

# OPERATING SYSTEMS

# CONTENTS

- 1/List the two major components of system software
  - 2/List the five basic functions of operating systems
  - 3/Discuss types of user interfaces(commonly used)
  - 4/Discuss the strengths and weaknesses of the most popular operating systems
  - 5/What are the three categories of an operating system
  - 6/List essential system utilities(commonly used)
  - 7/Explain the booting stages
  - 8/Why does a computer need an operating system?
- 

# 1/LIST THE TWO MAJOR COMPONENTS OF SYSTEM SOFTWARE

## 1- The Operating System (OS)

set of programs that coordinates interactions between:

- 1- hardware components
- 2- application software and computer hardware

## 2- System Utilities (Utility Programs)

Software programs essential for effective management of the computer system.

# 2/LIST THE FIVE BASIC FUNCTIONS OF OPERATING SYSTEMS

- Starts the computer
- Manages applications
- Manages memory
- Handles input and output device messages
- Provides a user interface for communication



### 3/DISCUSS TYPES OF USER INTERFACES(COMMONLY USED)

## Graphical user interface(GUI)

- Uses icons that appear on the desktop which represent computer resources used to perform actions.
- Sidebar
- Programs you open will appear in the center of the desktop.



# MENU-DRIVEN USER INTERFACE

- Provides text-based menus
- Displays available user options

**MENU DRIVEN INTERFACES**

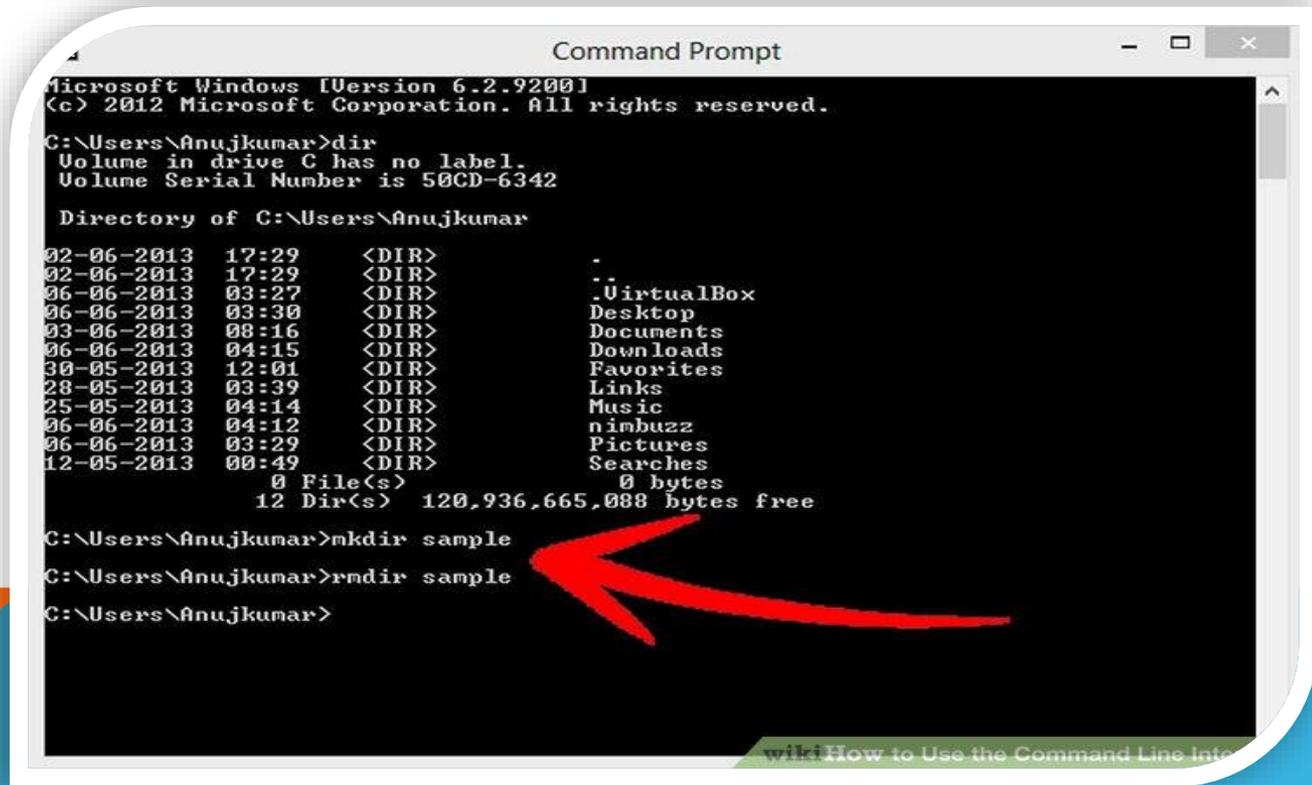
Menu Driven Applications

- ATM
- Mobile Phone
- MP3 Player
- Video recorder
- Household Devices
- Digital/Cable TV



# COMMAND-LINE USER INTERFACE

- Requires the user to type commands to instruct the OS to perform the desired action
