College of Computer Training (CCT)

Module Title:	Computing Architecture
Programme Title / Year	BSc 1st year
Project Title:	Personal Computer Build Research Project
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Student Nos.:	2020311
Assignment Due Date:	Saturday 12th December 2020 (11:00 pm / 23:00

Academic Year: Year 1■ Year 2☐ Year☐

DECLARATION

I, Lais Ferreia dos Santos, confirm that by submitting, or causing the attached assignment to be submitted, to CCT, I have not plagiarised any other person's work in this assignment and except where appropriately acknowledged, this assignment is my own work, has been expressed in my own words, and has not previously been submitted for assessment.

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1. Introduction

This project reports on research carried out on hardware and software for a computer, including information on how to properly build a computer. My first step was choosing which kind of computer I would develop. My choice was a gaming computer because I am quite interested in this subject and I intend to work on it soon. To prepare for this project I carefully researched each component of a computer, figuring out which would better suit my needs.

I have studied each hardware element, starting with the chassis/case, motherboard, processor, graphics cards, ram memory, power supply, cpu cooler and SSD M.2. After completing this part of the project, I researched the software necessaries and peripherals.

The value proposed for this project was between €500 and €1,500 and the total that I have spent was €1,429.48.

1. Survey

2.1. Hardware

2.1.1. Chassis

GOLDEN FIELD - Z3 Windowed Mid-Tower

Cost: €64.95

2.1.2. Central Processing Unit (CPU)

AMD Ryzen 5 2400G

Cost: €113.71

2.1.3. Motherboard

ASUS ROG Strix X570-E Gaming ATX Motherboard

Cost: €302.49

2.1.4. Graphics Processing Unit (GPU)

MSI Nvidia GeForce GTX 1660Ti

Cost: €329.93

2.1.5. RAM Memory

Corsair Vengeance RGB PRO 16 GB (2 x 8 GB) DDR4 3200 MHz C16 XMP 2.0 Enthusiast RGB LED Illuminated Memory Kit - Black
Cost: €85.42

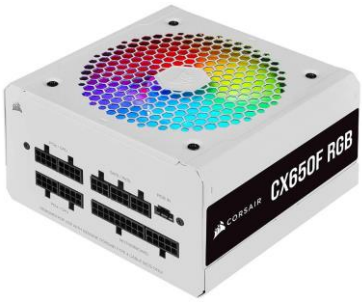
2.1.6. Storage (SSD M.2 SATA)

Western Digital WDS500G2B0B WD Blue 3D NAND Internal SSD M.2 SATA, 500 GB - Black
Cost: €64.91

2.1.7. Power Supply

Corsair CX650F RGB, 80 PLUS Bronze Fully Modular ATX

Cost: €114.41



2.1.8. CPU Air Cooler

ID-COOLING SE-234-ARGB CPU Cooler AM4

Cost: €58.83

2.2. Software

2.2.1. Operating System (OS)

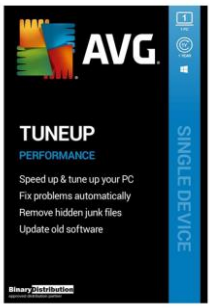
Microsoft Windows 10 Professional

Cost: €56.55

2.2.2. Antivirus

AVG PC TuneUp 2020 – 1 PC, 1 Year

Cost: 11,29



2.3. Peripherals

2.3.1. Keyboard & Mouse

Wireless Gaming Keyboard and Mouse

Cost: €38.50

2.3.2. Speakers

Trust GXT 606 Javv RGB-Illuminated 2.0 Speaker Set

Cost: €20.32

2.3.3. Headset

Gaming Headset Stereo Surround Sound Gaming

Cost: €38.66

2.3.4. Webcam

1080P Full HD Webcam

Cost: €30.93

2.3.5. Monitor

Dell SE2216H 21.5 Inch Full HD (1920 x 1080) Monitor, 60 Hz, VA, 12 ms, Thin Bezel, HDMI, VGA, 3 Years Warranty, Black

Cost: €98.58

3. Building a Gaming PC

3.1. Getting the tools

The first step for building my gaming PC is gathering the necessaries tool. I will need screwdrivers Phillips #2 and a Phillips #0. The best kind of screwdrivers are magnetics, which will help me avoid dropping screws inside the case. I might need a wire cutter and cables ties as well.

3.2. Installing CPU

The motherboard which I chose has a pre-installed IO shield, so I can start installing The CPU onto it. It is important to remember to discharge the static energy or wear proper gloves when handling the components. It is necessary to look at the gold triangle on the processor and attach it to the CPU Socket.

3.3. Installing RAM Memory

The ASUS ROG Strix X570-E has 4 DDR4 sockets with a maximum of 128GB; I have installed 2 RAM memories with 8GB on each.

3.4. Installing Storage

The storage I used was a SSD M.2, which is compatible with my motherboard. This motherboard has two slots for it, but I utilized only one. I took the Philips screwdriver #0 to remove the chipset cover. I removed the heatsink and positioned the SSD. I then put the heatsink back.

3.5. Installing CPU Air Cooling

To install the CPU cooling, it thermal paste was used and it was finished using the screwdriver. The wire is then plugged into the CPU fan socket.

3.6. Installing Motherboard

The motherboard is installed in the chassis using the screwdriver. The front and back panels from the chassis to the motherboard are then connected.

3.7. Installing Fans

The fans will be installed on the front of the chassis, and the cables will be connected into the 4 pin fan headers.

3.8. Installing Power Supply

The power supply was installed on the bottom of the chassis, connecting the 24 pin socket to the power supply and the motherboard.

3.9. Installing Graphic Processing Unit (GPU)

The GPU is connected to the power supply with a power VGA cable

3.10. Installing Software

The Windows 10 Professional will be installed from a usb stick and the AVG antivirus will be easily downloaded.

3.11. Installing Peripherals

The keyboard mouse is wireless, so it will not be necessary to do any installation. The headset is connected by a 3.5mm jack cable, the webcam is connected by a usb cable and finally, the monitor has two options for connecting, HDMI and VGA- in this case I chose to use HDMI.

4. Conclusions

In this assignment I have built a recreational PC, specifically for gaming. I did not go beyond a professional computer in terms of capability, rather a simple one which could allow me to play games with a high degree of quality.

After completing this project, I understand much better the hardware and software of a PC desktop, how to connect each hardware component to each other and how to choose the correct pieces for a gaming computer. I have also improved my understanding about cables in a PC.

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