CENTRE ESPECÍFIC
D´EDUCACIÓ A DISTÀNCIA DE
LA COMUNITAT VALENCIANA

UNIT 3.HARDWARE COMPONENTS

External Components

Activities

Computer Systems
CFGS DAW

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Licencia

Nomenclatura

A lo largo de este tema se utilizarán distintos símbolos para distinguir elementos importantes dentro del contenido. Estos símbolos son:

Actividad opcional. Normalmente hace referencia a un contenido que se ha comentado en la documentación por encima o que no se ha hecho, pero es interesante que le alumno investigue y practique. Son tipos de actividades que no entran para examen

Atención. Hace referencia a un tipo de actividad donde los alumnos suelen cometer equivocaciones.

UD03. HARDWARE COMPONENTS
External components. Activities

(1) Make a study (physical characteristics and configuration) of your disk(s) drive(s). Lean on photos (the device itself, the configuration of the BIOS, etc.). **Share that information in forum.**

(2) 👁 A hard drive transfers data at 1.6 Mb/s. If the rotation speed is 5400rpm, how many bytes does it transfer per revolution?

1 revolution every (60 s / 5400) → 0,011 seconds

*1.6 Mb → 1600000 bits every second, therefore 1600000 * 0,011=17600 bits / 8 = 2200 bytes.*

(3) 👁 When the manufacturer indicates the hard disk specifications is usually used the CHS terminology, where C is the number of Cylinders, H the number of Heads and S the number of Sectors. Knowing this, can you calculate the capacity in GB of a hard disk with: C = 200 H = 64 S = 40. What if the hard drive indicates that it has 976773169 LBA sectors?

The usually sector size is 512 bytes.

*C = 200 H = 64 S = 40 → 200 * 64 * 40 * 512 bytes = 262.144.000 bytes → 250 MiB*

976773169 are the total amount of sectors (logic) in the hard drive. With a sector size of 512 bytes, the hard drive capacity is approximately 465 GiB.

(4) 👁 The next table shows part of the technical specifications of a MoBo. Given the specifications, answer the following questions:

- How many hard drives can connect? *8 (IDE=2 + SATA=6)*
- How many SATA drives can connect? *6*
- Can we connect a floppy drive? *Yes*, and two? *no*
- In total, how many internal hard drives can be connected? *8*
- How many optical storage devices can be connected? *8*

Storage Interface	South Bridge - 1 x IDE connector supporting ATA- 133/100/66/33 and up to 2 IDE devices - 6 x SATA 3 Gb/s connectors supporting up to 6 SATA 3Gb/s devices - Support for SATA RAID 0, RAID 1 and RAID 10 ITE IT8720 chip - 1 x floppy disk drive connector supporting up to 1 floppy disk drive

(5) 👁 What is DMA? What sense is there in hard drives? Discuss it in forum.

Direct memory access (DMA) is a feature of computer systems that allows certain hardware subsystems to access main system memory independent of the central processing unit. (https://en.wikipedia.org/wiki/Direct_memory_access)

If DMA is enabled in a hard disk, the transfers should be faster and will occur without processor intervention.

(6) What is the USB HOST mode? Give me an example of use

https://www.sweetwater.com/insync/usb-host/

(7) There are two widely used peripherals and we have not said anything: the mouse and keyboard. Make a small work indicating what types of keyboards and mice can be found in stores with their advantages and disadvantages (remember that price is a feature). Do you know if there are new technologies concerning these two peripherals?

(8) 👁 A TFT monitor whose native resolution is 1440 x 1280. How many transistors will?

Let's consider that 1 pixel contains 1 transistor, therefore, the number of transistors will be (1440X1280)→1843200 transistors.

(9) 👁 If your computer has 2MB of video memory which is the maximum resolution supported if you work with 256 colors? What if you work with 16.7 million colors?

*2MB→2*1024*1024*8→16.777.216 bits*

*Memory Video = resolution * depth color*

*16.777.216 bits = resolution * 8 (with 8 bits there 256 colours)*

*Trying different horizontal resolutions (resolution = horizonal * vertical)*

*16.777.216 bits = 2048 * vertical * 8*

Vertical = 1024

(10) 🎖 In the notes we study the SATA data connector, but there are variations for it. Make a report on 3 of them showing images, cables ....

(11) 🎖 We have already commented that the SSD suffer a considerable drop in performance when they are full. What is "write amplification"? What does the TRIM about it?

(12) 🎖 The world of 3D graphics cards is very huge and understanding the current 3D hardware it complicated. Yet, it is interesting to know the meaning of certain concepts. Look up the meaning of the following concepts: pipelines, blending, anti-aliasing, shading, pov-ray, anisotropic filtering, z-buffer, clipping, render.

Discuss them in forum.