## Assessment Two

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January 27, 2013

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1.1

	A	В	С	D	Ε	F	G	Н	I	J
c1	3	-2	0	0	0	0	0	0	0	0
c2	4	0	-1	0	0	0	0	0	0	0
c3	0	4	0	-3	0	0	0	0	0	0
c4	0	0	1	-2	0	0	0	0	0	0
c5	-2	0	0	1	0	0	0	0	0	0
c6	0	0	1	0	-1	0	0	0	0	0
c7	2	0	0	0	0	-4	0	0	0	0
c8	0	0	0	0	1	0	-2	0	0	0
c9	0	0	0	0	0	8	-2	0	0	0
c10	0	0	0	6	0	0	0	-2	0	0
c11	0	0	0	0	0	0	0	1	-3	0
c12	0	0	0	0	0	0	1	0	0	-1
c13	0	0	0	0	0	0	0	0	1	-1
c14	0	0	0	0	2	0	0	0	-X	0

In order the find the consumption rate X of actor I over channel c14 we need to determine the PASS (Periodic Admissible Sequential Schedule).

$$A \quad B \quad \cdots \quad J$$

$$c1 \quad \begin{pmatrix} 3 & -2 & \cdots & 0 \\ 4 & 0 & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ c14 & 0 & 0 & \cdots & 0 \end{pmatrix} \begin{pmatrix} a \\ b \\ \vdots \\ j \end{pmatrix} = 0$$

Which gives

$$3a = 2b, 4a = c, 4b = 3d, c = 2d, d = 2a, c = e, 2a = 4f, e = 2g, 8f = 2g,$$
 
$$6d = 2g, h = 3i, g = j, i = j, 2e = Xi$$

And therefore

$$12a = 8b = 3c = 6d = 3e = 24f = 6g = 2h = 6i = 6j$$

And X = 4 We can get values for a..j by finding the least common integer denominator.

