

a)

1 - Running \rightarrow Blocked: When a process is blocked by an operation like mutual exclusions or I/O read/writes an interrupt happens and it goes to blocked state. It is marked as blocked in process table. OS chooses another process to run.

2 - Running \rightarrow Ready: When a timer interrupt happens or for some reason process is interrupted but ready to go, it is marked as Ready in process table and another process selected for running in process table.

3 - Ready \rightarrow Running: When process scheduler chooses a ready process to run after an interrupt etc. It runs the process and marks it as running in the table.

4 - Blocked \rightarrow Ready: When the reason that causes the process to be blocked ended, it is marked as ready but not running because the process must wait to be selected by process scheduler.

b)

c)

Most of the time not all of the registers are in use. In order to save time, unused registers are not saved/loaded. For older computers this had more effect in performance since system resources were smaller.

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