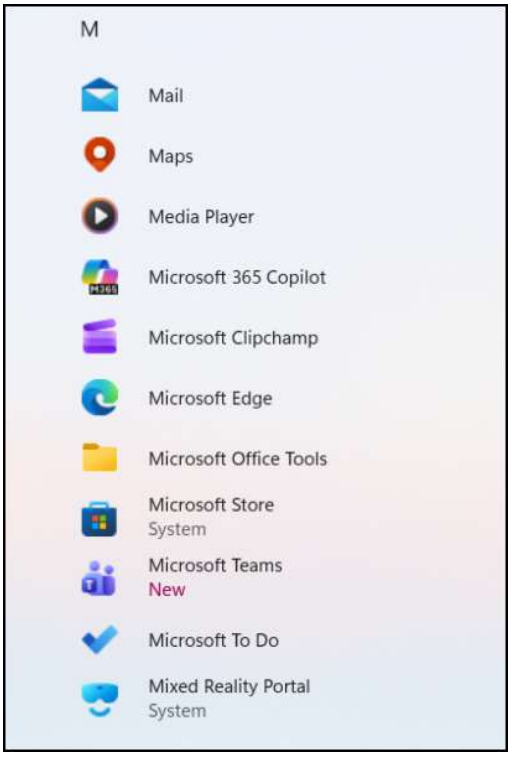
The **All** section displays all installed applications on your computer. Depending on your Windows 11 version and settings, apps may be organized alphabetically or grouped into categories. Select an app to launch it. Use the **View** option to change how apps are displayed.

The **Power button** appears at the bottom right of the Start menu. Select it to access power-management options such as **Sleep**, **Shut down**, and **Restart**.

You can also right-click the **Start button** on the taskbar to display a shortcut menu that provides quick access to commonly used tools.

About Apps and Application Programs

Apps and applications are types of software designed to help users perform tasks. In the past, the term application program was often used to describe full-featured software installed on a desktop or laptop computer, while the term app was commonly used for smaller programs installed on smartphones or tablets. Today, the terms app and application are often used interchangeably.



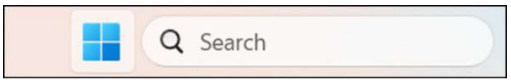
Apps can run on many types of computing devices, including desktop computers, laptops, tablets, smartphones, and web-based platforms. Some apps are installed directly on a device, while others are accessed through a web browser or cloud-based service. Apps may be designed for use with a mouse and keyboard, a touch screen, a stylus, voice commands, or a combination of input methods.

Modern apps vary widely in size and purpose. Some apps perform a single task, such as checking the weather or scanning a document. Others are full-featured productivity tools, such as word processors, spreadsheets, presentation programs, photo editors, video editors, and communication platforms. Some apps require very little storage or processing power, while resource-intensive applications may require more memory, storage, and processor performance.

Windows 11 supports many types of apps, including traditional desktop apps, Microsoft Store apps, web apps, and cloud-based apps. Additional apps can be installed from the Microsoft Store, downloaded from trusted websites, or accessed through online services. You will learn about different types of apps, applications, and software throughout this course.

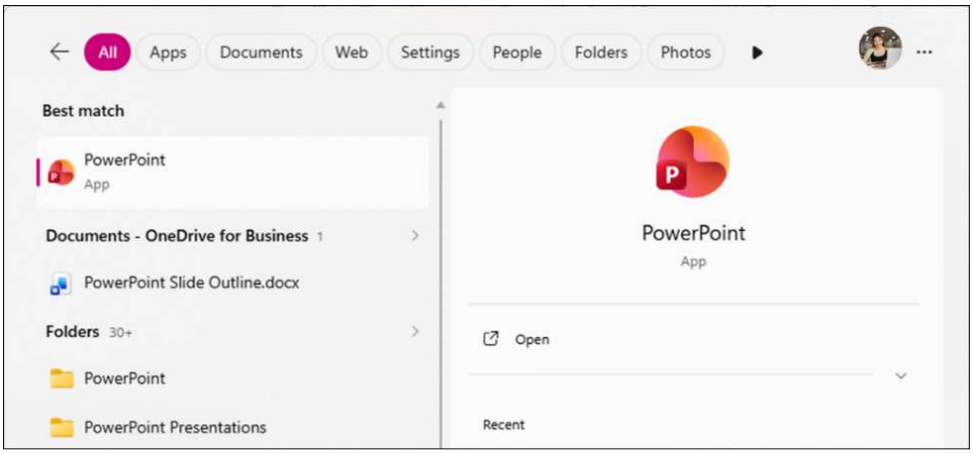
Search Box

Centered on the taskbar (next to the Start button) is the **Search icon** (magnifying glass).



Select the Search icon to open the search panel, then begin entering. Windows will display apps, files, settings, and web results that match what you enter.

When you open Search, you may also view **Recent files**, **Frequently used apps**, and **Suggested items** to help you quickly find what you need.



Use the Search feature throughout this course to locate programs and files.

Using the Taskbar

The taskbar appears at the bottom of the Windows desktop by default. You can move it to the left or right side of the screen, but it cannot be moved to the top in Windows 11.

It includes the items described below:

Taskbar Buttons

- A button appears on the taskbar for each open application, as well as for apps that are pinned to the taskbar.
- Select a taskbar button to switch to that app or window.
- A small line underneath the icon indicates that the app is running.
- Pointing to an icon displays preview thumbnails of open windows for that app.

Start Button

The Start button (centered on the taskbar by default) opens the Start menu, where you can access applications, settings, and power options.

Search

The Search box and icon open Windows Search. You can use it to find apps, files, settings, and web results.

Task View

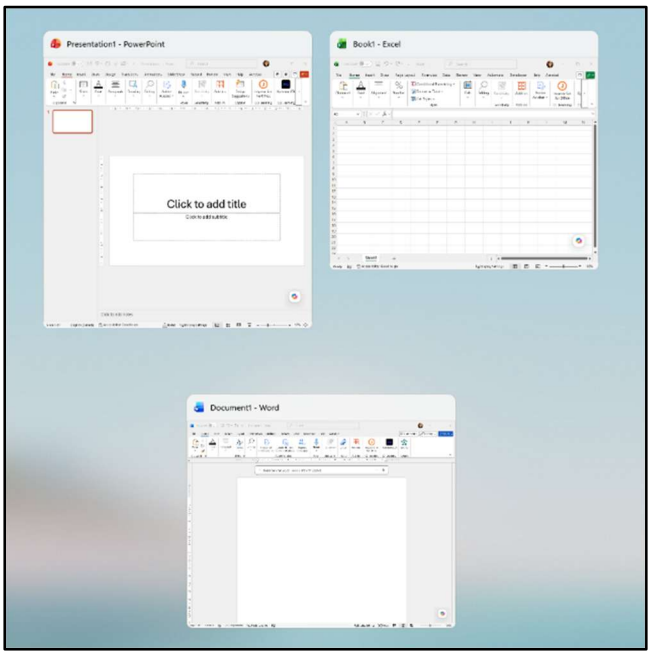
Task View displays thumbnails of all open windows and allows you to manage multiple desktops.

