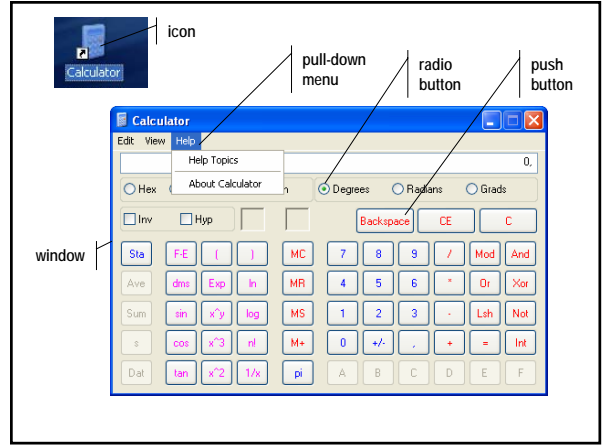


- 1. Operating system (OS)** – the core software of computers – Disk operating systems (DOS).
  - provides a **user interface**
  - manages computer resources: CPU, main memory, input/output devices, file system
 Popular operating systems:  
 Windows Vista, Windows XP, Windows 2000, Unix, Linux, Mac OS
- 2. Application** – program with own user interface that allows the user to interact with that particular program

**User interface** – program, important part of the software with which the user directly interacts.

**Graphical user interface (GUI)** – makes use of graphical screen elements:

- windows** – separate the screen into distinct work areas
- pull-down menus** – provide the user with a list of options
- icons** – small images that represent computer resources such as a file
- buttons** – can be pushed with a mouse click to indicate a user action



### File System

A **file system** is the overall structure in which files are named, stored, and organized.

Windows supports three file systems:

- FAT (File Allocation Table)** – main file system used by MS-DOS (Disk Operating System) and other Windows-based OS. Hard disks are based on **clusters** (the smallest amount of disk space that can be allocated) with equal sizes.
- FAT32** – supports smaller cluster sizes and larger volumes than FAT.
- NTFS (New Technology File System)** – advanced file system that provides performance, security, reliability, and advanced features.

**File** – complete, named collection of information;

- basic unit of storage;
- contains:
  - program
  - data used by a program
  - user created document

File operations:

- create
- save
- delete
- change
- send
- retrieve

**File Specification**

drive specifier     d:  
 file name         filename  
 extension         .ext  
 a:example.c       c:program.cpp

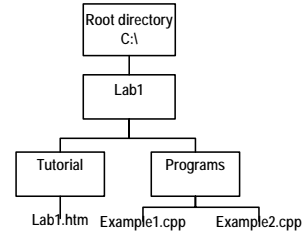
**Global File Name Characters**

- ? any character can occupy that position
- \* any character can occupy that position and all the remaining positions

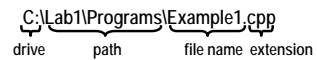
example?.cpp } example1.cpp  
                   } example2.cpp  
                   } example3.cpp

example\*.cpp } example1.cpp  
                   } example123.cpp  
                   } example.cpp

**Folder (directory)** – organization of files into a group that reduces the time required to locate a file.



**Path** – specifies the directory location on the drive.



**Current directory** – the directory we are currently working in.

The **root directory** is the current directory when DOS starts.

C:\

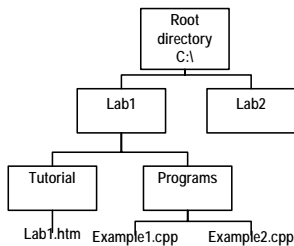
**Directory entries**

- . current directory
- .. parent directory
- subdirectories
- files

DOS Commands

**Make directory** – creates a subdirectory on the specified disk.

md [d:]path



md \Lab2  
 create subdirectory Lab2 under the root directory

md Lab2  
 does the same thing if the current directory is C:\

**Change directory** – change the current directory.

cd [d:][path]

