

HUMAN COMPUTER INTERACTION

WEEK 3

Definition of HCI

Objectives

At the end of this chapter, you will be able to learn:

- User experience design principles.
- HCI principles (WIMP) used by Windows operating system.
- Windows management and settings
- Health, safety and ergonomics issues which can occur when using a personal computer or a workstation.

Definition of HCI

What is HCI?

- HCI (Human Computer Interaction) involves planning, designing and usage of the interaction between users and computers.



Human ————— Interaction ————— Computer

Definition of HCI

User Experience Design Principles

- **What is User Experience (UX)?**

User Experience (UX) is the quality of a person's interaction with a product, system, or service. It includes ease of use, clarity, accessibility, efficiency, and overall satisfaction.

A good UX makes interaction smooth and satisfying, while poor UX creates confusion and frustration.

Note: Do not confused UX to UI design. User Interface (UI) design focuses on the visual and interactive elements of a product: layout, colors, typography, buttons, icons, and overall look and feel. UI is about how the product looks and behaves, while UX is about how the product feels and works.

Definition of HCI

User Experience Design Principles

- **Why UX Matters?**

A positive UX increases user satisfaction and loyalty.

Poor UX leads to errors, abandonment, and negative perceptions of the product.

UX is not just about “making things pretty” but about removing obstacles so users can achieve their goals effortlessly. In practice, UX often determines whether people continue to use a system or abandon it.

Definition of HCI

User Experience Design Principles

- **Principles of UX Design**

Clarity: Interfaces should be obvious and easy to interpret.

Consistency: Similar actions should always work the same way.

Feedback: The system must inform users of the results of their actions.

Accessibility: Designs should be inclusive and usable for people with different abilities.

Efficiency: Users should reach their goals with the least possible effort.

Definition of HCI

User Experience Design Principles

- **Example**

Good

Create New Job

×

Creating a new job allows you to set up the tasks you wish for the autonomous vehicle to perform. You can reorder and remove tasks at any time.

Cancel

Create

Bad

Create New Job: Creating a new job allows you to set up the tasks you wish for the autonomous vehicle to perform. You can reorder and remove tasks at any time. **Cancel / Create**

Definition of HCI

User Experience Design Principles

- **Modern UX Considerations**

Mobile-first and responsive design: Interfaces should adapt to different screen sizes.

Personalization: Systems can adjust to individual preferences and needs.

Microinteractions: Small animations or signals improve engagement and confidence.

Conversational and voice interfaces: Chatbots and voice assistants expand how users interact.

Dark mode and customization: Providing options increases comfort and usability.

Definition of HCI

User Experience Design Principles

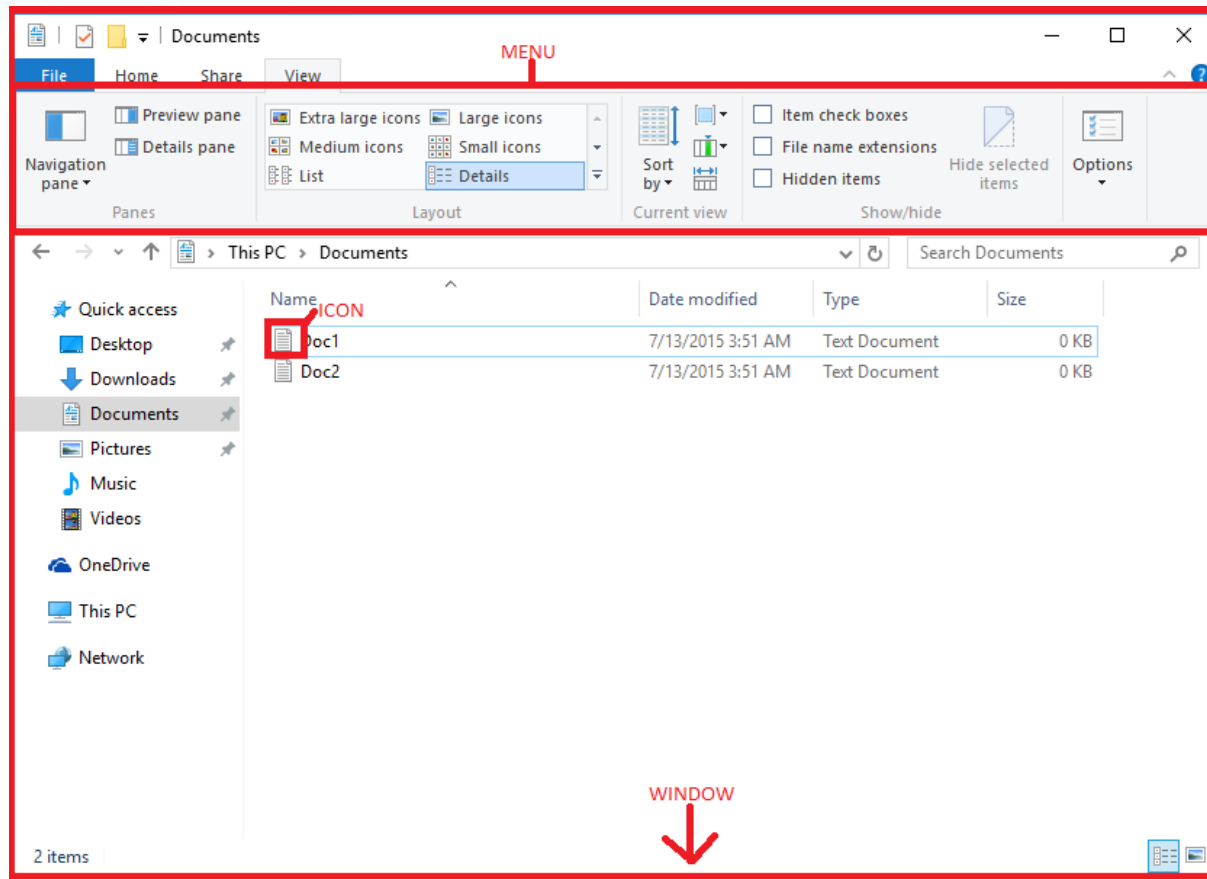
- **Example**

Good	Bad
First Name Caitlynn	validation fault - format does not match database. Invalid entry. First Name Caitlynn
First Name Haapala	First Name Haapala
Email cait48gmail.com Oops! This doesn't look like a valid email address. Try adding '@' before the domain name. Accepted email formats	Email cait48gmail.com

Definition of HCI

WIMP (Windows, Icons, Menus and Pointer)

- In HCI, WIMP stands for "**window, icon, menu, pointer**", denoting a style of interaction using these elements.

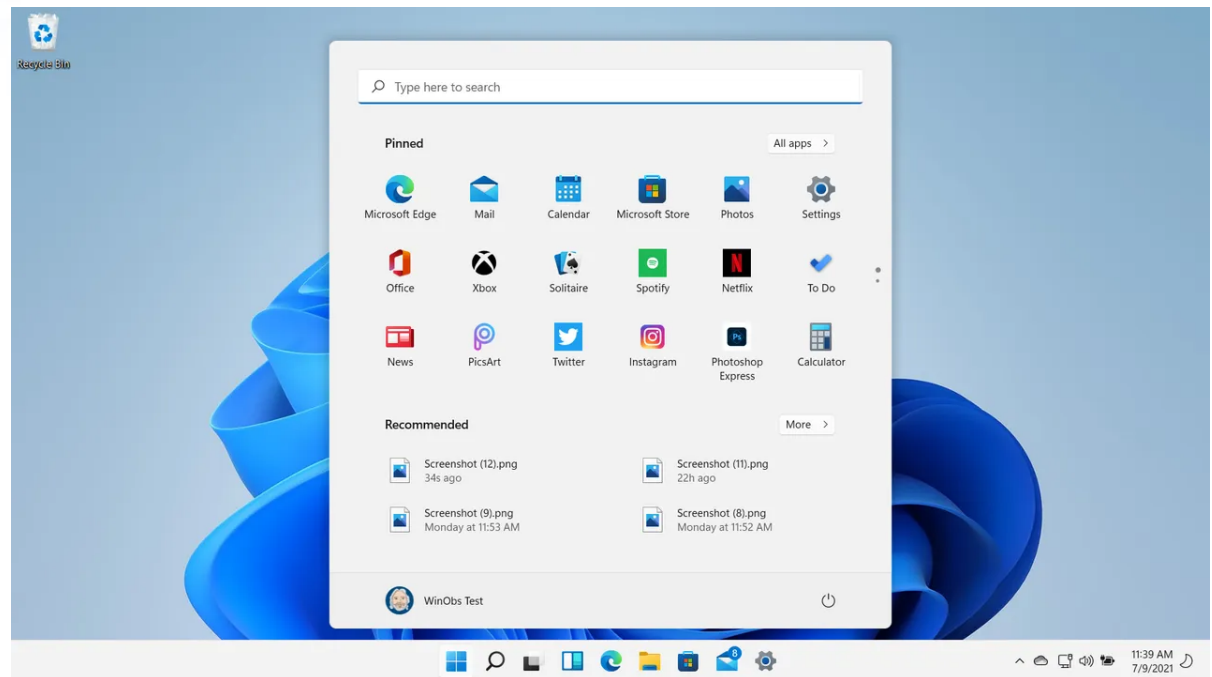


Definition Of HCI

WIMP (Windows, Icons, Menus and Pointer)

- **WIMP** is the graphical user interface (GUI) of Windows operating system. Most common GUI examples are:

- Windows
- Icons
- Images
- Texts
- Menus



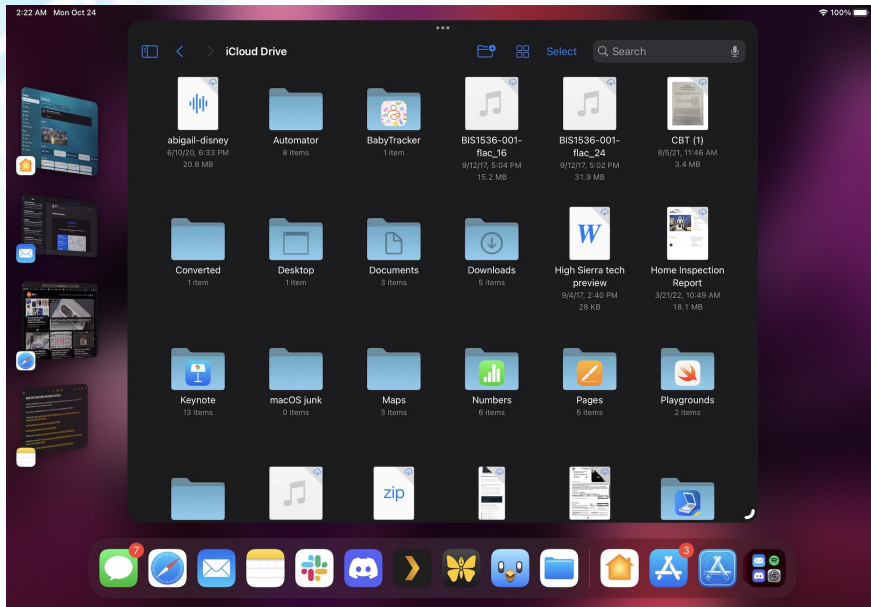
Windows GUI Example

Definition Of HCI

WIMP (Windows, Icons, Menus and Pointer)

- **Additional Example**

macOS Guided User Interface & Linux Guided User Interface



macOs GUI Example



Linux GUI Example

Concept of Windows Manager

WIMP - Pointer

- In graphical user interfaces, a pointer is a **small arrow** or **other symbol** on the display screen that moves as you shift the mouse.



