

Definition of O.S. ✓



2 views which can best explain its defⁿ :-

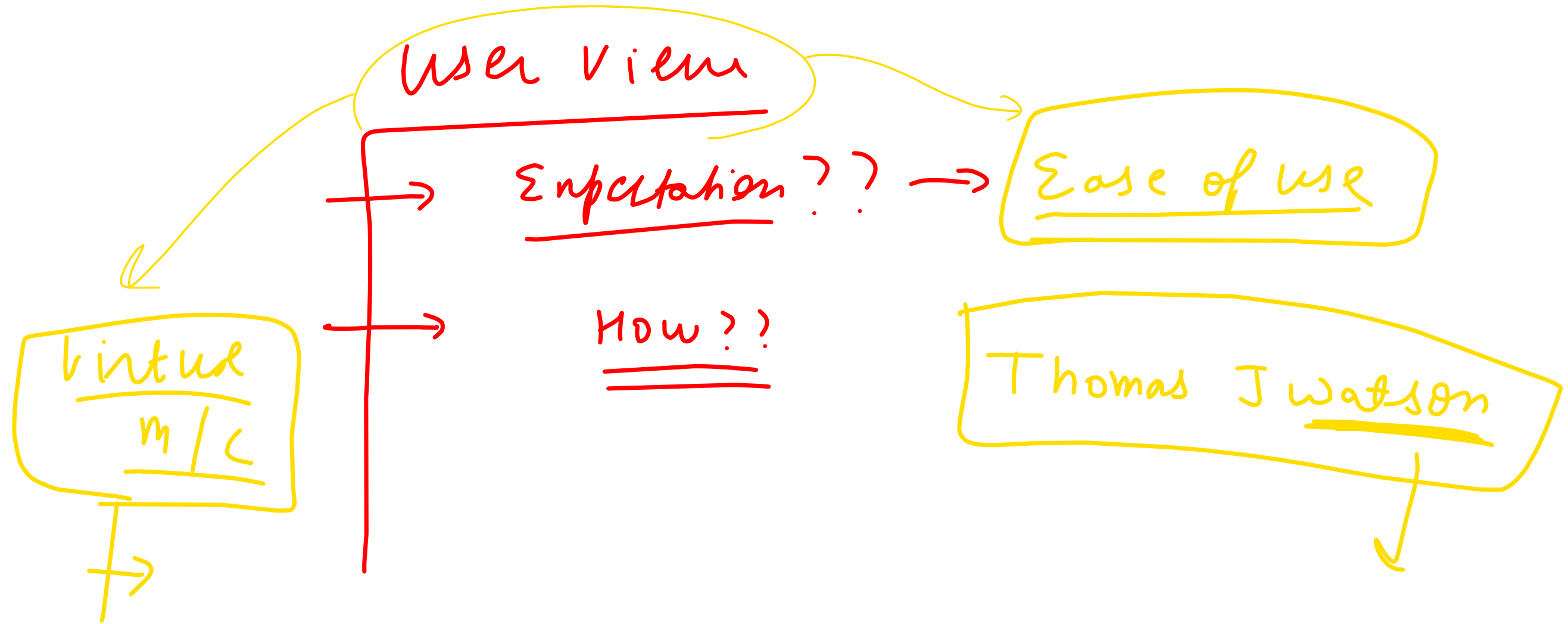
① User View ✓

② System View ✓



User view :- ✓

- what are the expectation of user from OS?
- How user wants its OS to be?
- user wants ease of use or user friendliness i.e user wants that O.S must make use of computer system very easy
- we can also say that OS must provide a Virtual m/c which is very easy to operate & all hidden tasks are done automatically



