user ⇒ program

Executable file
data files

DOTAZ

"value"

Job

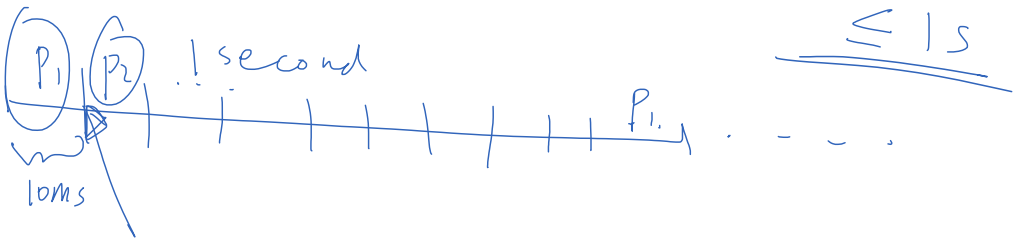
Task

OS process

response time 3 seconds expectation

{P1 ... Pn} real response time < 3s

≤ 1s



processes don't fit in memory

Assume: 10 processes are in mem

24GB mem is fully occupied by 10 processes

1) normal request data

2) e.g. memory leak

Swap process (at least one) to

hard disk

✓ code ✗

✓ data ✗

states (intermediate data) ✓ ⟹ Swap area

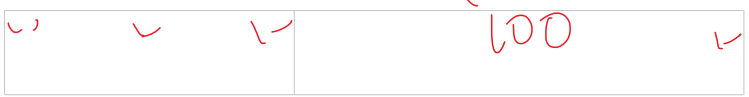
↳ cpu registers & pc

1 GB mem in the system

process / program uses 100 MB mem

sys could run 10 processes

V.M. each process can start the execution w/ 10 MB mem.



Why OS uses the lower portion of the mem ?

A : lower portion mem access is fast

B: Higher portion mem needs more bits for addressing.

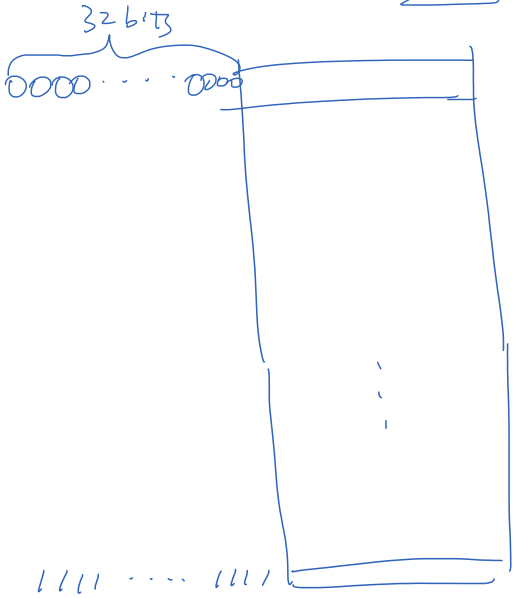
- byte addressed Computer system ,,

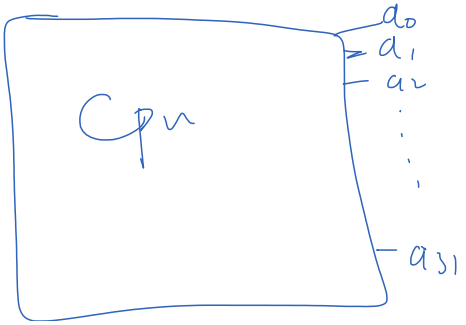
$\Longleftrightarrow$ Each byte has an address

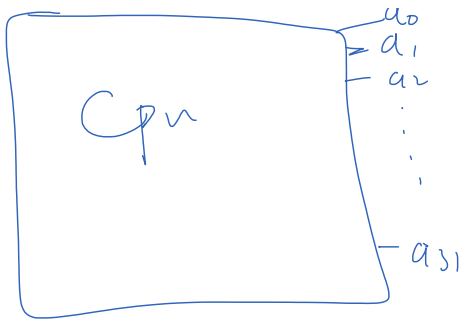
Capacity 2^n = Total bytes

n: # of bits

32 bits 2^{32} = 4GB








```
for (i = 1; i <= 10; i++) {
    score += HW[i];
}
Avg ( score, 10 );
:
score += exam;
:
```

→ fopen("grade")

:

submit (moodle, ...)