

Section 2.

3. Introduction to computer systems
4. How Hardware devices work
5. Need for Operating Systems from scratch
6. How input and output devices work together.



(I. 2. 3)

Operating System from Scratch

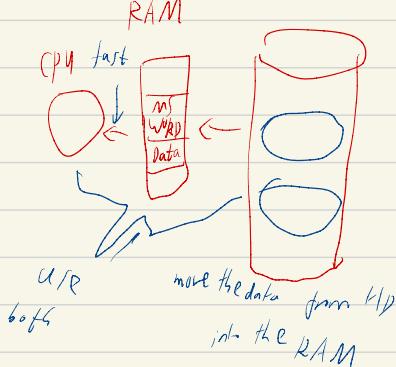
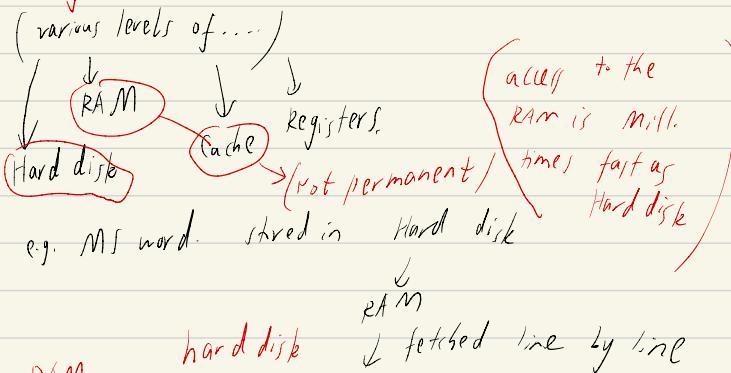
* a combination of hardware, software and data, which are used to solve the problem of human beings.

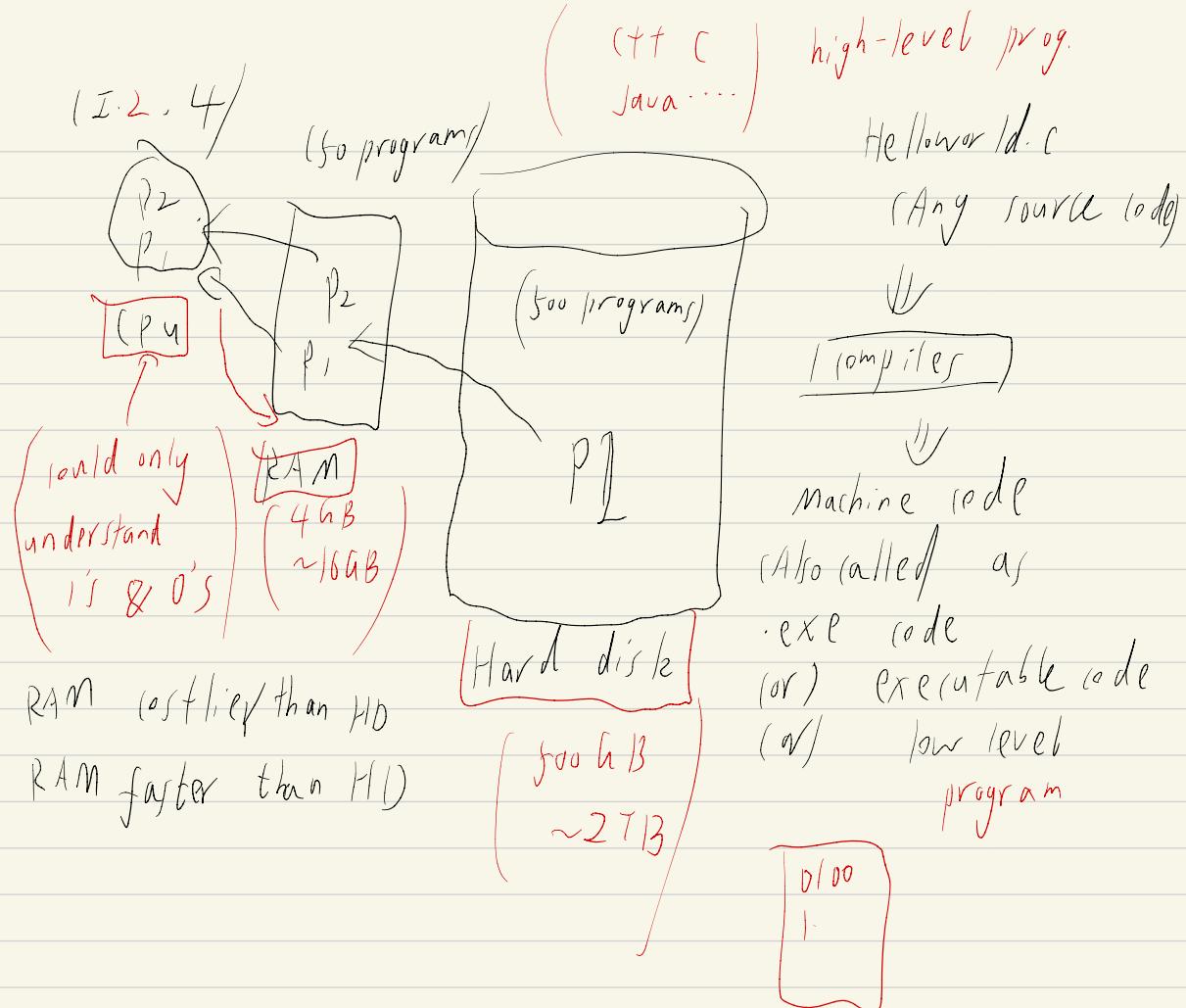
HW



fetch the program from the utility and then execute it.