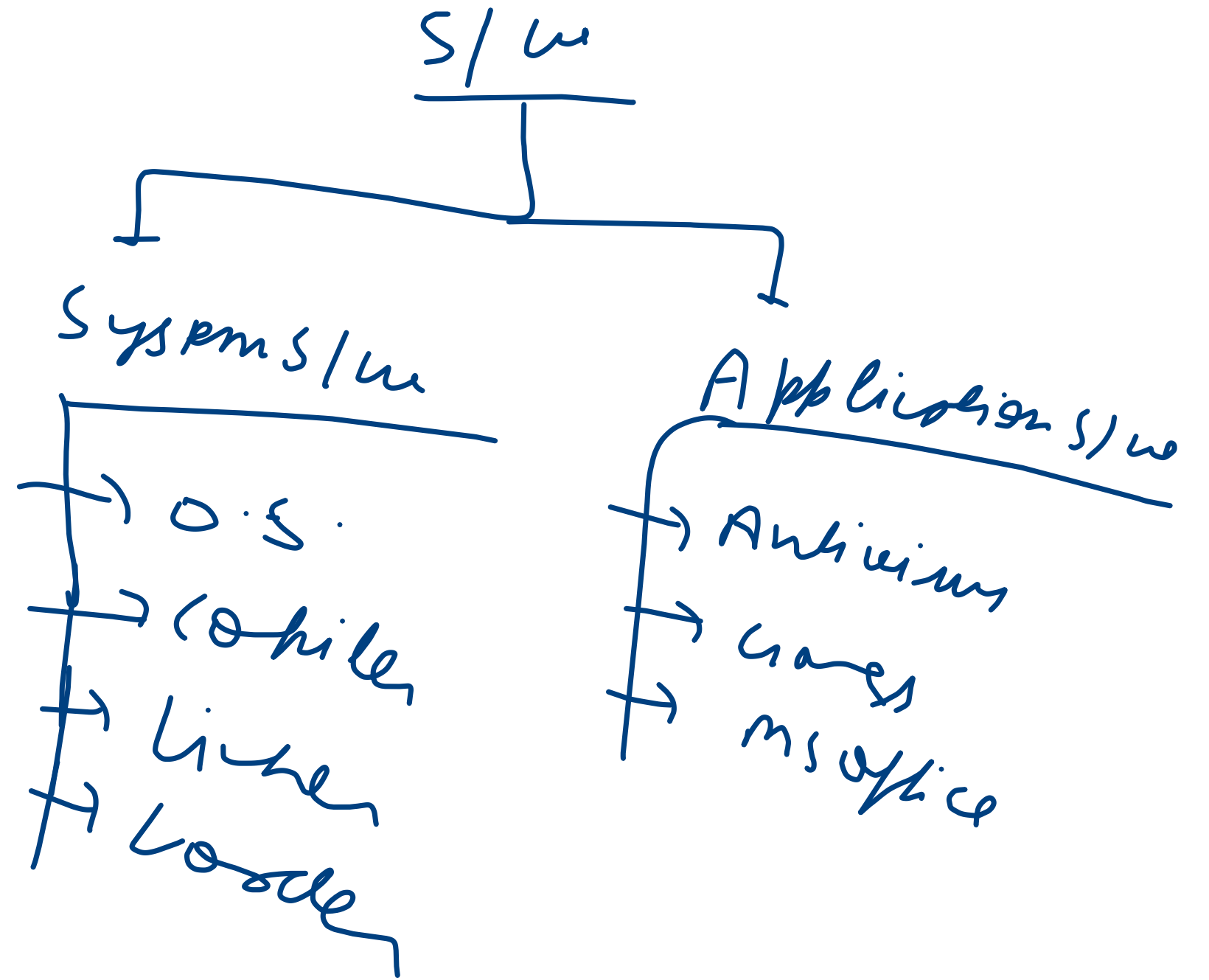


System View :-

- What are the expectations of system or H/w from OS?
- When developer of O.S. see O.S. from the H/w point of view then what are his expectations?
- 100% Utilization of H/w
- O.S. is a type of system S/w which is used to manage all resources of C.S. in order to achieve max^m efficiency

System View

Expectation??



H/w Resources in computer

① CPU:- [100% Utilization of CPU] ^{CPU scheduling}

- most important resource in computer
- Today we have multitasking O.S. like Windows & hence we do multiple tasks at a time.
- O.S must manage CPU in such a way that user doesn't feel that its computer is slow.

② main memory [Directly accessed by CPU]

- multitasking means multiple tasks are kept in mm at a time
- Since mm is limited so we can keep only few tasks in mm & rest are kept in Job pool maintained in HD
- Hence OS has to decide which are the most imp. Jobs among all which are kept in mm
- When new process arrives in mm then it must not

Overwrite the memory of any other process.

