

# Computer Architecture & Organization

تقنيات وتركيب الحاسوب

المادة العملية

المحاضرة الثانية

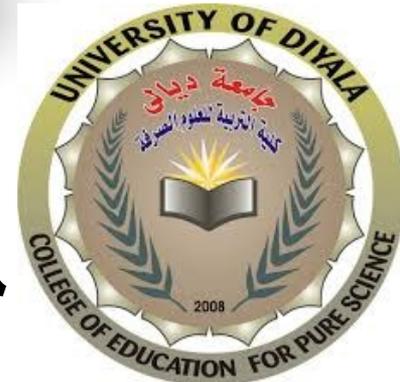
Operating System انظمة التشغيل

المرحلة الاولى

العام الدراسي 2020-2021

مدرس المادة

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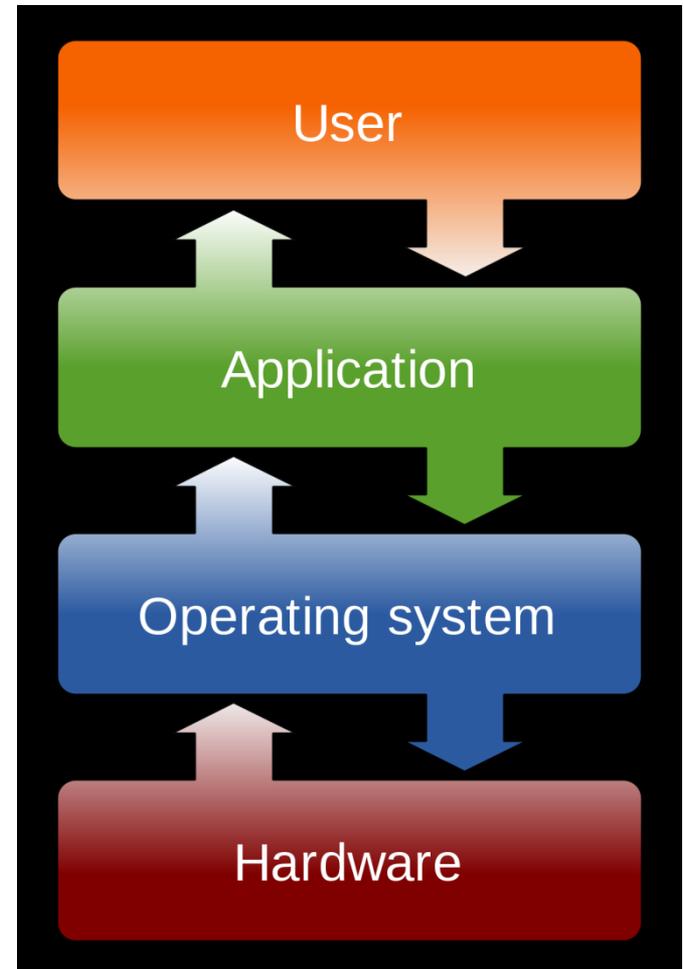


# What is Operating System?

- **The operating system is the most important program that runs on a computer.**
- **Operating system is an interface between computer and user.**
- **It is responsible for the management and coordination of activities and the sharing of the resources of the computer.**



# What is O.S.?





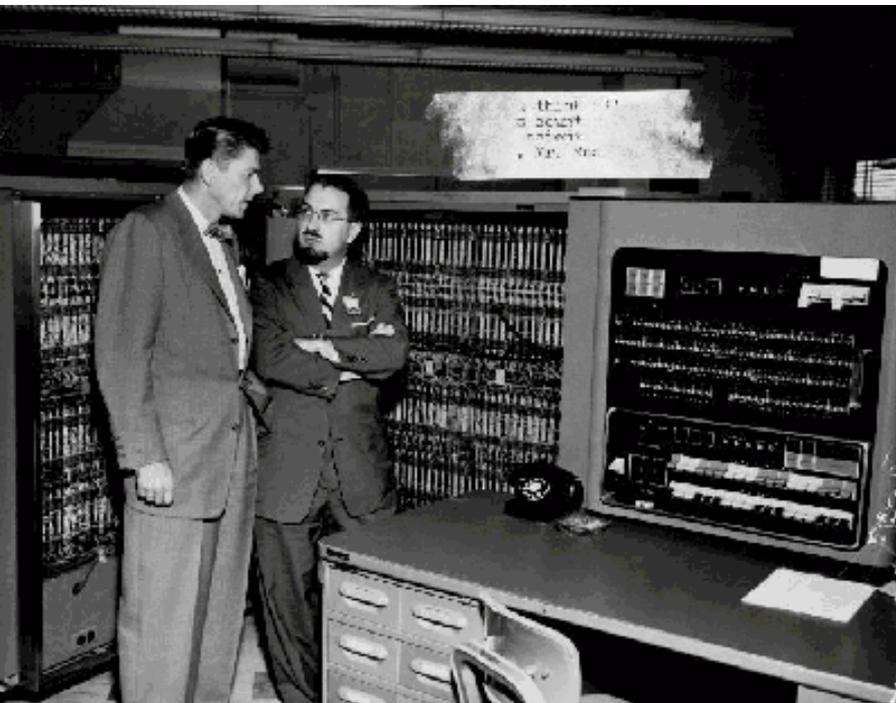
## History Of O.S.