- Select a window to bring it to the front
- Point to a window to reveal a Close button
- Select New desktop to create a virtual desktop

Task View

Task View displays small windows of your running applications and a New desktop icon.

You can select a window to bring that application to the front of your screen, or you can point the mouse pointer over a window to display a Close button ×. Select the **Close** button to close the application.



You can also select **New desktop** to create a *virtual Desktop*. In computing, the word virtual refers to the way a particular component or environment appears to a user. For example, a virtual Desktop is a software implementation of a physical Desktop – it does not exist physically, but you can use it (and organize your work on it) as if it did exist physically.

You can launch different applications on this Desktop and then alternate between your open Desktops to keep your workspace uncluttered. You can create as many virtual Desktops as you like, and you can move applications between Desktops.

When you are finished working with a virtual Desktop, display Task View, point the mouse pointer over the Desktop you want to close to display a Close button.

Select the **Close** button to close the Desktop.

Taskbar Buttons

When you open a program, an underlined button for that application appears in the taskbar as a visual clue that the program is running. If you hover the mouse over a taskbar button, Windows displays a preview window for each file that is open within that application.

Exercise 1-2: Exploring the Start menu and Taskbar

In this exercise, you will explore areas of the Desktop, Start menu, and taskbar.

1. If necessary, start the computer and log into Windows.
2. When the Desktop appears, put your hand on the mouse and then slide the mouse along your desk and observe that the mouse pointer follows the movements you make with the mouse.
3. On the keyboard, select WINDOWS to open the Start menu.
4. On the keyboard, select ESC to close the Start menu.
5. Select the **Start** button to open the Start menu again.
6. Select in the search box.
7. In the search box, enter: `notepad`. Notice that a list of possible matches for the term you entered displays at the top of the menu.
8. At (or near) the top of the menu, select **Notepad** to open the Notepad application window on the Desktop.
9. Select the **Close** button at the upper right corner of the Notepad window to close the application.
10. Select **Start**, then under Pinned, select **Calculator** to open the calculator app. Notice that the calculator displays inside its own window. All programs run inside their own dedicated windows. Notice that a button for the calculator app now displays in the taskbar.

11. In the taskbar, select the **File Explorer** button (it appears like a yellow file folder) to open a File Explorer window. You use File Explorer to view and manage files on your computer.
12. Select the **Show Desktop** button at the right edge of the taskbar to make the open windows invisible and display only the Desktop.
13. In the taskbar, point the mouse pointer over the **Calculator** button to display a preview window of the app.
14. In the taskbar, point the mouse pointer over the **File Explorer** button to display a preview window of the File Explorer application.
15. Move the mouse pointer into the File Explorer preview window until the Close button displays, then select the **Close** button to close File Explorer.
16. In the taskbar, select the **Calculator** button to display the Calculator app on the Desktop again.
17. Select the **Close** button in the Calculator app window to close it.
18. Right-click the time in the notification area and examine the items on the shortcut menu.
19. Select an empty area of the Desktop to close the shortcut menu.
20. Select the time in the notification area to open the calendar.
21. Close the window.

Global and Profile-Specific Settings

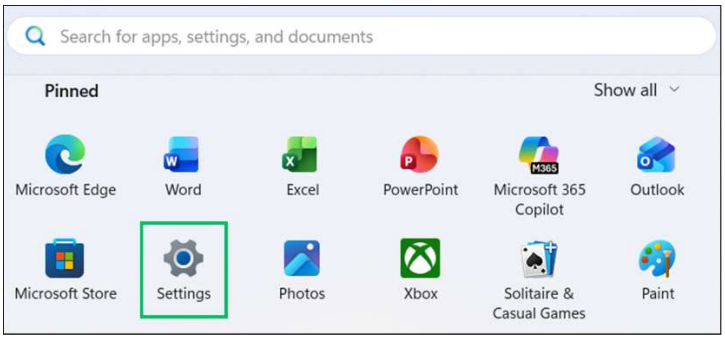
Operating systems are highly customizable, allowing you to create the type of environment you like to work in. Some settings are global, meaning they affect all user accounts on the system. Generally, global settings are related to hardware. For example, settings that affect screen resolution, power management options, date and time settings, installed printers, or whether to require a password when waking the computer are global settings.

Profile-specific settings are settings tied to an individual user's profile. These affect only one user account on the system. Items such as background pictures, screen savers, themes and sound schemes, or whether to display file name extensions in File Explorer are examples of profile-specific settings.

There are two main areas from which you can access settings

The Settings App

You can configure several commonly-accessed settings through the Windows 11 Settings app. Select **Start**, and then **Settings** to open the main window of the Settings app.



From this window, you can browse the categories or use the search box at the upper right corner to find what you are searching for, including advanced options on specific pages in the Control Panel.

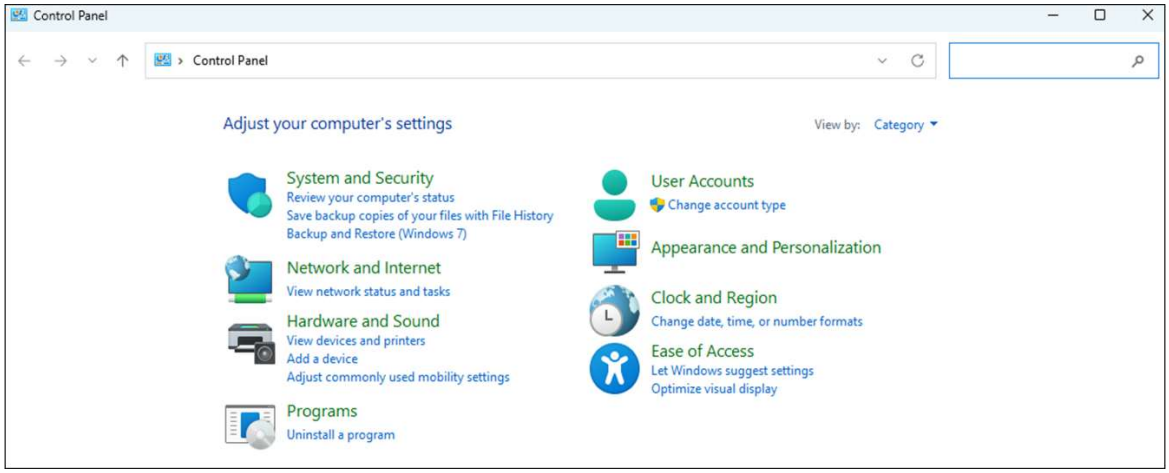
Note: You can also right-click on the Desktop and select either **Display settings** or **Personalize** to open specific settings windows in the Settings app.

