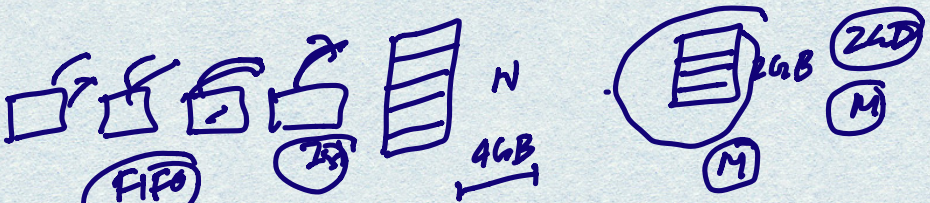
Scheduling Queues in Operating System

1. Job Queue ✓
2. Ready Queue ✓
3. Device Queue ✓

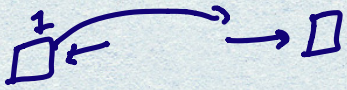
4. Implementation of Queues using double linked list
5. Queuing diagram

Job Queue



- As the processes enter the system, they are first put in job queue.
- often, in a batch system more processes are submitted than that can be executed. These processes are stored on the disk for later execution.
- Not used in modern operating systems because of virtual memory and demand paging in modern OS.

Ready Queue



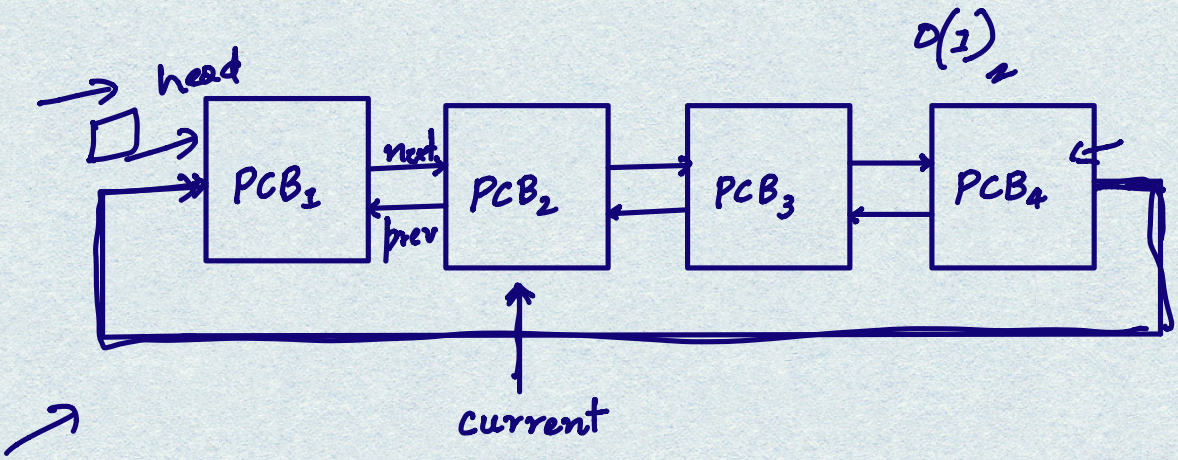
- The processes that are residing in the main memory and are ready and waiting to execute are kept in ready Queue.
- The short-term scheduler or the cpu scheduler schedules processes from ready Queue.

How the ready Queue is stored in main memory.

