**Running:** process currently being executed

**Ready:** a process is prepared to execute when given the opportunity

**Blocked:** a process that cannot execute until some event occurs, e.g. the completion of an I/O operation

**New:** A process that has just been created but has not yet been admitted to the pool of executable processes by the OS. PCB has been created but the process is not loaded into the main memory. For example, a new batch job is submitted for execution. Two steps, 1. creates PCB and required tables; 2. load into main memory when it is ready to run. Note that New and Ready state exist because the processor can only allow a limited number of processes in Ready state.

**Exit:** A process that has been released from the pool of executable processes by the OS, either because it halted or because it aborted for some reason. Also two steps: 1. a process is terminated due to normal completion. 2. save the tables and other information are preserved for accounting program, e.g. performance analysis.

**Null 🡪** **New:** A new process is created to execute a program.

**New 🡪 Ready:** The OS will move a process from the New state to the Ready state when it is prepared to take on an additional process. Most systems set some limit based on the number of existing processes or the amount of virtual memory committed to existing processes. This limit assures there are not so many active processes as to degrade performance.

**Ready 🡪** **Running:** When it is time to select a process to run, the OS chooses one of the processes in the Ready state. This is the job of the scheduler or dispatcher. Scheduling is explored in Part Four.

**Running 🡪** **Exit:** The currently running process is terminated by the OS if the process indicates that it has completed or if it aborts.

**Running 🡪 Ready:** examples:1. reaches maximum allowable time 2. preempted process (A is running and B is blocked. While A is still running, B is now ready to run. Since B has higher priority, A is preempted. Or A is a preempted process.

**Running 🡪 Blocked:** 1. request something; it request something other than calculation, e.g. I/O operation that must be completed before going on. Or the running process is requesting data from other process

**Blocked 🡪** **Ready:** A process in the Blocked state is moved to the Ready state when the event for which it has been waiting occurs.

**Ready/Blocked 🡪 Exit:** 1. A parent process can terminate a child process at any time. 2. When a parent process terminates, all its associated child processes must also terminate.