The Windows Control Panel

The Control Panel is the area in Windows where you can access features to customize settings for devices on your system.

You can access the Control Panel by:

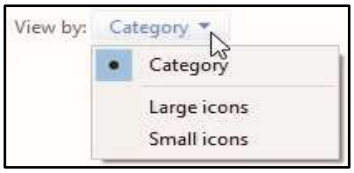
- Right-clicking **Start**, then selecting **Control Panel** in the shortcut menu; or
- selecting an advanced feature in the Settings app.



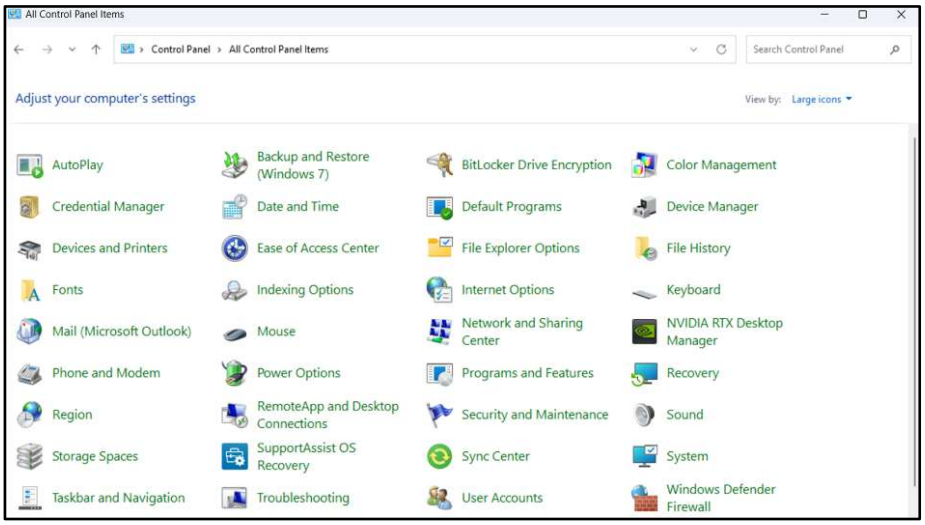
The default view for Control Panel topics is Category view. The categories are described below:

System and Security	Provides options for firewall settings, power options and file history (backups).
Network and Internet	Set up or modify how your system connects to a network or the Internet and share files with others.
Hardware and Sound	Set up or modify devices such as printers, speakers and monitors.
Programs	Provides access to system management tasks such as installing and uninstalling programs.
User Accounts	Provides options for setting the computer up to be used by more than one person.
Appearance and Personalization	Customize your screen with screen savers, desktop backgrounds, and so on.
Clock, and Region	Change the format of dates, times, currency, or numbers to reflect regional standards or languages.
Ease of Access	Provides options for changing accessibility specifications, such as turning on voice recognition or altering visual displays.

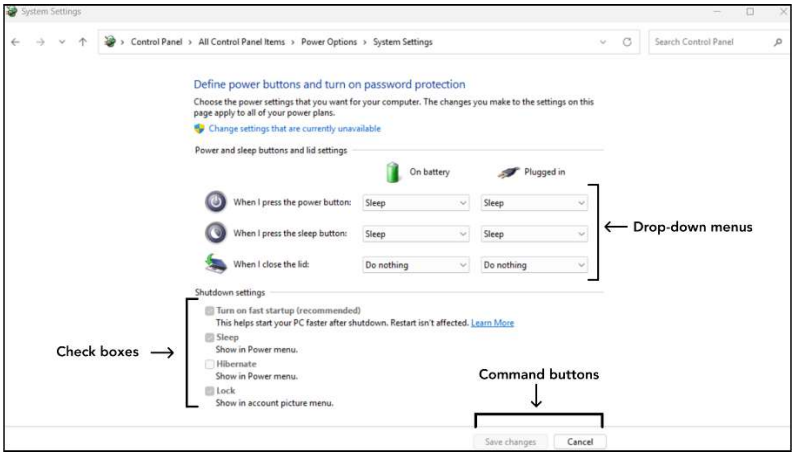
Selecting a category opens a particular page or window in the Control Panel, and each screen provides links to other pages. Select various links to drill down to the command or feature you want to access.

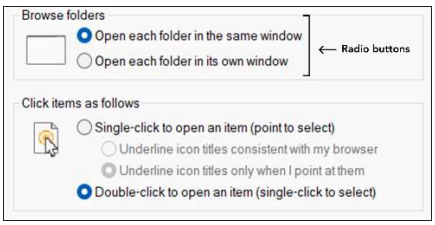


Note that a small down-facing arrow displays to the right of the word Category. This arrow denotes that a drop-down list or drop-down menu is available. When you select the arrow, a list opens and drops down on the screen, allowing you to select an option. You can use this drop-down menu to change the display in the Control Panel from Category to view either large icons or small icons.



When you drill down to a page where you configure settings, you can use the various menu options on the page. The following figures illustrate other types of menu options used in Windows.

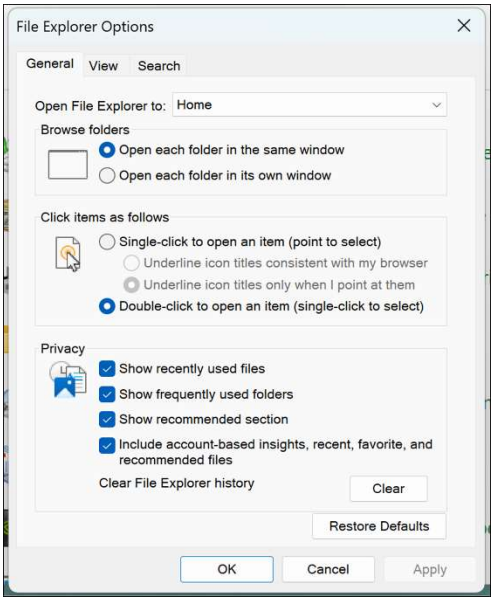




Radio buttons	Force a user to select one option out of a group of options. When you select a radio button, any previously selected radio button within the same group is automatically unselected.
Check boxes	Allow users to turn one or more option choices on or off.

Drop-down arrows	Commonly used in the Start menu, Settings app, File Explorer, and dialog boxes to provide access to additional features while keeping the interface organized and uncluttered.
Command buttons	Enable a user to either save (and apply) or abandon configuration setting choices. For example, after you select the options, you want to enable, you would select Save changes to keep your changes, or you could select Cancel to discard the changes you made.

Dialog Boxes



In Windows, you often specify settings through dialog boxes. A *dialog box* is a window that displays on top of all other windows. It is designed to accept user input, and it remains open until you close it.

The adjacent figure displays a typical Windows dialog box. This dialog box includes several tabs on which you can specify settings. Notice that the tab illustrated in the figure includes radio buttons, check boxes and command buttons.

