

Computer architecture

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Submission date: 30-Jul-2023 09:48PM (UTC+0100)

Submission ID: 210876137

File name: 45236_Tariq_Tariq_Computer_architecture_503754_459076658.rtf (18.43M)

Word count: 1147

Character count: 6073

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Computer architecture

1a) 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. An operating system is software that manages computer hardware and software resources. [1- Hayfaa Subhi Malallah]

An operating system is the program that, after being initially loaded into the computer by a boot program, manages all the other application programs in a computer.

1b) What is the evolution of operating system?

The OS generation involves continuous development and improvement. It includes research, user feedback and enhancements in performance. The OS generation evolves from the previous version with new features and better performance.

1c) The different Generations of operating system include: Vacuum Tubes and Plugboards, Transistors and Batch systems, Integrated Circuits and Multiprogramming, and Personal Computers

Types of operating system

There are different types of operating system.

Examples of modern operating system are Apple macOS, Microsoft windows, Google's Android OS, Linux Operating system, Apple iOS.

Key features of modern operating system

It includes a processor context program counter stack pointer and its own data storage for the stack. It executes sequentially and is interruptible. It is a lightweight process. In other words, it is the smallest sequence of program instructions in execution. Some of the key features of the operating system are program execution, providing protected or supervisor mode, file system manipulating, error handling, information and resources protection, resources allocation.

References for operating system

Best Books for Operating Systems [2022]

1. **Operating System Concepts Author:** Abraham Silber Schatz, Peter B. Galvin and Greg Gagne ...
2. **Guide to Operating Systems Author:** Greg Tomson.
3. **Operating Systems: Internals and Design Principles Author:** Dr. William Stallings ...
4. **Design of the UNIX Operating Systems Author:** Maurice Bach.
- 8 • **"Modern Operating Systems" by Andrew S. Tanenbaum and Herbert Bos -**
This book provides a comprehensive introduction to operating systems concepts, design principles, and implementation techniques. It covers various topics including process management, memory management, file systems, and more.
- 8 • **"Operating System Concepts" by Abraham Silber Schatz, Peter B. Galvin, and Greg Gagne -** This widely used textbook covers the fundamental concepts of operating systems. It explores different aspects such as process management, concurrency, memory management, and file systems.

2) Use of CLI commands in a Windows / Mac OS.

What is CLI?

9 CLI is a powerful program, but its use CLI hasn't always been well-received. Beginners are reluctant to use it, thinking that it is only for advanced users. But that is not true.

4 The Command Line Interface (CLI) is a powerful tool that can be used to interact with computers. 1 It is an editing environment that is text-based and uses specified text (known as commands) to interact with the computer and perform numerous operations, including installing and working with programs¹. 4 The CLI works by allowing users to enter commands into the command prompt. The operating system then interprets and executes these commands. The user can then enter additional commands or modify existing ones to achieve the desired outcome².

1 In the early days of computers, developers used MS-DOS to navigate around the computer system. Disk Operating System (DOS) is a kind of operating system that uses commands (words) to interact with the computer. The DOS didn't use mouse pointers, icons, or any graphics, so users were stuck with using text-commands to operate the computer system. For instance, to go to a particular folder, you'd type: Cd <name of folder>. The command line interface (or CLI for short) is similar to DOS in that it uses commands to perform various operations, like creating files, creating folders, installing programs, and what have you

1 Every operating system comes with an inbuilt command prompt. Some application packages such as Nodejs, Anaconda, Git, and so on also come with their own command prompt. The same thing goes for Cloud Providers such as AWS, GCP, Azure. Although the CLI bears different names across different platforms or packages, its purpose remains the same: to let you interact freely with the software package or the computer system using text-based instructions known as commands. [1]

3. Use of CLI commands in a Linux OS.

Linux commands are commands that are typed into command line into execute various tasks. Some examples of basic CLI Linux are, which lists the directory system, and cd pathname, which changes the current directory to the specified pathname. Linux CLI commands can be used for simple or administrative tasks, or when a graphical user interface is not available or preferred.

