Operating System Assignment #5

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1 Problem 5.1

The system is a safe state, as shown below in the calculation.
The Safe Sequence is < P1, P3, P2, P0 >

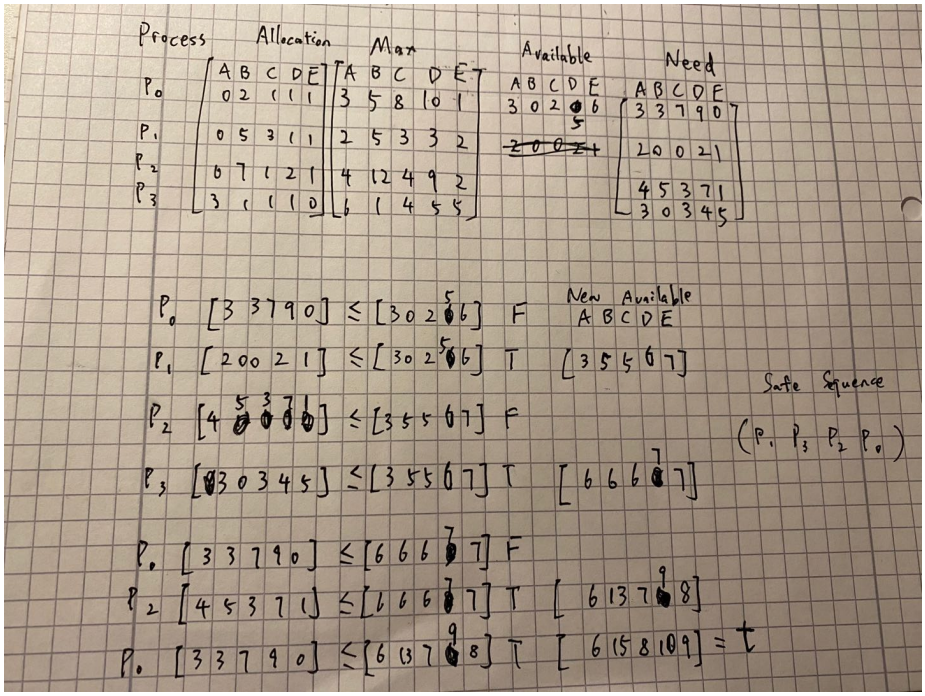

Figure 1: 5.1 safe state calculation

2 Problem 5.2

2.1 a

The following is the corresponding resource allocation graph.

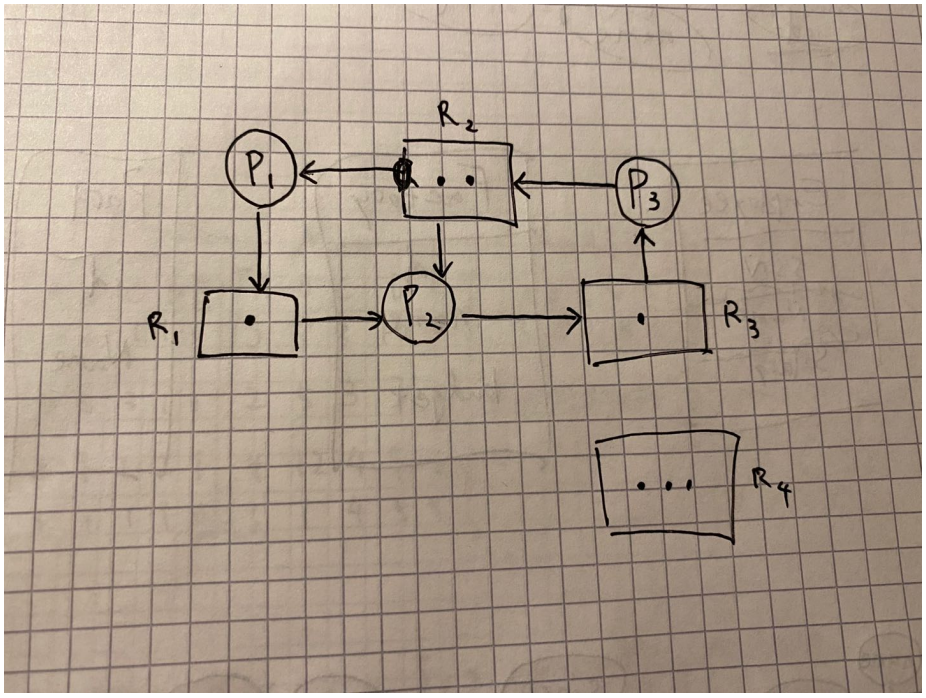

Figure 2: RAG

2.2 b

The system is in deadlock, because the available array is $< 0\ 0\ 0\ 3 >$ and this does not satisfy another of the processes.
Also the RAG meets requirement of circular wait for a deadlock to form.

