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COMPUTER SCIENCE, 200 LEVEL

CSC202 ASSIGNMENT

INSTRUCTION: DISCUSS THE FUNCTIONS OF A CPU

First of all, what is a CPU?

A central processing unit (CPU), also called a central processor or main processor, is the [electronic circuitry](https://en.wikipedia.org/wiki/Electronic_circuit) within a [computer](https://en.wikipedia.org/wiki/Computer) that executes [instructions](https://en.wikipedia.org/wiki/Instruction_%28computing%29) that make up a [computer program](https://en.wikipedia.org/wiki/Computer_program). The CPU performs basic [arithmetic](https://en.wikipedia.org/wiki/Arithmetic), logic, controlling, and [input/output](https://en.wikipedia.org/wiki/Input/output) (I/O) operations specified by the instructions in the program.

The 4 major functions of a CPU are discussed below.

Fetch

The first step of a CPU is to fetch instructions from the program memory. Program memory is the location of instruction which a program counter determines.

This location stores a number that identifies the address of the next instruction to fetch. After the fetching of instruction, the program counter increases itself by the length of the instruction so that it will contain the address of the next instruction in the sequence.

The memory from which the instruction fetches should be relatively slow memory. The laziness of the memory lets the CPU to slow while waiting for the instruction to return.

High-speed cache and pipeline architecture handle this issue.

Decode

After fetching information CPU will determine what to do with that data next, this step is the decode step. The circuitry known as the instruction decoder performs this step.

The instruction is then converted into signals which control other parts of the CPU. CPU’s Instruction Set Architecture (ISA) determines the way in which the instruction should interpret.

One group of bits among the instruction indicates which operation is to be performed. While the other fields provide the information required for the operation, such as the operands.

Execute

After the fetching and decoding steps, the execute step takes place. Depending on the CPU architecture, this step may consist of a single or sequence of actions.

During each action, various parts of the CPU are electrically connected so that they can perform the desired operation. The results of the execution are written on the internal CPU register for quick access.

Store

Since CPU must have to give the feedback after executing the data, so the output data is stored in the memory. These memories are slower and less expensive than registers, these are high capacity main memories.