A kind of Pointer - Mouse



Grabber pointer



I-beam pointer



Selection pointer

Mouse Pointer Types

NOTE: Many text processing programs use an I-beam pointer.



Concept of Windows Manager

WIMP - Icons

- Icons can be defined as **small pictures that represent commands, files, or windows.**

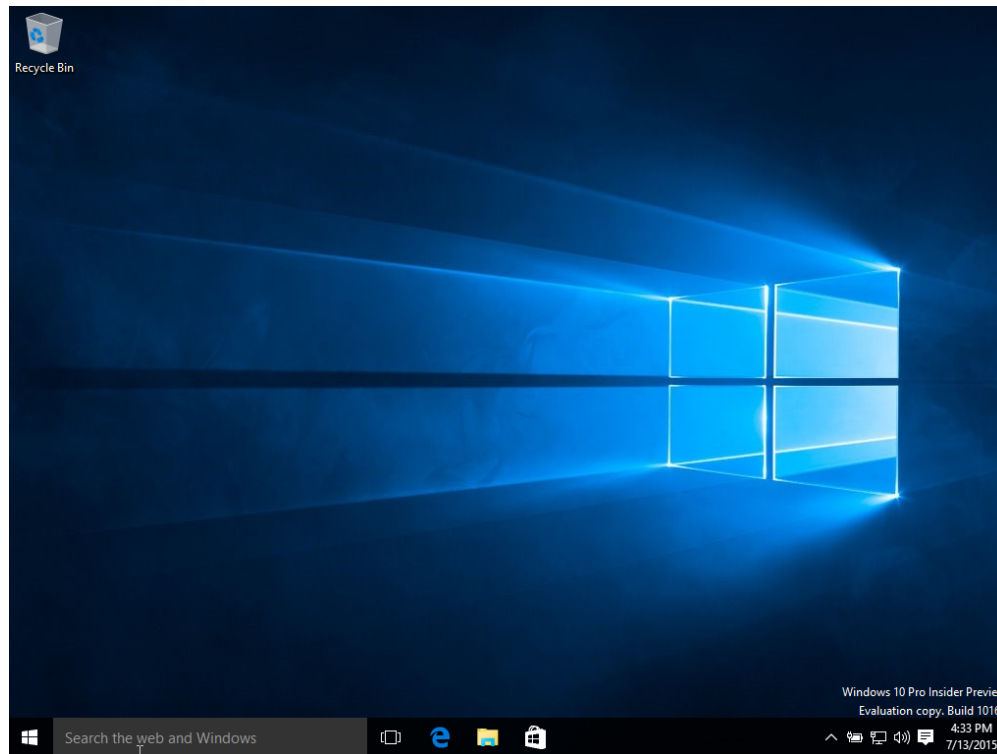


Examples of desktop icons

Concept of Windows Manager

WIMP - Desktop

- The desktop is the **main screen area** that you see after you turn on your computer and log on to Windows. Like the top of an actual desk, it serves as a surface for your work.

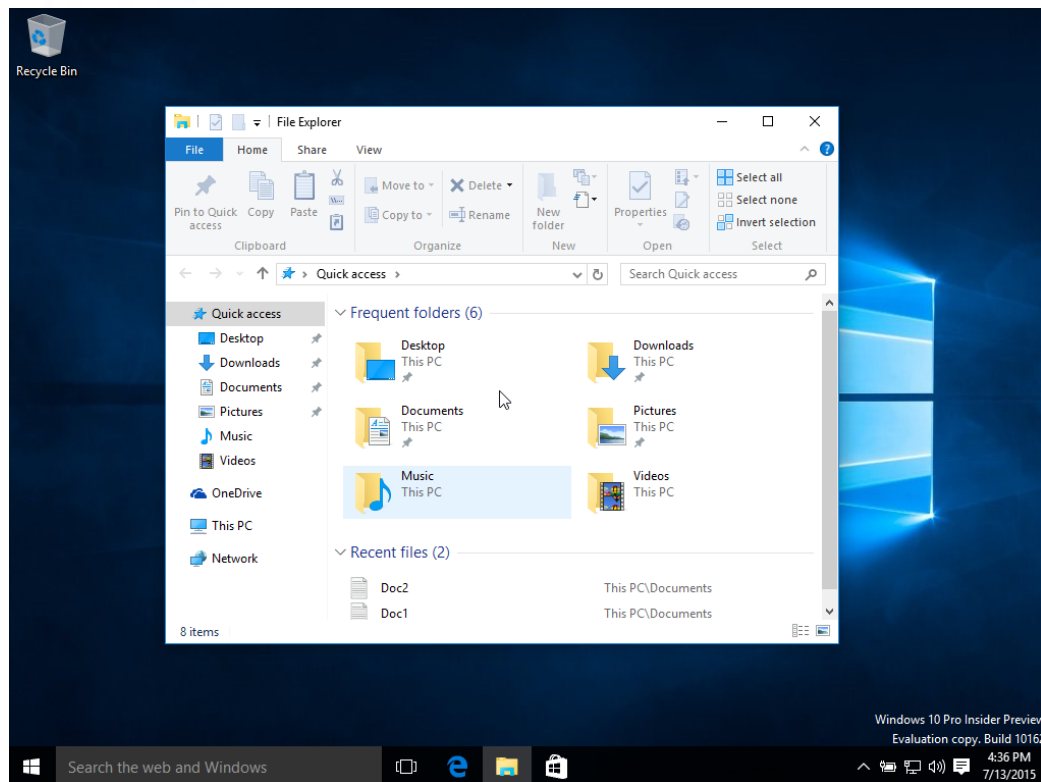


Example of a desktop

Concept of Windows Manager

Windows as a Computer Term

- Whenever you open a program, file, or folder, it appears on your screen in a box or frame called a **window** (that's where the Windows operating system obtains its name).

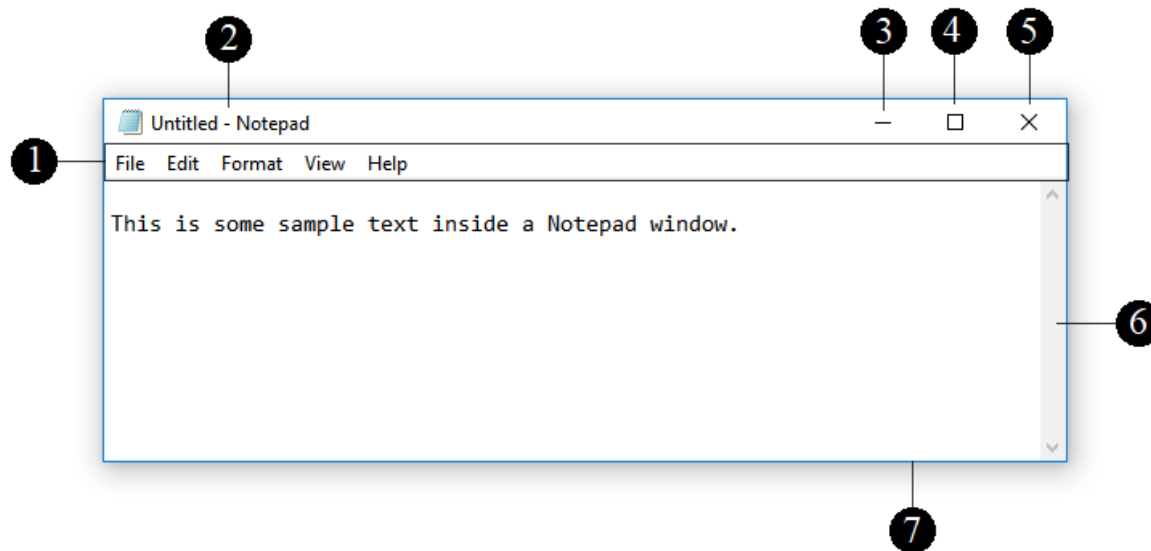


Example of a window

Concept of Windows Manager

Parts of a Window

- Although the content of every window is different, all windows share some features in common. These basic components are:



1 Menu Bar

2 Title Bar

3 Minimize Button

4 Maximize Button

5 Close Button

6 Scroll Bar

7 Border

Concept of Windows Manager

Switch between Windows

- If you open more than one program or document at a time, you can quickly start piling up windows on your desktop. That's where the **taskbar** becomes handy. **Whenever you open a program, folder, or document, Windows creates a button on the taskbar corresponding to that item.** The button shows the icon and the name of the item.



In the picture shown, several programs are opened and each has its own button on the taskbar.



NOTE: If you press **ALT+TAB** keys together, you can switch between windows.

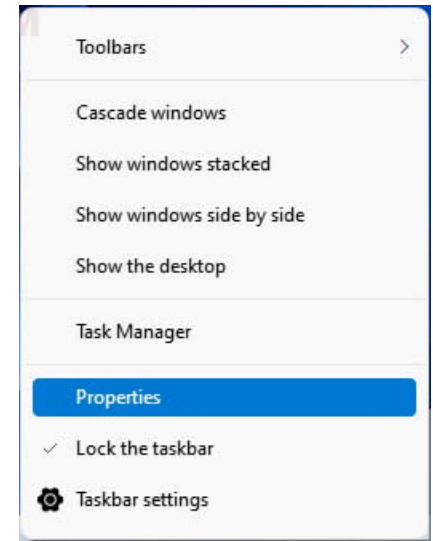
Concept of Windows Manager

Arrange Your Windows

- To arrange your opened windows, **right-click an empty area on the taskbar**, then **click**:
 1. **Cascade Windows**
 2. **Show Windows Stacked**
 3. **Show Windows Side by Side**
- You can arrange opened windows in one of three ways:



Arrange windows in a cascade (left), vertical stack (center), or side-by-side pattern (right)

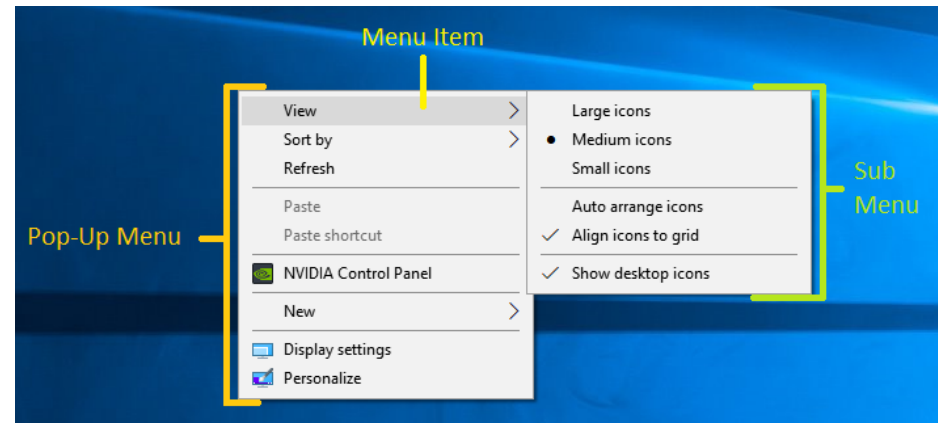
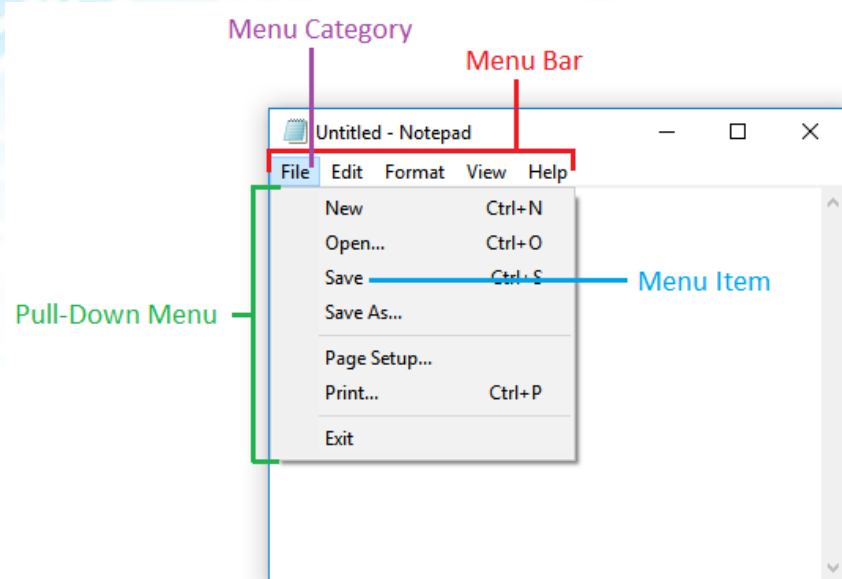