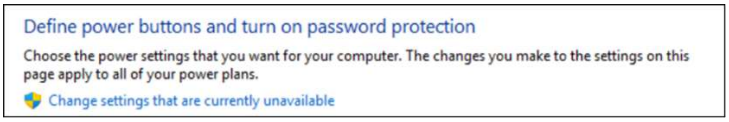
You cannot access any other items on the Desktop or in a program while a dialog box is open.

Changing Global Settings

You can use the Control Panel or the Settings app to customize many operating system settings, including global settings.

Some features, specifically those that affect how the computer functions or those that can affect other users, may not be displayed in the Control Panel if you are using a system that belongs to a company or school domain.

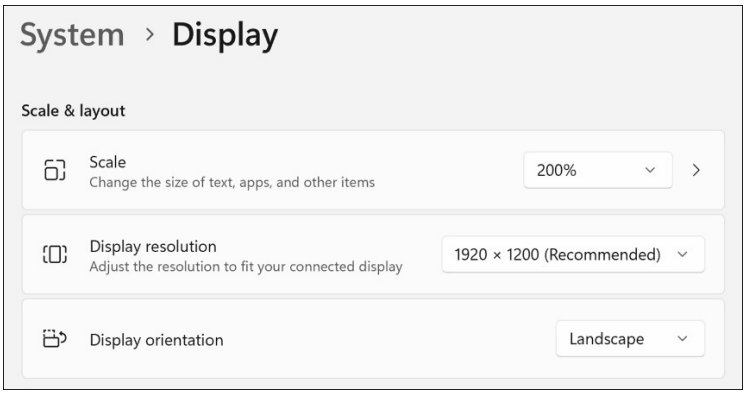
Note that even if you can change certain settings, the options may not be readily available in the Control Panel. However, you can make these options available by selecting a link that displays **Change settings that are currently unavailable**.



Changing the Screen Resolution

Screen resolution refers to the degree of clarity with which text and images appear. Screen resolution is measured by the number of pixels (or dots) the screen can accommodate, and the measurements are given as width by height. For example, a resolution of 1024 x 768 displays 1024 pixels horizontally on the screen and 768 pixels vertically.

Most displays work best at their maximum resolution setting, and most systems are automatically set to use the highest resolution setting. However, you can adjust the resolution. If you reduce the resolution (for example, if you change it from 1024 x 768 to 800 x 600), items displayed on the screen will appear bigger, but you may not be able to view all the items on the screen.



The screen resolution is a global hardware setting (it affects all user accounts). You can access the resolution settings on the Display page in the Settings app.

Changing Password Protection

By default, Windows 11 systems are configured to require a user to re-enter the log on password when waking the system from sleep. However, you can reconfigure this option through the Accounts window > Sign-in options section of the Settings app.

Changing Power Management Options

Hibernate mode, which is available on laptops, is not included in the Power menu by default. You can, however, specify to add this option to the Power menu through the Power Options > System Settings page in the Control Panel as well.

Exercise 1-3: Working with global settings

In this exercise, you will examine global settings that affect power options and password protection.

Note: Depending on how your system is configured, you may not have the ability to change certain settings. In such cases, read along.

1. In the Search bar, enter **Control Panel**. Select **Control panel** from the results.
2. At the top right, select the arrow for View by and select **Category**, if necessary. Then select **Hardware and Sound**.
3. Under Power Options, select **Change what the power buttons do**.
4. At the top of the window, select **Change settings that are currently unavailable**.
5. At the bottom of the window, in the Shutdown settings section, select the check box for **Hibernate**. (This option will be listed only if you are using a laptop. If you are using a desktop PC, skip to Step 7).
6. Select **Save changes**.

7. Close the Control Panel by selecting its **Close** button.
8. Select **Start** to open the Start menu.
9. Select **Power**. If you selected the Hibernate check box in Step 6, the Hibernate option now appears in the menu.
10. In the Power menu, select **Sleep** to put your PC to sleep.
11. Select the power button to wake up your computer. Notice that you do not have to enter your password to resume working right where you left off.
12. Now, return your system to its original setting.
13. Right-select **Start**, then select **Control Panel**, **Hardware and Sound**.
14. Under Power Options, select **Change what the power buttons do**.
15. At the top of the window, select **Change settings that are currently unavailable**.
16. At the bottom of the window, in the Shutdown settings section, clear the check box for **Hibernate**. If applicable.
17. Select **Save changes**, then close the Control Panel by selecting its **Close** button.

Customizing Profile-Specific Settings

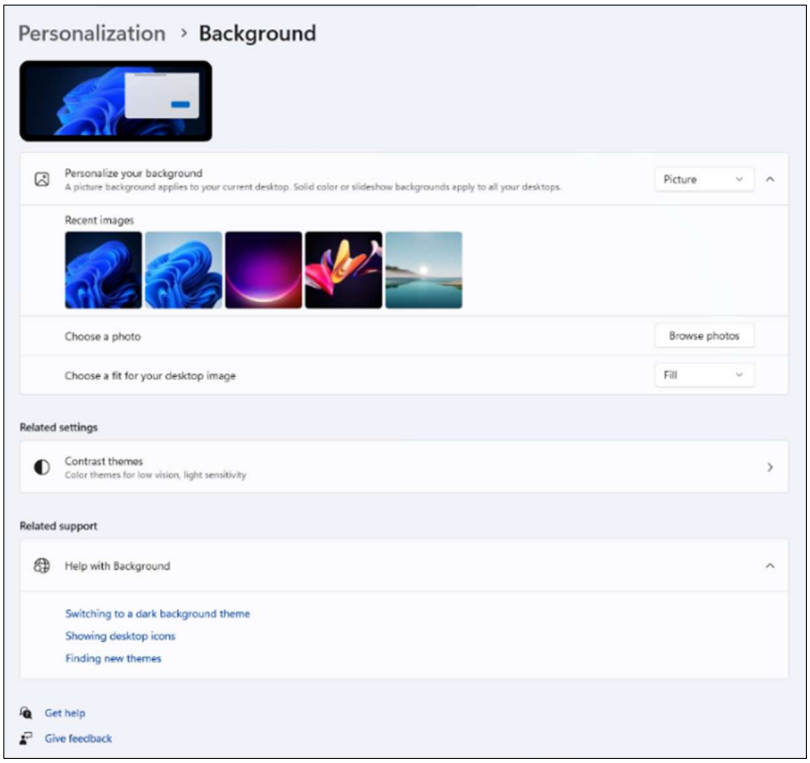
Profile-specific settings allow you to customize the appearance and feel of your PC to make your working environment truly yours. Changes that you make to these settings are saved with your profile and do not affect other users on the same computer.

Customizing the Desktop Display

You can customize your Desktop by changing the background picture, configuring a screen saver, changing window colors, applying themes and configuring sounds.

