

P

LM1

$$2 \mu s \geq (1-p) \cdot 1 \mu s + p \cdot (0.3 \cdot 8 \mu s + 0.7 \cdot 2 \mu s)$$

$$p \leq 0.00006$$

3 numbers

LRU

70 W_{total}

1 2

4 5 3

1 4 5

2 4 5 3

1 2

• • •

• • •

• • •

• • •

4 5 3

1 4 5

2 4 5 3

1 2

4 5

3 1 4

5 2 4 5

3 1

4

5 3 1

4 5 2 4

5 3

3 numbers

FIFO

9 iterations

1 2

4	5	3	1	4	5	2	4	5	3	1	2
•	•	•	•	•	•	•		•		•	
4	5	3	1	4	5	2	2	2	3	1	1
	4	5	3	1	4	5	5	5	2	3	3
		4	5	3	1	4	4	4	5	2	2

4 numbers

LRU

8 iterations

1 2

4 5 3 1

4 5 2

4 5 3

1 2

• • • •

•

•

•

•

4 5 3 1

4 5 2

4 5 3

1 2

4 5 3

1 4 5

2 4 5

3 1

4 5 3

1 4 5

5 2 4

5 3

4 5 3

1 4 5

1 1 2

4 5

Anomalia Belady'ego

4 ramki

FIFO

10 klocków

1 2

4 5 3 1

4 5

2

4

5

3

1

2

• • • •

• • • •

• •

4 5 3 1

1

1

2

4

5

3

1

2

4 5 3

3

3

1

2

4

5

3

1

4 5

5

5

3

1

2

4

5

3

4

4

4

5

3

1

2

4

5

\bar{S} number

OPT

\bar{S} solution

1 2

4 5 3 1
 • • • •
 4 4 4 4
 5 5 5
 3 3
 1

4 5 2
 •
 4
 5
 3
 1
 2

4 5 3

1 2

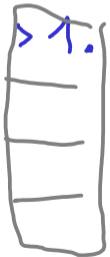
4 ramka -

LRU
clock

8 wykładów
9 wykładów

M3

1	4	1	2	5	3	1	2	6	4	3	2
.
>1.	>1.	>1.	>1.	>1. → 3.	3.	3.	>3.	3	3.	3	
	4.	4.	4.	4.	>4	1.	1.	1.	1	1	2.
			2.	2.	2	>2	>2.	2		4.	4. >4.
				5.	5	5	5	6.	>6.	>6.	6



3 nambe -

POLE ROBOLE

MG

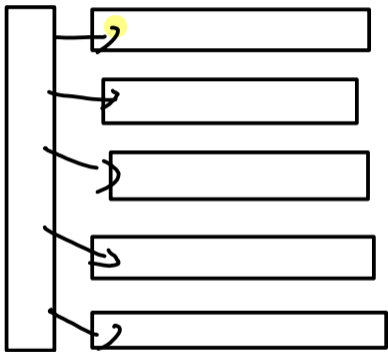
|
← 3

7 hteolón

2	4	3	4	4	4	3	4	2	7	5	2	5
.	.	.				.		3	.	.		
2	2	2	4	4	4	4	4	4	4	5	5	5
	4	4	3	3		3	3	3	2	2	2	2
		3						2	1	1	1	

1 rank

MS

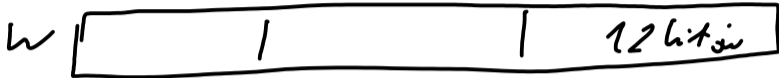


A) $O(p)$

B) $O(p^2)$

$$4 \text{ KiB} = 2^{12} \text{ B}$$

MG

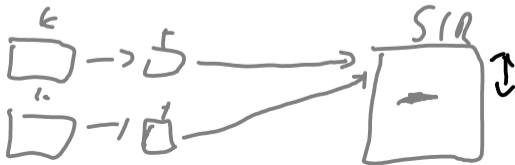


0x 10003

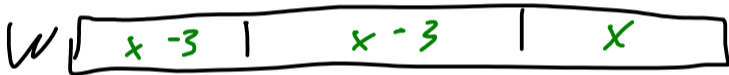
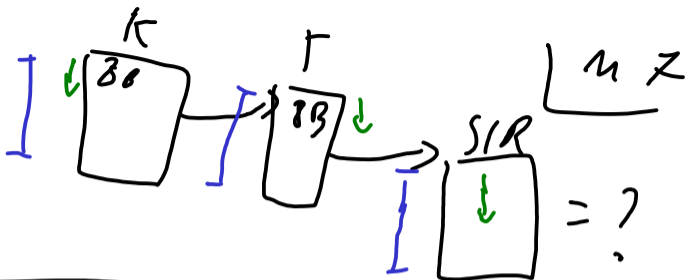
0x 20103 X

0x 10003

0x 21003 ✓



$$\frac{2^x}{8} = 2^{x-3}$$



$\leftarrow \text{Z} 26 \text{r} \rightarrow$

$$2(x-3) + x = 72$$

$$x = 26$$

$W \rightsquigarrow F$

$= ?$
 \cdot
 $2^x \cdot 8$
 \downarrow
 $2^{26} \cdot 8$