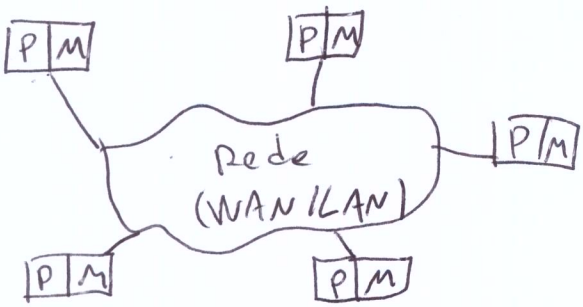
- Componentes de hardware

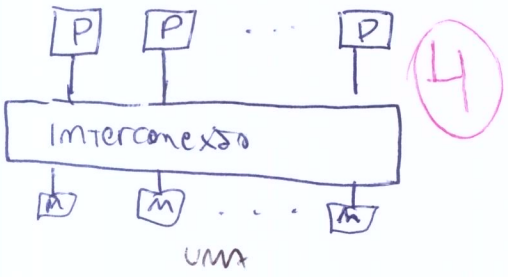


1

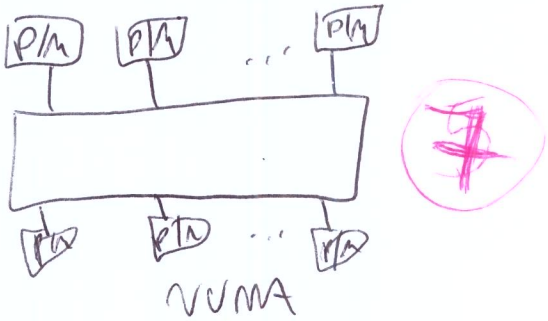
- Componentes de software

2

Sistemas multiprocessados

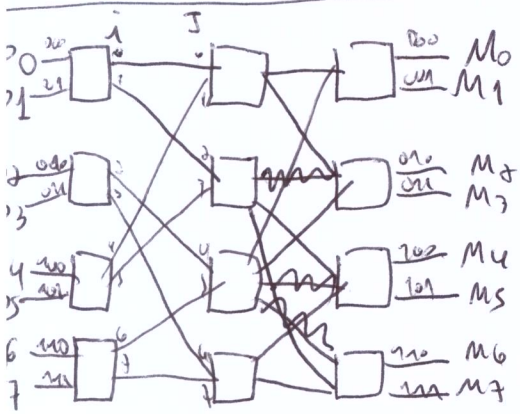


4



7

- Omega e Butterfly



OMEGA

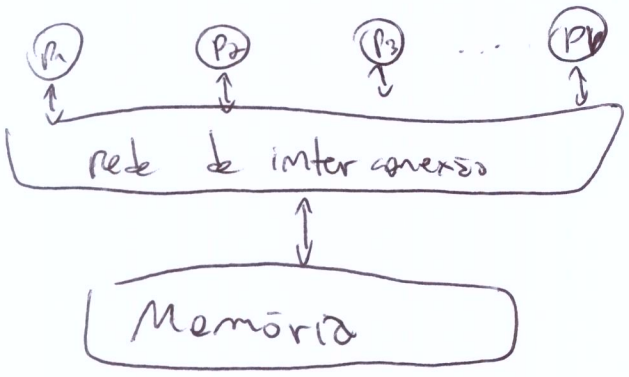
$n = 8$

$n = 4$

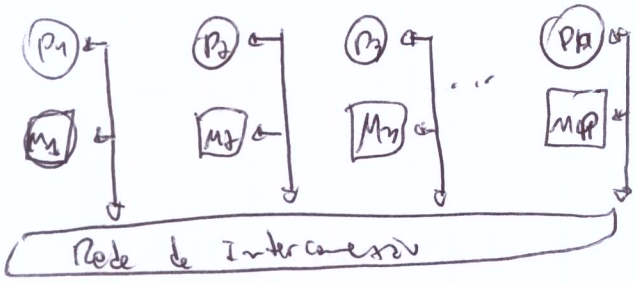
$$J = \begin{cases} 2i & , 0 \leq i \leq n/2 - 1 \\ 2i + 1 - n & , \frac{n}{2} \leq i \leq n - 1 \end{cases}$$

