From last time

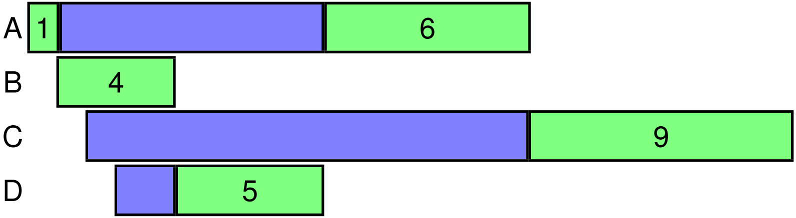
Explain why the time slice in pre-emptive process scheduling algorithms is normally significantly longer than the time needed for a context switch (2 marks)
(define terms first) to minimise overhead
Why is a schedule giving lowest average turnaround time the same as that giving lowest average waiting time? (1 mark)
turnaround time = run time + wait time
Given a set of jobs with known processing time, all available to run, explain why repeatedly running the shortest job next gives the lowest average turnaround time. (3 marks)
runtime of 1st process = waiting time for all other processes
What is a CPU burst and an I/O burst? What is a CPU-bound and an I/O bound process? Why is it a good strategy in process scheduling to give higher priority to I/O bound processes? (4 marks)
(definitions; I/O bound = <u>smaller</u> CPU burst) As previous Q

Shortest Remaining Time First/Next (SRTF)

Preemptive (not time-sliced) version of SJF:

For each newly-ready process:
if CPU-burst $<$ time to complete running process,
then context-switch & run the new process

Question: as previous example, but staggered arrival:

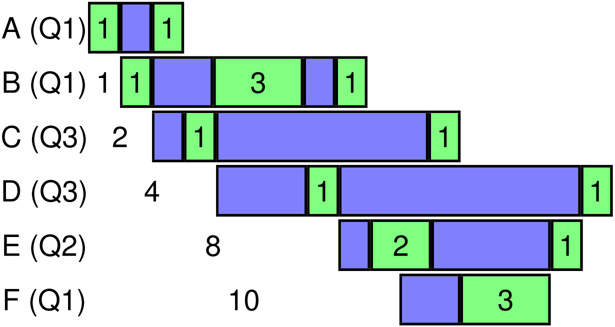


Shorter average waiting time than (non-preemptive) SJF

Example ctd.

2nd scenario: (repeatedly)
– 3 quanta for Q1, then 2 quanta for Q2, then 1 quantum for Q3
– each queue applies round-robin (time-slice = 1 quantum)

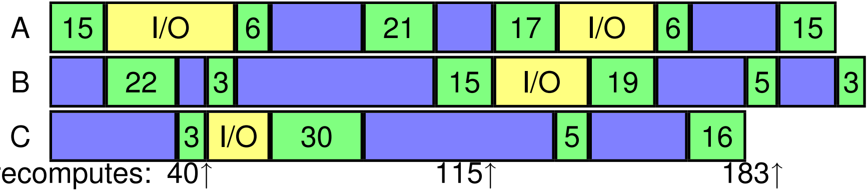
Question: A-F as before:



example ctd.

Three processes A, B, C (in the 3rd queue)
initial priority & quantum A=23, B=22, C=21

A: 15 CPU, 28 I/O, 44 CPU, 24 I/O, 21 CPU ...
B: 40 CPU, 22 I/O, 27 CPU ...
C: 3 CPU, 9 I/O, 51 CPU ...



Question: what triggers each recompute? what new quanta?

– A:(23-15)/2+23=27 B:22 C:(21-3)/2+21=30
– A:23 B:(22-3-15)/2+22=24 C:21
– A:23 B:22 C:21