

Board notes

metric:

A : 10 arrive@0 done@10

TAV = done - arrive

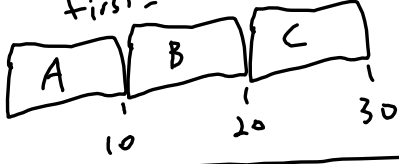
B : 10 arrive@0 done@20

(list 5 assumptions here:

C : 10 arrive@0 done@30
 ↗ add completion time after

- 1 - arrive @ 0
- 2 - CPU only
- 3 - same length
- 4 - known duration
- 5 - only metric is completion

FCFS: first-come first-served



Avg: 20

EDIT:

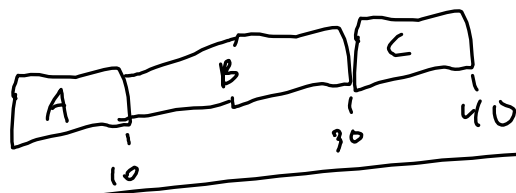
drop assum. 3

A : 10 arrive@0

B : 20 arrive@0

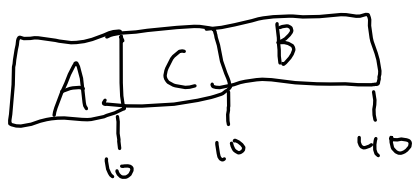
C : 10 arrive@0

FCFS fails



Avg: $80/3 = 26.6...$

SJF: shortest job first



Avg: 20 (better!)
 (optimal under assumptions)

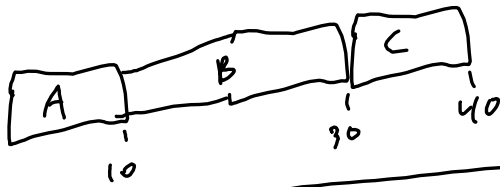
EDIT:

A : 16 arrive@11

B : 20 arrive@0

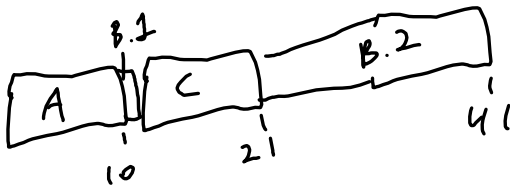
C : 10 arrive@0

drop assum. 3+1



SJF fails, looks like FCFS
Avg: $\frac{29 + 30 + 10}{3} = 6\frac{2}{3} = 23$

Shortest time to completion first
(uses pre-emption!)



Avg = $\frac{10 + 10 + 41}{3} = 20.33$ better!

Round Robin and time slices
(relies on the timer!)

5-unit slice (no edit on sched)

A : 16 arrive@11

B : 20 arrive@0

C : 10 arrive@0

drop 3+1
change 5:
shortest time to first run



metric = avg < 10

remaining assumptions: - CPU only
- known time

let's kill #2.

workloads

interactivity!

in these real workloads: do we really know time (#4?)
do we really know what kind of job?

(maybe we do! but unix didn't)

algorithm: MLFQ

Multi-level - feedback - queueing
(to the tune of teenage-mutant-ninja-turtles)

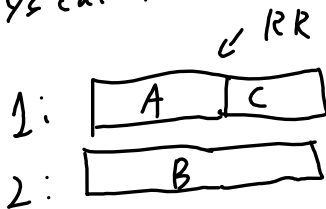
idea: learn type of job over time

Queues with priority
(DMU, doctor office, etc)
mvc

metric: turnaround time
response time

RR within Q

- yield / sys call rate sets priority



track: yield rate

Rules:

#1 high Q
#2 RR in Q

#3 enter at high Q
#4 (see alyS)

exact algos:
#1: demote if timer interrupts (rule 4) (interact: can this be gamed
does it starve?)

#2: add priority boost to top on timer
(rule 5)
(Can this still be gamed? starvation/responsiveness?)

#3: demote after computation quanta reached
(even if you yield in the middle)

- discuss: parameterization! (#Q? timer length?
interact!)
(nice, exact quanta, reserved scheds, Q maxes, etc)