5

- Memória centralizada

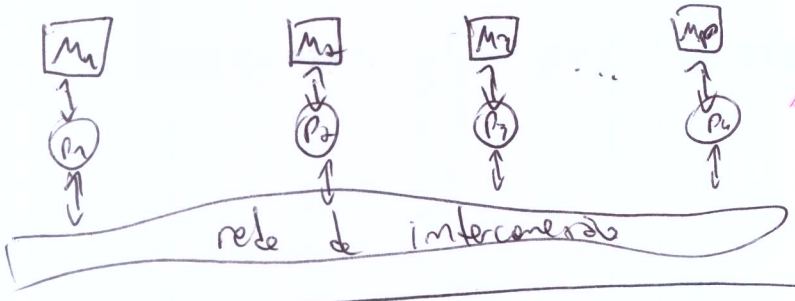


- Memória Compartilhada

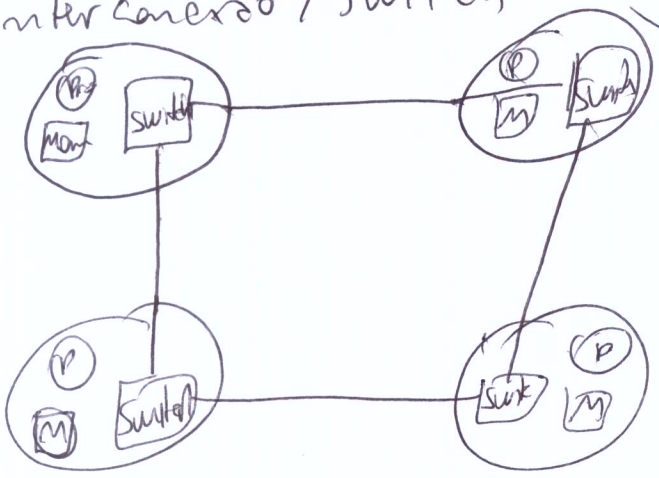


3

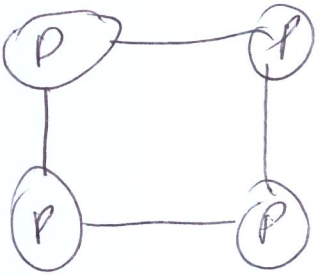
- Troca de mensagens / Multiprocessadores de memória distribuída



