COMPUTER ENGINEERING
Escuela Politécnica Superior
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Computer Build Up

Task 1, Part 2 (Hardware Laboratory)

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Images and Tables List

1. Introduction

This document shows the main components of a PC that can properly run the OS Windows 10 Enterprise, the CAD Tool Autodesk Autocad 2018 and the Game Forza Horizon 3.

It also include a brief guide on how to build the PC up.

1.1 Purpose of the Document

The goal of this document is to show an example on how to build up the best quality-price ratio PC according to the demanded specifications.

1.2 Document Structure

The document is composed by 4 chapters. Each chapter will contain the basic information about the topic that is declared at the title.

- **Chapter 1:** Introduction. Brief introduction about the document contents, purpose of the document and its structure.
- **Chapter 2**: the minimum demanded requirements of the PC are exposed.
- **Chapter 3**: a list of the components and the reasons why we have chosen them are showed.
- **Chapter 4**: brief tutorial on how to assembly the components that are mentioned in chapter 3.

1.3 Acronyms and Definitions

- TDP Thermal Design Power
- RAM Random Access Memory
- OS Operative System
- GDDR5 Graphics Double Data Rate type 5

- HDD Hard Disk Drive
- SDD Solid State Disk
- PSU Power Supply Unit
- AC Alternating current
- DC Direct Current
- FHD Full High Definition
- RGB Red Green Blue
- SATA Serial Advanced Technology Attachment

2. Requirements

The PC that is exposed in the following chapters must run fluently the programs that are demanded to accomplish this task, those programs are:

	CPU Clock	RAM	GPU	Available Space
Windows 10 Enterprise	1 GHz	2 GB	GPU that supports DirectX 9	16 GB
Autodesk Autocad 2018	1 GHz	8 GB	GPU that supports DirectX 11	4 GB
Forza Horizon 3	3.6 GHz	12 GB	1060	55 GB

Table 1, Requirements

3. Components

The PC would have these components:

Component Name	Price (€)
AMD Ryzen 7 2700 4.1 Ghz	285,90
MSI X370 Gaming Plus	99,99
Corsair Vengeance LPX DDR4 3000 PC-24000 16GB 2x8GB CL15	139,00
Palit GeForce GTX 1070Ti JetStream 8GB GDDR5	429,90
Crucial MX500 - SSD 250 GB (3D NAND, SATA, 2.5 Inches)	64,99
Seagate Barracuda - HDD 2 TB (3,5 Inches)	62,35
EVGA 750 GQ, 80+ Gold 750W, Semi Modular	88,95
Nox Hummer ZX Zero - ATX, White	47,99
BenQ GW2470H - LED Screen Eye-Care 24" (1920 x 1080)	124,00
Tacens Mars Gaming Combo Gaming	39,90
Final Price (Shipping Cost (1 / 2 days) Included)	1382,97

Table 2, Components

- Ryzen 7 2700: includes sixteen threads and eight cores with multi threading technology that allows cores working in two software threads at the same time. Base frequency (3.2 GHz) and Boost frequency (4.1 GHz). TDP 65W. 16Mb Cache (L3). This processor is unlocked so we can increase his power. It has also include a Cooler (95W Wraith Spire). Therefore with this microprocessor we can successfully run Forza Horizon 3, which is the most demanding program (it requires 3.6 GHz), as we can operate at 4.1 GHz.

- MSI X370: Gaming Plus is a complete ATX motherboard. We have selected this motherboard because it has the socket AM4 that supports Ryzen Generation like our Ryzen 7 2700. And a X370 chipset which provides user differents ways to manipulate the PC . It has five usb 3.1 and two usb 2.0, four slots for rams memories and of course audio and LAN ports, everything integrated in a single board.

- RAM, 16Gb Corsair Vengeance DDR4 with 3000 MHz and CL15 of latency has a great performance for our computer. It easily satisfy the Forza Horizon 3 which is the most demanding RAM program that requires 12Gb.

- Palit GeForce GTX 1070 Ti: we have chosen this graphic card because its quality-price ratio was very good at this moment and because it is a powerful enough graphic card to run at full graphic mode all the programs that required for this task. It has 8GB GDDR5 RAM and count with a 1607 MHz clock speed that can be rose up till 1683 MHz.

- Crucial MX500 (250 Gb) is our ssd hard disk. We chose this type of hard disk because is the fastest with 560/510 MB/s of write and read speed. Ideal for run the OS and the main programs such as AutoCad or Forza Horizon 3, and we still have extra storage.

-Seagate Barracuda HDD (2Tb) is our hard disk drive. This type of hard disk is ideal for store files, multimedia and also programs. But HDD is considerably slower than SSD.

-EVGA 750 GQ converts the AC to DC and provide power to the components of the computer. We chose this PSU because it is powerful enough and has a gold certification that proves its quality.

-The Now Hummer ZX Zero is a cheap tower case that includes three fans to optimize its ventilation system. It also has in the upper panel two USB 2.0, two USB 3.0 and audio connections. Of course it is an ATX case like our motherboard.

- BenQ GW2470H 24" is a perfect monitor for our computer build up. The 1920x1080 FHD resolution is ideal for the casual user and its Low Blue Light technology allow us to spend hours in front of the computer without having eye strain.

-Finally the Tacens Mars Gaming Combo provide us several pheripherials with and incredibly quality-price ratio. It includes RGB keyboard, mouse, headphones and a XXL mousepad.

4. Assembly

This will be a roughly guide on how to assemble the components previously exposed:

1. First off all, before starting the assembly you must discharge yourself in order to avoid component damaging, you can use an antistatic wristband for that.

2. Then you have to place the microprocessor in its motherboard socket (first remove the plastic cover that is protecting the socket, then place the microprocessor with its gold pins pointing to the motherboard, after that secure it by pushing the clip).

3. After the microprocessor is well secured, you have to place its fan above it and secure and connect it to the motherboard.

4. Now you have to insert the RAMs memories in their slots. Before inserting them you have to lift up the plastic in the both sides to be able to insert the memories. For increasing their performance the best way to insert them is in the Dual Channel which has the same colours (Black ones).

5. After the RAMs are placed you must insert the graphic card using the same method, but on its corresponding connector (PCI Express x16 3.0).

6. We have already the motherboard ready for the installation in our tower case, so take it carefully and screw it on the tower case. Once we have the motherboard installed, it is time for the disks. Fit them in their reserved slots and connect their SATA into the motherboard.

7. Now you just have to install the PSU and power up everything by connecting all the necessary cables.

Bibliography and References

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