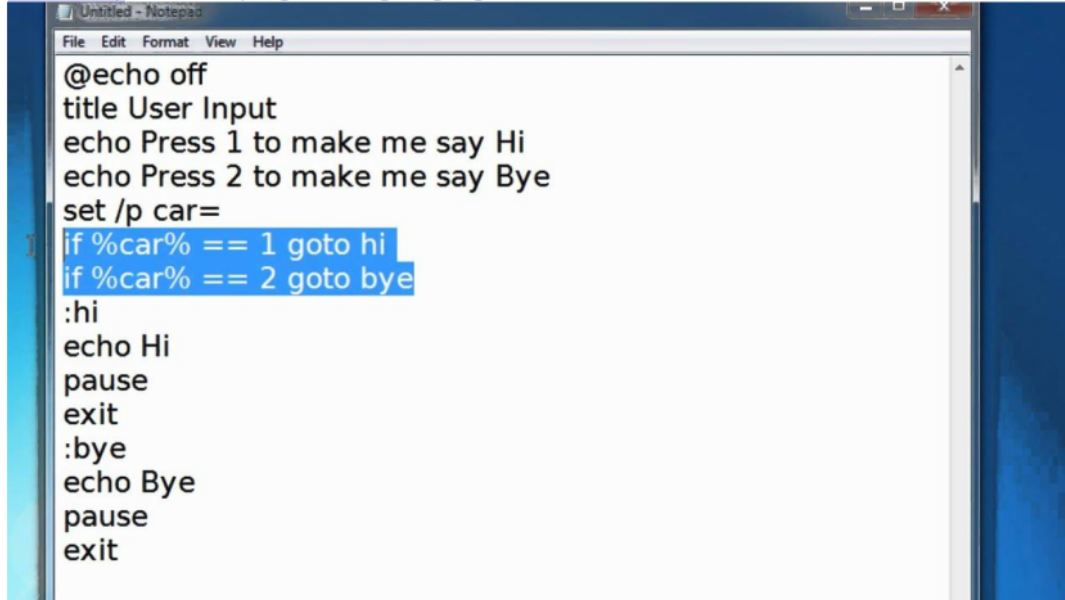


4. Use of Batch scripts in a Windows / Mac OS.

5 A batch script is a text file that contains certain commands that are executed in sequence. It is used to simplify certain repetitive tasks or routines in the Windows, DOS and OS/2 operating systems, and is also used in complex network and system administration.

What is batch scripting?

Batch scripting consists of series and commands to be executed by the command-line interpreter, stored in a plain text file. It is not commonly used a programming language and so it is not commonly used as a programming language.

A screenshot of a Notepad window titled 'Untitled - Notepad'. The window contains a batch script with the following text:

```
@echo off
title User Input
echo Press 1 to make me say Hi
echo Press 2 to make me say Bye
set /p car=
if %car% == 1 goto hi
if %car% == 2 goto bye
:hi
echo Hi
pause
exit
:bye
echo Bye
pause
exit
```

5. Use of Bash scripts in a Linux OS.

Bash scripts are plain text files that contain a series of commands to be executed by a command-line interpreter. They can perform various tasks such as remotely backing up file systems or making an LED flash. Bash scripts are a mixture of commands that we would normally type ourselves on the command line and commands that we generally wouldn't. They are an important part of process automation in Linux and help you write a sequence of commands in a file and then execute them. This saves you time because you don't have to write certain commands again and again. You can perform daily tasks efficiently and even schedule them for automatic execution. You can also set certain scripts to execute on startup such as showing a particular message on launching a new session or setting certain environment variables.

Definition:

Linux is a free OS, and that can be downloaded, updated, and even redistributed at no cost. In the domain of the operating system, Linux is relatively new. In the year 1991, it was written and also updated for current use. It is possible to compare Linux and Windows to an object whose roof and floor are either replaceable or not. However, with Linux, as a unit, both roof and floor can be transferred in whatever way one wishes. However, the roof and floor of the windows are hugely rigid that it stays secure. Developers within the open-source Linux community want to gain a significant share of end-user desktops that increase the number of intended Linux users than the Unix of old school users who are afraid to share the desire at OS market and server [54]