- The General Motors Research Lab implemented the first OS in the early 1950s for their IBM 701.
- In the mid-1960s, operating systems started to use disks.
- In the late 1960s, the first version of the Unix OS was developed.
- The first OS built by Microsoft was DOS. It was built in 1981 by purchasing the 86-DOS software from a Seattle company.
- The present-day popular OS Windows first came to existence in 1985 when a GUI was created and paired with MS-DOS.

# History Of O.S.



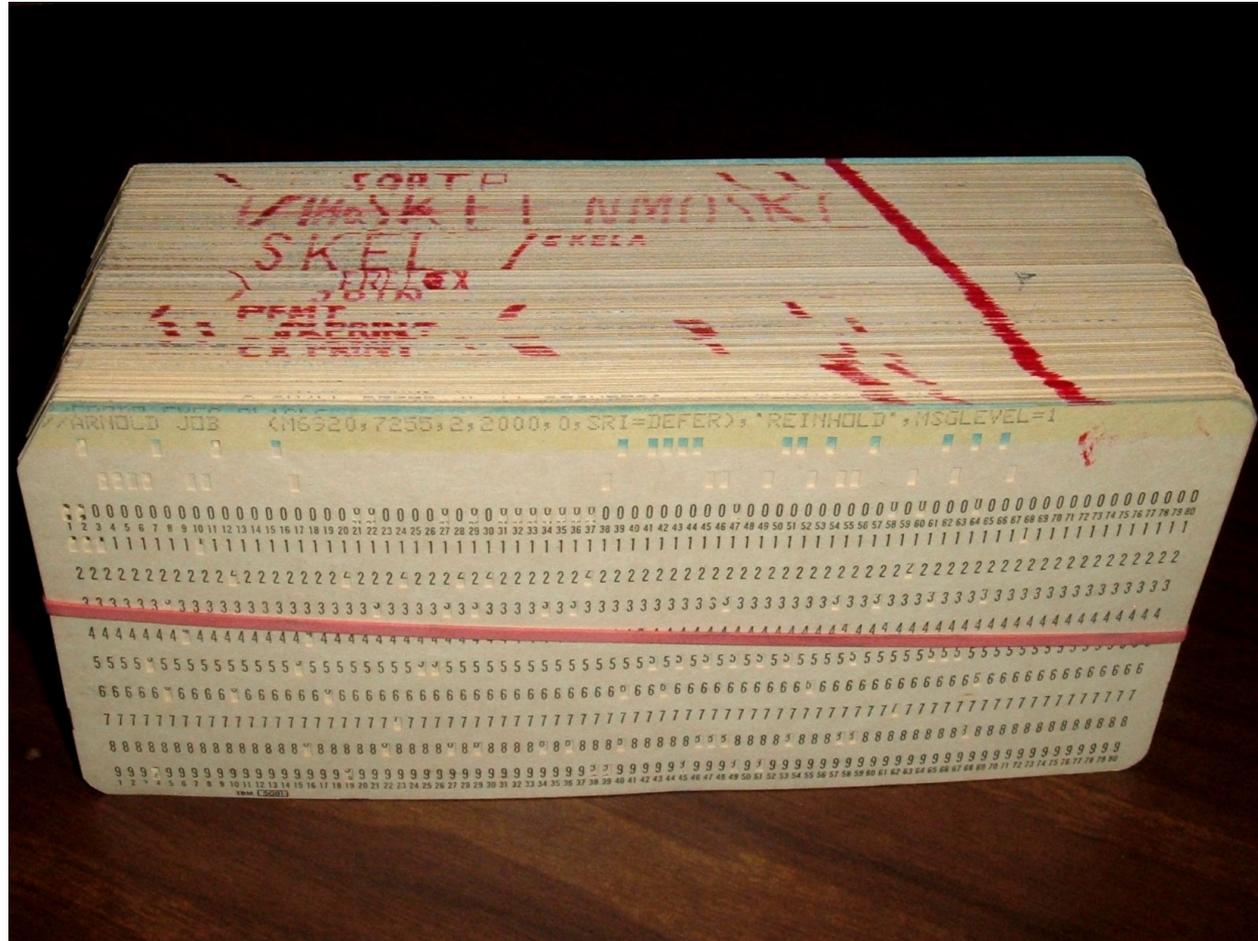
**IBM 701**



**IBM 709**



# History Of O.S.





# UNIX

UNIPLEXED  
INFORMATION  
COMPUTING SYSTEM



**PDP-12**



**Unix OS on PDP-7 Mini Computers**



# DOS

DISK  
OPERATING  
SYSTEM

Welcome to FreeDOS

CuteMouse v1.9.1 alpha 1 [FreeDOS]  
Installed at PS/2 port  
C:\>ver

FreeCom version 0.82 pl 3 XMS\_Swap [Dec 10 2003 06:49:21]

```
C:\>dir
Volume in drive C is FREEDOS_C95
Volume Serial Number is 0E4F-19EB
Directory of C:\

FDOS           <DIR>    08-26-04   6:23p
AUTOEXEC.BAT   435     08-26-04   6:24p
BOOTSECT.BIN   512     08-26-04   6:23p
COMMAND.COM    93,963  08-26-04   6:24p
CONFIG.SYS     881     08-26-04   6:24p
FDOSBOOT.BIN   512     08-26-04   6:24p
KERNEL.SYS     45,815  04-17-04   9:19p
6 file(s)      142,838 bytes
1 dir(s)       1,864,517,632 bytes free
```