Arrange your Windows

Concept of Windows Manager

Menu and Menu Types

- Most graphical user interfaces allow you to **execute commands by selecting an item from a menu.**

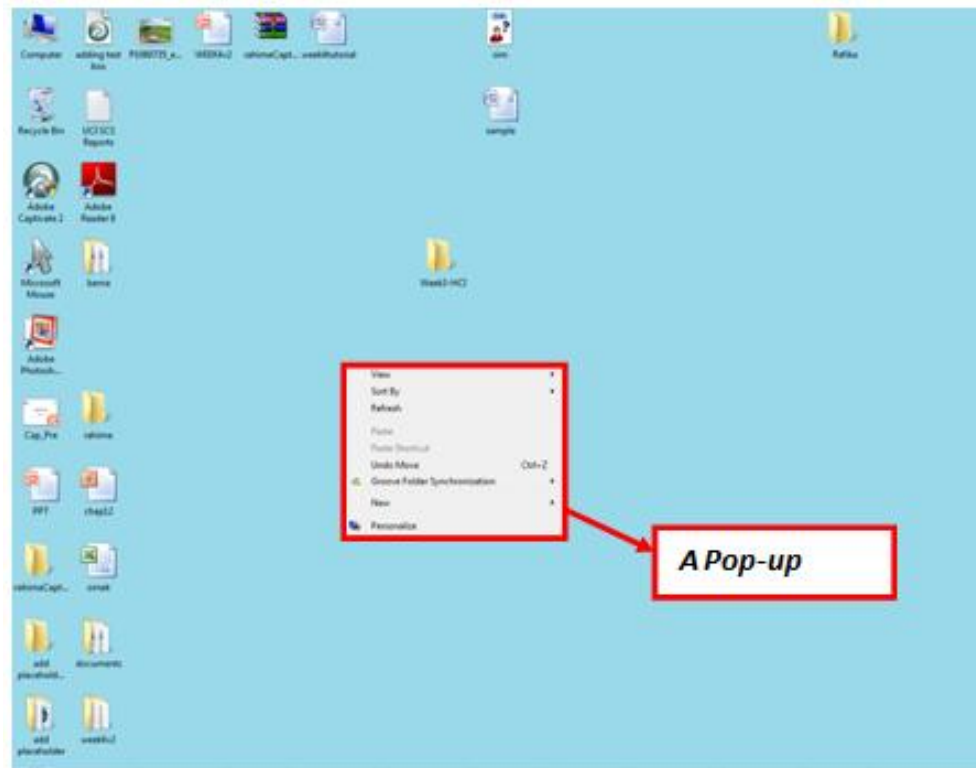


Menu Types

Concept of Windows Manager

Menus – Pop Up Menu

- A pop-up menu is a menu that appears temporarily when you click the mouse right button on an empty space. Once you make a selection from the pop-up menu, the menu usually disappears.

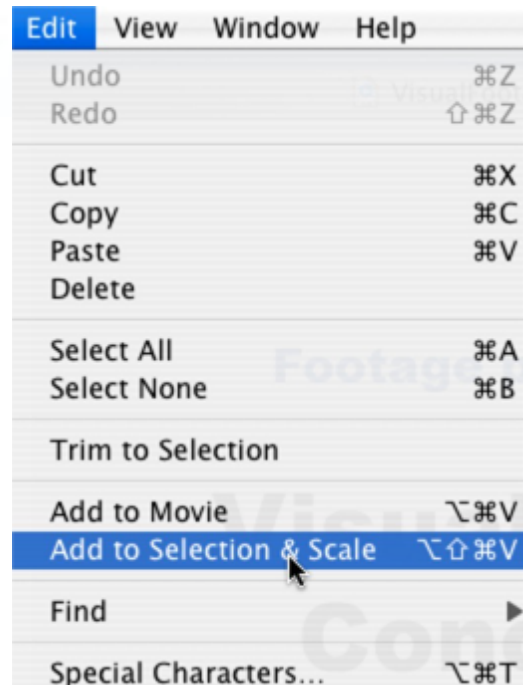


A pop – up menu example

Concept of Windows Manager

Menus – Pull-Down Menu

- Pull-Down Menu is a special type of pop-up menu that appears directly below the command you select.

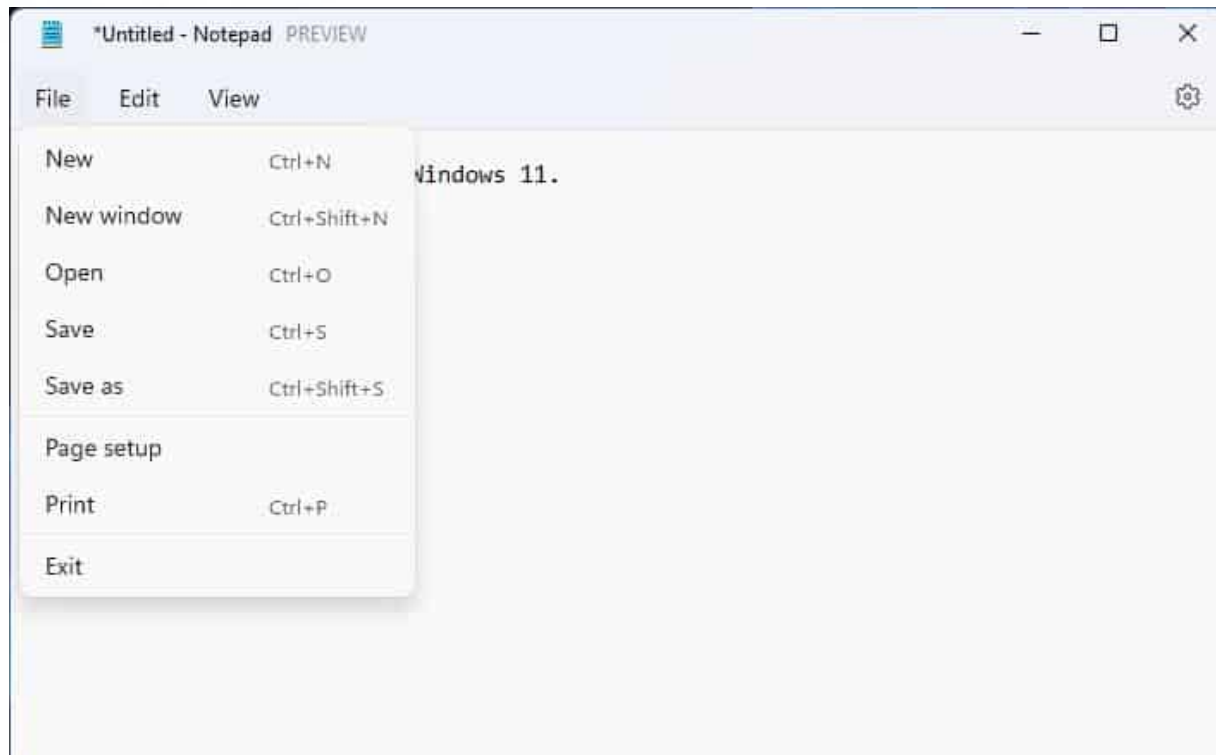


Pull Down menu

Concept of Windows Manager

Common Menu Options

- Several computer programs use **common menu options**. You can see **file**, **edit** and **help** menus in several different programs. Each menu contains similar submenus.



Common Menu Options - File Menu

Concept of Windows Manager

Menus – Drop-Down Lists

- Drop-down lists **are similar to menus**. Instead of clicking on a command, you **choose an option**.
- When closed, a drop-down list shows only the currently selected option. The other available options are hidden until you click the control.

Colors

Pick a color



List item 1

List item 2

List item 3 that has a much longer string

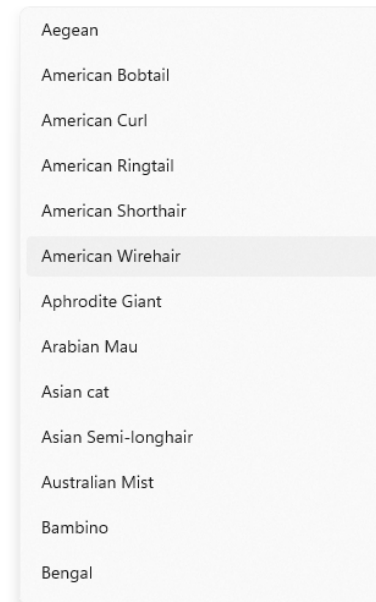
List item 4

*A drop-down list shown closed (left); and
open (right)*

Concept of Windows Manager

Menus – List Boxes

- A list box **displays a list of options** that you can choose from. Unlike a drop-down list, some or all of the options are visible without opening the list.

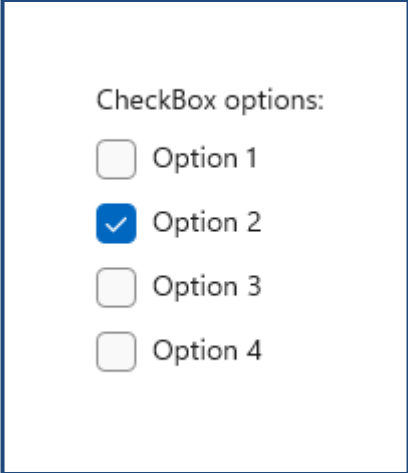


A List box

Concept of Windows Manager

Check Box

- A check box (or tick box) is a graphical user interface element **that permits user to make multiple selections** from a number of options.



CheckBox options:

☐ Option 1

☒ Option 2

☐ Option 3

☐ Option 4

Sample check boxes with one option selected

Concept of Windows Manager

Radio Button

- Radio Button is a **round selection button** that is used to choose items from a list. Radio buttons are designed so that you can **choose only one item at a time**.



☒ RadioButton 1

☐ RadioButton 2

☐ RadioButton 3

Radio Button



NOTE: You can select only **one option** by using RADIO BUTTON.
You can select **multiple options** by using CHECK BOX

Concept of Windows Manager

Slider

- **A slider** lets you adjust a setting along a range of values. A slider along the bar shows the currently selected value.



Slide Example (Moving the slider to change screen brightness)

Concept of Windows Manager

Tabs

- In some dialog boxes, options are divided into ***two or more tabs***. Only one tab, or set of options, can be viewed at a time.
- The currently selected tab appears in front of the other tabs. To switch to a different tab, click on the tab that you want to see.