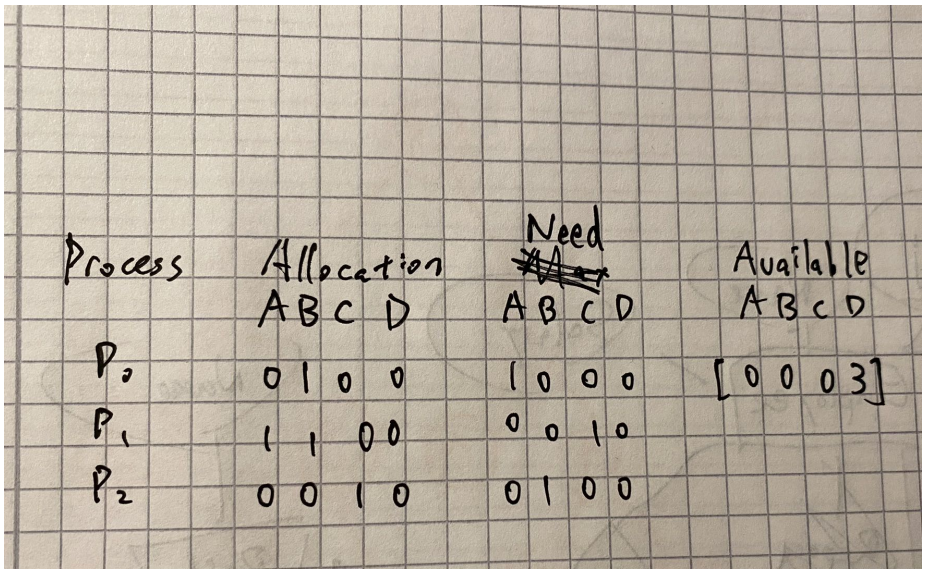

Figure 3: 5.2 safe state calculation

3 Problem 5.3

3.1 a

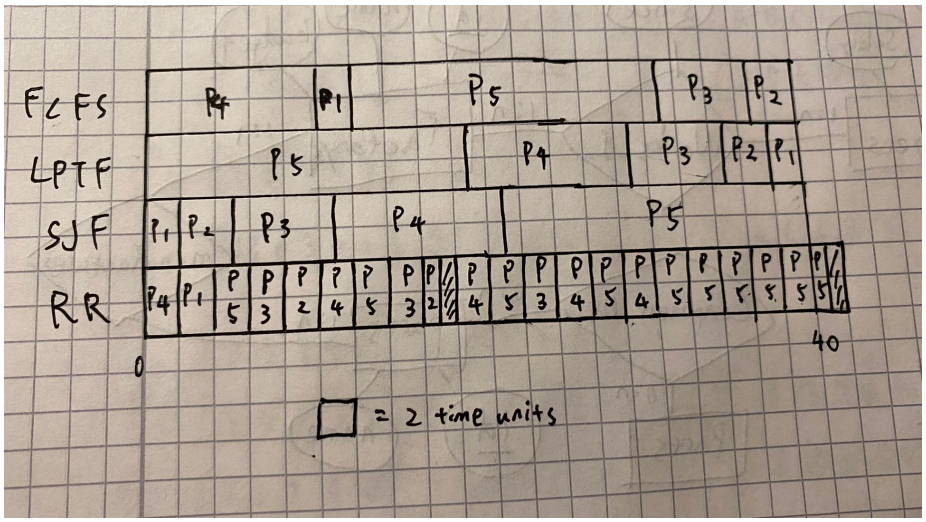

Figure 4: 5.3 Gantt Diagram

3.2 b

FLFS: (10+12+31+37+40)/5= 26 time units
LPTF: (19+29+35+38+40)/5= 32.2 time units
SJF: (2+5+11+21+40)/5= 15.8 time units
RR: (4+17+24+30+41)/5 =23.2 time units

4 Problem 5.4

4.1 a

file	symbol	internal	external	weak symbol	strong symbol
a.c	x		✗		✗
a.c	y	✗		✗	
a.c	f	✗			✗
a.c	g	✗			✗
b.c	x	✗			✗
b.c	y	✗			✗
b.c	f	✗			✗
b.c	g		✗		✗

Figure 5: symbols table

4.2 b

This is what will be printed to the standard output.

b.c: f()
a.c: g()
a.c: f()

First, the main function only has access to f() which is in b.c, and that contains g() from a.c. Therefore, the order printed is like above.