C:\>\_



ComputerHope.com



# Windows

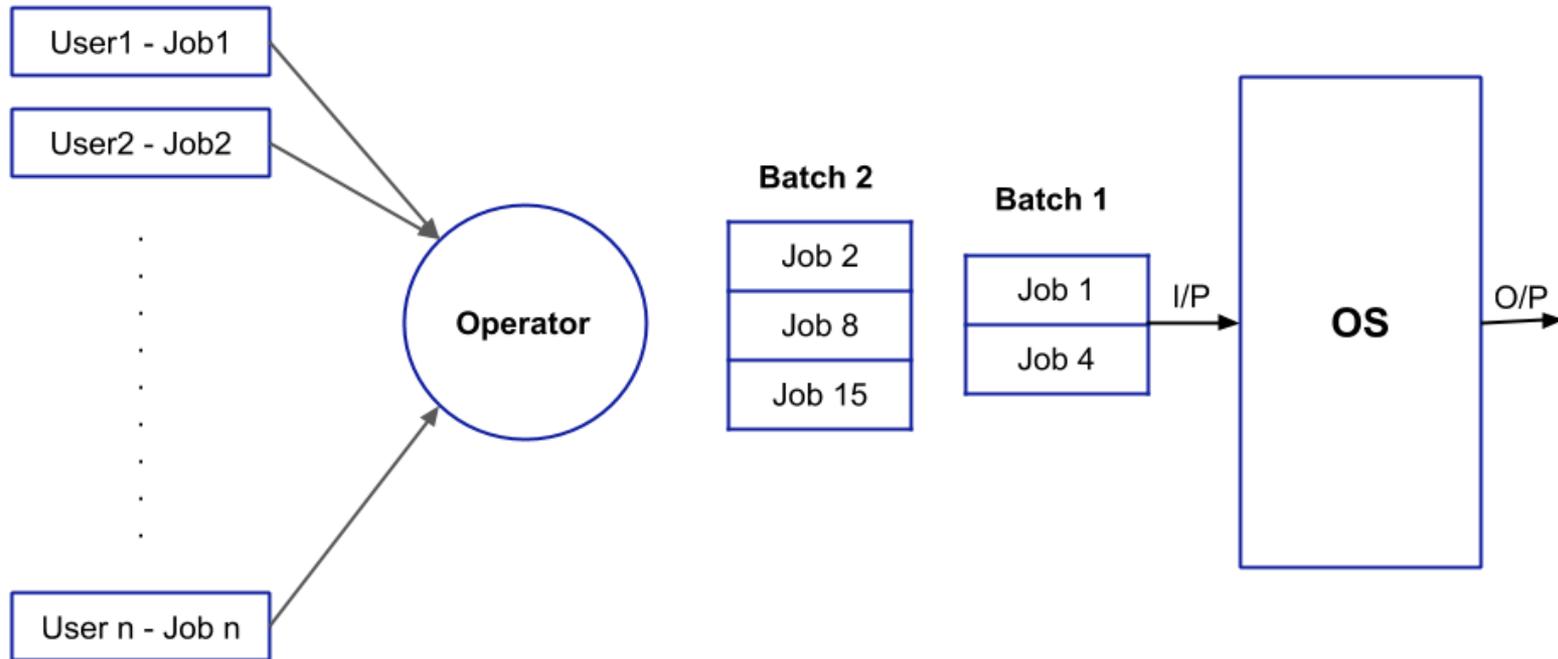




# Types of Operating System (OS)

## 1- Batch operating system

**The users of a batch operating system do not interact with the computer directly. Each user prepares his job on an off-line device like punch cards and submits it to the computer operator.