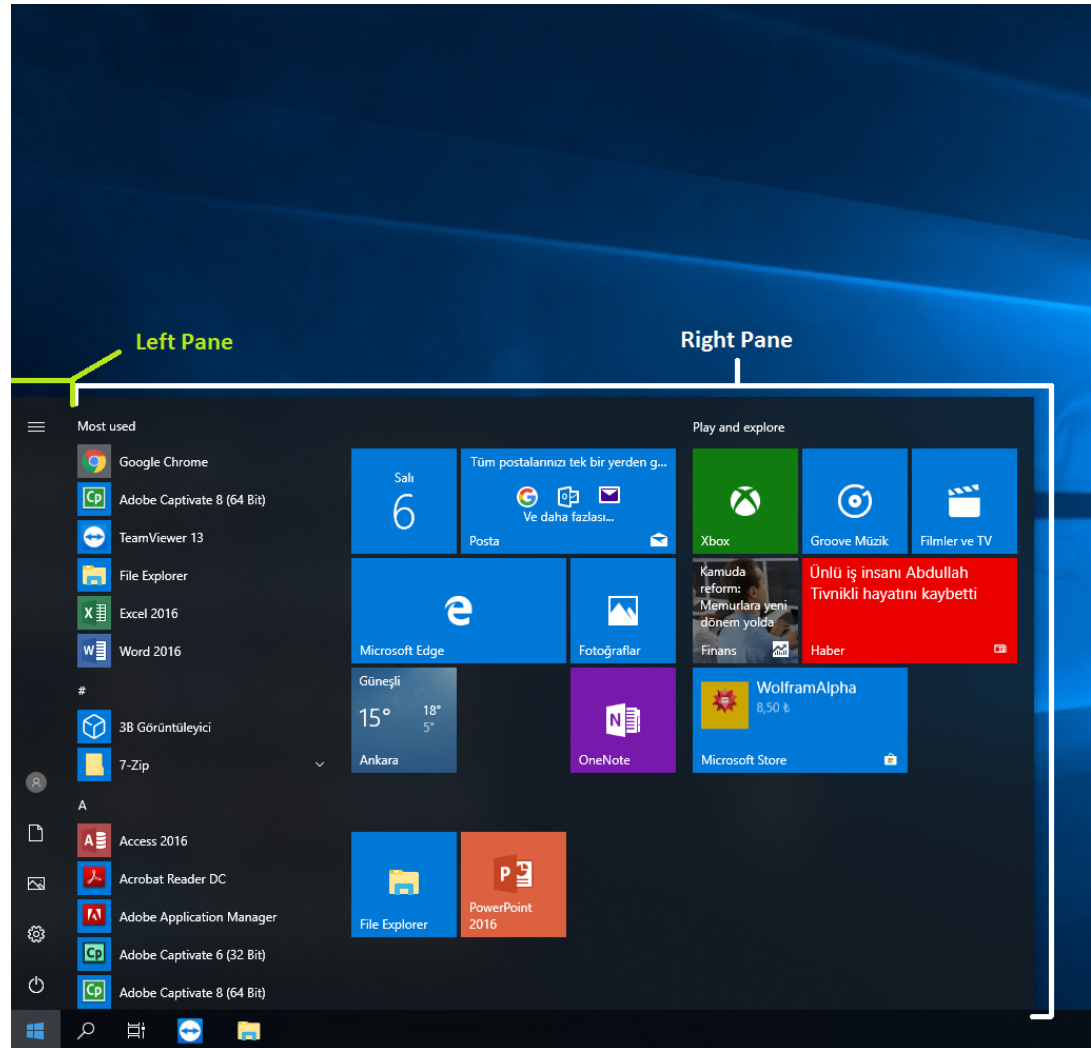


Tabs

Primary Pattern For GUI Actions

Start Menu

- The **Start menu** is the **main** entrance to your computer's **programs**, **folders**, and **settings**. To open the Start menu, click the **Start button** 
- Or, press the Windows logo key  on your keyboard.

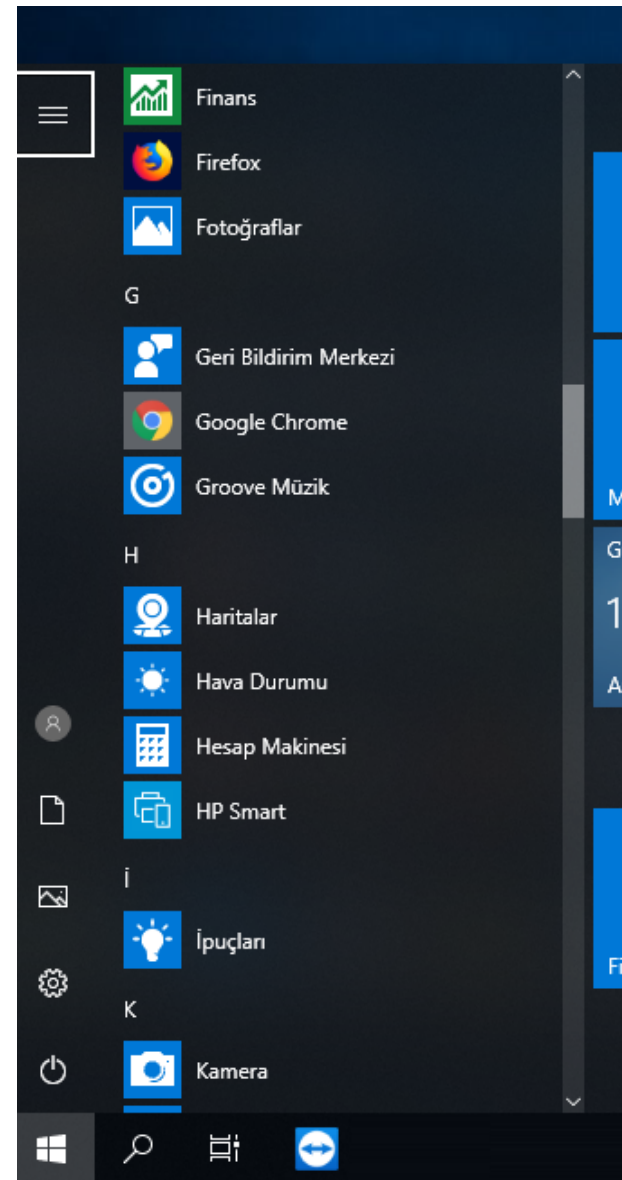


Start Button

Primary Pattern For GUI Actions

Start Menu – Right Pane

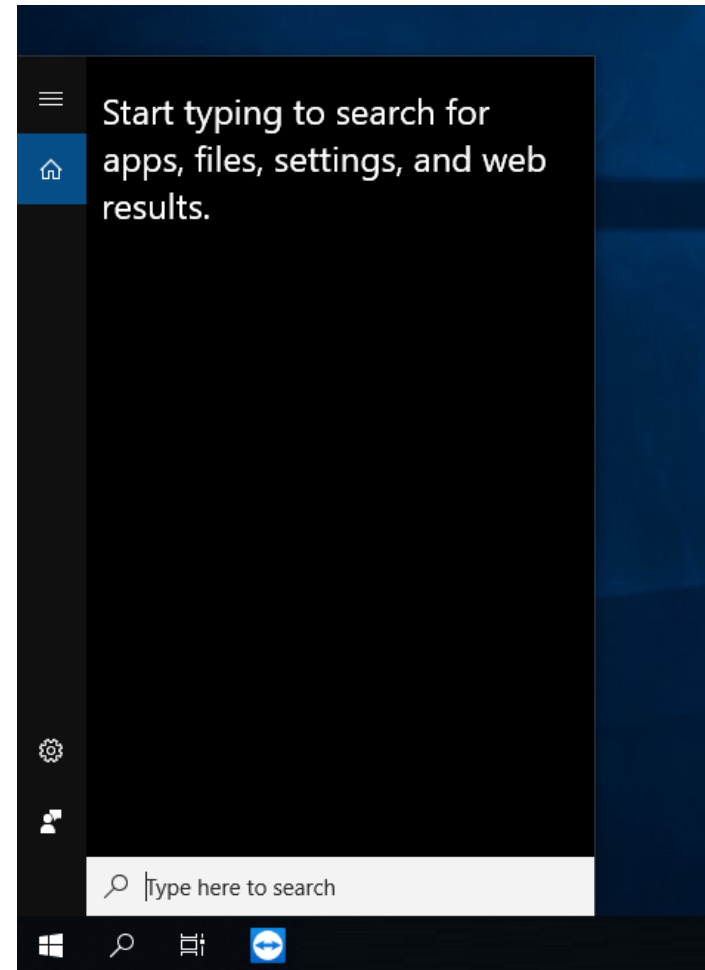
- One of the most common use of the Start menu is to open previously installed programs.
- To open a program shown in the **right pane** of the Start menu, click on it.
- When a program is opened, Start menu closes.



Primary Pattern For GUI Actions

Start Menu – Search Box

- The **Search box** is one of the most convenient ways to find items (files, folders and programs) on your computer.
- The exact location of the items doesn't matter, the Search box will search through your computer.



Start Button – Search Box

Primary Pattern For GUI Actions

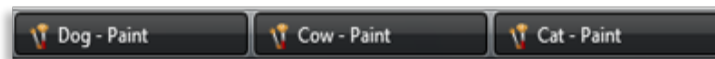
Taskbar

- Taskbar is the area of the desktop that contains the Start button and buttons for all active programs. The **taskbar is the long horizontal bar at the bottom of your screen**. By default, the taskbar is located at the bottom of the desktop, but **you can move it**. It has four main sections:

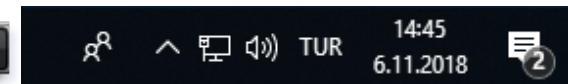
- The Start button
- The Quick Launch toolbar
- The Middle section
- The Notification Area



The Quick Launch toolbar sits to the right of the Start button



Middle Section shows programs and documents you have opened

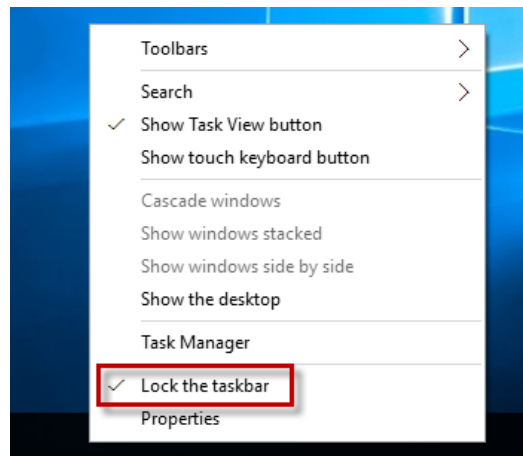


The notification area of the taskbar

Primary Pattern For GUI Actions

Lock / Unlock the Taskbar

- You can **keep the taskbar in one place by locking it**, which can prevent accidental moving or resizing. If you unlock it, you can move it to the bottom, side, or top of the desktop.
- To view the status of the taskbar, right-click on an empty space on the taskbar. If 'Lock the Taskbar' has a check mark next to it, this means it is locked.

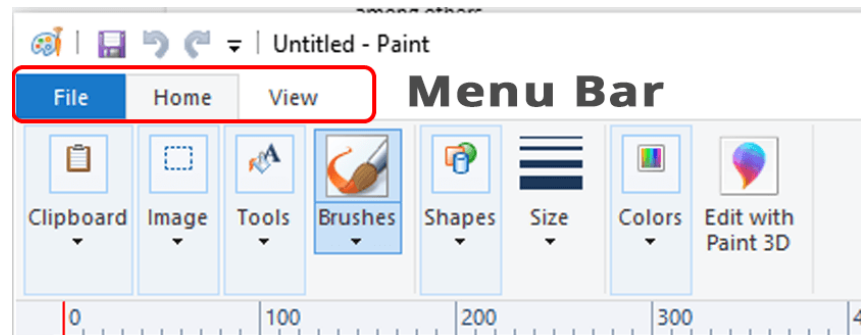


Lock / Unlock taskbar

Primary Pattern For GUI Actions

Menu Bar

- Menu Bar, which is common among various programs, can be defined as the menu arranged horizontally. Each menu option is has its own pull-down menu that appears when you make a selection.