cd  
 display the current directory

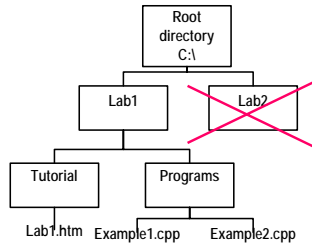
cd ..  
 change the current directory to the parent directory

cd \  
 change the current directory to the root directory

cd \Lab2  
 change the current directory to directory path \Lab2

**Remove directory** - removes a subdirectory from the specified disk (the subdirectory has to be empty).

`rd [d:]\path`



`rd \Lab2`

remove the entry for Lab2 from the root directory

**Directory** - lists either the directory entries, or only those for specified files.

`dir [d:][\path][filename[.ext]][/P][/W]`

`/P` to pause the display when the screen is full  
`/W` to display the information in a wide display format

`dir` list all the directory entries on the default drive

`dir a:` list all the directory entries for current directory of drive A

`dir \Lab1\Programs` list all the directory entries for the directory path \Lab1\Programs

`cd \Lab1\Programs`

`dir Example1.cpp` list the directory entry of the selected file Example1.cpp

**Copy** - copies one or more files to the specified disk.

`copy [A][\B][d:][\path]filename[.ext][\A][\B] [\path][filename[.ext]][\A][\B][\V]`  
 source file target file

`/A` ASCII (text) file

`/B` binary file

`/V` verify that the data written on a disk has been correctly recorded

Copy with the same name

`copy a:prog.cpp`

copy the file prog.cpp from drive A to the current directory

`copy *.* a:`

copy all the files from the current directory to drive A

`copy a:prog.cpp \Lab1\Programs`

copy the file prog.cpp from drive A to the directory path \Lab1\Programs

Copy with different name

`copy a:prog.cpp \Labs\Programs\newprog.cpp`

copy the file prog.cpp from drive A to the directory path \Lab1\Programs, naming the copy newprog.cpp

Copy and combine files

`copy Example1.cpp+Example2.cpp bigfile.cpp`

copy the files Example1.cpp and Example2.cpp into a new file called bigfile.cpp

`copy Example1.cpp+Example2.cpp`

add the file Example2.cpp to the end of the first file Example1.cpp

`copy *.cpp combin.prn`

combine all files with an extension .cpp to one file called combin.prn

**Rename** - changes the name of the specified file in the first parameter to the name and extension given in the second parameter.

`ren [d:][\path]filename[.ext] filename[.ext]`

old file name new file name

`ren a:prog.cpp hello.cpp`

rename the file prog.cpp on drive A to hello.cpp

**Type** - displays the contents of the specified file on the standard output device (text files).

type [d:][path]filename[.ext]

type a:hello.cpp

display the file hello.cpp on drive A on the screen

**Delete** - deletes the specified file.

del [d:][path]filename[.ext]

