

Master proces = P0

* Lab 3 *

Datum:

① min_val = ?
② max

n = 6

p = 3

n/p = 2

~~A~~ A x m

n - parno

p - broj procesa

$n \% p == 0$

i \ j	0	1	2	3	4	5
0	0	1	2	3	4	5
1	6	7	8	9	10	11
2	12	13	14	15	16	17
3	18	19	20	21	22	23
4	24	25	26	27	28	29
5	30	31	32	33	34	35

} → P0
} → P1
} P2

P0

P1

P2

j	0	2	4
0	0	2	4
6	8	10	

j	0	2	4
0	12	14	16
6	18	20	22

j	0	2	4
0	24	26	28
6	30	32	34

↓

↓

↓

P0 =

0	0
6	2
2	4
8	6
4	8
10	10

P1 =

12	12
18	14
14	16
20	18
16	20
22	22

P2 =

24	24
30	26
26	28
32	30
28	32
34	34

l_min = 0

l_min = 12

l_min = 24

Ukoliko min y P0 se izracunava u reducu ⇒ global-min send P0

na Reduce(MIN)

REDUCE(MINLOC) samo kada se upravlja uzim. broj procesa
ako se upravlja min y broj procesa, onda samo for loop

3. $n=8, p=4$

A =

	0	1	2	3	4	5	6	7
0	0	1	2	3	4	5	6	7
1	8	9	10	11	12	13	14	15
2	16	17	18	19	20	21	22	23
3	24	25	26	27	28	29	30	31
4	32	33	34	35	36	37	38	39
5	40	41	42	43	44	45	46	47
6	48	49	50	51	52	53	54	55
7	56	57	58	59	60	61	62	63

Datum:

P0, P1, P2

P0

T =

	0	1	2	3	4	5	6	7
0	0	0	0	0	0	0	0	0
1	9	9	0	0	0	0	0	0
2	18	18	0	0	0	0	0	0
3	27	27	0	0	0	0	0	0
4	36	36	0	0	0	0	0	0
5	45	45	0	0	0	0	0	0
6	54	54	0	0	0	0	0	0
7	63	63	0	0	0	0	0	0

P1

T =

	0	1	2	3	4	5	6	7
0	1	8	0	0	0	-	-	0
1	10	17	0					0
2	19	26	0					0
3	28	35	0	-	1	-		0
4	37	44	0					0
5	46	53	0		1			0
6	55	62	0					0
7	0	0	0	-	-	-	-	0

P2

T =

	0	1	2	3	4	5	6	7
0	2	16	0	2	0	0	0	0
1	11	25	0					
2	20	34	0					
3	29	43	0					1
4	38	52	0					1
5	47	61	0					
6	0	0				-	-	0
7	0	0	-	-				0

5

$m=4$
 $n=3$
 $k=2$

$$A_{m \times n} = \begin{bmatrix} 0 & 1 & 2 \\ 3 & 4 & 5 \\ 6 & 7 & 8 \\ 9 & 10 & 11 \end{bmatrix}$$

$$B_{n \times k} = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$$

$$C_{m \times k} = \begin{bmatrix} 0 & 1 \\ 1 & 2 \\ 2 & 3 \\ 3 & 4 \end{bmatrix}$$

Число операций зависит от k/p конкатенации B (по p умнож k/p , $p1$ умнож k/p , ...)

$$K=8, p=4 \quad \underbrace{0 \ 1}_{p_0} \underbrace{2 \ 3}_{p_1} \underbrace{4 \ 5}_{p_2} \underbrace{6 \ 7}_{p_3}$$

$$C^{00} = a_{00}b_{00} + a_{01}b_{10} + a_{02}b_{20}$$

6

$n=3, p=3$

$$A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 4 & 5 \\ 2 & 7 & 8 \end{bmatrix}$$

$$B = \begin{bmatrix} 0 & 1 & 2 \\ 2 & 3 & 4 \\ 5 & 6 & 7 \\ 8 & 9 & 10 \end{bmatrix}$$

\Rightarrow

$$C_{n \times n} = \begin{bmatrix} 100 & 36 & 42 & 48 \\ 81 & 96 & 111 & 126 \\ 126 & 150 & 174 & 198 \end{bmatrix}$$

max = 126 150 174

p_0

$$A_{n \times n}^{p_0} [1 \ 2 \ 3] \cdot B_{n \times n} \begin{bmatrix} 2 & 3 & 4 \\ 5 & 6 & 7 \\ 8 & 9 & 10 \end{bmatrix} = \begin{bmatrix} 1 \cdot 2 + 2 \cdot 5 + 3 \cdot 8 & 1 \cdot 3 + 2 \cdot 6 + 3 \cdot 9 & 1 \cdot 4 + 2 \cdot 7 + 3 \cdot 10 \end{bmatrix}$$

$$= \begin{bmatrix} 36 & 42 & 48 \end{bmatrix} = \text{local_c0}$$

p_1

$$A^{p_1} = [4 \ 5 \ 6] = \text{local_a}$$

$$A^{p_1} \cdot B_{n \times n} = \text{local_c1}$$

$$\begin{bmatrix} 4 & 5 & 6 \end{bmatrix} \cdot \begin{bmatrix} 2 & 3 & 4 \\ 5 & 6 & 7 \\ 8 & 9 & 10 \end{bmatrix} = \begin{bmatrix} 81 & 96 & 111 \end{bmatrix} = \text{local_c1}$$

p_2

$$\text{loc_a} = [7 \ 8 \ 9]$$

$$B = \begin{bmatrix} 2 & 3 & 4 \\ 5 & 6 & 7 \\ 8 & 9 & 10 \end{bmatrix}$$

$$\text{loc_a} \cdot B = \begin{bmatrix} 126 & 150 & 174 \end{bmatrix} = \text{local_c2}$$