**

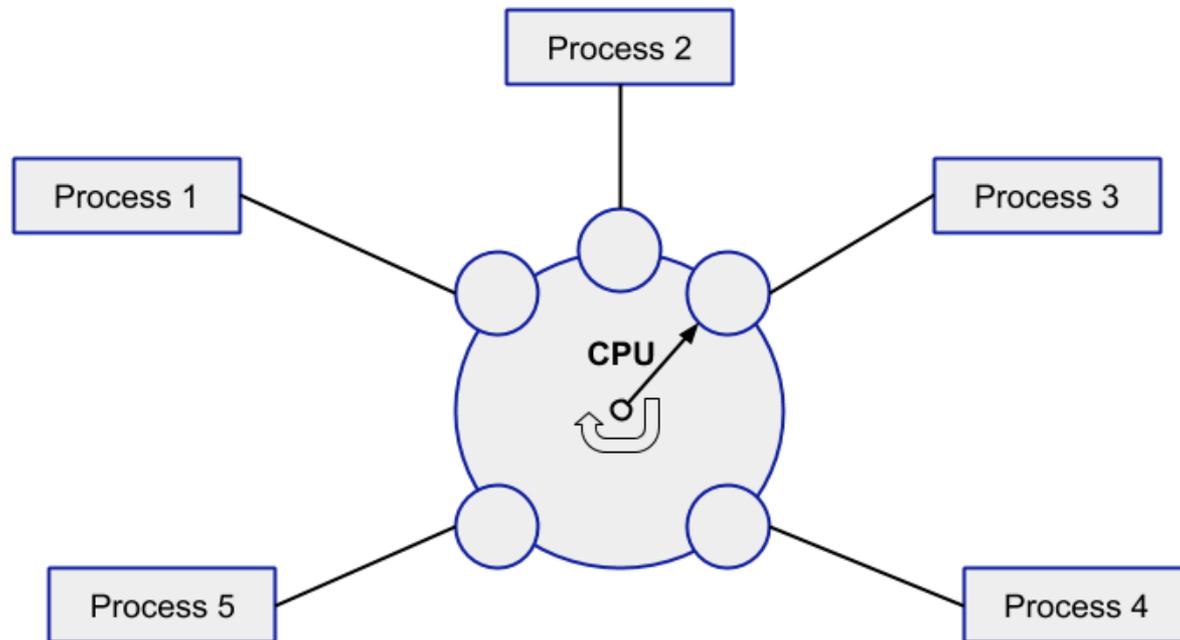




# Types of Operating System (OS)

## 2. Time-Sharing Operating System

**In a Multi-tasking Operating System, more than one processes are being executed at a particular time with the help of the time-sharing concept.**



