Faculty of engineering - Shoubra
Benha University

Research Article / Research Project / Literature Review

in fulfillment of the requirements of

Department	**Engineering Mathematics and Physics**
Division	**----------**
Academic Year	**2019-2020 Preparatory**
Course name	**Computer**
Course code	**ECE001**

Title: -

Operating Systems

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Project link : https://github.com/rashidaimam/html_project
Website link : https://rashidaimam.github.io/html_project/

Abstract

An operating system acts as an intermediary between the user of a computer and computer hardware. The purpose of an operating system is to provide an environment in which a user can execute programs in a convenient and efficient manner. An operating system is a software that manages the computer hardware. The hardware must provide appropriate mechanisms to ensure the correct operation of the computer system and to prevent user programs from interfering with the proper operation of the system.

Table of contents

Introduction

- An operating system is a program that controls the execution of application programs and acts as an interface between the user of a computer and the computer hardware.
- A more common definition is that the operating system is the one program running at all times on the computer (usually called the kernel), with all else being application programs.
- An operating system is concerned with the allocation of resources and services, such as memory, processors, devices, and information. The operating system correspondingly includes programs to manage these resources, such as a traffic controller, a scheduler, memory management module, I/O programs, and a file system.

Functions of Operating system – Operating system performs three functions:
Convenience: An OS makes a computer more convenient to use.
Efficiency: An OS allows the computer system resources to be used in an efficient manner.
Ability to Evolve: An OS should be constructed in such a way as to permit the effective development, testing and introduction of new system functions at the same time without interfering with service.

Operating system as User Interface –

- User
- System and application programs
- Operating system
- Hardware

Every general-purpose computer consists of the hardware, operating system, system programs, and application programs. The hardware consists of memory, CPU, ALU, and I/O devices, peripheral device, and storage device. System program consists of compilers, loaders, editors, OS, etc. The application program consists of business programs, database programs.

Literature Review

To preview the research results on operating systems, I have used HTML to create a website representing these results.This this section I will preview some snapshots from website pages and HTML code.
Website page:

Operating Systems

1. Operating Systems
2. Types of Operating Systems
3. Applications of Operating System
4. Exambels of Operating System
5. Operating Systems Market Share

What is an operating system?

An operating system is the most important software that runs on a computer. It manages the computer's memory and processes, as well as all of its software and hardware. It also allows you to communicate with the computer without knowing how to speak the computer's language. Without an operating system, a computer is useless.

why need an Operating System

Your computer's operating system (OS) manages all of the software and hardware on the computer. Most of the time, there are several different computer programs running at the same time, and they all need to access your computer's central processing unit (CPU), memory, and storage. The operating system coordinates all of this to make sure each program gets what it needs.

Source code :

```
<html>
<head>
<h1>Operating Systems</h1>
<ol style="text-align:left;">
<li><a href="index.html">Operating Systems</a></li>
<li><a href="os_types.html">Types of Operating Systems</a></li>
<li><a href="os_apps.html">Applications of Operating System</a></li>
<li><a href="os_ex.html">Exambels of Operating System</a></li>
<li><a href="os_market.html">Operating Systems Market Share</a></li>
</ol>
</head>
<body style="width:60%; font-size:30px; text-align:center; align:auto">
    <h2>What is an operating system?</h2>
    <p>
        An operating system is the most important software that runs on a computer. It manages the computer's memory and processes,
        as well as all of its software and hardware. It also allows you to communicate with the computer without knowing how to
        speak the computer's language. Without an operating system, a computer is useless.
    </p>
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    <p>
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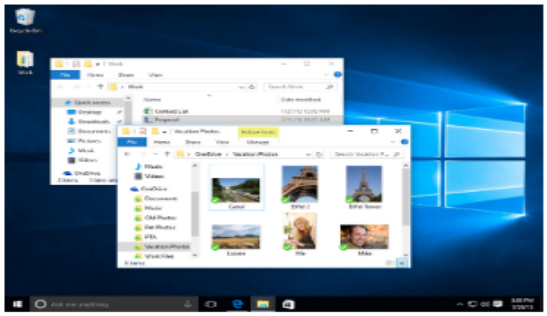
Types of operating systems

Operating systems usually come pre-loaded on any computer you buy. Most people use the operating system that comes with their computer, but it's possible to upgrade or even change operating systems. The three most common operating systems for personal computers are **Microsoft Windows**, **macOS**, and **Linux**.

Modern operating systems use a graphical user interface, or GUI (pronounced gooey). A GUI lets you use your mouse to click icons, buttons, and menus, and everything is clearly displayed on the screen using a combination of graphics and text.



Each operating system's GUI has a different look and feel, so if you switch to a different operating system it may seem unfamiliar at first. However, modern operating systems are designed to be easy to use, and most of the basic principles are the same.

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    </p>
    <p>
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        mouse to click icons, buttons, and menus, and everything is clearly displayed on the screen using a combination
        of graphics and text.
    </p>
    <img src="os_windows.jpg" width="600">
    <p>
        Each operating system's GUI has a different look and feel, so if you switch to a different operating system it
        may seem unfamiliar at first. However, modern operating systems are designed to be easy to use, and most of the
        basic principles are the same.
    </p>
</body>
</html>

```

Results and discussion

Operating System: User View

The user view of the computer refers to the interface being used. Such systems are designed for one user to monopolize its resources, to maximize the work that the user is performing. In these cases, the operating system is designed mostly for ease of use, with some attention paid to performance, and none paid to resource utilization.

Operating System: System View

Operating system can be viewed as a resource allocator also. A computer system consists of many resources like - hardware and software - that must be managed efficiently. The operating system acts as the manager of the resources, decides between conflicting requests, controls execution of programs etc.

Operating System Management Tasks

1. **Processor management** which involves putting the tasks into order and pairing them into manageable size before they go to the CPU.
2. **Memory management** which coordinates data to and from RAM (random-access memory) and determines the necessity for virtual memory.
3. **Device management** which provides interface between connected devices.
4. **Storage management** which directs permanent data storage.
5. **Application** which allows standard communication between software and your computer.
6. **User interface** which allows you to communicate with your computer.

Functions of Operating System

1. It boots the computer
2. It performs basic computer tasks e.g. managing the various peripheral devices e.g. mouse, keyboard
3. It provides a user interface, e.g. command line, graphical user interface (GUI)
4. It handles system resources such as computer's memory and sharing of the central processing unit(CPU) time by various applications or peripheral devices.
5. It provides file management which refers to the way that the operating system manipulates, stores, retrieves and saves data.
6. Error Handling is done by the operating system. It takes preventive measures whenever required to avoid errors.

Conclusions

The operating system in its current form empowers users of all ages, as well as small, medium and large businesses – from children whose needs are only to play games and access the internet; to more specialized, productive and engineer/constructive areas of work: secretarial, household economies to large corporations (each member of staff) – in its use and functions, across a range of platforms/architectures, as never before. We now have a mass market, on a global scale, getting larger year by year. Its not a question any more, about the difficulties of computer technologies when it comes to buying or having an interest in this consumer product, but when will I be able to afford it.

Reference

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