advanced scheduling halil metbala

1. **Multiple Queues:**  A process on a system with Multiple Queues Scheduling needs 30 quanta to complete. How many times must it be swapped in, including the very first time (before it has run at all)?

1 2 4 8 15

A: 5 times.

1. **Shortest Process Next:**  A scheduler working with the {\em Shortest Process Next} Strategy has two processes in ready state and has to schedule one of these:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Process name | 1st run | 2nd run | 3rd run | 4th run |
| A | 50 ms | 150 ms | 300 ms | 85 ms |
| B | 300 ms | 150 ms | 85 ms | 50 ms |

Which process will be taken by the scheduler and why?

Answer: It will take the process A first because of less time spent on average.

A: 50 200 500 585 🡪 average: 333.75ms

B:300 450 535 585 🡪average: 467.5ms

1. **CPU-bound and I/O-bound Processes**

* Explain in a few words the terms CPU-bound and I/O-bound processes.
* Why is it important for the scheduler to distinguish between CPU-bound and I/O-bound processes?

a.)CPU-bound: have no user interaction, need high quanta but low priority. I/O bound: high user interaction, need low quanta but high priority (less lag).

b.) because the perceived performance of the program is important for the user. Therefore if you give an I/O process high quanta for example, it will spend too much time on the same process and will not get scheduled fast enough.

1. **Real Time Schedulable** A soft real-time system has four periodic events with periods of 50, 100, 200, and 250 milliseconds each. Suppose that the four events require 35, 20, 10 and $x$ milliseconds of CPU-time, respectively. What is the largest value of $x$ for which the system is schedulable?

P = period

C = time to be handled

i = current process

sum(Ci/Pi) <= 1 if x/250 = 0.05 therefore x = 12.5 ms