$$a=2,b=3,c=8,d=4,e=8,f=1,g=4,h=12,i=4,j=4$$

1.2 The sequence can be found by summing the number of tokens displaced for each edge.

		A	C	A	В	C	F	E	D	В	C	C	E	H	Н	D	Н	G	Н	Н	E	E	G	I	Н	7
с1	0	3	3	6	4	4	4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	7
c2	0	4	3	7	7	6	6	6	6	6	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
с3	0	0	0	0	4	4	4	4	1	5	5	5	5	5	5	2	2	2	2	2	2	2	2	2	2	
c4	0	0	1	1	1	2	2	2	0	0	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0	
c5	4	2	2	0	0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	
с6	0	0	1	1	1	2	2	1	1	1	2	3	2	2	2	2	2	2	2	2	1	0	0	0	0	
с7	0	2	2	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
c8	0	0	0	0	0	0	0	1	1	1	1	1	2	2	2	2	2	0	0	0	1	2	0	0	0	
с9	0	0	0	0	0	0	8	8	8	8	8	8	8	8	8	8	8	6	6	6	6	6	4	4	4	
c10	0	0	0	0	0	0	0	0	6	6	6	6	6	4	2	8	6	6	4	2	2	2	2	2	0	
c11	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	3	3	4	5	5	5	5	2	3	
c12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	2	2	2	
c13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
c14	0	0	0	0	0	0	0	2	2	2	2	2	4	4	4	4	4	4	4	4	6	8	8	4	4	
	_																									
	В	С	Е	I	С	D	J	J	Н	Н	Н	Е	С	I	С	E	D	Е	G	Н	Н	Н	I	J	G	J
c1	0	C 0	E 0	I 0	C 0	D 0	J 0	J 0	H 0	H 0	H 0	E 0		I 0	C 0	E 0	0	E 0	G 0	H 0	H 0	H 0	I 0	J 0	0	J 0
c1 c2	0 4	0 3	E 0 3	I 0 3	0 2	D 0 2	J 0 2	J 0 2	H 0 2	H 0 2	H 0 2	E 0 2	0 1	I 0 1	0 0	E 0 0	0	Е	G 0 0		Н	H 0 0	I 0 0	J	0	0
c1 c2 c3	0 4 6	C 0	E 0	I 0	C 0	D 0 2 3	J 0	J 0	H 0 2 3	H 0 2 3	H 0 2 3	E 0 2 3	С	I	0 0 3	E 0 0 3	0 0 0	E 0	G 0 0		H 0	H 0	I 0 0 0	J 0	0 0 0	0
c1 c2 c3 c4	0 4 6 0	C 0 3 6 1	E 0 3 6 1	I 0 3 6 1	C 0 2 6 2	D 0 2 3 0	J 0 2 3 0	J 0 2 3 0	H 0 2 3 0	H 0 2 3 0	H 0 2 3 0	E 0 2 3 0	C 0 1 3 1	I 0 1 3 1	0 0 3 2	E 0 0 3 2	0	E 0	G 0 0 0		H 0	H 0 0 0 0	I 0 0	J 0	0 0 0	0
c1 c2 c3 c4 c5	0 4 6 0 2	0 3	E 0 3 6 1 2	I 0 3	0 2	D 0 2 3	J 0 2	J 0 2	H 0 2 3	H 0 2 3	H 0 2 3	E 0 2 3 0 3	0 1	I 0 1	C 0 0 3 2 3	E 0 0 3	0 0 0	E 0	G 0 0 0 0 4		H 0	H 0 0 0 0 0 4	I 0 0 0 0 0 4	J 0	0 0 0 0 4	0 0 0 4
c1 c2 c3 c4 c5 c6	0 4 6 0 2 0	C 0 3 6 1 2	E 0 3 6 1 2	I 0 3 6 1	C 0 2 6 2 2 1	D 0 2 3 0 3 1	J 0 2 3 0	J 0 2 3 0 3	H 0 2 3 0 3 1	H 0 2 3 0	H 0 2 3 0 3 1	E 0 2 3 0 3 0	C 0 1 3 1 3 1	I 0 1 3 1 3 1	C 0 0 3 2 3 2	E 0 0 3 2 3 1	0 0 0 0 4 1	E 0	G 0 0 0 0 4 0		H 0 0 0 0 4 0	H 0 0 0 0 4 0	I 0 0 0 0 4 0	J 0 0 0 0 4 0	0 0 0 0 4 0	0 0 0 4 0
c1 c2 c3 c4 c5 c6	0 4 6 0 2	C 0 3 6 1 2 1	E 0 3 6 1 2	I 0 3 6 1	C 0 2 6 2	D 0 2 3 0	J 0 2 3 0	J 0 2 3 0	H 0 2 3 0	H 0 2 3 0	H 0 2 3 0	E 0 2 3 0 3 0 0	C 0 1 3 1 3 1 0	I 0 1 3 1 3 1 0	C 0 0 3 2 3 2 0	E 0 0 3 2 3 1 0	0 0 0 0 4 1	E 0	G 0 0 0 0 4 0 0	0 0 0 0 4 0	H 0 0 0 0 4 0 0	H 0 0 0 0 4 0 0	0 0 0 0 4 0 0	J 0 0 0 0 4 0	0 0 0 0 4 0	0 0 0 4 0
c1 c2 c3 c4 c5 c6 c7	0 4 6 0 2 0	C 0 3 6 1 2 1 0	E 0 3 6 1 2 0 0	I 0 3 6 1	C 0 2 6 2 2 1	D 0 2 3 0 3 1	J 0 2 3 0	J 0 2 3 0 3	H 0 2 3 0 3 1	H 0 2 3 0	H 0 2 3 0 3 1 0	E 0 2 3 0 3 0	C 0 1 3 1 3 1	I 0 1 3 1 3 1	C 0 0 3 2 3 2	E 0 0 3 2 3 1	0 0 0 0 4 1	E 0	G 0 0 0 0 4 0 0 2	0 0 0 0 4 0 0	H 0 0 0 0 4 0 0 2	H 0 0 0 0 4 0 0 2	0 0 0 0 4 0 0 2	J 0 0 0 0 4 0 0 2	0 0 0 0 4 0 0	0 0 0 4 0 0
