Lecture 1 - Computer Architectures

Modern computers follow the Von Neumann architecture with *fetch, execute, store* control flow. More specficially, the computer contains

- A processing unit with both an arithmetic logic unit and processor registers
- A control unit that includes an instruction register and a program counter
- Memory that stores data and instructions
- External mass storage
- Input and output mechanisms

The control unit manages the four basic operations as follows:

- Fetch: gets the next program command from the computer's memory
- Decode: deciphers what the program is telling the computer to do.
- Execute: carries out the requested action
- Store: saves the result to a register or memory

The register is a type of memory that is very fast and very close to the cpu but very limited in space. It is used to save intermediate calculations.