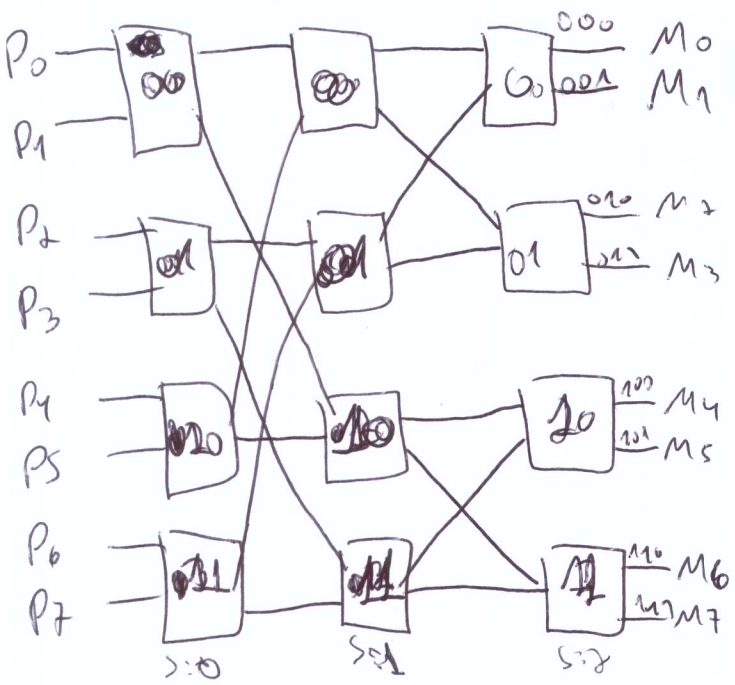
- Interconexão / Switch



1



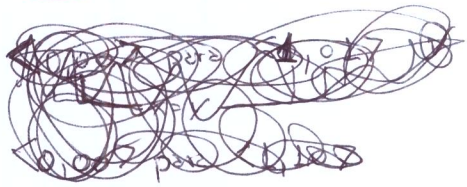
Butterfly



M = 4

n = 8

6



<00,07 para <00,1> ✓

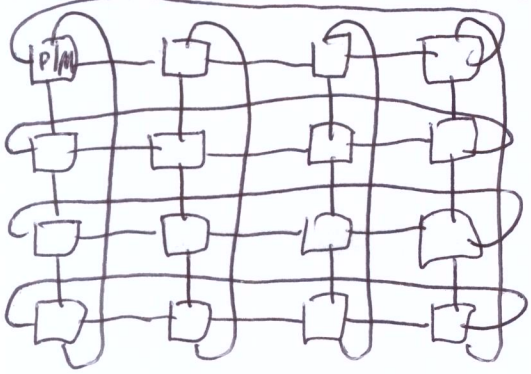
x-y

<00,0> para <10,1> ✓

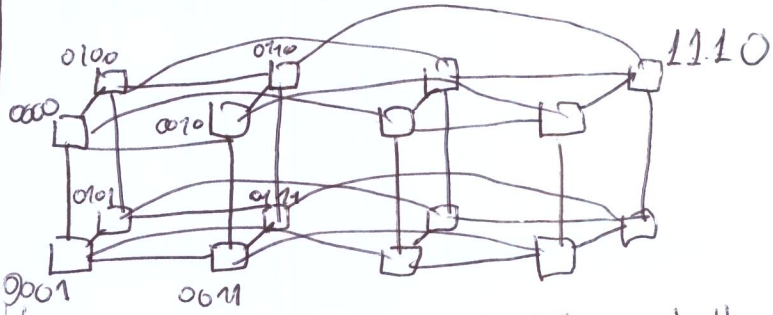
x XOR y

Sistemas multiprocessados

4x4 2D-Mesh (Torus)



Hipercubo



0001

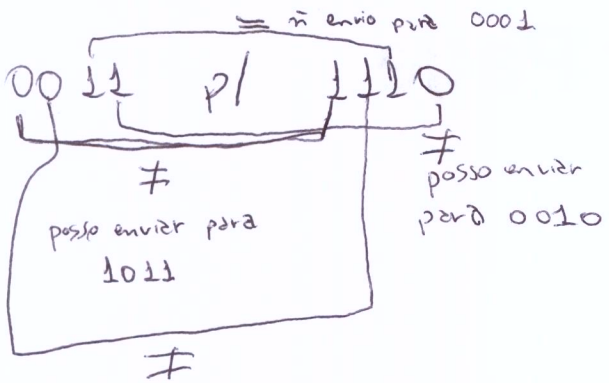
0 face

0 cubo

Menor caminho = Distância de Hamming

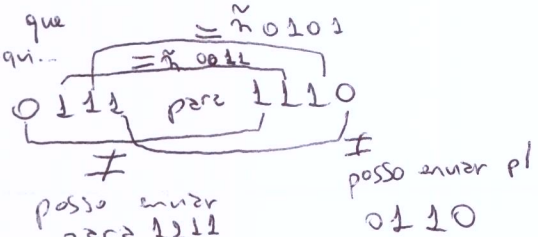
8

Roteamento Hypercubo

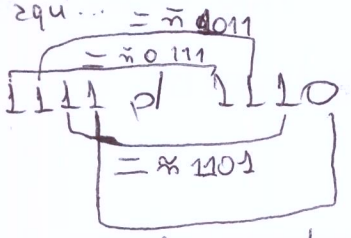


→ Distância = 0011 XOR 1110 = 1101 = 3

Supondo que enviei aqui...

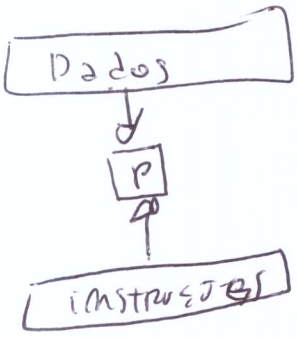


Supondo que enviei aqui...