② Memory:





CPU fetch prog. from RAM
(very efficiently)...

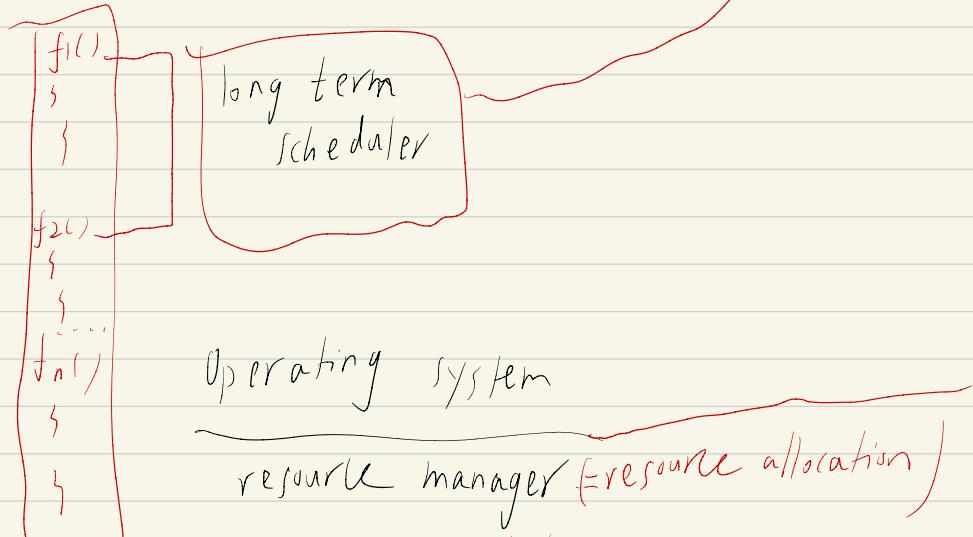
Q If P1 is not in the RAM?

A: copy the program in the Hard Disk
and place it in the RAM. (time
costlier than the case that program is
already in the RAM)

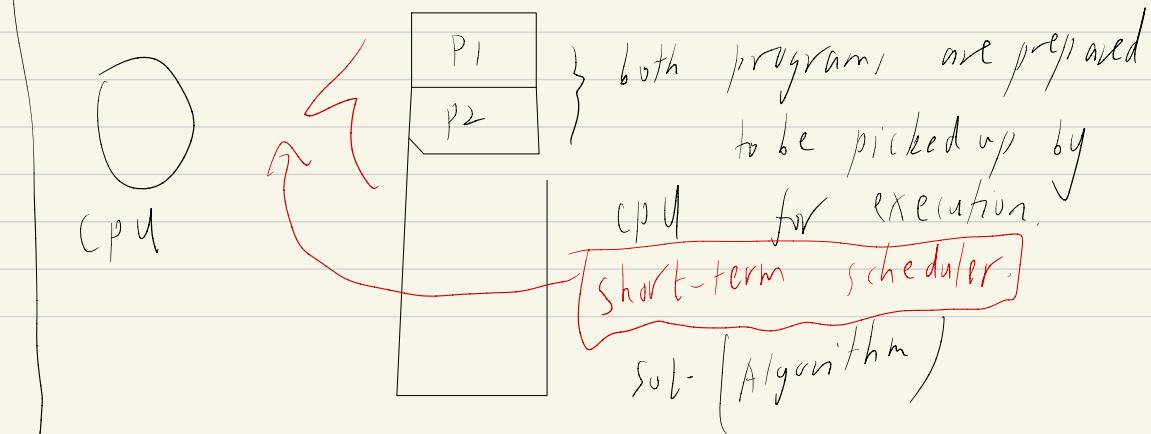
(I 2.5)