- Uses complicated rules of syntax



The screenshot shows a Windows Command Prompt window with the following text:

```
Microsoft Windows [Version 6.2.9200]
(c) 2012 Microsoft Corporation. All rights reserved.

C:\Users\Anujkumar>dir
Volume in drive C has no label.
Volume Serial Number is 50CD-6342

Directory of C:\Users\Anujkumar

02-06-2013  17:29    <DIR>          .
02-06-2013  17:29    <DIR>          ..
06-06-2013  03:27    <DIR>          .VirtualBox
06-06-2013  03:30    <DIR>          Desktop
03-06-2013  08:16    <DIR>          Documents
06-06-2013  04:15    <DIR>          Downloads
30-05-2013  12:01    <DIR>          Favorites
28-05-2013  03:39    <DIR>          Links
25-05-2013  04:14    <DIR>          Music
06-06-2013  04:12    <DIR>          nimbuzz
06-06-2013  03:29    <DIR>          Pictures
12-05-2013  00:49    <DIR>          Searches
             0 File(s)              0 bytes
             12 Dir(s)  120,936,665,088 bytes free

C:\Users\Anujkumar>mkdir sample
C:\Users\Anujkumar>rmdir sample
C:\Users\Anujkumar>
```

A red arrow points to the `rmdir sample` command line.

wiki How to Use the Command Line Interface

# 4/DISCUSS THE STRENGTHS AND WEAKNESSES OF THE MOST POPULAR OPERATING SYSTEMS

## Linux OS

### Strengths:

- Open source software
- Can be installed on a mac or pc
- Powerful, free
- Features such as
  - Multitasking
  - Virtual memory
  - Internet support
  - GUI

### Weaknesses:

- Lack of technical support prevents adoption in corporate environments.
- Difficult to run Microsoft Office applications.



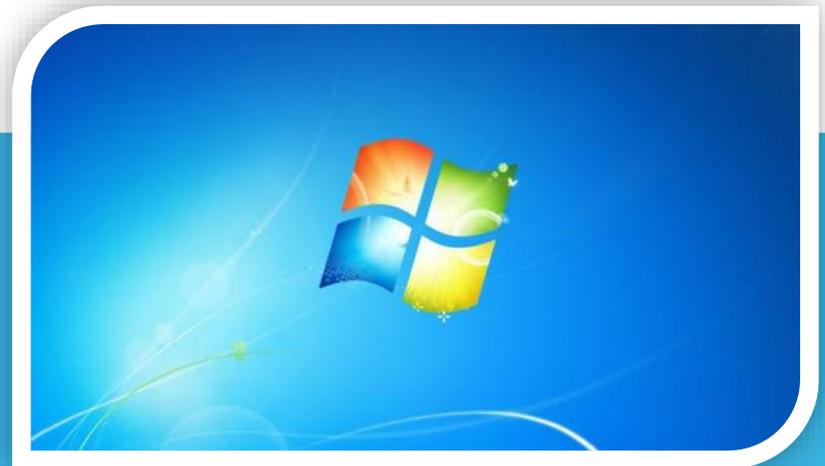
# WINDOWS OS (VISTA , 7, ETC...)

