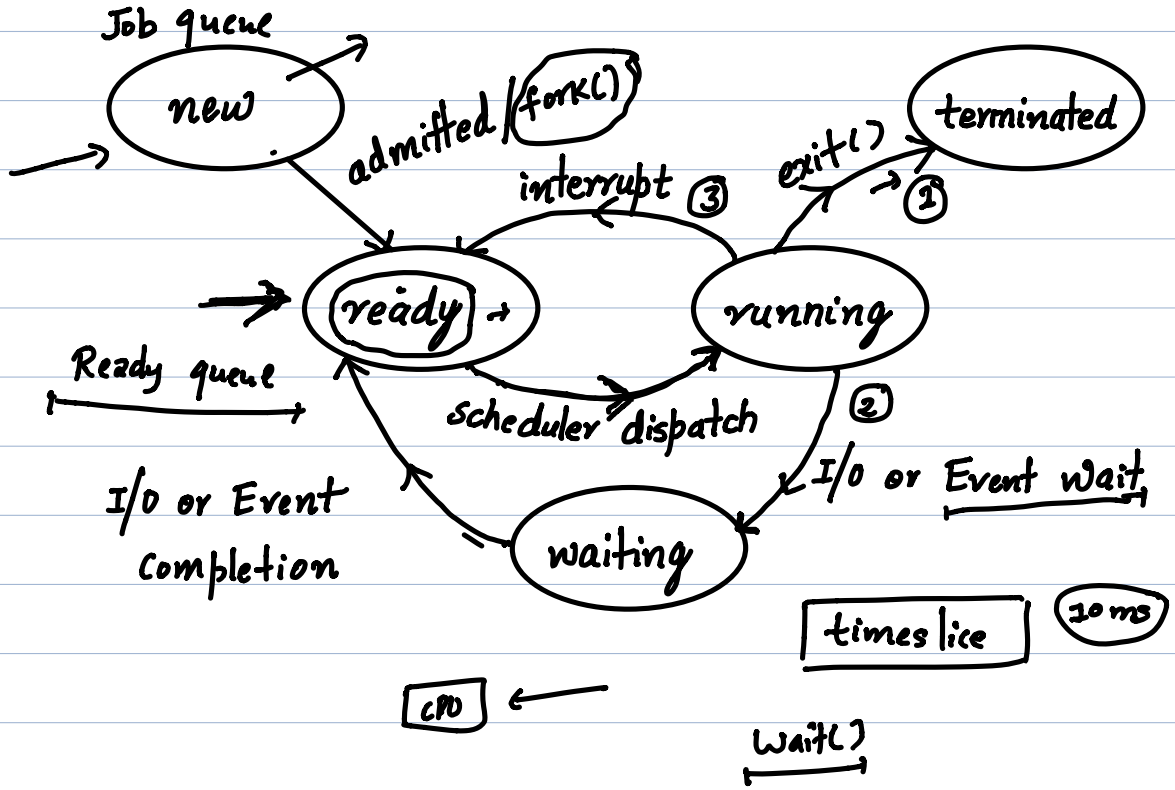
State Diagram of a Process

- In old times, the only job of the operating system was processing jobs.
- An operating system will receive jobs in batches by an operator and it needed to execute them. These are called batch operating systems.
- Today, we have operating systems which can directly interact with the user.
- A modern operating system can run several programs at one time. These are called time-sharing operating system.
- In time-sharing operating system, we have the concept of processes or tasks instead of jobs
- In batch operating system, all the jobs first entered the job queue. Since the memory required by these jobs can be greater than the available memory, only some of these jobs were pushed to main memory by the long-term scheduler.

- When these jobs were sitting in the job queue, the state of the job was NEW.



Running ⟶ Ready

1. An interrupt occurs on the CPU
2. A higher priority process arrives in the ready queue
3. Timeslice of the process expires

Running ⟶ Waiting

1. I/O Request ←

2. Fork() → wait() on child ←
3. wait for an interrupt ←

Process States :-

NEW : Batch OS → The job has arrived in the job queue.
Time-sharing OS → The process is being created.

READY : The process is waiting to be assigned a processor.

RUNNING : The program is being executed on the CPU.

WAITING : The process is waiting for some event to occur (I/O or completion of child)

TERMINATED : The process has finished execution.
exit()