A brief study on different operating system

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Abstract— this paper presents a comparative study of various operating system archetypes similar to Windows, Linux, UNIX, ANDROID, and AMIGA which are the most well known operating systems. The basic criterion for studying the different operating systems the fundamental architecture power management, Architecture, security and throughput, this research study gives an overview on the similarities and differences in the basic operating systems use. As every operating system has difference in the underlying composition and working background this gives the best valuable comparative study.

Keywords— operating system(OS),Disk operating system(DOS

), Operating System Power Management (OSPM)

I.   INTRODUCTION

Operating system: - An OS is software that is responsible for managing computer hardware and software resources and provides wide-range of services for computer programs. The OS is a essential component of the system software in a computer system. Application programs frequently involve an operating system to function.

II.   DIFFERENT TYPES OF OS

1. UNIX OPERATING SYSTEM

UNIX OS is multitasking, multiuser computer OS that exists with many of its versions. The actual Unix was developed at AT&T's Bell Labs research center by Ken Thompson, Dennis Ritchie, and others from the power user's or programmer's point of view, Unix systems are characterized by a modular design that is sometimes called the ,"UNIX philosophy" which means the OS provides a set of simple tools and each of them perform a limited, well-defined function, with a unified file system as the main means of communication and shell scripting and command language to combine the tools to perform complex workflows.
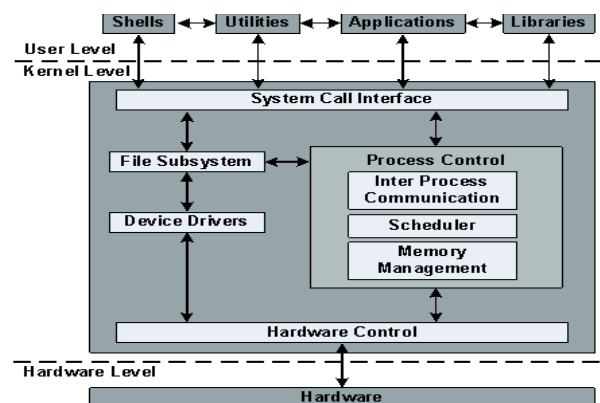

Fig: - UNIX OS

2. LINUX OPERATING SYSTEM

Linux is a Unix-like and mostly POSIX-acquiescent computer OS assembled under the model of free and open-source software development and distribution. The defining component for Linux is the Linux kernel, an operating system kernel which was first released on 5 October 1991 by Linus Torvalds. The Free Software Foundation that uses the name GNU/Linux, which has led to some disagreement.
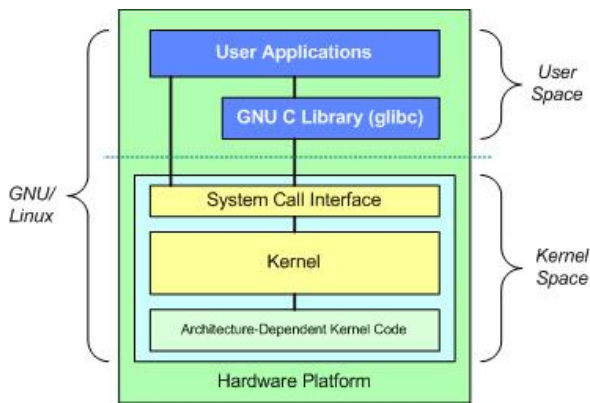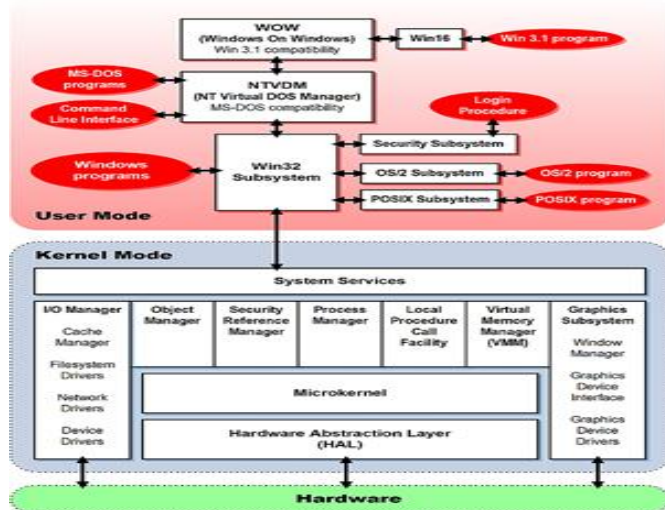
Fig: - Linux OS

Fig: windows NT

3. AMIGA OPERATING SYSTEM

Amiga OS is the proprietary native operating system of the Amiga personal computer. It was first developed by Commodore International and introduced with the launch of the first Amiga, Amiga OS is a single-user operating system based on a preemptive multitasking kernel, called Excel. It includes an abstraction of the Amiga's hardware, a disk operating system called Amiga DOS, a windowing system API called Intuition and a desktop file manager called Workbench.