To access these customization settings through the Settings app, use one of the following options:

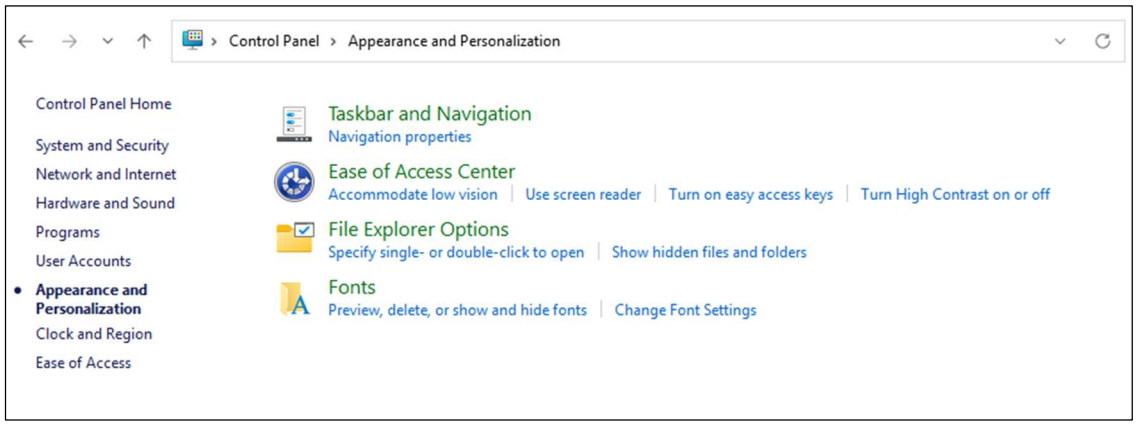
Select **Start**, **Settings**, **Personalization** or right-click an empty area on the Desktop, then select **Personalize**.



You can use the tabs within the Settings app window to make your customizations. A few of the links for advanced settings take you to an appropriate page in the Control Panel.

To access these customization settings directly through the Control Panel:

Right-click **Start**, then select **Control Panel**, **Appearance and Personalization**, **Personalization**.



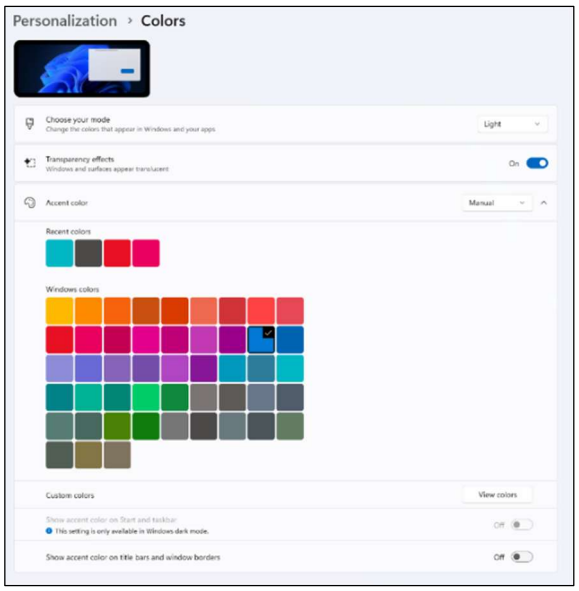
In Windows, a theme is a combination of pictures, colors and sounds. Each theme includes a Desktop background, a window border color, sounds and a screensaver.

My Themes	Themes you have customized, saved or downloaded. When you make changes to a theme, the new settings appear in this section as an unsaved theme.
Windows Default Themes	Themes that are included with Windows 11. You can go online to Microsoft.com to browse, download and install additional themes.
Installed Themes	Themes that are created by computer manufacturers or non-Microsoft providers. Not every system includes installed themes.
High Contrast Themes	Themes that are designed to improve computer performance or to make items clearer to view. These themes do not include transparency effects.

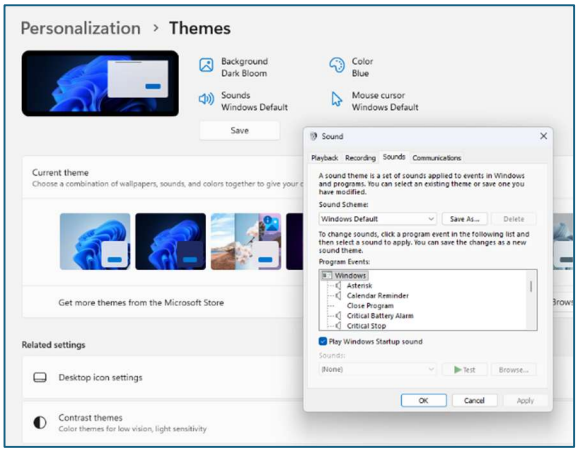
Select any theme to view it. For the selected theme, you can change the window color, sounds and screen saver settings. Select the theme component at the bottom of the Personalization window to access the configuration settings.

To customize the Desktop:

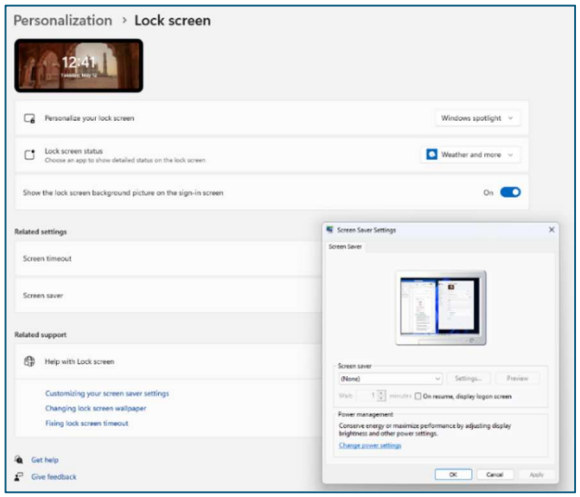
- Use the **Desktop Background** option to display the Background tab of the Personalization window in the Settings app. You can select one of the pictures displayed in the window, or you can browse to a different location on your computer and select a saved picture to display on the Desktop.
- Use the **Colors** option to display the Colors tab of the Personalization window in the Settings app. Select a color square to specify an accent color. You can also instruct Windows to automatically select an accent color based on colors in your background picture.



- Use the **Themes**, **Sounds** option to apply a specific sound scheme to the theme. The sound scheme determines which sounds play when Windows events (such as closing a program or minimizing a window) occur.



- Use the **Personalization**, **Lock screen**, **Screen Saver** option to select and apply a screen saver. If the screen saver includes configurable options, you can set those too.



Exercise 1-4: Customizing the Desktop

In this exercise, you will customize the Desktop and configure and apply a screen saver.