del a:hello.cpp

delete the file hello.cpp from the drive A

Remove directory Tutorial

1. Change directory to the directory for removing

cd \Lab1\Tutorial

2. Delete all files from Tutorial

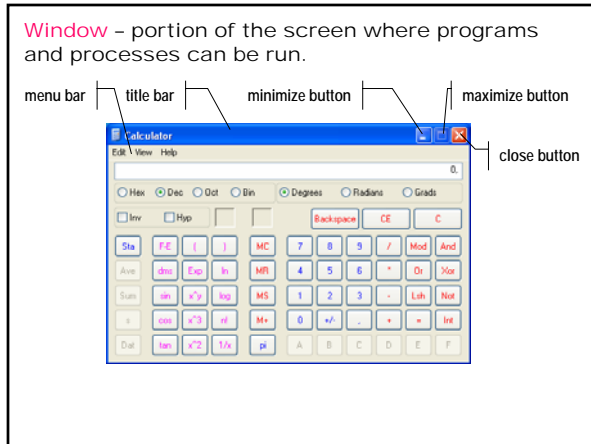
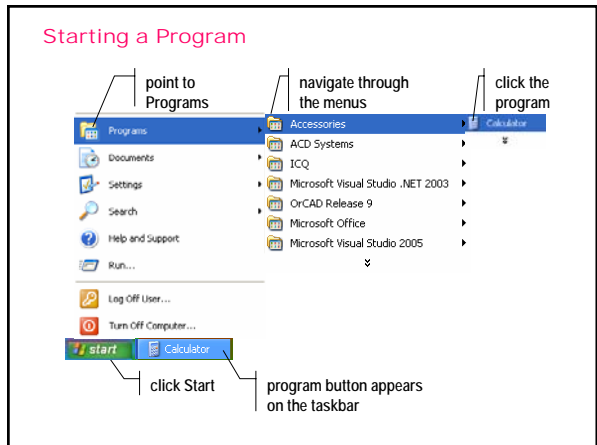
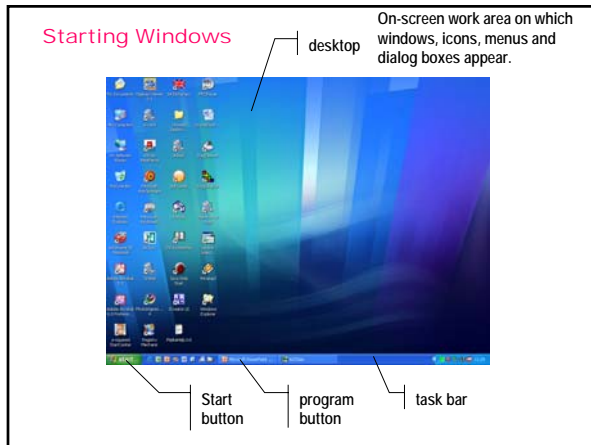
del \*.\*

3. Change directory to the level above Tutorial directory

cd ..

3. Remove the subdirectory Tutorial

rd Tutorial



Minimize / maximize a window / restore it to its previous size

1. Click the minimize button to minimize the window to a taskbar button. To restore the minimized window to its previous size, click its taskbar button.
2. Click the maximize button to maximize the window so it covers the full screen.
3. After maximizing a window, click the maximize button to restore the window to its previous size.

Resize an open window

1. Change the width – point to the left or right window border; when the pointer changes into a horizontal double-headed arrow, drag the border to the right or left.
2. Change the height – point to the top or bottom window border; when the pointer changes into a vertical double-headed arrow, drag the border up or down.
3. Change the height and width – point to any window corner; when the pointer changes into a diagonal double-headed arrow, drag the border in any direction.

Working with files and folders

Start ⇒ Programs ⇒ Windows Explorer

1. Select a file / folder  
Click (press and release the left mouse button) the file / folder. <L>
2. Select consecutive files / folders
  - <L> first item
  - press and hold down <SHIFT>
  - <L> last item
3. Select nonconsecutive files / folders
  - press and hold down <CTRL>
  - <L> each item
4. Open a file / folder  
Double-click the file or folder. <L<sup>2</sup>>

5. Rename a file / folder
  - <L> file / folder
  - right mouse button click <R>
  - choose Rename from the menu
  - type new name
  - press <ENTER>or
  - <L> file / folder
  - File ⇒ Rename
  - type new name
  - press <ENTER>
6. Create a new folder  
File ⇒ New Folder ⇒ Folder  
Folder named **New Folder** is created.
7. Delete a file / folder
  - <L> file / folder
  - File ⇒ Delete or <Delete>

8. Copy a file / folder
  - <L> file / folder
  - Edit ⇒ Copy
  - select the target location
  - Edit ⇒ Pasteor
  - <L> file / folder
  - drag (press and hold down the left mouse button) to the target location – press <CTRL> if both the source and the target location have the same drive

9. Move a file / folder
  - <L> file / folder
  - Edit ⇒ Cut
  - select the target drive / folder
  - Edit ⇒ Pasteor
  - <L> file / folder
  - drag to the target location – press <ALT> if the source and the target location have the different drive