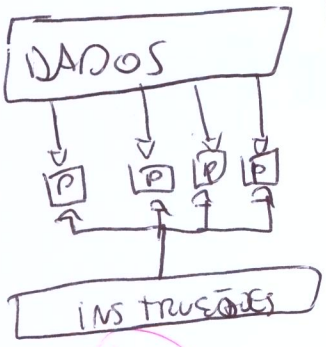


≠ envio p/ 1110 · Fim!

-SISD

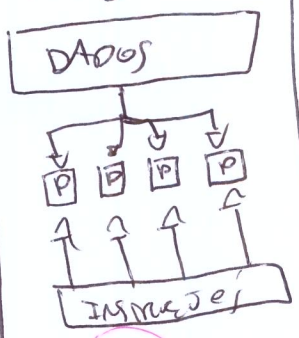


SIMD



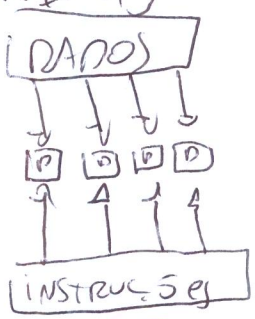
10

MISD



11

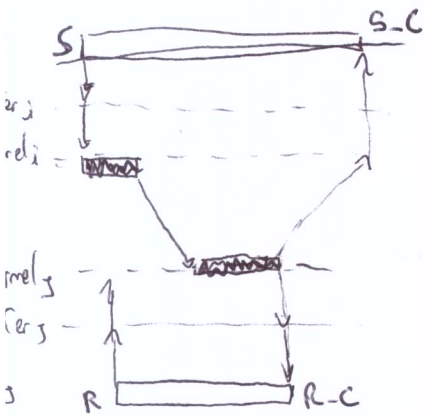
MIMD



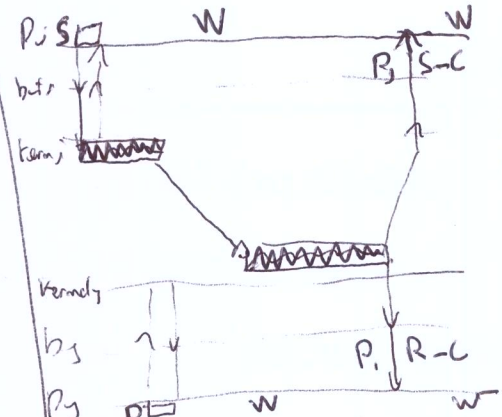
12

1

-Caracteristicas / Bloqueante / Síncrono



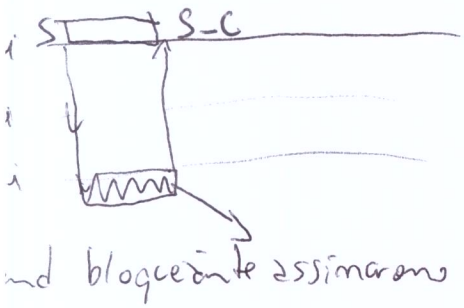
Bloqueante - síncrono (a)
Send / Receive bloqueante



Send não bloqueante, síncrono
Receive não bloqueante (b)

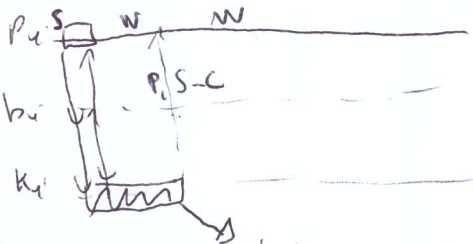
Bloqueio
Copia de/para buffer
S → Send invocado
S_C → Send completo
R → Receive invocado
R_C → Receive completo
P → Chamada não bloq. completa
W → Wait chamada op. não bloqueante possível

