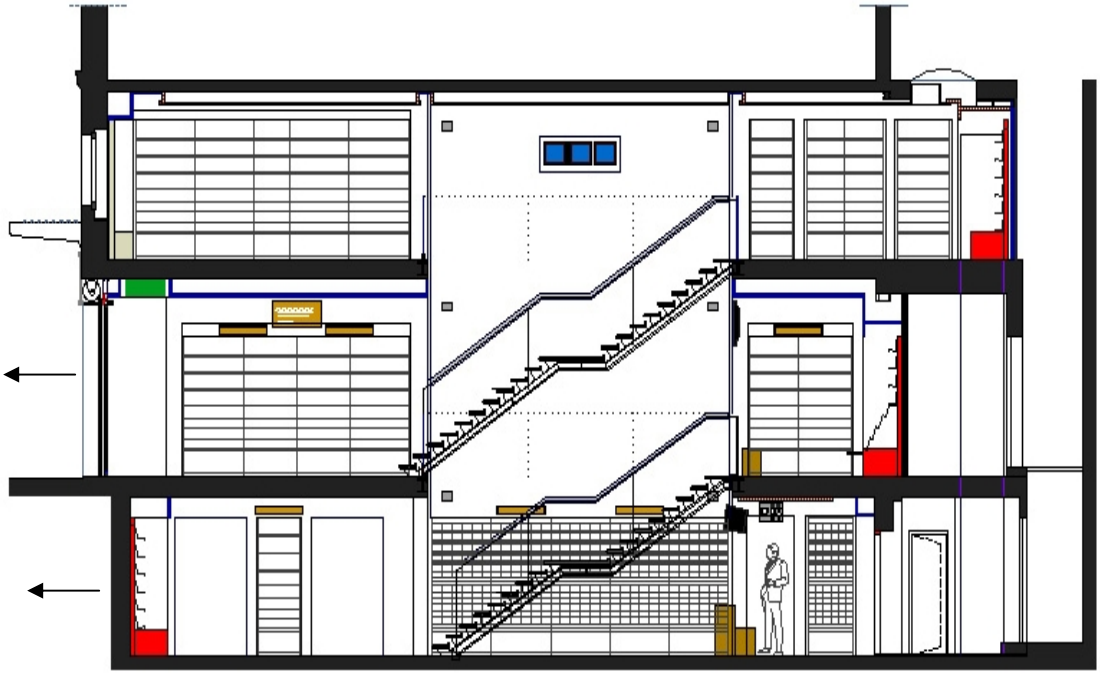
Second floor: the user programs ...

First floor:
the Operating System
...

Ground floor:
the Hardware ...



distribute the jobs between the available hardware resources, and to coordinate the overall parallel computational process.

If in ground floor lives a single person without family, such as *the guardian*, we have a **CPU single core**.

Everything the guardian must do, for the people in first or second floor he only can do one thing at a time (the **main** characteristic of *Von Neumann architecture)*. For example in the morning he first collects and sorts the mail for the people in the building, and then only after he can watering the garden.

If the guardian must do many jobs, he needs to write in paper things to do: (the **memory** and the **CPU load**). Furthermore sometime to perform its task the guardian must move some objects trough the passageway in ground floor (the **System Bus**). If the passageways are very large we have for example, **64 bits** CPU architecture (bus).

In this scenario someday (when he must do and move many things) the guardian can be very tired but all in all survival. The most afflicted are always the people in first floor. They have every day many, new and complex request from the people in second floor. This request must be translate in a correct way and the passed at the guardian.

The people in second floor (the higher floor): “live in cloud cuckoo land”. These people must do everything easily and promptly: (the **artificial intelligence**, **robotics**...).

The activity in the build increase over the time, then the guardian decides to get help in order to reduce the execution time for a single job. There are two ways to do this:

- the municipally of Bill’s Garden interconnect all the buildings in the city using roads then the guardian can share a distribute the jobs (the **Computer Networks)**, if the guardians involved have the same nationality and language we have a **Computer Cluster** in other way we have a **Grid**. Nevertheless in both cases it is necessary to define a correct way in which guardians can manage, share and complete a job: the **communications protocol.**