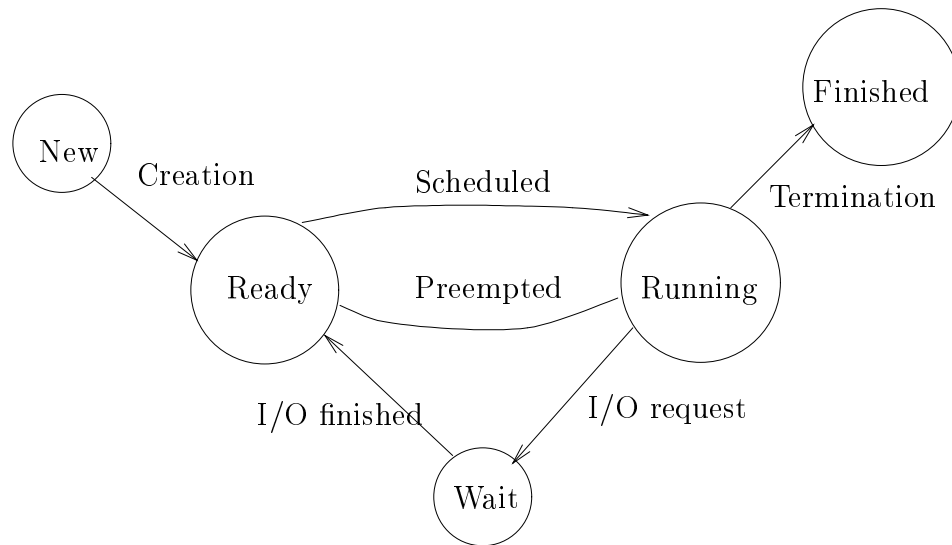




## Solutions to Mock Exam

1. (a) The transition diagram is as follows:



- (b) **Round-Robin** : rotation of graphics won't be smooth because compilation processes get large part of CPU; editor process probably not affected, as file system is not the bottleneck.
- Shortest-Job First:** Graphics very slow because it is the most CPU-intensive process, editor very fast because it uses the CPU very little, compilation processes in the middle.
- Priority:** If graphics process gets high priority, it will run smoothly. Compilation processes will be slowed down, editor process only marginally.
- (c) I/O-bound processes will not have used the processor recently, hence they are favoured. If a process has not had the processor for a while, it will obtain it eventually, whatever the time it had used before.
2. (a) No. Main memory is about 250,000 times faster than disks, hence a 1% page fault rate yields a slowdown of roughly a factor of 2,500.
- (b) The system is thrashing and swapping pages in and out all the time.
- (i) No; the CPU is not the bottleneck.
  - (ii) No; the size of the paging disk is not the problem.
  - (iii) No; will make things only worse.
  - (iv) Yes; fewer programs will compete for main memory.
  - (v) Yes; fewer pages will be accessed.

- (vi) If there is an improvement, it will be only marginal. The page faults still occur, they are served only faster. But we need to reduce the number of page faults drastically.