Protection

Secondary memory:-

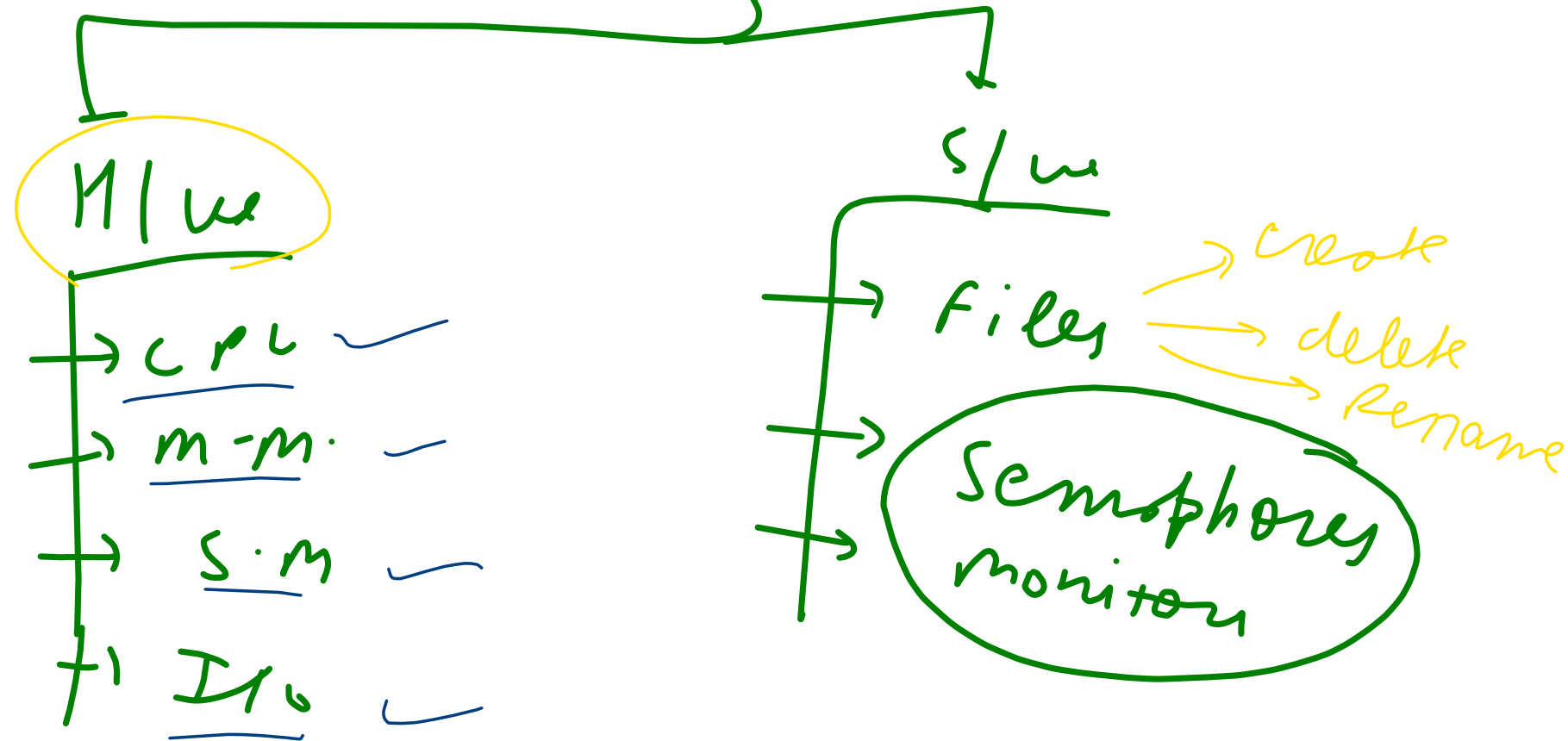
- HD, FO, CD Rom, Flash memory [Pen Drive]
- Not directly accessed by CPU & hence if CPU need data then it will 1st search in Primary memory & if data is missing then it will be searched in HD
- If user creates a file then allocating space in HD is also done by O.S.
- O.S also provide security to HD in the sense that it prevent unauthorized access to the files

I/O devices

- many I/O devices are ^{indirectly → I.O.} connected to CPU via System Bus.
- Depending upon situation O.S. will enable/disable them.