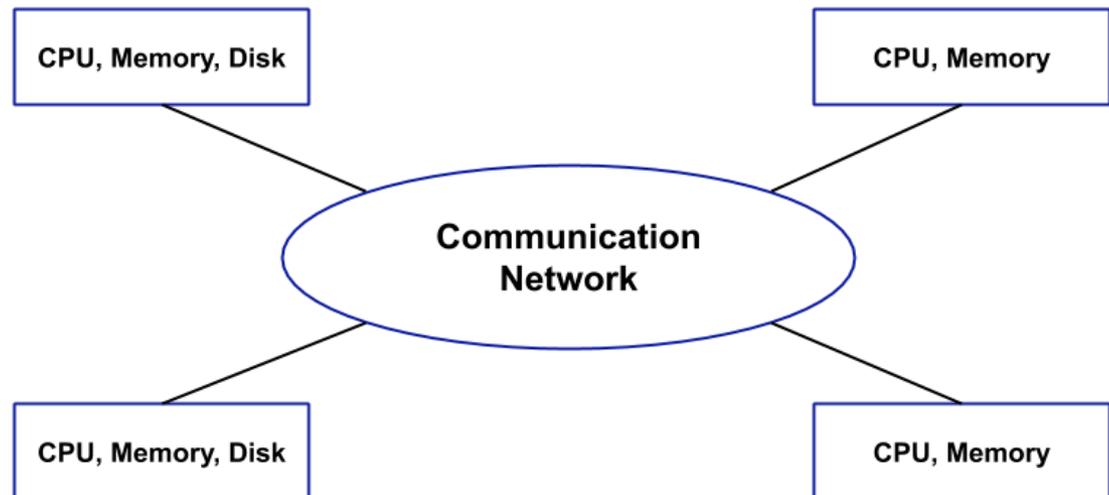


# Types of Operating System (OS)

## 3. Distributed Operating System

**Distributed systems use multiple central processors to serve multiple real-time applications and multiple users. Data processing jobs are distributed among the processors accordingly.**

**The processors communicate with one another through various communication lines (such as high-speed buses or telephone lines).**







# Types of Operating System (OS)

## 5. Real-time Operating System

**The Real-time Operating Systems are used in the situation where we are dealing with some real-time data. So, as soon as the data comes, the execution of the process should be done and there should be no delay i.e.**

**For example, the details of the temperature of the petroleum industry are very crucial and this should be done in real-time and in a very short period of time.**





# Types of Operating System (OS)

## 6- Network operating System

**A Network Operating System runs on a server and provides the server the capability to manage data, users, groups, security, applications, and other networking functions.**

**The primary purpose of the network operating system is to allow shared file and printer access among multiple computers in a network.**





# Types of Operating System (OS)

## **Single-user, single task**

one user can effectively do one thing at a time. The Palm OS for Palm handheld computers is a good example of a modern single-user, single-task operating system.

## **Single-user, multi-tasking**

This is the type of operating system most people use on their desktop and laptop computers today.

## **Multi-user**

A multi-user operating system allows many different users to take advantage of the computer's resources simultaneously.



# Functions of Operating System

Memory Management

Processor Management

File Management

Device Management

I/O management

Secondary Storage management

Security

Command Interpretation

Networking

Communication Management

Job accounting



# Functions of Operating System

**Process management:-** Process management helps OS to create and delete processes. It also provides mechanisms for synchronization and communication among processes.

**Memory management:-** Memory management module performs the task of allocation and de-allocation of memory space to programs in need of this resources.

**File management:-** It manages all the file-related activities such as organization storage, retrieval, naming, sharing, and protection of files.

**Device Management:** Device management keeps tracks of all devices. This module also responsible for this task is known as the I/O controller. It also performs the task of allocation and de-allocation of the devices.



# Functions of Operating System

**I/O System Management:** One of the main objects of any OS is to hide the peculiarities of that hardware devices from the user.

**Secondary-Storage Management:** Systems have several levels of storage which includes primary storage, secondary storage, and cache storage. Instructions and data must be stored in primary storage or cache so that a running program can reference it.

**Security:-** Security module protects the data and information of a computer system against malware threat and authorized access.

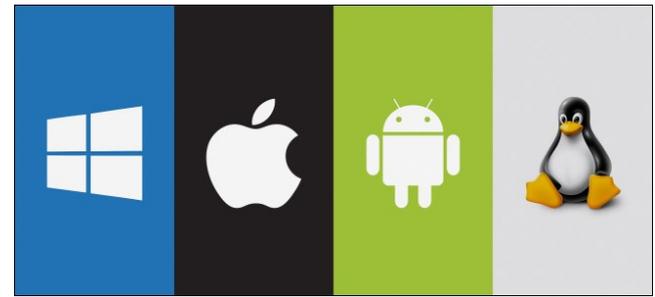


# Functions of Operating System

**Networking:** A distributed system is a group of processors which do not share memory, hardware devices, or a clock. The processors communicate with one another through the network.