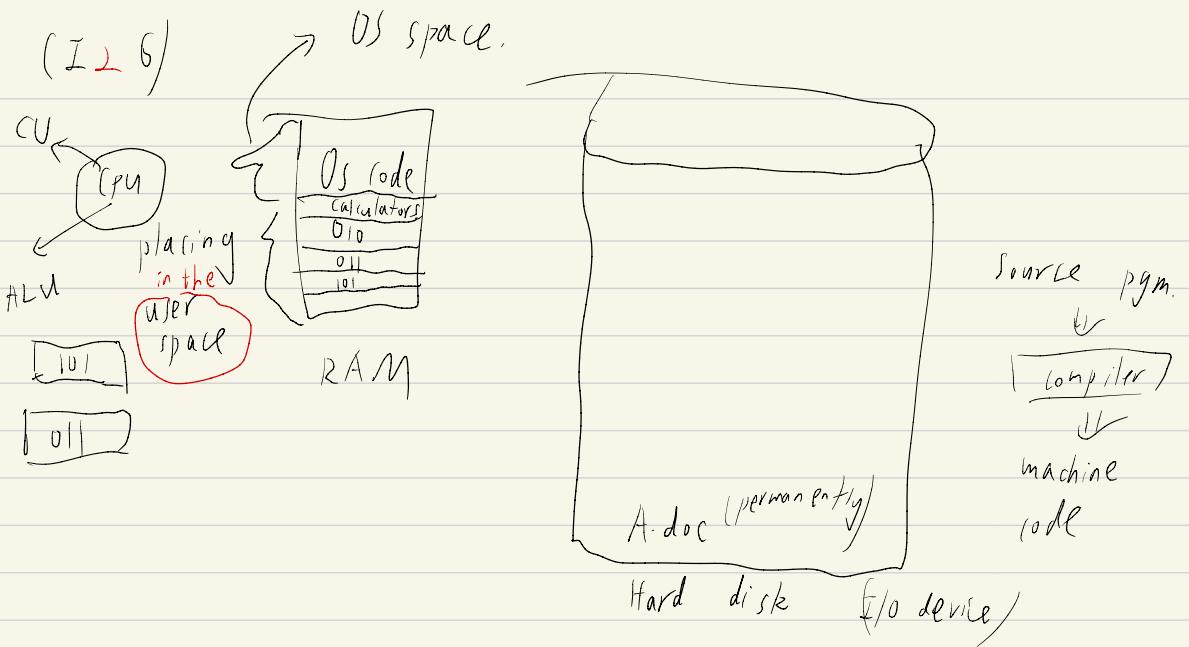
a: Only two programs can be moved from hard disk to RAM. Which ones?

(prediction) ← various algorithms



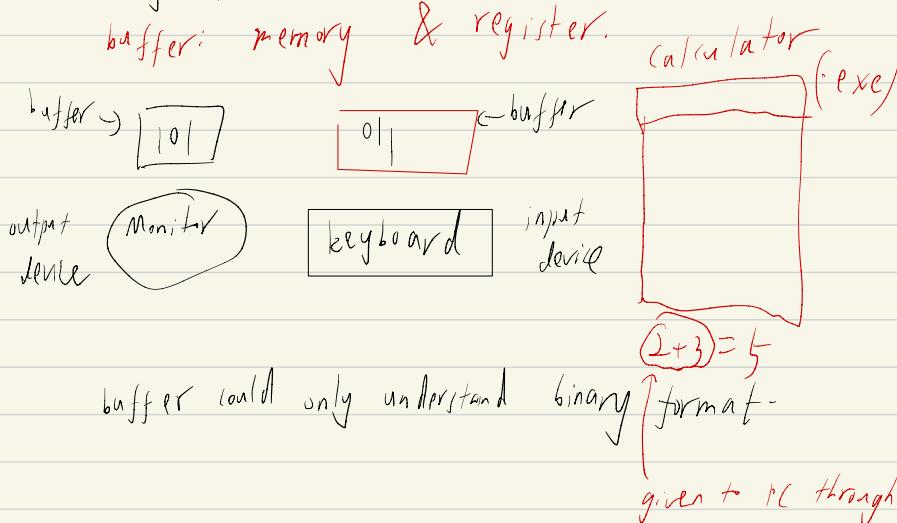
e.g.: Q: p₁ or p₂ first to access RAM the resource of CPU?

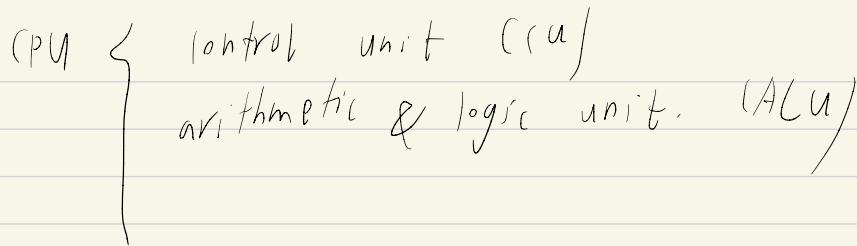




Every I/O device will have a buffer associated with it.

buffer: memory & register.





If a file is saved, it has to be present inside the hard disk.

e.g. .

- (i) Move A doc into the RAM.
- (ii) Then the pgm. inside the RAM (i.e. MSword) will be executed by the CPU.
- (iii) Then put the doc back from the RAM to the hard disk.
(Free the RAM)

The program undergoes something called I/O. (I/O event).

1) Execution:

A program moves into the RAM, and run by CPU line by line.

2) I/O event:

3). waiting for some event to happen.

Turn-around Time:

$$= \text{Waiting time} + \text{Burst time} + \text{I/O time}$$

C. 9.

pgm : P1



loaded into
RAM

completed
execution
from.



turn-around Time.