14



Send bloqueante assíncrono

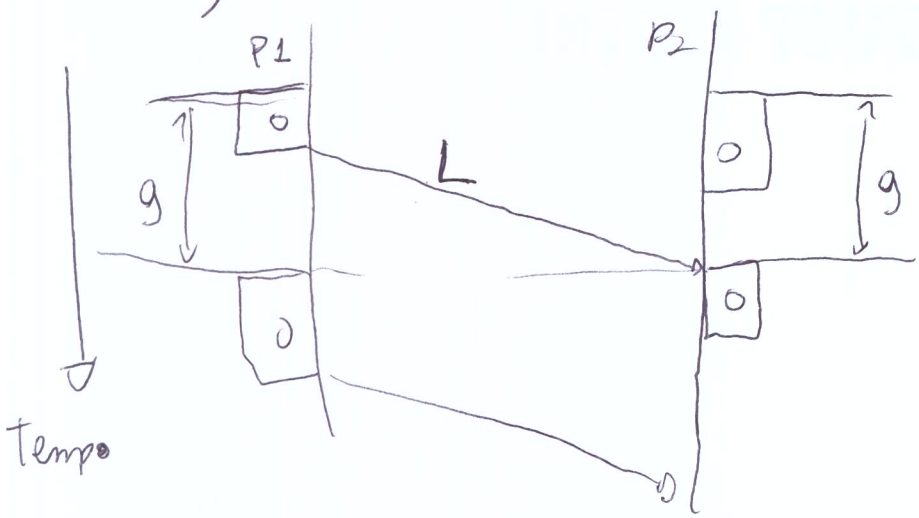
(c)



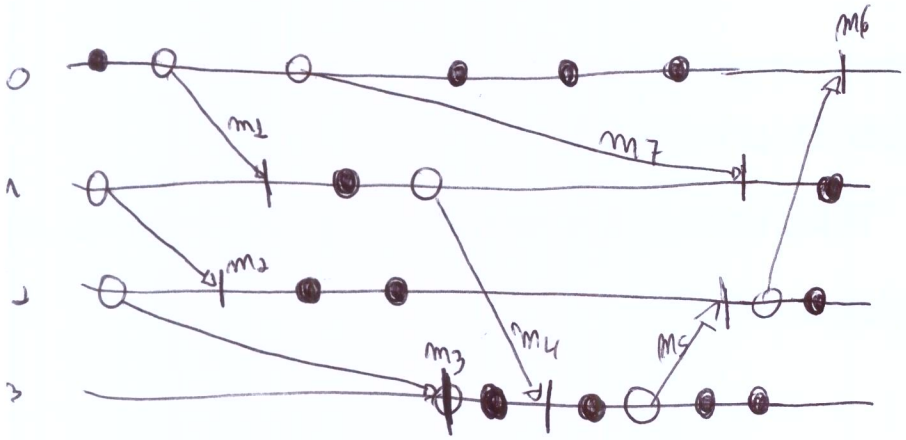
Send ñ bloq. assíncrono

(d)

- LogP

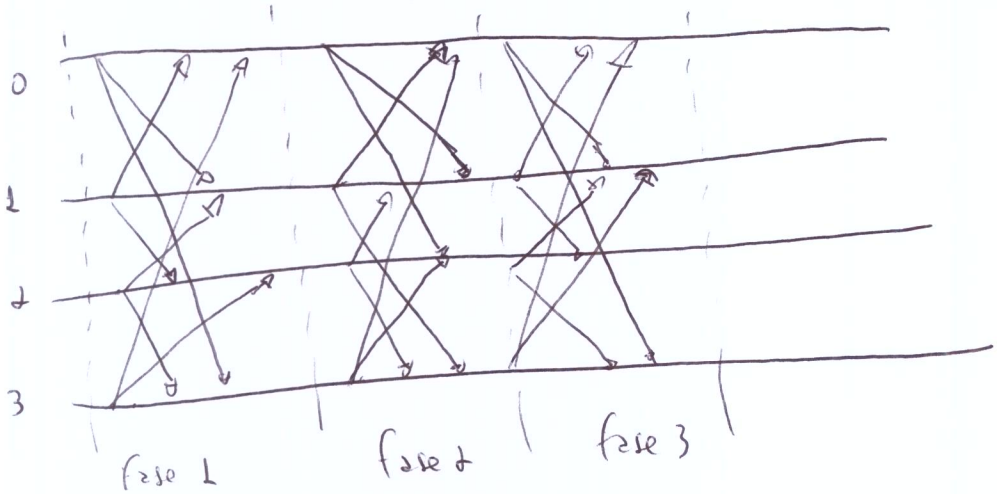


13



● eventos locais
○ send
| receive

16



17