**Job accounting:** Keeping track of time & resource used by various job and users.

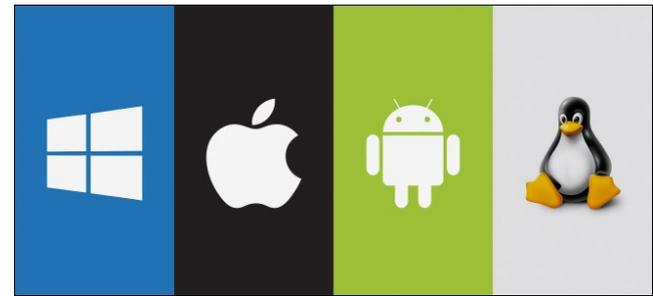
**Communication management:** Coordination and assignment of compilers, interpreters, and another software resource of the various users of the computer systems.



## Microsoft Windows

Microsoft created the **Windows** operating system in the mid-1980s. There have been many different versions of Windows, but the most recent ones are **Windows 10** (released in 2015), **Windows 8** (2012), **Windows 7** (2009), and **Windows Vista** (2007). Windows comes **pre-loaded** on most new PCs, which helps to make it the **most popular operating system** in the world.

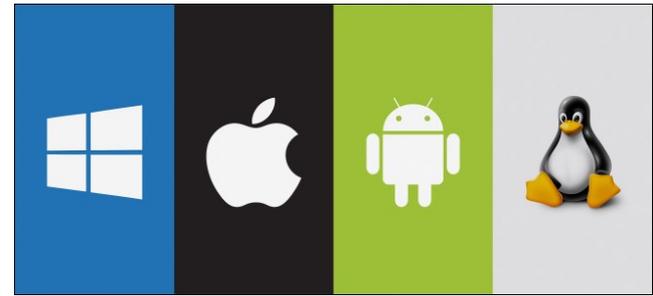




## macOS

macOS (previously called OS X) is a line of operating systems created by Apple. It comes preloaded on all Macintosh computers, or Macs. Some of the specific versions include Mojave (released in 2018), High Sierra (2017), and Sierra (2016).

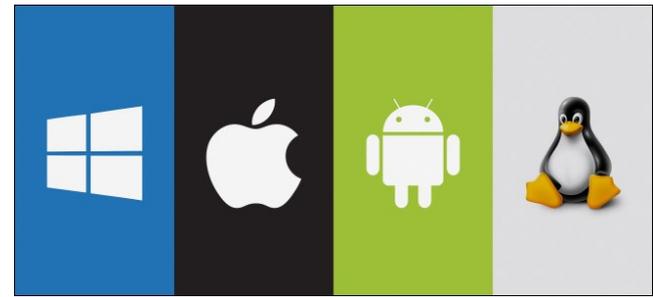
According to StatCounter Global Stats, macOS users account for less than 10% of global operating systems—much lower than the percentage of Windows users (more than 80%). One reason for this is that Apple computers tend to be more expensive. However, many people do prefer the look and feel of macOS over Windows.



## Linux

Linux (pronounced LINN-ux) is a family of **open-source operating systems**, which means they can be modified and distributed by anyone around the world. This is different from proprietary software like Windows, which can only be modified by the company that owns it. The advantages of Linux are that it is free, and there are many different distributions—or versions—you can choose from.

According to StatCounter Global Stats, Linux users account for less than 2% of global operating systems. However, most servers run Linux because it's relatively easy to customize.



## Operating systems for mobile devices

The operating systems we've been talking about so far were designed to run on desktop and laptop computers. Mobile devices such as phones, tablet computers, and MP3 players are different from desktop and laptop computers, so they run operating systems that are designed specifically for mobile devices. Examples of mobile operating systems include Apple iOS and Google Android. In the screenshot below, you can see iOS running on an iPad.



# Introduction to Windows

**Windows 1.0 – Nov 1985**

**Windows 2.0 – Dec 1987**

**Windows 3.0 – May 1990**

**Windows 95 – Aug 1995**

**Windows 98 – June 1998**

**Windows ME – Sep 2000**

**Windows XP – Oct 2001**

**Windows Vista – Nov 2006**

**Windows 7 – July 2009**

**Windows 8.0 – Oct 2012**

**Windows 8.1 – Oct 2013**

**Windows 10 – July 2015**





# Taskbar

At the bottom, you will see a row which is known as the taskbar. It has the currently running applications, you can also pin applications that you frequently use by using an option Pin to Taskbar”.



## Start Menu

This is located in the bottom left corner of Windows OS GUI. This is the place where the user can search for any setting and for any application for their use. Users can uninstall or repair applications from the control panel. The user can do a lot of activities just by searching through the start menu.