Fig:-Amiga OS

4. WINDOWS NT

Windows NT is a family of operating systems introduced by Microsoft, the first version of which was released in July 1993. It is a processor-independent, multiprocessing, multi-user operating system.

5. ANDROID OS

Android is a mobile operating system (OS) based on the Linux kernel and currently developed by Google with a user interface based on direct manipulation Android is designed primarily for touch screen mobile devices such as Smartphone and tablet computers, with specialized user interfaces for televisions (Android TV), cars (Android Auto), and wrist watches (Android Wear). The OS uses touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching, and reverse pinching to manipulate on-screen objects, and a virtual keyboard
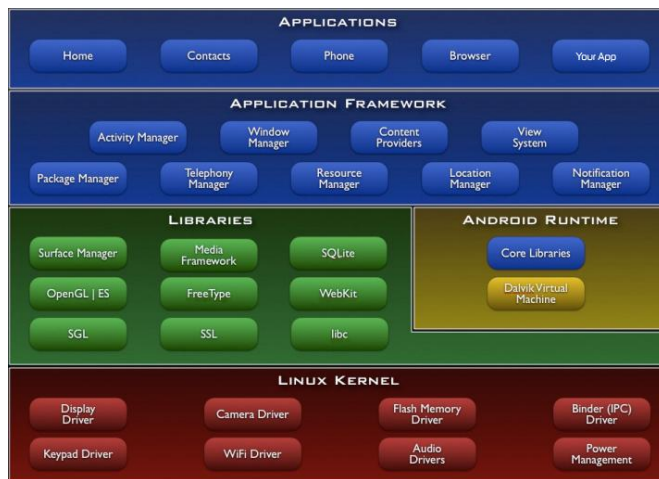

Fig: - Android OS

II. LAYERED ARCHITECTURE:-

The operating system is to be organized as a hierarchy of layers, each one constructed upon the one below it. The first system that was constructed in this way was the system built at the Technische Hogeschool Eindhoven in the Netherlands by E. W. Dijkstra (1968) and his students. In this approach the operating system is broken up into number of layers. The bottom layer (layer 0) is the hardware layer and the highest layer (layer n) is the user interface layer as shown in the figure.
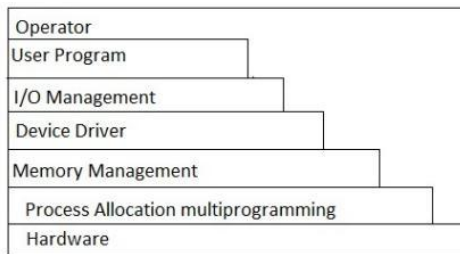
fig:- layered Architecture

The layered are selected such that each user functions and services of only lower level layer. Because of this design of the system is simplified when operating system is broken up into layer. Os/2 operating system is example of layered architecture of operating system .The main disadvantage of this architecture is that it requires an appropriate definition of the various layers & a careful planning of the proper placement of the layer.

III. POWER MANAGEMENT

Operating System Power Management (OSPM) is an operating system technology for managing the power of the underlying platform and switching it between different power states. OSPM enables a stage or system to implement the most efficient power mode and is applicable across all devices and components within a platform/system. OSPM is also known as Operating System-directed configuration and Power Management

- ENERGY EFFICIENCY

Percentage of total energy input to a machine or equipment that is consumed in useful work and not wasted as useless heat. Efficiency Formula

- EFFICIENCY FORMULA

Efficiency formula in terms of Work is given:

$$\eta = \frac{work\ output}{work\ input} \times 100\%$$

Efficiency formula in terms of Energy is given:

$$\eta = \frac{Energy\ output}{Energy\ input} \times 100\%$$

Efficiency formula is used to calculate the efficiency for any given input. It is unit less and is expressed in percentage.

IV. COMPARITIVE STUDY AND ANALYSIS

S/N	Name	Architecure	Type Concept	Power Management
1	Unix	Hardware,Kernel,Shell,User	Multiuser, Multitasking	Nil
2	Linux	KernelMode,UserMode	Multitasking	Advanced Power Management(APM)
3	Amiga	Layered approach, Open architecture, flexible	Preemptive Multitasking	
4	Android		Single User	Own Linux power Extension
5	Windows NT	KernelMode,UserMode	Multiuser, Multiprocessing	Does not have PM, It uses BIOS

V. CONCLUSION

In this paper we have compared the architecture, type concept and the power management aspects of the different operating system scenario such as UNIX, LINUX, Windows NT, Amiga and Android. The effort gives the basic idea regarding similarities and difference in these operating systems. This Experiment gives idea about the different architectures on which these operating systems are based. This experiment also shows the Windows NT is the only operating system which does not uses any power management mechanism rather it uses BIOS.

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VI. ACKNOWLEDGEMENT

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