Link

1. [programatically.com](https://www.programatically.com) 2. [freecodecamp.org](https://www.freecodecamp.org) 3. [makeuseof.com](https://www.makeuseof.com) 4. [freecodecamp.org](https://www.freecodecamp.org) 5. [geeksforgeeks.org](https://www.geeksforgeeks.org)

```
192.168.1.8 - PuTTY
[redacted]@parrot:~$ ifconfig
eth0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    ether 74:86:7a:1c:ab:61 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 8 bytes 396 (396.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 8 bytes 396 (396.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlan0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.1.8 netmask 255.255.255.0 broadcast 192.168.1.255
    inet6 fe80::6c5b:4f1b:15f4:e4b1 prefixlen 64 scopeid 0x20<link>
    ether bc:85:56:31:cc:93 txqueuelen 1000 (Ethernet)
    RX packets 3906 bytes 1027750 (1003.6 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1154 bytes 247131 (241.3 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[redacted]@parrot:~$
```

I need only ip address Nothing else
i am asking a bash command to get specific
value

```
ohhhvictor@ohhhvictor-virtual-machine: ~
File Edit View Search Terminal Help
-rw-r--r-- 1 ohhhvictor ohhhvictor 15 Aug 9 18:24 myerror.txt
-rw-r--r-- 1 ohhhvictor ohhhvictor 66 Jul 31 12:25 mynewtest
-rw-r--r-- 1 ohhhvictor ohhhvictor 15 Dec 10 17:24 mynewtest.sh
drwxr-xr-x 2 ohhhvictor ohhhvictor 4096 Jul 30 19:59 onenorefolder
drwxr-xr-x 2 ohhhvictor ohhhvictor 4096 Jul 25 11:33 Pictures
drwxr-xr-x 2 ohhhvictor ohhhvictor 4096 Jul 25 11:33 Public
-rw-r--r-- 1 ohhhvictor ohhhvictor 50 Nov 24 13:11 script.sh
drwxr-xr-x 7 ohhhvictor ohhhvictor 4096 Oct 30 19:29 snap
drwxr-xr-x 2 ohhhvictor ohhhvictor 4096 Jul 25 11:33 Templates
drwxr-xr-x 2 ohhhvictor ohhhvictor 4096 Jul 25 11:33 Videos
-rw-r--r-- 1 ohhhvictor ohhhvictor 2 Nov 7 17:10 xaa
ohhhvictor@ohhhvictor-virtual-machine:~$
ohhhvictor@ohhhvictor-virtual-machine:~$
ohhhvictor@ohhhvictor-virtual-machine:~$ chnod +x mynewtest.sh
ohhhvictor@ohhhvictor-virtual-machine:~$ ls -l
total 80
-rw-r--r-- 1 ohhhvictor ohhhvictor 50 Nov 24 10:35 ar101
drwxr-xr-x 3 ohhhvictor ohhhvictor 4096 Nov 8 16:44 Desktop
drwxr-xr-x 2 ohhhvictor ohhhvictor 4096 Jul 25 11:33 Documents
drwxr-xr-x 2 ohhhvictor ohhhvictor 4096 Jul 25 11:33 Downloads
-rw-r--r-- 1 ohhhvictor ohhhvictor 8980 Jul 25 11:07 examples.desktop
-rw-r--r-- 1 ohhhvictor ohhhvictor 108 Nov 21 17:14 hello.sh
drwxr-xr-x 2 ohhhvictor ohhhvictor 4096 Jul 25 11:33 Music
-rw-r--r-- 1 ohhhvictor ohhhvictor 15 Aug 9 18:24 myerror.txt
-rw-r--r-- 1 ohhhvictor ohhhvictor 66 Jul 31 12:25 mynewtest
-rw-r--r-- 1 ohhhvictor ohhhvictor 15 Dec 10 17:24 mynewtest.sh
drwxr-xr-x 2 ohhhvictor ohhhvictor 4096 Jul 30 19:59 onenorefolder
drwxr-xr-x 2 ohhhvictor ohhhvictor 4096 Jul 25 11:33 Pictures
drwxr-xr-x 2 ohhhvictor ohhhvictor 4096 Jul 25 11:33 Public
```

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