## Strengths:

- Considered the main OS of PCs worldwide
- Windows operating systems dominate the market, with Mac OS X and Linux quite a distance behind.(More than 90% of users use Windows)
- Can also be installed on a mac
- Continuous improvements and problem fixes
- Various versions for full compatibility for various specific uses
- GUI
- Easy to use
- Considerably Cheap

## Weaknesses:

- Too many Viruses and Worms.



# MAC OS



## Strengths:

- First OS to bring the GUI to the world.
- Very Stable
- Easy to use
- Mac OS can run Windows
- Certain professions such as Graphic Design rely on Mac OS

## Weaknesses:

- Expensive
- Software products developed for Windows greatly outnumber those developed for Mac OS.
- Hardly run on a PC(Windows).

## 5/WHAT ARE THE THREE CATEGORIES OF AN OPERATING SYSTEM

Stand-alone operating systems: used by single users

Server operating systems: used in client/server network environments.

Embedded operating systems: found on ROM chips in portable devices



## **6/LIST ESSENTIAL SYSTEM UTILITIES(COMMONLY USED)**

- backup software
  - antivirus software
  - a file manager
  - search tools
  - file compression utilities
  - disk scanning programs
- 

## 7/EXPLAIN THE BOOTING STAGES

What Happens During  
System Boot?



# STEP 1-ACTIVATE THE BIOS AND SETUP PROGRAM:

The BIOS (basic input/output system) is the part of the system software that provides the computer with the descriptions of the equipment that your system contains, typically the CPU, hard disk, RAM, and video component—equipment not usually replaced by the user. The operating system then uses the BIOS data to control those devices.



# STEP 2: INITIATE THE POWER-ON SELF TEST

a series of tests are conducted to make sure that the computer and associated peripherals are operating correctly these tests are known as the power-on self-test (POST).

Among the components tested are the computer's main memory (RAM), the keyboard, mouse, disk drives, and the hard disk

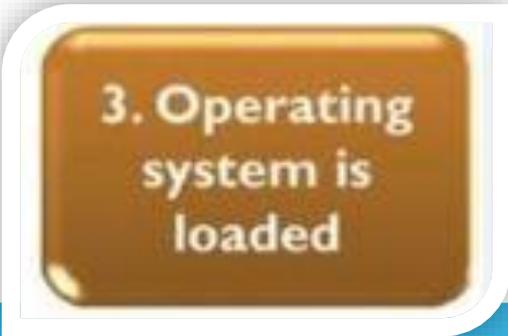


2. Power-on self-test (POST) is completed

# STEP 3: LOAD THE OPERATING SYSTEM

Once the power-on self-test is successfully completed, the BIOS initiates a search for the operating system. Options (or settings) in the setup program determine where the BIOS looks for the OS.

the BIOS first looks for the OS on the computer's hard disk. When the BIOS finds the OS, it loads the OS's kernel into memory



3. Operating  
system is  
loaded

# STEP 4: CONFIGURE THE SYSTEM

information about installed peripherals and software is stored in a database called the registry.

Once the operating system's kernel has been loaded, it checks the system's configuration to determine which drivers and other utility programs are needed.

A driver is a utility program that contains instructions to make a peripheral device addressable or usable by an OS.



Windows and Mac operating systems are equipped with (PnP) capabilities, which automatically detect new PnP-compatible peripherals that you might have installed while the power was switched off, load the necessary drivers, and check for conflicts with other devices.



# STEP 5: LOAD SYSTEM UTILITIES

After the operating system has detected and configured all of the system's hardware, it loads system utilities such as speaker volume control, antivirus software, and power management options.