Resources in CS

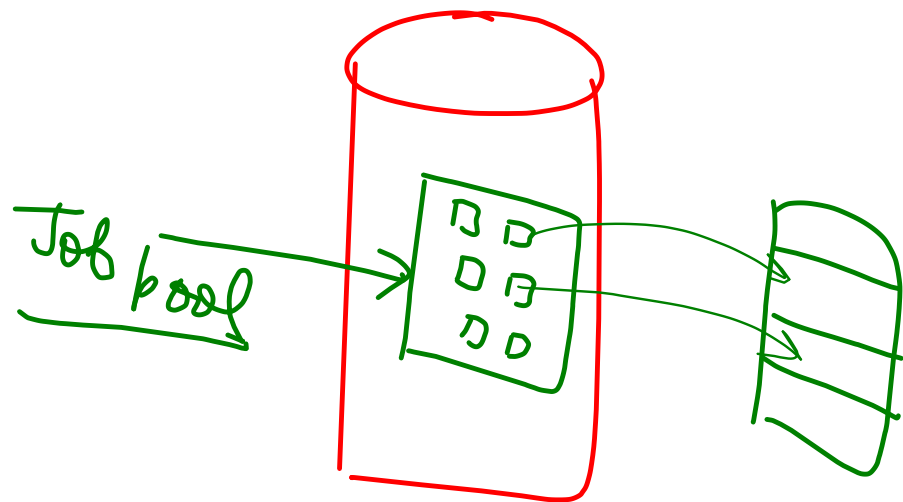
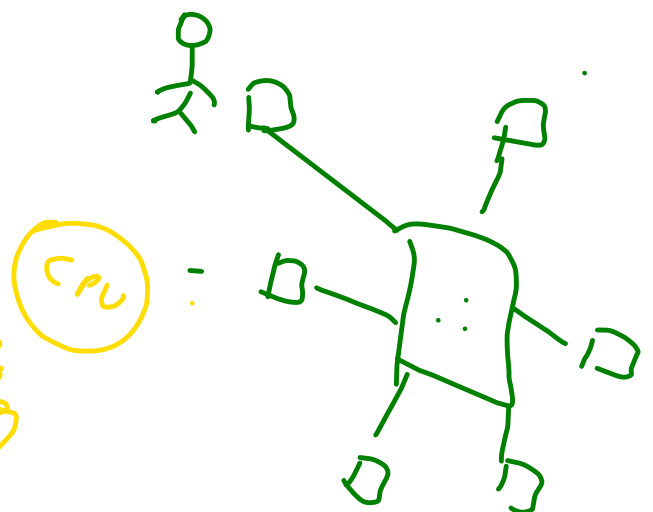
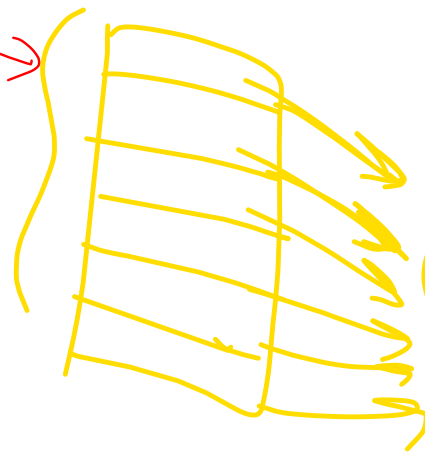


CPU
→ 100% Utilization of CPU

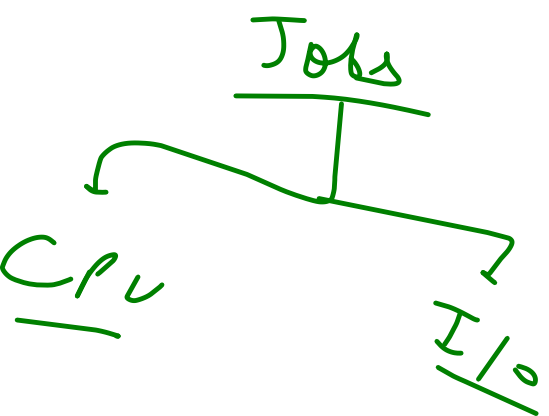
multiple Task in mem → multitasking → windows

Job Scheduling

Limited



Job min





memory

Primary

[main/physical]

O.S.
m.m.

RAM

ROM

Cache

CPU Registers

[volatile, faster access, small in size]

Secondary

[Auxiliary]

HD

CPROM

FD

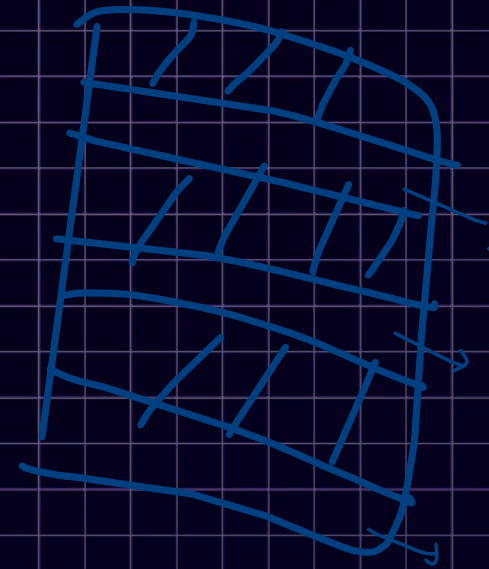
Flash memory

→ PC, SP, LS



Summary

- user view → virtual m/c [Ease of use] ← sth. desirable
- System view → Resource manager [Allocation, Deallocation, Protection, Free resource management]





Conclusion

- O.S. is a huge collection of s/w which provide a virtual m/c to user & this m/c is very easy to operate
- Ease of use is given by the programs which are part of O.S.



Goals of O.S.

- Ease of use → Users
- Efficiency → ✓
- Reliability
- Robustness →
- Scalability → ✓
- Portability →



Functions of O.S.

- Process management
- memory management
- File management
- Security
- I/O management

Kernel

Heart of O.S.