

Suppose 3 processes:

P1 has following computation: 2ms CPU, 11ms wait, 3ms CPU, 11ms wait, 2ms CPU, 11ms wait, 4ms CPU, 11ms wait, 2ms CPU, 11ms wait, 3ms CPU, 11ms wait

P2 has following computation: 25ms CPU, 20ms wait for I/O, 35ms CPU, 20 ms wait for I/O

P3 has 1000ms of CPU

started at the same time 0 with order P1,P2, P3 on uni-processor computer. Draw diagram of running process from 0 to 80ms if the scheduling algorithm is:

- 1) Round robin with 10ms time amount. Compute waiting time for process P1. Do you know another scheduling algorithm that can decrease this waiting time for process P1?
- 2) multi-level feedback queue with two queues, top one with RR 10ms, the second one with RR 15ms. If the process executes I/O wait than it is moved up in the feedback queue.
- 3) Shortest remaining time– with prediction of next CPU burst by exponential averaging with $\alpha=0.5$. $\tau_{n+1} = \alpha t_n + (1-\alpha)\tau_n$.

Write prediction for each process if in time 0 each process has the history $\tau_0=6ms$.

The re-scheduling is done when some process enters ready queue or the 2*predicted time is over. The new prediction is computed if process enters the waiting queue or the 2*predicted time is over.

Real-time Scheduling

There is real-time operating system with 3 periodic processes:

P1 has computation time 20ms with period 40ms

P2 has computation time 10ms with period 50ms

P3 has computation time 15ms with period 60m

Is it possible to schedule these tasks? Can you use RMS or EDF? Explain why, draw diagram of running processes.