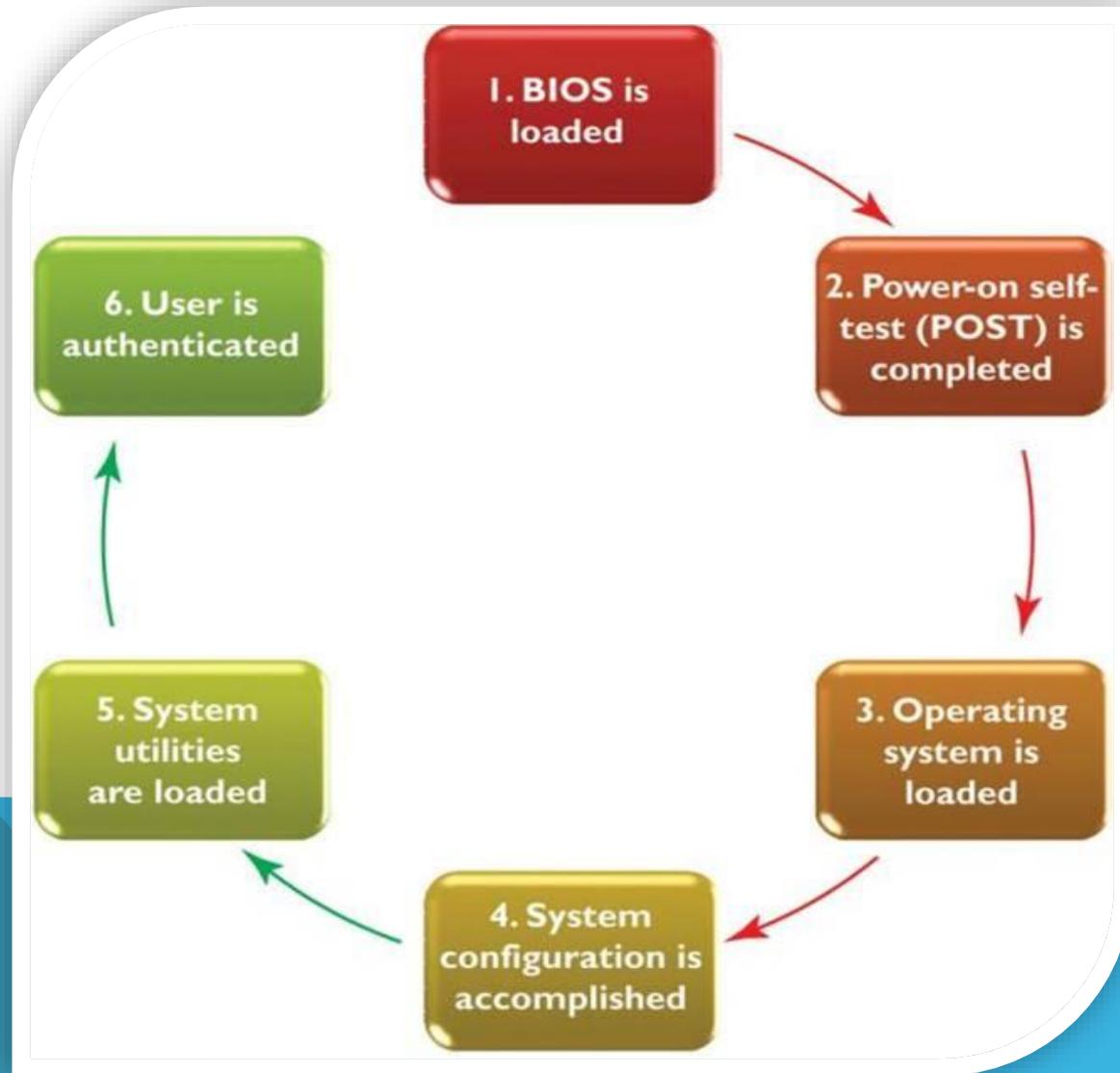
# STEP 6: AUTHENTICATE A USER

When the operating system finishes loading, you may see a request for a user name and password. Through this process, called authentication (or login), you verify that you are indeed the person who is authorized to use the computer.



6. User is  
authenticated

# BOOTING COMPLETE !



# 8/WHY DOES A COMPUTER NEED AN OPERATING SYSTEM?

The primary reason that a computer needs an operating system is to **coordinate** the interactions of its hardware components with each other as well as to coordinate their interaction with application software.



# REFERENCE

Computers are your future 12<sup>th</sup> edition by : Catherine LaBerta

Chapter 4: System Software



**THANK YOU FOR WATCHING 😊**

**This work has been done by: Fahed Ben Omran**