c1 c2 c3 c4 c5 c6 c7 c8	0 4 6 0 2 0 0 0 4	C 0 3 6 1 2 1 0 0 4	E 0 3 6 1 2 0 0 1 4	I 0 3 6 1	C 0 2 6 2 2 1	D 0 2 3 0 3 1 0 1 4	J 0 2 3 0	J 0 2 3 0 3	H 0 2 3 0 3 1	H 0 2 3 0 3 1 0 1 4	H 0 2 3 0 3 1 0 1 4	E 0 2 3 0 3 0 0 2 4	C 0 1 3 1 3 1 0 2 4	I 0 1 3 1 3 1 0 2 4	C 0 0 3 2 3 2 0 2 4	E 0 0 3 2 3 1 0	0 0 0 0 4 1 0 3 4	E 0	G 0 0 0 0 4 0 0 2 2	0 0 0 0 4 0	H 0 0 0 0 4 0 0 2 2	H 0 0 0 0 4 0 0 2 2	I 0 0 0 0 4 0 0 2 2	J 0 0 0 0 4 0 0 2 2	0 0 0 0 4 0 0 0	0 0 0 4 0 0 0
c1 c2 c3 c4 c5 c6 c7 c8 c9	0 4 6 0 2 0 0 0 4 0	C 0 3 6 1 2 1 0 0 4 0	E 0 3 6 1 2 0 0 1 4 0 0	I 0 3 6 1	C 0 2 6 2 2 1 0 1 4 0 0	D 0 2 3 0 3 1 0 1 4 6	J 0 2 3 0	J 0 2 3 0 3 1 0 1 4 6	H 0 2 3 0 3 1	H 0 2 3 0 3 1 0 1 4 2	H 0 2 3 0 3 1 0 1 4	E 0 2 3 0 3 0 0 2 4 0	C 0 1 3 1 3 1 0 2 4 0	I 0 1 3 1 3 1 0 2 4 0 0	C 0 0 3 2 3 2 0 2 4 0	E 0 0 3 2 3 1 0 3 4 0	0 0 0 0 4 1 0 3 4 6	E 0	G 0 0 0 0 4 0 0 2 2 6	0 0 0 0 4 0 0	H 0 0 0 0 4 0 0 2 2 2	H 0 0 0 0 4 0 0 0 2 2 0	I 0 0 0 0 4 0 0 0 2 2	J 0 0 0 0 4 0 0 2	0 0 0 0 4 0 0 0 0	0 0 0 4 0 0 0 0
c1 c2 c3 c4 c5 c6 c7 c8 c9 c10	0 4 6 0 2 0 0 0 4 0 3	C 0 3 6 1 2 1 0 0 4	E 0 3 6 1 2 0 0 1 4 0 3	I 0 3 6 1 2 0 0 1 4 0 0 0	C 0 2 6 2 2 1 0 1 4 0 0 0	D 0 2 3 0 3 1 0 1 4 6 0	J 0 2 3 0	J 0 2 3 0 3	H 0 2 3 0 3 1	H 0 2 3 0 3 1 0 1 4	H 0 2 3 0 3 1 0 1 4 0 3	E 0 2 3 0 3 0 0 0 2 4 0 3	C 0 1 3 1 3 1 0 2 4	I 0 1 3 1 3 1 0 2 4 0	C 0 0 3 2 3 2 0 2 4 0 0	E 0 0 3 2 3 1 0	0 0 0 0 4 1 0 3 4 6	E 0	G 0 0 0 0 4 0 0 2 2	0 0 0 0 4 0 0	H 0 0 0 0 4 0 0 2 2	H 0 0 0 0 4 0 0 2 2	I 0 0 0 0 4 0 0 2 2	J 0 0 0 0 4 0 0 2 2	0 0 0 0 4 0 0 0	0 0 0 4 0 0 0 0 0
c1 c2 c3 c4 c5 c6 c7 c8 c9 c10 c11 c12	0 4 6 0 2 0 0 0 4 0	C 0 3 6 1 2 1 0 0 4 0	E 0 3 6 1 2 0 0 1 4 0 0	I 0 3 6 1 2 0 0 1 4 0 0	C 0 2 6 2 2 1 0 1 4 0 0	D 0 2 3 0 3 1 0 1 4 6 0 2	J 0 2 3 0	J 0 2 3 0 3 1 0 1 4 6	H 0 2 3 0 3 1	H 0 2 3 0 3 1 0 1 4 2 2 0	H 0 2 3 0 3 1 0 1 4 0 3 0	E 0 2 3 0 3 0 0 0 2 4 0 3 0 0	C 0 1 3 1 3 1 0 2 4 0	I 0 1 3 1 3 1 0 2 4 0 0	C 0 0 3 2 3 2 0 2 4 0	E 0 0 3 2 3 1 0 3 4 0	0 0 0 0 4 1 0 3 4 6	E 0	G 0 0 0 0 4 0 0 2 2 6	0 0 0 0 4 0 0	H 0 0 0 0 4 0 0 2 2 2	H 0 0 0 0 4 0 0 0 2 2 0	I 0 0 0 0 4 0 0 2 2 0 0	J 0 0 0 0 4 0 0 2 2	0 0 0 0 4 0 0 0 0	0 0 0 4 0 0 0 0 0 0
c1 c2 c3 c4 c5 c6 c7 c8 c9 c10	0 4 6 0 2 0 0 0 4 0 3	C 0 3 6 1 2 1 0 0 4 0	E 0 3 6 1 2 0 0 1 4 0 3	I 0 3 6 1 2 0 0 1 4 0 0 0	C 0 2 6 2 2 1 0 1 4 0 0 0	D 0 2 3 0 3 1 0 1 4 6 0	J 0 2 3 0	J 0 2 3 0 3 1 0 1 4 6	H 0 2 3 0 3 1	H 0 2 3 0 3 1 0 1 4 2	H 0 2 3 0 3 1 0 1 4 0 3	E 0 2 3 0 3 0 0 0 2 4 0 3	C 0 1 3 1 3 1 0 2 4 0	I 0 1 3 1 3 1 0 2 4 0	C 0 0 3 2 3 2 0 2 4 0 0	E 0 0 3 2 3 1 0 3 4 0	0 0 0 0 4 1 0 3 4 6	E 0	G 0 0 0 0 4 0 0 2 2 6	0 0 0 0 4 0 0	H 0 0 0 0 4 0 0 2 2 2	H 0 0 0 0 4 0 0 0 2 2 0	I 0 0 0 0 4 0 0 0 2 2	J 0 0 0 0 4 0 0 2 2	0 0 0 0 4 0 0 0 0	0 0 0 4 0 0 0 0 0