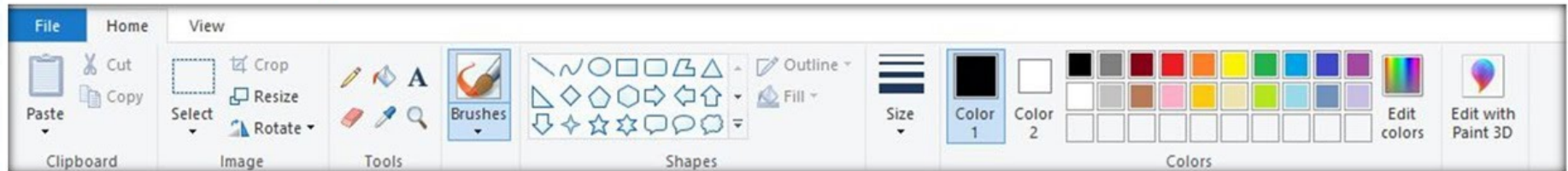


Menubar

Primary Pattern For GUI Actions

Toolbar

- The row, column, or block of **buttons/icons**, that represents tasks you perform within a program.
- The **toolbar buttons provide shortcuts to tasks that are frequently accessed from the menus.**

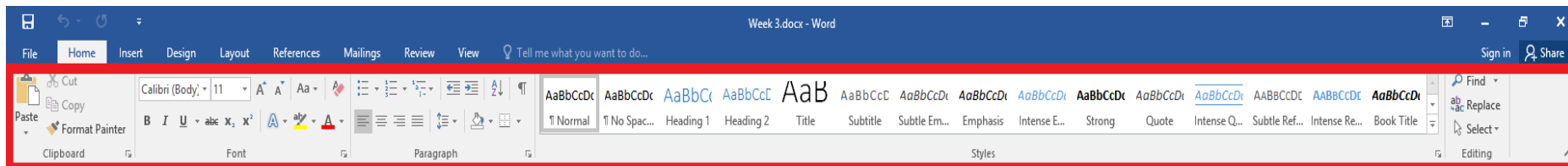


Toolbar

Primary Pattern For GUI Actions

Ribbon

- The Ribbon is designed to help you **find the commands** easily that you need to complete a task in office programs. Commands are organized in logical groups, which are collected together under tabs.
- The Home ribbon is shown within the red frame below.



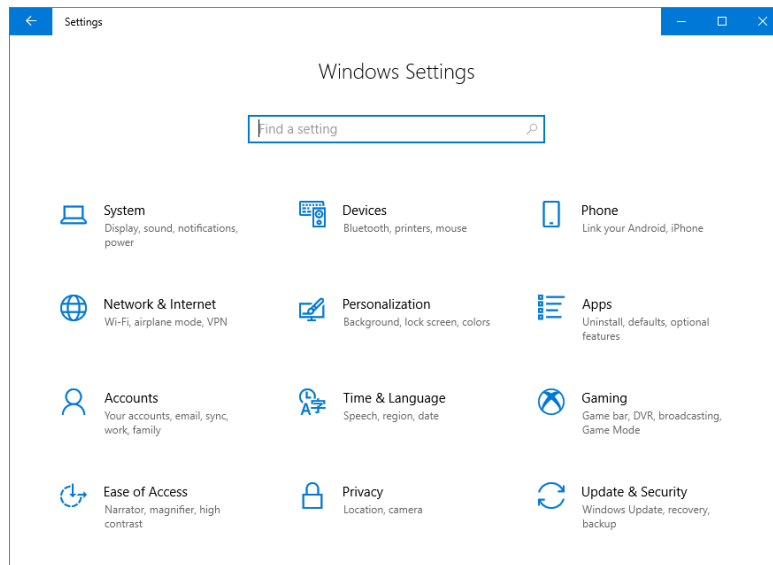
Home Ribbon

Windows Settings

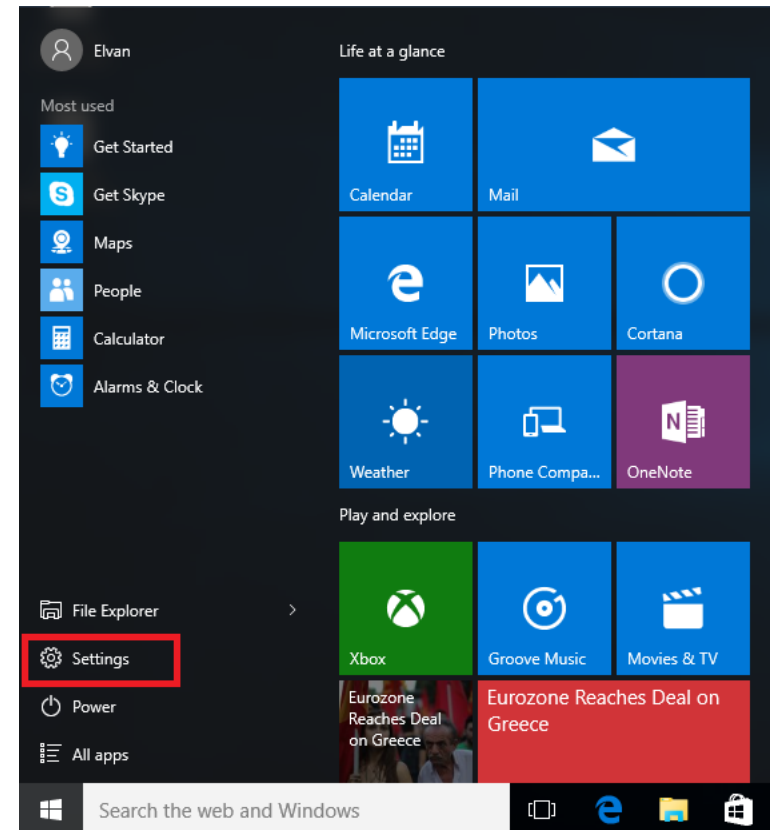
Settings

- You can use **Settings** to make changes in the appearance and the settings of Windows, including the color of your desktop and windows, hardware and software setup and configuration, and security. **To open Settings;**

1. Click **Start button** then
2. Click **Settings** on the left panel.



Settings

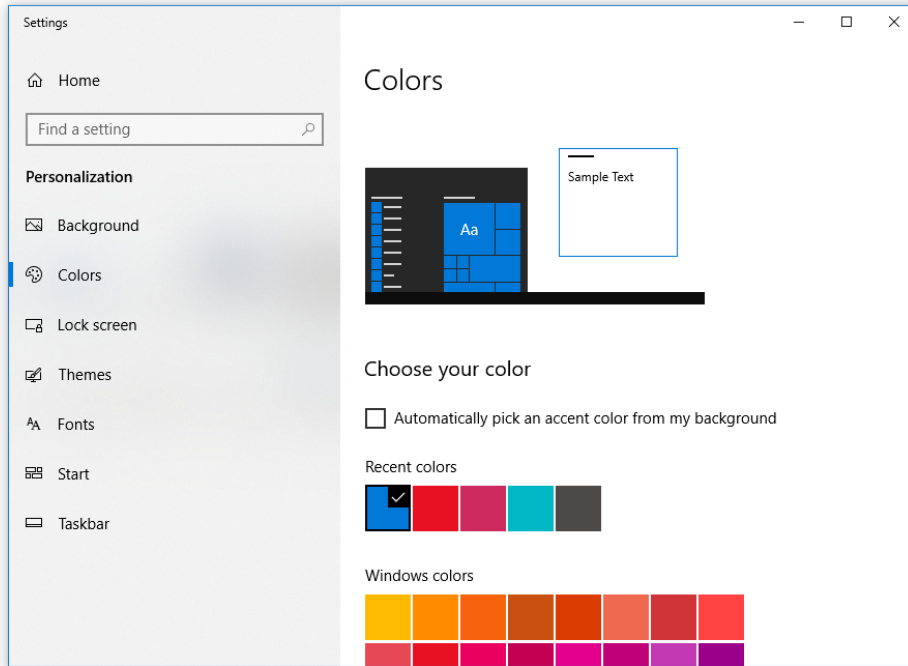


Open Settings

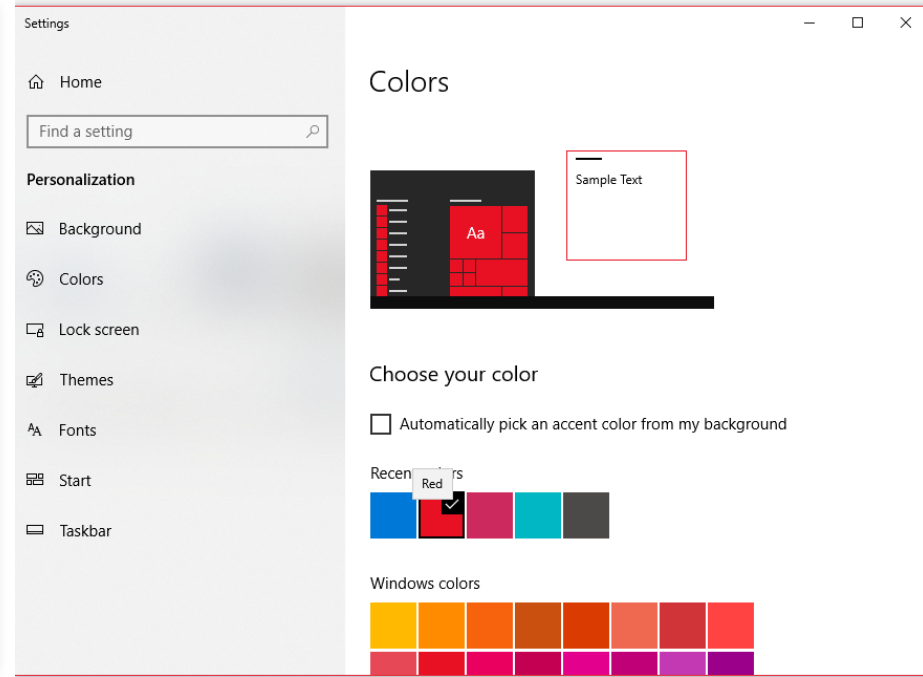
Windows Settings

Change Windows Color and Appearance

- You can change your windows colors and appearance by using **Colors** menu (inside the **Personalization** Settings).