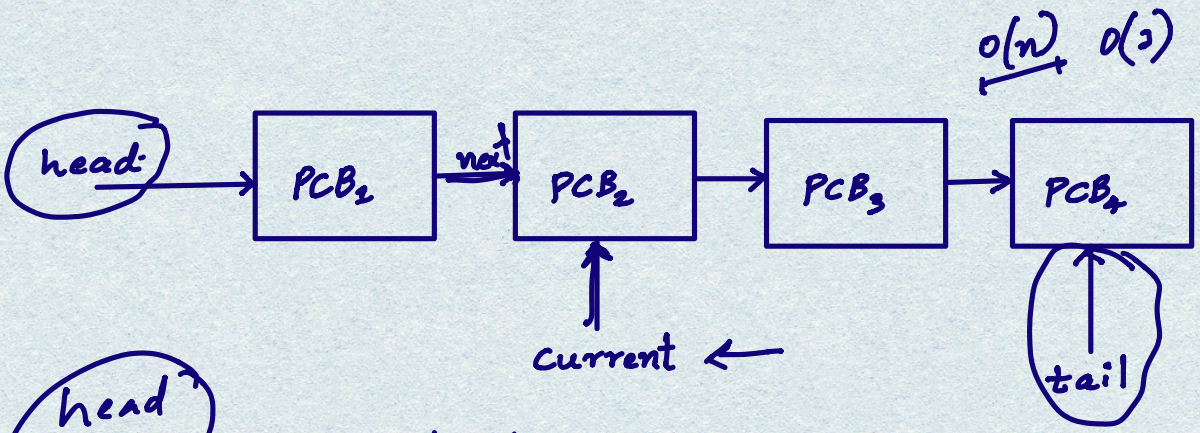
- A process is identified by its process control block.
- Process control block is the data structure that stores all information about a process.

```
struct task_struct {
    pid_t pid;
    long state;
    struct task_struct *parent;
    struct files_struct *files;
    struct mm_struct *mm;
    int prio;
};
```

heap

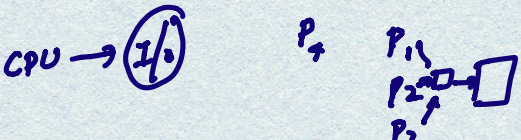



```
Struct task_struct {
    { - - - -
      - - - -
    struct task_struct *next;
    struct task_struct *prev;
};
```

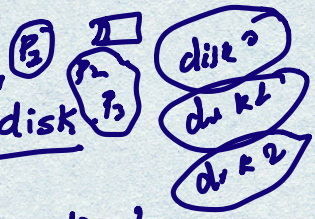



```
Struct task_struct {
    { .. . . . .
      . . . . . .
    Struct task_struct *next;
};
```

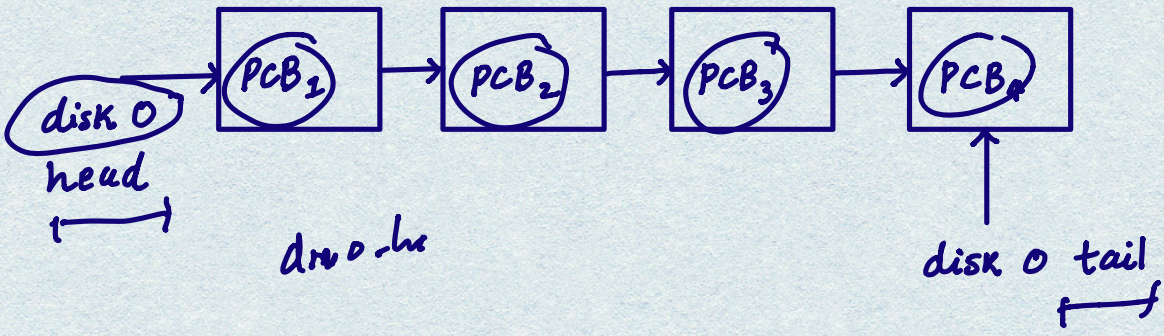
Device Queue



- After a process is allocated the cpu, the process may execute for a while and then wait for the occurence of particular event such as I/O (Read/write).
- Suppose process makes an I/O request to a disk.
- This disk may be busy with handling I/O requests of some other processes.



- The process then have to wait for the disk
- The list of processes waiting for a particular I/O device is called a device Queue.
- Each device has its own device Queue.



Queuing-diagram Representation of Process Scheduling