1. Close any open screen elements, if necessary, then right-click an empty area on the Desktop, and select **Personalize** in the shortcut menu to open the Background tab of the Personalization window in the Settings app. The Background setting should currently be set to Picture.
2. Select the drop-down arrow for the Background setting, then select **Solid color**. Notice that the display in the Preview area changes to reflect the current selection.
3. Select a color square in the Background colors section and observe the effects in the Preview area.
4. Display the Background drop-list again and select **Slideshow**. Notice that options for choosing a picture album and setting a time interval for changing the background picture become available in the window.
5. Display the Background drop-down list once more and select **Picture**.
6. In the Choose your picture section, select an image that you want to use as your Desktop background.
7. In the left pane of the window, select **Colors** to display the Colors tab. You can use this tab to select an accent color for the tiles and menu options that display in the Start menu.
8. Select a color square for the color you would like to use as your accent color.
9. Scroll to the bottom of the window to view the remaining options. You can specify your accent color on the Start button, taskbar, action center and in the title bars of individual windows. You can also specify whether to make the Start menu, taskbar and action center transparent.
10. In the left pane of the window, select **Lock screen**. The lock screen is the image that displays when you lock your system, or when you wake your computer and you require a password upon waking. The available settings are Windows Spotlight (which features changing images chosen by Microsoft), picture (which lets you select a picture that does not change), or slide show (which allows you to specify a folder on your computer where you have images that can be used for a lock screen slide show).
11. In the left pane of the window, select **Themes** to open the Themes tab, then in the right pane, select **Theme settings** to open the Personalization page in the Control Panel.
12. At the bottom of the page, select **Screen Saver** to open the Screen Saver Settings dialog box.
13. Display the Screen saver drop-down list, then select **Ribbons**. A preview of the Ribbons screen saver should be displayed at the top of the dialog box.
14. Ensure that the Wait time is **1 minute**, select **Apply**, and then select **OK**.
15. Do not touch your mouse or keyboard for at least 1 minute so that you can view the screen saver.
16. Once the screen saver displays, move your mouse slightly and notice that the screen saver disappears.
17. Change the Wait time to **20 minutes**.
18. Close the Control Panel.
19. Close the Settings app.

Mobile Operating Systems

Smartphones (and some tablets) use mobile operating systems. Mobile operating systems are optimized for touch screen technology, small screen size, fast file transfer, and accessing cellular networks. Even though they run on small devices and are streamlined so that they do not use excessive battery power or system resources, they can accomplish an amazing array of tasks including phone calling, video calling, streaming audio and video, Internet browsing, texting,

connecting to Wi-Fi, and pairing with Bluetooth devices. Some of the most widely-installed mobile operating systems are:

- **Android** - Developed primarily by Google, Android is based on the Linux kernel and is the most widely used mobile operating system in the world. Android is available on smartphones, tablets, and other devices manufactured by companies such as Samsung, Google, OnePlus, Xiaomi, and others.
- **iOS** - Developed by Apple, iOS is a proprietary mobile operating system used on the iPhone. It is closely integrated with Apple's hardware, services, and ecosystem, including iCloud, the App Store, and Apple Watch. iPadOS is a version of iOS optimized for the iPad. It includes features designed specifically for larger screens and multitasking
- **Other Mobile OS** – While Android and iOS dominate the mobile market, other mobile operating systems have existed, including Windows Phone/Windows 11 Mobile and BlackBerry OS. These platforms are no longer actively developed or widely used.

Touch Screen Navigation on Mobile OS

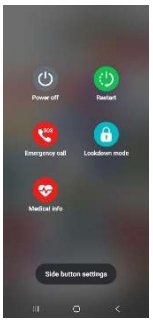
Various phones and mobile operating systems recognize specific actions and gestures for navigating and performing tasks on a touch screen. Generally, you can use the following motions and gestures to interact with a smartphone or tablet:

- Tap (lightly tap items with your fingertip)
  - Tap keys on the onscreen keyboard to enter
  - Tap an item to select it
  - Tap an app icon to launch an application
- Touch and Hold (touch an item and maintain contact)
  - Touch and hold an app, widget or icon to move it
  - Touch and hold an item to display additional options or a shortcut menu
- Swipe or Slide (lightly drag your finger vertically or horizontally across the screen)
  - Swipe to navigate between screens or pages
  - Swipe to scroll through lists, menus, or web pages
  - Swipe on the lock screen to access notifications or unlock options
- Drag (touch and hold on an item, and then move it)
  - Drag an app icon, shortcut or widget to add it to a new location
  - Drag items to organize them on the Home screens or folders
- Pinch and Spread (move two fingers together or apart)
  - Pinch or spread to zoom in or out while viewing pictures, maps, documents or web pages
  - Pinch or spread to adjust zoom while using the camera app

Power On / Off

To turn on a smartphone or tablet, select and hold the power button until the device starts up. On most phones the power key is also the lock key – you can select it to lock the device.

The first time you turn on your device, a welcome screen displays and you are guided through the basic steps required to set up your phone (such as choosing a default language, connecting to a Wi-Fi network, setting up accounts associated with the device, and so on).



To turn the phone off, select and hold the power/lock button until the device options menu displays, then tap the power off option. The figure to the right displays the options on an Android phone.

The Options menu allows you to put the device into one of several modes. You can turn the phone off, restart it, put it into airplane mode (in this mode the phone disconnects from all networks and turns off features for phone calling and Wi-Fi access) or put it into emergency mode (this mode is designed to conserve battery power by disabling apps and functions that use a lot of power; however, you can still send messages, use contacts, and make emergency calls.)

Lock Screen

Mobile operating systems on smartphones and tablets typically use a gesture-based lock screen. A lock screen on a mobile device is like the lock screen in Windows – this screen displays until the user performs the required gesture or enters the correct information (like entering your user account password in Windows).

The image illustrates an Android lock screen. Notice that there are no shortcut icons displayed on the lock screen; you must unlock it before you can access any of the device's features.

Lock screens protect your devices from unintended access (that is, you can't accidentally launch an app or make a call while the phone is in your pocket or purse) and can also protect your phone from illicit access by others. Until you unlock the phone, there is very little you can do with it.

By default, most phones lock automatically when the screen times out. You can also manually lock your phone at any time by selecting the power/lock key.

Generally, a mobile operating system can use the following lock screen types:

- **Swipe** – swipe on the lock screen to access notifications, camera controls, or unlock options. By itself, a swipe does not provide security.
- **Pattern** – you create a pattern by dragging your finger across a grid of dots, and you re-enter that pattern to unlock the phone. This is considered a medium-level security setting.
- **PIN** – set and then enter a personal identification number (PIN) of at least six digits. This option provides medium to high security.
- **Password** – you create a password for unlocking the screen. This option provides high security.

- **Fingerprint** – you can use fingerprint recognition to unlock the screen. This option provides medium to high security.
- **Face Recognition** – use facial recognition technology to unlock the device. Security levels vary depending on the device and implementation.
- **None** – you can set your phone to never use a lock screen.

If you choose one of the secure lock screen options, you can also specify whether to display or hide content and notifications on the lock screen.

It is always good practice to lock your phone. Smartphones often contain a lot of private information, such as account numbers, electronic ID cards, and more. Locking the phone can help prevent illicit use even if your phone is stolen.