Windows with Blue Color

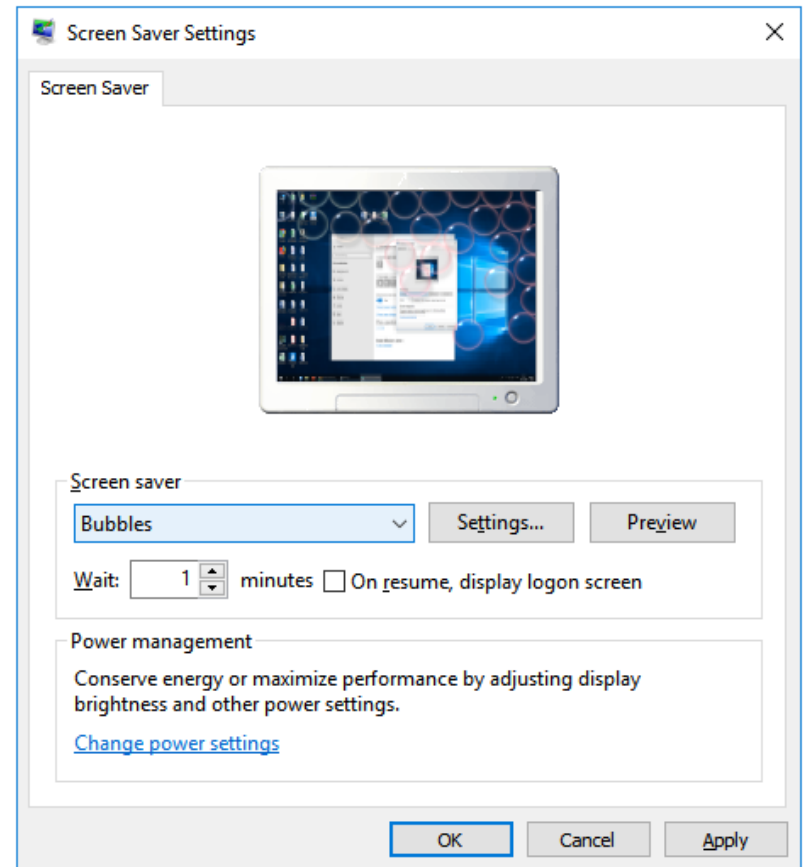


Windows with Red Color

Windows Settings

Screen Saver

- To change your screen saver you have to follow the steps below;
 1. Click **Start** button
 2. Click **Settings** link on the left panel
 3. Orderly select **Personalization - Lock screen** items
 4. Click **Screen saver settings** link
 5. Under **Screen saver**, in the drop-down list, click the **Screen saver** you want to use.
 6. Click **Preview** to see what your chosen screen saver will look like.
 7. Click **OK**.



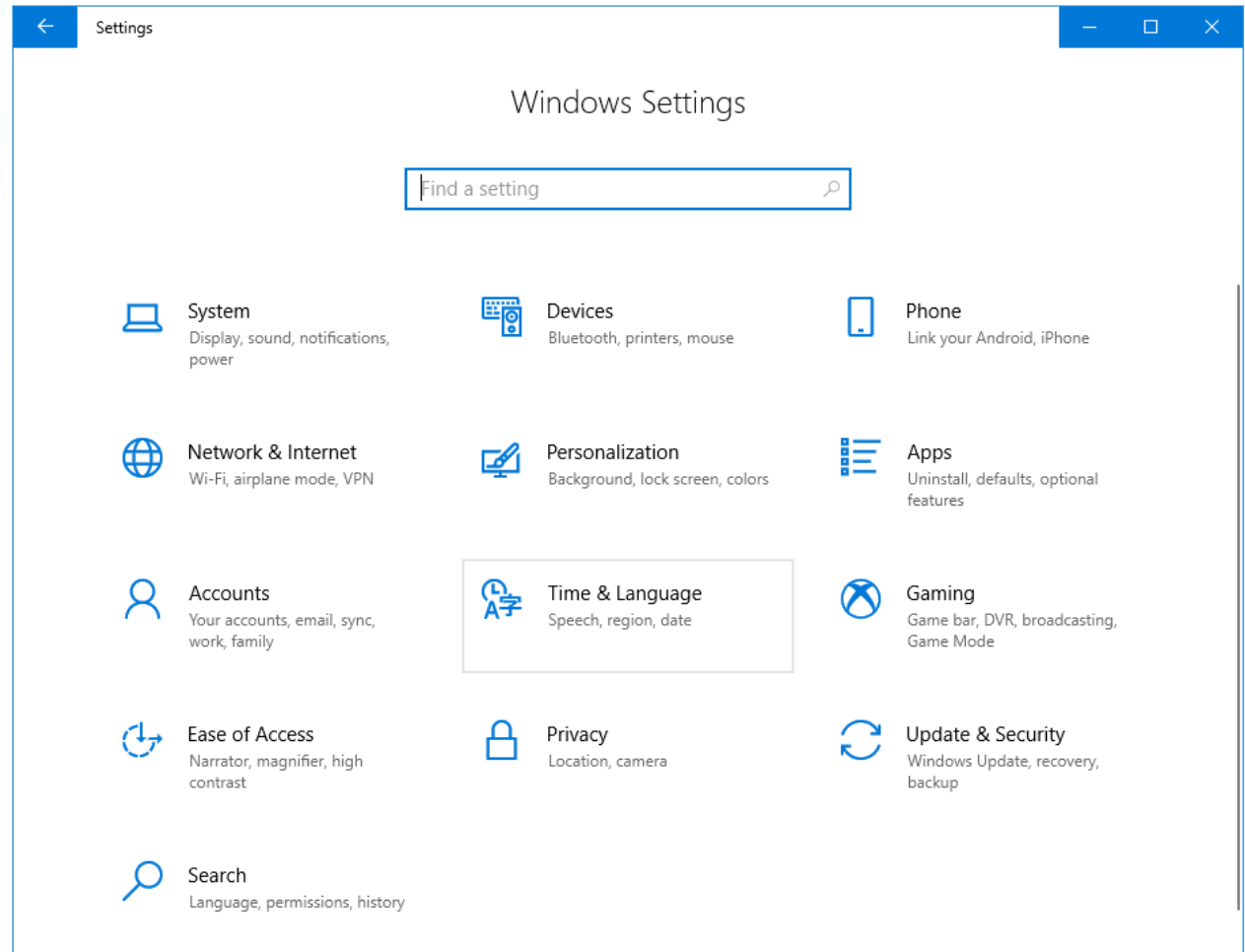
Changing Screen Saver

Windows Settings

Clock, Language and Region Settings

- To change Clock, Language and Region options, click;

1. **Start button**
2. **Settings** on the left panel
3. **Time & Language**

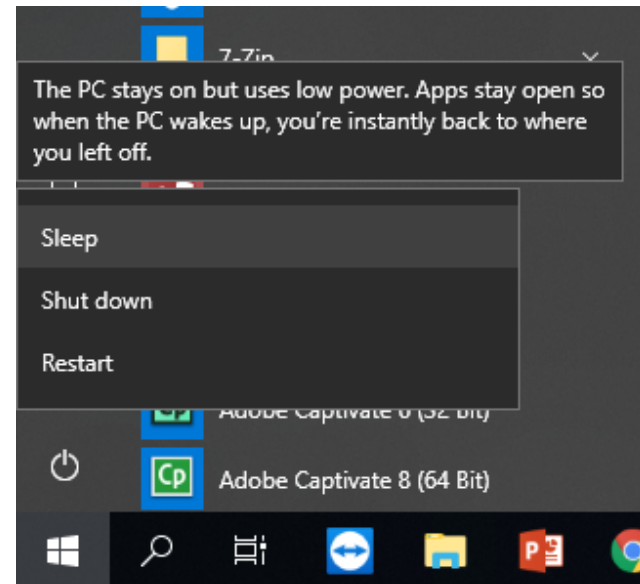


Changing Clock, Language and Region Settings

Windows Settings

Sleep Mode

- Sleep mode uses very little power.
 - When you use Sleep mode, you do not have to worry that you will lose your work because you are back to where you left off.
 - When you quick from sleep mode, your PC starts up faster than other modes.
-
- To activate sleep mode,
 1. open **Start menu**
 2. select **Power button**
 3. click **Sleep**

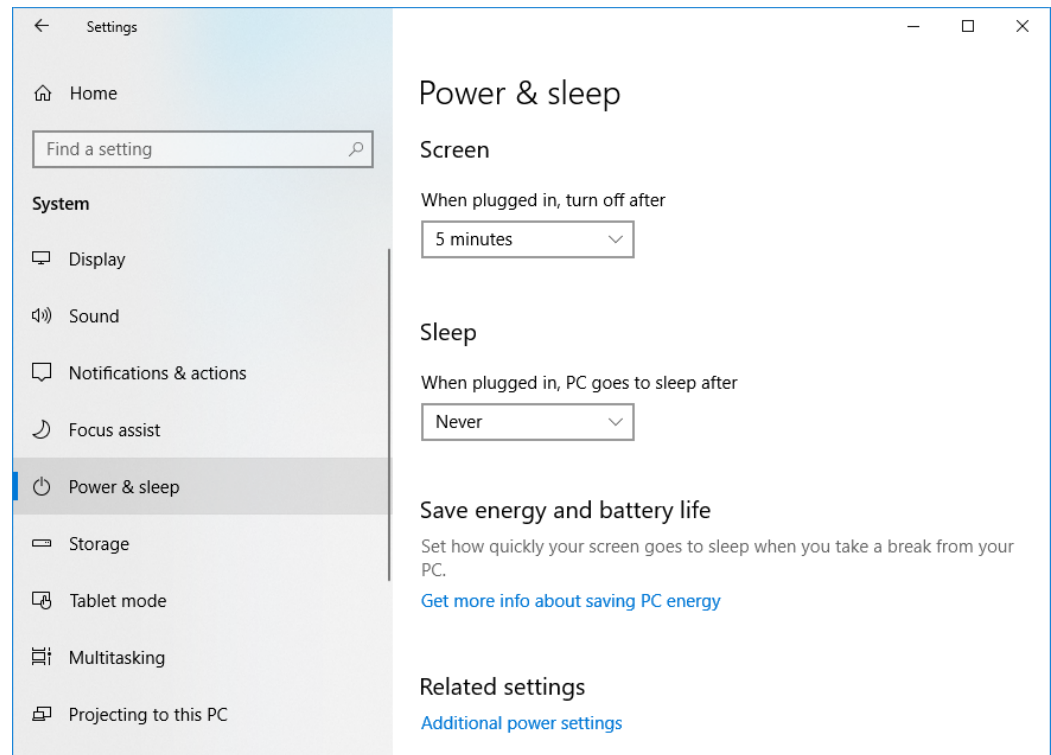


Sleep Mode

Windows Settings

Sleep Mode

- To adjust Sleep Mode settings
 1. open **Start menu**
 2. click **Settings**
 3. select **System**
 4. click **Power & sleep**

