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Homework 8

1.) Time to input one Block = T_i
Computation time w/ b/n inputs = C
Time to move data from buffer to memory = T_m
Run Time w/ Buffer: (per block)
$= \max\{C, T_i\} + T_m$
RunTime w/out Buffer: (per block)
$= T_i + C$
$\Rightarrow \left(\frac{C+T_i}{2}\right) \leq \max\{C, T_i\} \leq C + T_i$

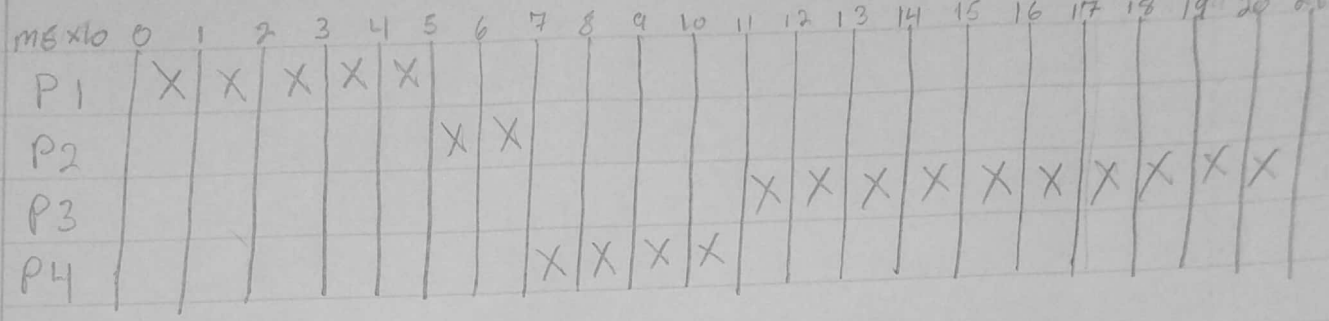
Even if $C \doteq T_i \Rightarrow$
Run Time w/ Buffer: (per block)
$= T_i + M$
Run Time w/out Buffer: (per block)
$= T_i + T_i$
$\Rightarrow$ Buffer can at most reduce Run Time by a factor of 2

2.) a.) Indexed or Hashed
b.) Indexed Sequential
c.) Indexed or Hashed

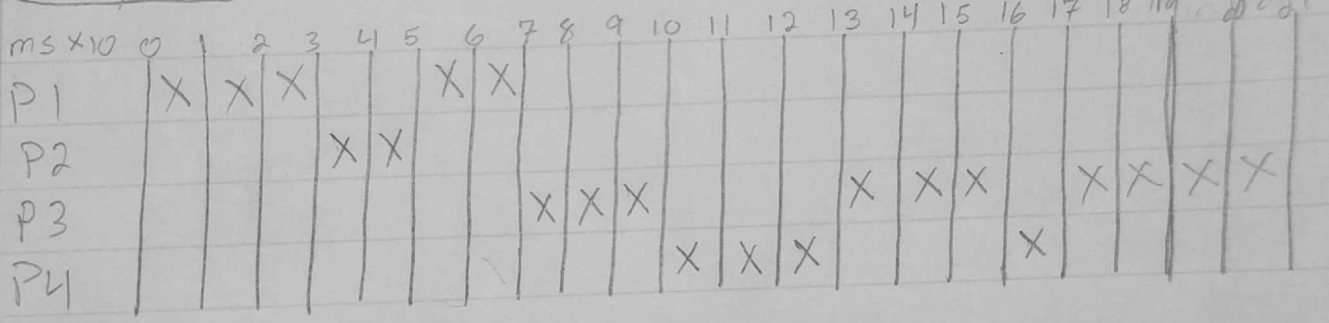
3.) a.) That process will get to run twice as much as others
b.) To give more run time to important processes
c.) Make the quantum be able to be increased for more important processes

Homework 8

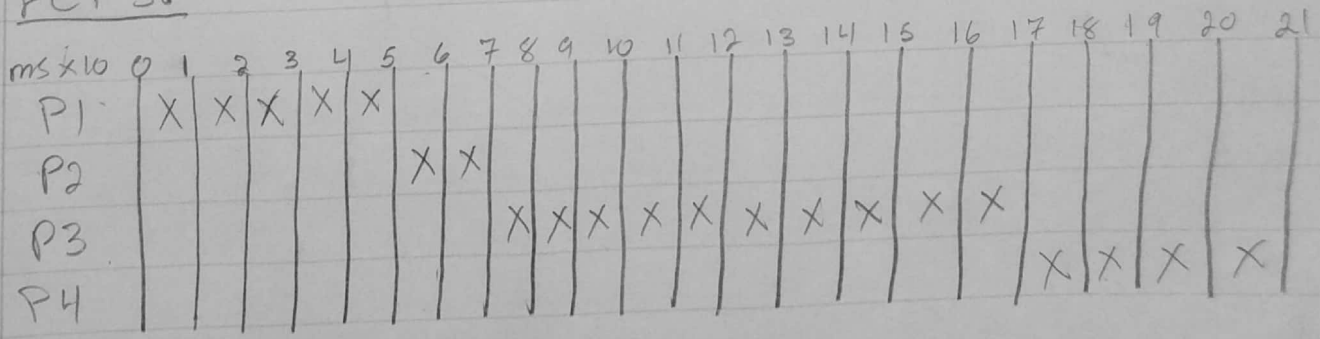
4.) Non-Preemptive Priority:



RR (q=3):



FCFS:



Average Waiting Time:

Non-Preemptive

$\frac{0+30+70+110}{4} = \boxed{27.5 \text{ ms}}$

RR (q=3)

$\frac{20+10+70+20}{4} = \boxed{42.5 \text{ ms}}$

FCFS

$\frac{0+30+30+110}{4} = \boxed{42.5 \text{ ms}}$

Average Turnaround Time:

Non-Preemptive

$\frac{50+60+50+170}{4} = \boxed{80 \text{ ms}}$

RR (q=3)

$\frac{70+30+170+110}{4} = \boxed{95 \text{ ms}}$

FCFS

$\frac{50+60+130+150}{4} = \boxed{95 \text{ ms}}$