The Home Screen

Instead of featuring a Desktop as the place from which to launch programs and perform other tasks, mobile operating systems are designed around a Home screen. (Some mobile operating systems refer to the Home screen as the Start screen.)

The Home screen displays links or shortcuts (in the form of icons or buttons) to applications, settings, features, and notifications, and generally displays as much status information as possible within a very small space.

Home screens differ from one mobile operating system to the next, but for the most part the Home screen consists of a grid of shortcuts that can be arranged over multiple pages. The following figure illustrates the Home screen on an Android phone.

The Home screen includes the following features:

Notification icons	Displays new messages and email notifications, information about available software updates, and so on.
Status icons	Displays information about the state of the phone hardware, including signal strength, battery level, the current time, and so on.

Status bar	Bar across the top of the phone that displays the status icons (on the right side) and notification icons (on the left side).
App shortcuts	Shortcuts to installed apps. Tap once to launch the app.
App folder	Several apps can be grouped into a folder.
Widget	Self-contained application (not a shortcut) that runs on the Home screen. There are widgets for clocks, calendars, Internet bookmarks, stock prices, weather, and even those that display the number of unread messages in your email Inbox.
Home screen indicator	Indicates which Home screen is currently displayed. In the preceding figure, there are three Home screen pages (indicated by the three icons). The first Home screen page is currently displayed. You can tap an indicator icon to move to that Home screen page, or swipe left or right to access the various Home screen pages.
Dock	An area along the bottom edge of the screen (in the figure, the dock contains icons for Phone, Contacts, Chrome, Messages, and Apps) which displays on all Home screen pages.
Apps screen	Allows quick access to all the installed apps, including the Settings app.

The Home screen is highly customizable; you can add wallpapers, apply themes, add apps and widgets, create folders, affect the display of the date and time, and so on.

The Mobile Settings App

The Settings app provides access to basic device settings for a smartphone or tablet. In most mobile operating systems, the icon for the Settings app is a gear (or set of gears).

Tap the **Settings** app icon to display the main settings page, which allows you to configure several elements of the phone hardware and the operating system.

The arrangement of the settings may differ from one mobile operating system to another, but for the most part you will find settings that affect:

- Wireless and cellular network connections
- Phone hardware (for example, sounds and notifications, storage, battery)
- Personalization settings (themes, wallpaper, accounts, and so on)
- System settings (such as date and time, accessibility settings, OS version and system updates)

Notice that these are the same types of settings that you can configure in a desktop operating system.

Virtual Personal Assistants

Many mobile operating systems include virtual personal assistants, which are voice-activated services that use a natural language user interface to answer questions, make recommendations and perform actions by delegating requests to a set of web services. You speak natural language voice requests and commands to operate your smartphone and its apps.

For example, you can ask, “OK Google, display some maps of Mesa, Arizona.” Or you can request, “Siri, remind me to take the turkey out of the freezer tonight at 8pm.”

For the virtual assistants to work, they need access to items such as your location, contacts, voice input, browser history (a history of websites you have visited), search history, calendar details,

information from text messages and email messages, and so on. The first time you launch an assistant, you will be prompted to allow access. Note that most of these functions and services require a connection to either Wi-Fi or a cellular network.

Popular virtual assistants include:

- **Siri** – Developed by Apple and available on iPhone, iPad, Mac, Apple Watch, and other Apple devices. Siri can answer questions, set reminders, send messages, make calls, and perform many other tasks. Users can activate Siri by saying "Siri" or by pressing and holding the device's designated button.
- **Google Assistant/Gemini** – Developed by Google and available on Android devices and other platforms. These assistants can answer questions, search the Internet, set reminders, control smart-home devices, and perform many other tasks using voice commands.
- **Microsoft Copilot** – Developed by Microsoft and available on Windows, mobile devices, and the web. Copilot uses artificial intelligence to answer questions, generate content, assist with productivity tasks, and interact with Microsoft services and applications.

Operating System Updates

Operating systems are routinely updated for the purpose of increasing security, fixing bugs and adapting to new hardware and technology standards. Updates can be released in various forms. These include:

- **Patches** – A patch is a software fix designed to correct a specific problem, such as a bug, security vulnerability, or compatibility issue. Patches are typically released as soon as a problem is identified and tested.
- **Updates** – An update is a software package that improves security, reliability, performance, compatibility, or functionality. Updates may contain patches, bug fixes, feature improvements, and new capabilities.
- **Feature Updates** – A feature update is a major software release that introduces significant new features, interface changes, or enhancements. Modern operating systems such as Windows 11 regularly receive feature updates in addition to routine security and maintenance updates.
- **Service Packs** (Legacy) – In earlier versions of Microsoft Windows, a service pack was a collection of patches, updates, and enhancements released as a single package. Modern versions of Windows have replaced service packs with cumulative and feature updates.

Microsoft provides updates for Windows through the built-in **Windows Update** service. Windows Update automatically downloads and installs security updates, bug fixes, performance improvements, and feature updates.

Users can also manually check for updates through **Settings** > **Windows Update**. Apple provides updates for macOS through **Software Update**, which is available in **System Settings**. Software Update can automatically download and install operating system updates, security updates, and other Apple software updates.

There are different kinds of updates. Security updates or critical updates protect against security vulnerabilities and viruses and spyware. Other updates correct errors that are not related to security, or they enhance functionality and improve performance.

Automatic Updating – Previous Versions of Windows

The Windows Update website was first made live when Windows 95 was launched, and users would check the website and manually download and install updates. Since that time, Microsoft has continually made the update process more streamlined and automated.

Windows Update is a service that continuously checks for updates automatically. Users can configure the service to run in one of three ways: You can automatically check for and install the latest updates. You can also set Windows Update to check for and download updates and then alert you that updates are ready to be installed.

You can even set it not to check for updates at all.

Users can also manually check for (and install) available updates at any time.

Update Categories

Users can configure the Windows Update by specifying actions for different categories of updates. Updates are categorized based on their importance. There are three categories for updates:

- **Important** – these updates include security and critical updates.
- **Recommended** – these updates include software updates and new or improved features. Depending on how you set up Windows Updates, recommended updates can be exhibited together with important updates, or with optional updates.
- **Optional** – these updates include software that you can install manually, such as new or trial Microsoft software or optional device drivers from Microsoft partners.

Automatic Updating – Windows 11

In Windows 11, Windows Update automatically downloads and installs the latest updates, drivers, and patches released by Microsoft.

On a Windows 11 system, Windows Update will automatically download and install important and critical updates by default.

Optional updates and updates that require you to accept new terms of use are downloaded, and then Windows

Update will let you know that these are ready to be installed. Windows 11 does not allow you to selectively install updates; you can choose only whether your computer will reboot automatically to install updates when the system is inactive, or whether you prefer to be notified to schedule a reboot.

