Build Your PC

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1 Requirements

1.1 Programming

The final build should be able to excecute build tasks at a decent speed so processor, memory and SSD choices should take this into account.

1.2 Quiet

The PC should be as quiet as possible. As such, parts that require massive amounts of cooling are out of the question. This will also affect fan choice.

1.3 Open Source Drivers

Since the computer will be running GNU/Linux, it will be preferable if most of the parts have drivers which are open-source. This means no Nvidia.

1.4 Budget

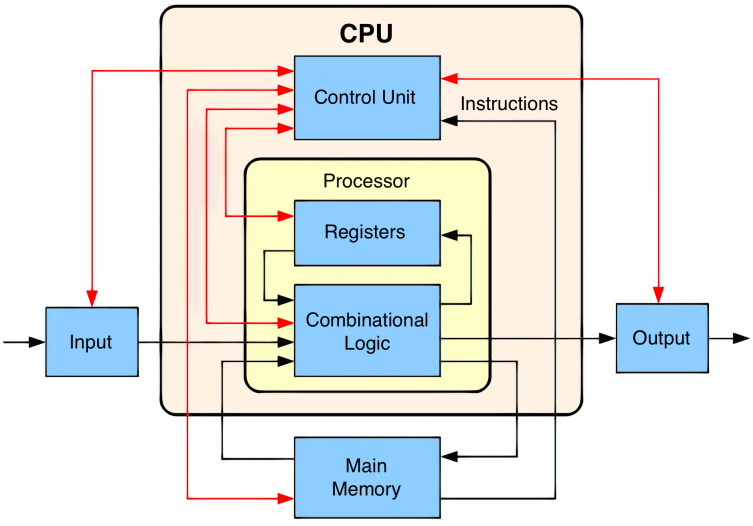
Ideally, the parts should offer a decent performance whilst being relatively affordable.

2 Parts Investigation

This section shall cover different parts considered and will focus on the following aspects:

- Cost
- Availability
- Performance

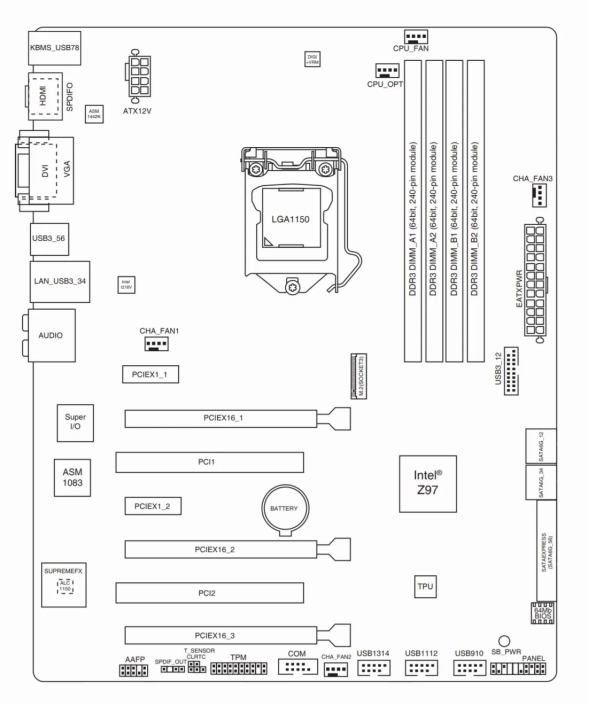
2.1 Processor



The above is an image showing the basic internals of a CPU. A CPU can be considered to be the primary component of a computer. It is often referred to as the ”brain” of the computer since it is responsible for arithmetic, logic, control and input/output operations specified by instructions in the computer's program.

The two main competitors in this space are AMD and Intel. Over the years, both have whipped out decent budget alternatives. This section will look at what both sides can offer with respect to the aforementioned requirements.

2.2 Motherboard



A motherboard is the main printed circuit board (PCB) in a computer. It serves as the foundation upon which other parts are built upon. It connects all the parts of the machine together. It conists of many parts as shown on the diagram above.

2.3 RAM

Random Access Memory is a form of volatile memory in a computer system responsible for the temporary storage of data and instructions currently being executed.

2.4 Storage

These include storage devices that are not directly accesible by the CPU. They are non-volatile devices which allow data to be stored for as long as the user needs. In terms of capacity, they are much larger than main memory but access times are slower. Applications, the operating system, device drivers and general files are stored in secodary storage. This system will consider the following 2 types of secondary storage:

- Hard Disk Drives: Makes use of magnetic storage technology with moving parts. HDDs have slower access and data transfer speeds. They are also less durable and make more noise since they have moving parts but are generally more affordable.

- Solid State Drives: Uses flash technology and stores data in non-volatile memory chips (usually NAND). They do not make use of moving parts and are hence quieter, smaller and more durable. However they tend to be more expensive.

2.5 Power Supply Unit

As its name suggests, a Power Supply Unit (PSU) provides power to the system. In more precise terms, it converts electrical power from an outlet to the appropriate direct current voltages required by the computer parts. Some of its key responsibilities are: voltage regulations, provision of connectors, modularity and safety features.

2.6 Fans

2.7 Case

3 Parts Selection

4 Operating System