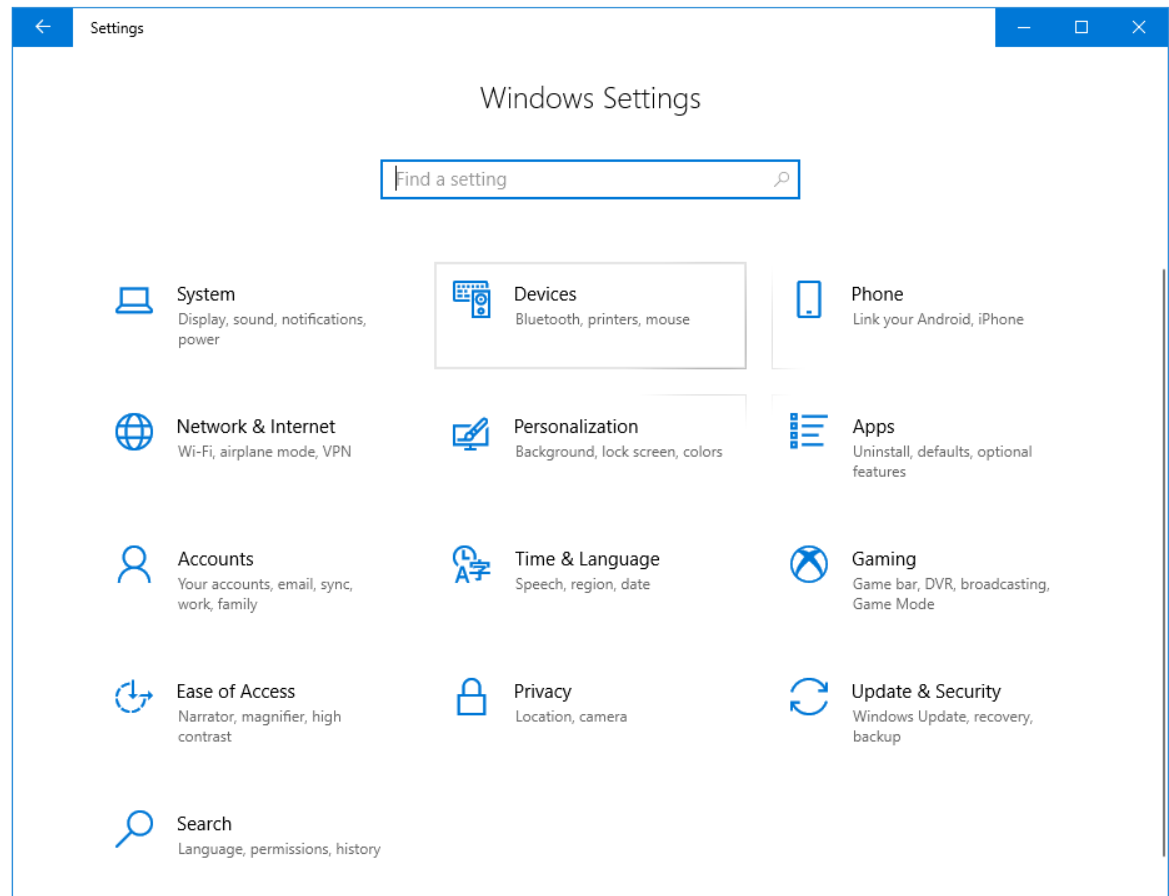


Power & Sleep Settings

Windows Settings

Hardware Settings

- To change hardware settings, click;
 1. Start button
 2. Settings on the left panel
 3. Devices
- By using this panel you can change several hardware settings.

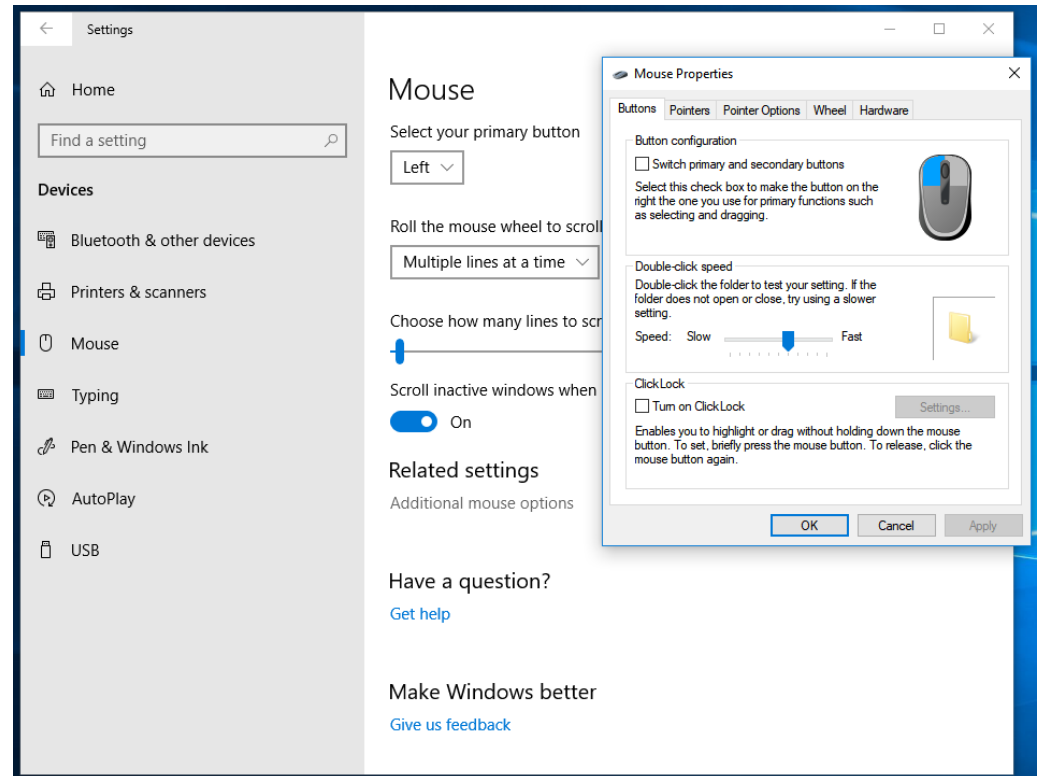


Changing Hardware Settings

Windows Settings

Mouse Settings

- You can customize your mouse settings in a variety of ways, such as **switching the functions of your mouse buttons, making the mouse pointer more visible, and altering the scroll wheel speed.**
- To open mouse properties options, click;
 1. **Start button**
 2. **Settings** on the left panel.
 3. **Devices**
 4. **Mouse**
 5. **Additional mouse options** on the right panel.

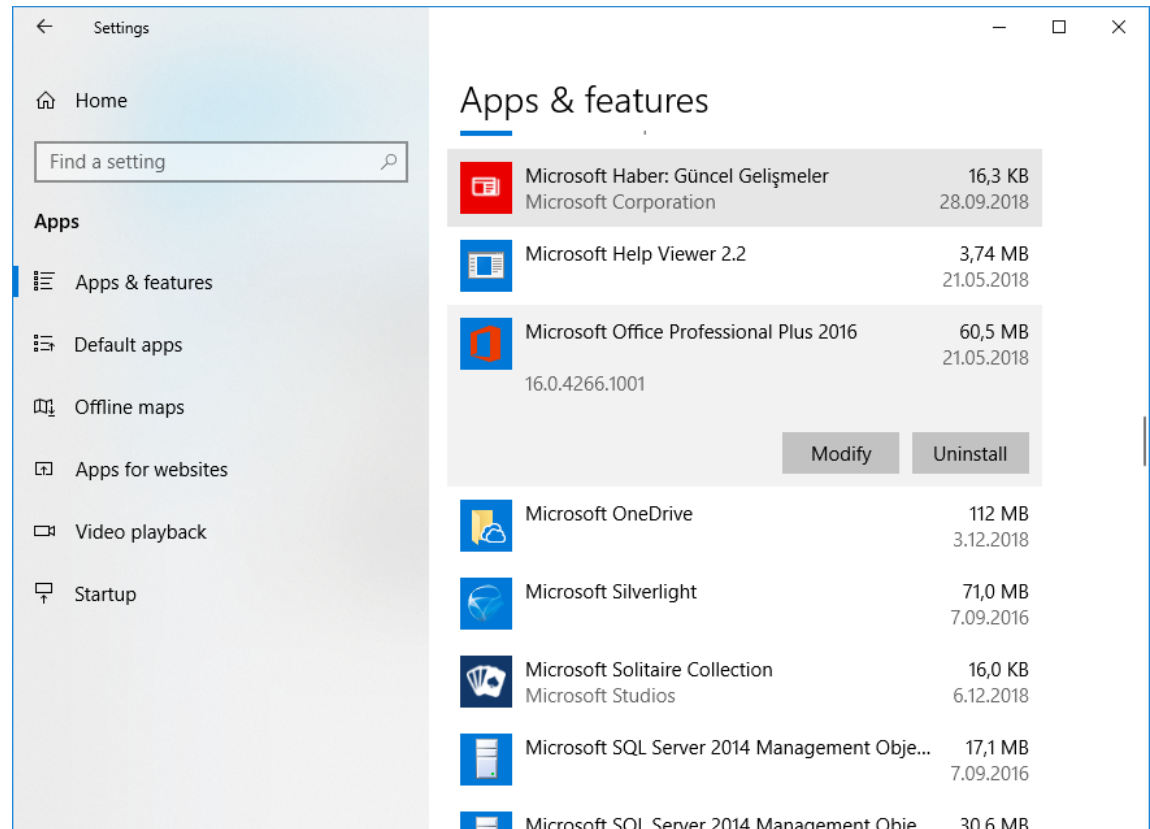


Mouse Settings

Windows Settings

Uninstall Apps

- To uninstall unwanted apps (programs),
 1. open **Start menu**
 2. click **Settings**
 3. click **Apps**
 4. select **Apps & features**
 5. select an app
 6. click **Uninstall** button



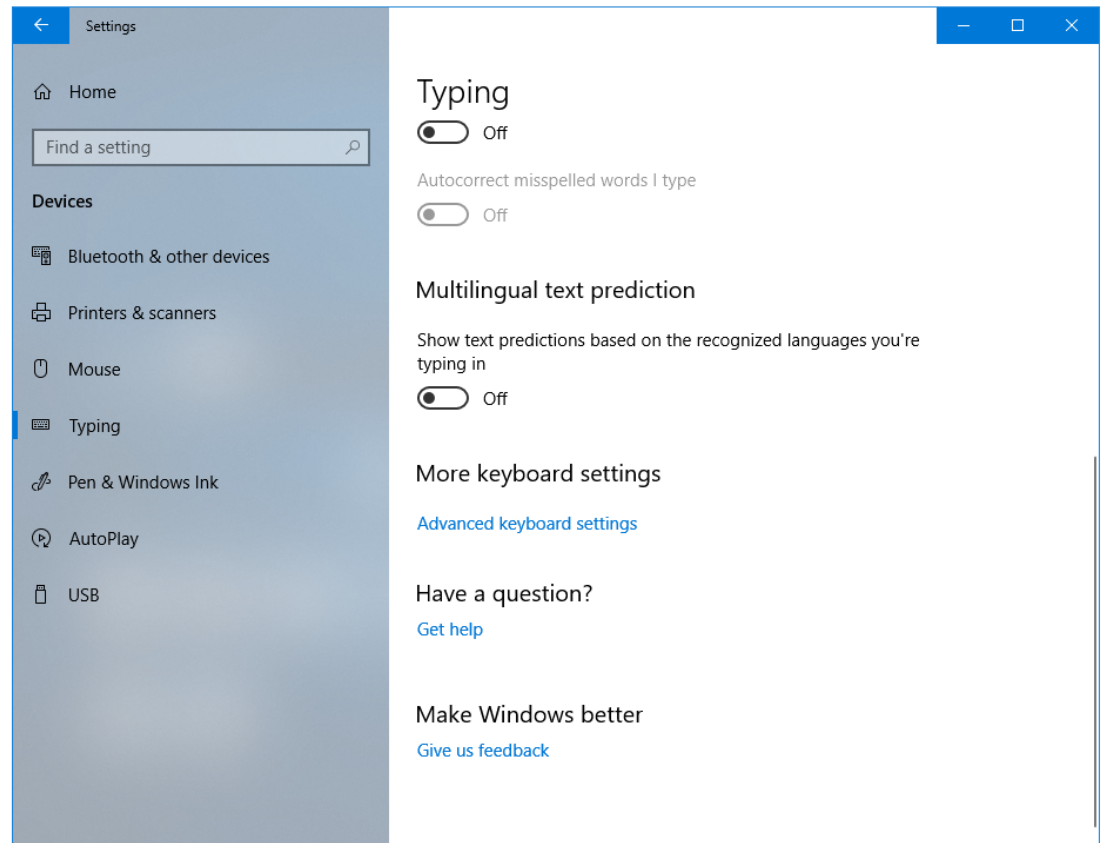
Apps & features Settings

Windows Settings

Typing Settings

- Whether you're writing a letter or entering numerical data, keyboard is the main device to enter information into your computer.