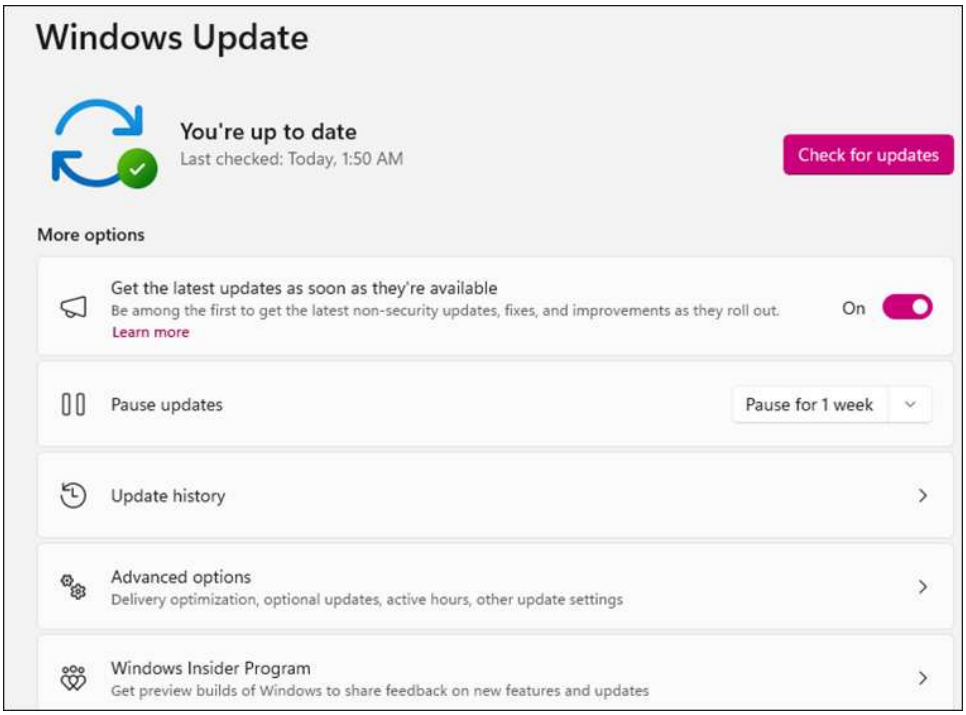
Manually Checking for Updates

Microsoft releases important updates every second Tuesday once per month. However, updates can be released at any time. You can manually check for updates by opening **Settings** and selecting **Windows Update**.

Windows Update allows you to view update status, check for available updates, review update history, and manage update settings.

The status of the system is illustrated at the top. In the image, the status is “You’re up to date.” Notice that the message also displays when Windows Update last checked for available updates.

Select **Check for updates** to have Windows Update check for, download, and install any available updates.



Exercise 1-5: Checking your update status

In this exercise, you will investigate when updates were last installed.

1. Select **Start**, then select **Settings** to open the Settings app.
2. Select the **Windows Update** category.
3. When was the last time Windows Update checked for updates?
4. At this point, you could select **Check for updates** to have Windows Update check again for updates right now. In this exercise, however, we will not check for updates.
5. Close the Settings app.

Benefits and Drawbacks of Automatic Updating

Keeping your system updated ensures that you have the latest security schemes and technologies as well as the latest features. However, not all updates are necessary, and at times, updates can cause unexpected conflicts and even failures. This is especially true in workplace or school settings where computer systems must often interact with old hardware or old applications.

Updating a Mobile Operating System

When mobile phone manufacturers create updates for their devices, they decide when those updates will be pushed out to their customer base. Users will notice a notification on their devices that an update is available and ready to be installed. You can also check manually for updates. To check for updates on an Android device:

1. Connect to a Wi-Fi network.
2. Open the **Settings** app.
3. Scroll to **System** (or **About Phone**, depending on the device).
4. Tap **System Update**, **Software Update**, or **Check for Updates**.
5. Follow the on-screen instructions to download and install any available updates.

To check for updates on an iPhone:

1. Connect to a Wi-Fi network.
2. Open the **Settings** app.
3. Tap **General** > **Software Update**.
4. If an update is available, tap **Update Now** or **Download and Install**.
5. Follow the on-screen instructions to complete the update.

Note: It is always a good idea to back up your personal data before installing an update. You will learn how to back up your mobile data in an upcoming lesson.

Lesson Summary

In this lesson, you learned about the features and functions of modern operating systems. You also learned how to start the computer and how to access various features of the operating system. You should now be familiar with:

- ☑ the function of an operating system
- ☑ using the taskbar
- ☑ popular desktop operating systems
- ☑ accessing the Settings app
- ☑ user accounts and profiles
- ☑ accessing the Control Panel
- ☑ power on and power off procedures
- ☑ customizing the Windows Desktop
- ☑ power options
- ☑ the features of mobile operating systems
- ☑ using the Start button
- ☑ operating system updates
- ☑ navigating the Windows Desktop

Review Questions

1. The ability for different people to use the same computer is made possible through:

   a. Open-source software
   b. User accounts
   c. Desktop elements
   d. Settings app

2. Which of the following is the collection of stored settings that ensure your customizations are in effect whenever you log on?

   a. Your user profile
   b. Your domain
   c. Your lock screen
   d. Your permission level

3. Kelly has several documents open on her laptop, and is working concurrently in each one. She is about to leave for several hours to attend an off-site social function, but will return to her documents later in the day. Which option below would save the most power and still ensure that she can pick up right where she left off?

   a. Hibernating the laptop.
   b. Putting the laptop to sleep.
   c. Shutting down the laptop.
   d. Displaying the lock screen.

4. From which of the following areas in Windows 11 can you access Desktop customization settings?

   a. Desktop drop-down list
   b. Desktop Customization wizard
   c. Calculator app
   d. Control Panel

5. Which of the following Windows dialog box features allows you to select several options?

   a. Drop-down lists
   b. Radio buttons
   c. Check boxes
   d. Command buttons

6. Which of the following is an example of a global setting on a Windows system?
   a. Desktop background picture
   b. Screen resolution
   c. Accent color
   d. Screen saver

7. Which mobile operating system feature helps you avoid accidentally placing a call or taking a picture?
   a. Virtual personal assistant
   b. Pinch gesture
   c. Dock
   d. Lock screen

8. Which of the following is a function of the operating system?
   a. To compose and send an email.
   b. To edit photographs and other high-resolution images.
   c. To control communication and manage files.
   d. All of these are operating system functions.

9. What is the best way to shut down a computer?

    a. Select the power button on the computer case.
    b. Select Start, Power, Shut down, then let the process complete.
    c. Select CTRL+ALT+DEL twice.
    d. Select ESC.

10. What is a service pack?

    a. A collection of software updates.
    b. A form of spyware.
    c. A power mode designed to provide emergency power during a power outage.
    d. A collection of Desktop backgrounds, sounds and themes that you can find online and then download and install on your system.