- To open typing properties options, click;
 1. Start button
 2. Setting on the left panel
 3. Devices
 4. Typing
- To change keyboard language, click **Advanced keyboard settings** link from the right panel



Typing Settings

Windows Settings

Take a Screen Capture

- You can take a screenshot of your screen by pressing **PRINT SCREEN** key (or PRTSCN, on some keyboards). This is called a screen capture. You can then paste the screen capture into a document, e-mail message, or other file.

To copy the entire screen

- Press **PRINT SCREEN**.

To copy only an active window

- Press **ALT+PRINT SCREEN**.

To copy part of the screen

- ✂ ○ Type 'Snipping Tool' in Windows Search Box



Print Screen Button

Windows Settings

Function of CTRL+ALT+DELETE

- **Control-Alt-Delete** is a computer keyboard command on PC compatible systems that can be used to reboot the computer, and summon the task manager or Windows Security.

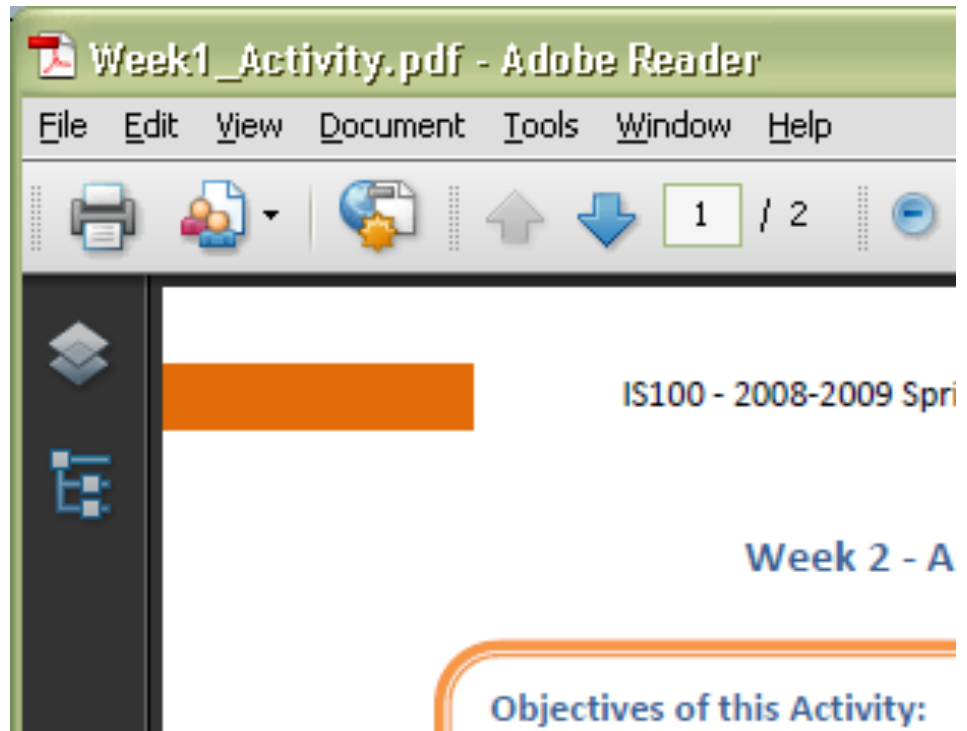


CTRL+ALT+DELETE Buttons

Windows Settings

Shortcut Keys

- When working with any “window” pressing **Alt** key activates the shortcuts for a menu. Then pressing **ALT + “underlined key”** enables you to open a specific menu.
- For the figure on the right pressing **ALT+F** will enable you to open the File menu.



Press ALT+F to open File Menu

HEALTH, SAFETY AND ERGONOMICS

The Importance of Good Posture While Working with Computer

- *Did you know that bad posture diseases are the leading cause of disability among working people in World with 200 millions people being affected?*
- The information here will help you **to develop a good working posture when using a personal computer or a workstation.**
- If you learn and apply these good habits now, it saves you from experiencing health problems in the future !!!

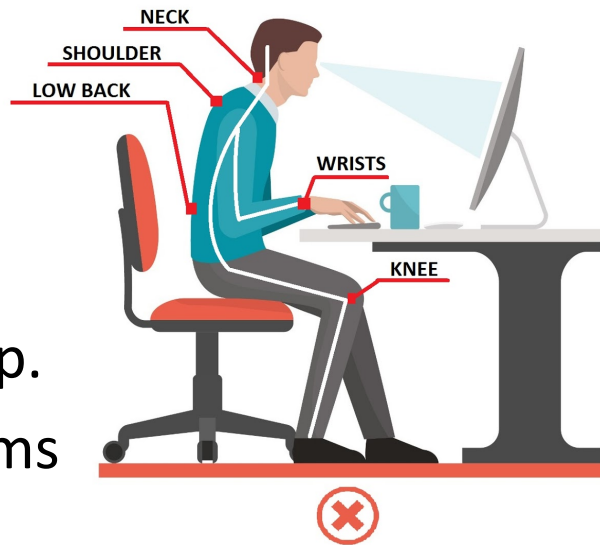


*Did you know that bad posture disease account for
60% of workers' compensation claims ?*

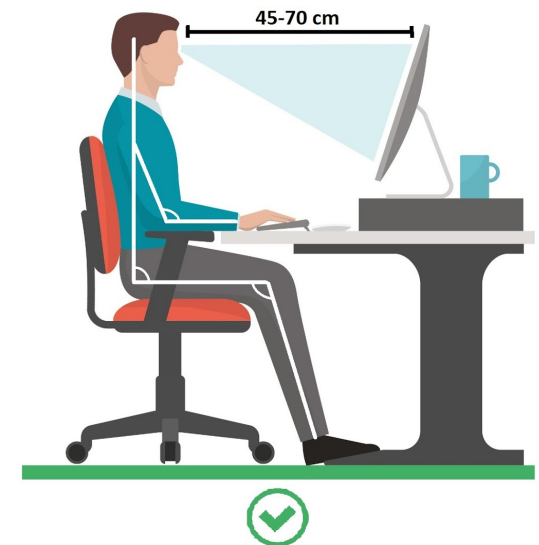
HEALTH, SAFETY AND ERGONOMICS

Adopt a Good Posture

- A good working posture can be sustained with the minimum of static muscular effort. In general, a varied working position is better than a fixed working posture.
- Your upper body is most comfortable when:
 - Your back is supported.
 - Your head is up.
 - Your upper arms are relaxed.



WRONG SITTING POSITION

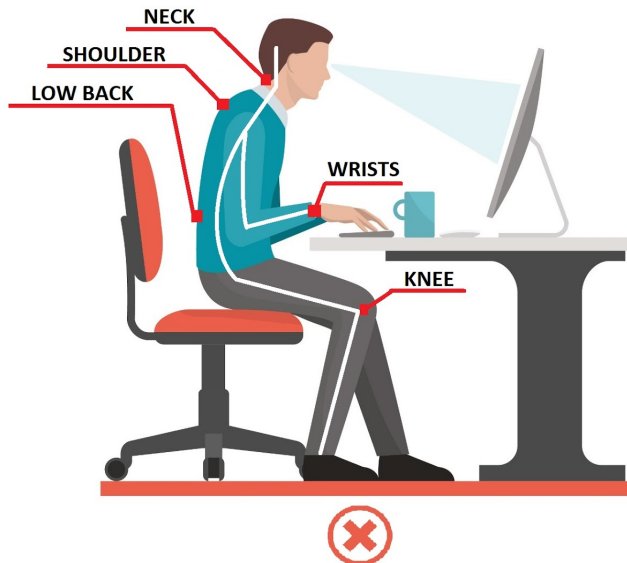


CORRECT SITTING POSITION

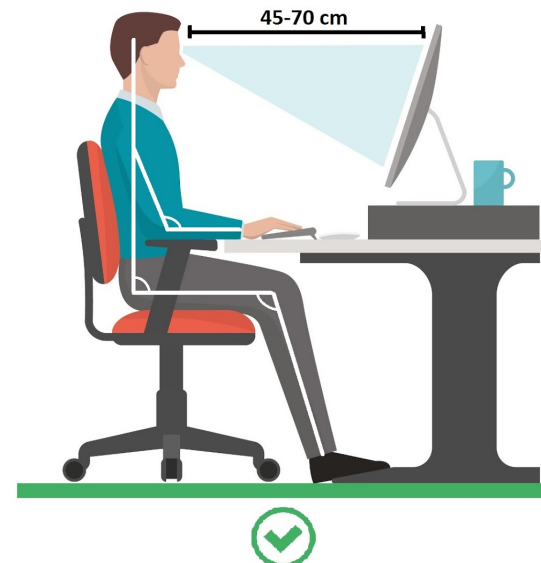
HEALTH, SAFETY AND ERGONOMICS

Adopt a Good Posture

- In order to improve your posture, adjust your chair so that:
 - Your lower back is supported.
 - Your knees are level with your hips.
 - Your feet are parallel on the floor. Use a footrest if necessary.
 - Your eye level is just above the top of the screen. Tilt your screen if necessary.



WRONG SITTING POSITION



CORRECT SITTING POSITION

HEALTH, SAFETY AND ERGONOMICS

Adopt a Good Posture

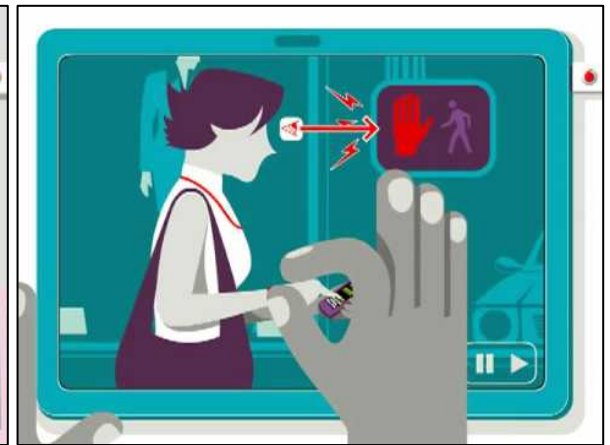
- Examine the following videos which present how basic guidelines should be applied.



*Adult or Child Laptop Use at Home,
Work or School*



Healthy use of laptops everywhere



*Mobile or Smart Phone Use while
Driving, Traveling or on the Move*

HEALTH, SAFETY AND ERGONOMICS

Repetitive Strain Injury - RSI

- Keyboard-induced RSI is caused by a combination of rapid keyboard movements and by arms in a static position, over a long period of time. There are several factors that can lead to keyboard-related RSI. These include:

- Rapid, repetitive movements.
- An awkward working position.
- An excessive work-load.
- Tight deadlines.
- Inadequate rest breaks.



[4] Keyboard Usage Techniques

HEALTH, SAFETY AND ERGONOMICS

Right Eye Positioning

- Eye muscles that shift focus between your source document and a screen for a long period of time can cause tiredness. The symptoms of eye strain include:
 - Headaches
 - Burning Eyes
 - Nausea
 - Itching Eyes
 - Blurring
 - Fatigue
- Take a break for about 10 minutes after every uninterrupted 60 minutes of computer work to prevent the onset of fatigue.
- Short, frequent breaks are more satisfactory than occasional, longer breaks. If possible, breaks should be taken away from the screen.
- While working, switch your eyes from the screen to distance and stretch occasionally.



**METU
ODTÜ**



TEST YOURSELF

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