Nov-9

Multiprocessors

Shared Memory (64)

Distributed Memory (>256)

Multicore

Multi-threaded

[MPI (google)]

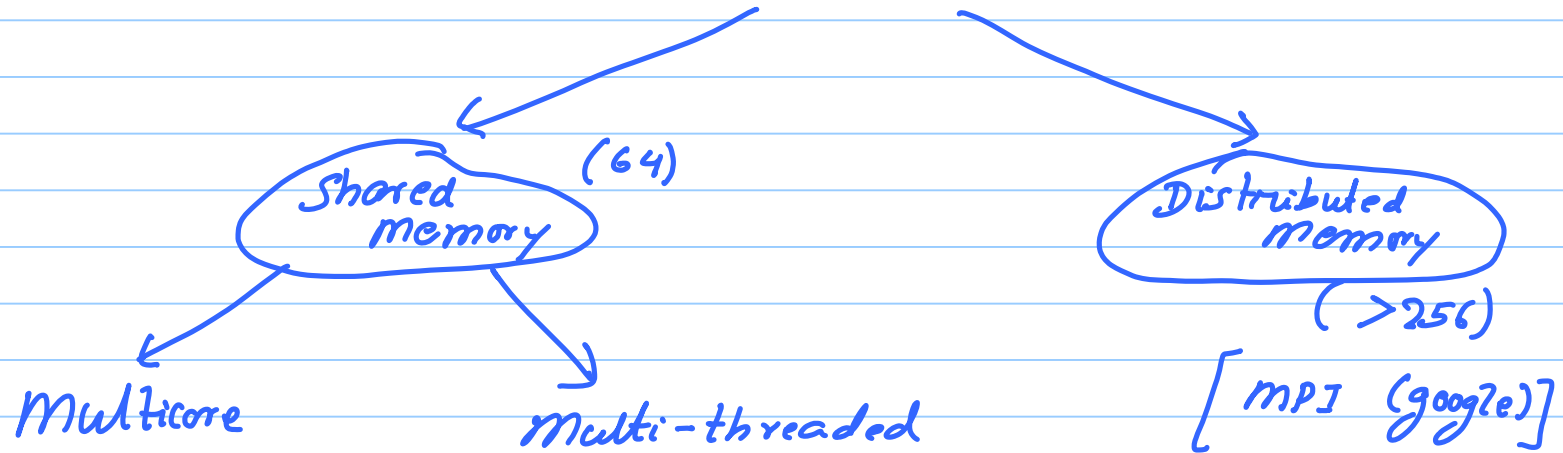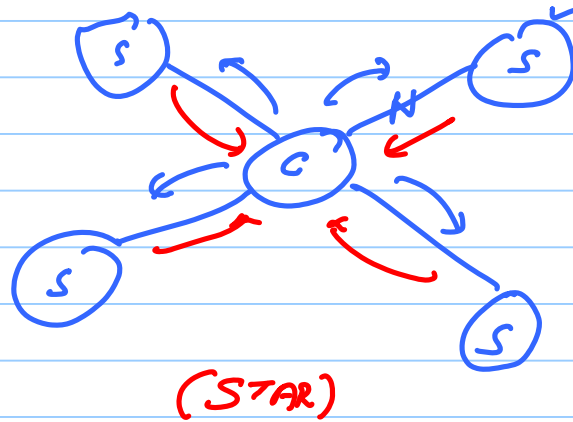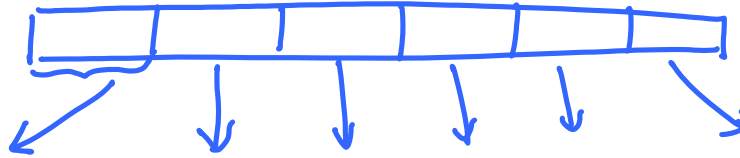(STAR)

Bisection Bandwidth — Minimum number of links
that need to fail to divide the network
into two halves

Diameter: Largest (shortest - path) between all pairs of nodes.
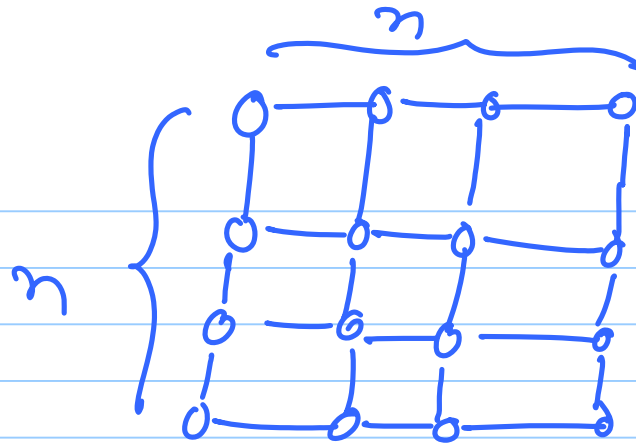
1) Chain.

n

O —— O —— O —— O —— o —— o —— O

BB : 1
Diam: $n-1$

2) Ring

BB. 2
Diam: $n/2$

3)

n

mesh

BB: n
Diam: $2n$

4)

n
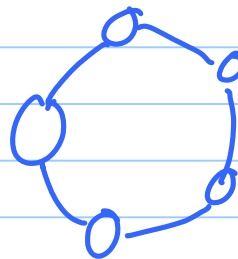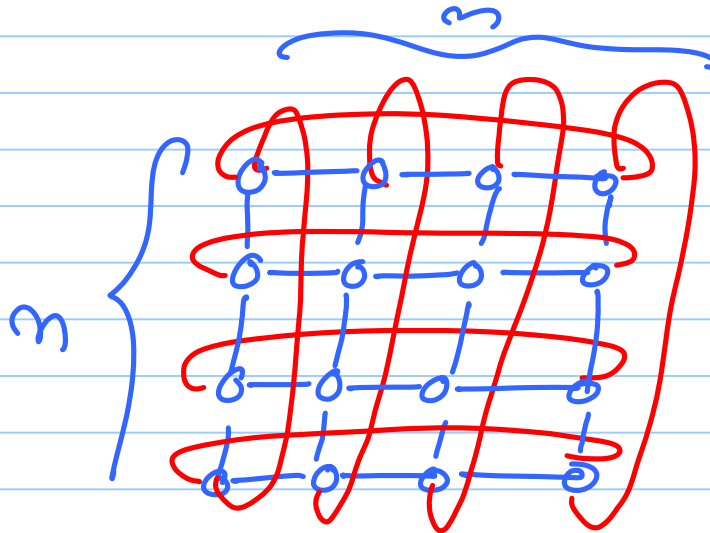
2D TORUS

BB: $2n$
Diam: n

n

5) hyfercube.

(1)

0

H_0

$\underset{00}{\bullet} \quad \underset{01}{\bullet}$

H_1

(2)

$\underset{000}{\circ} \qquad \underset{010}{\circ}$

$\underset{001}{\circ} \qquad \underset{011}{\circ}$

H_2

(4)

H_3

(8)

H_4
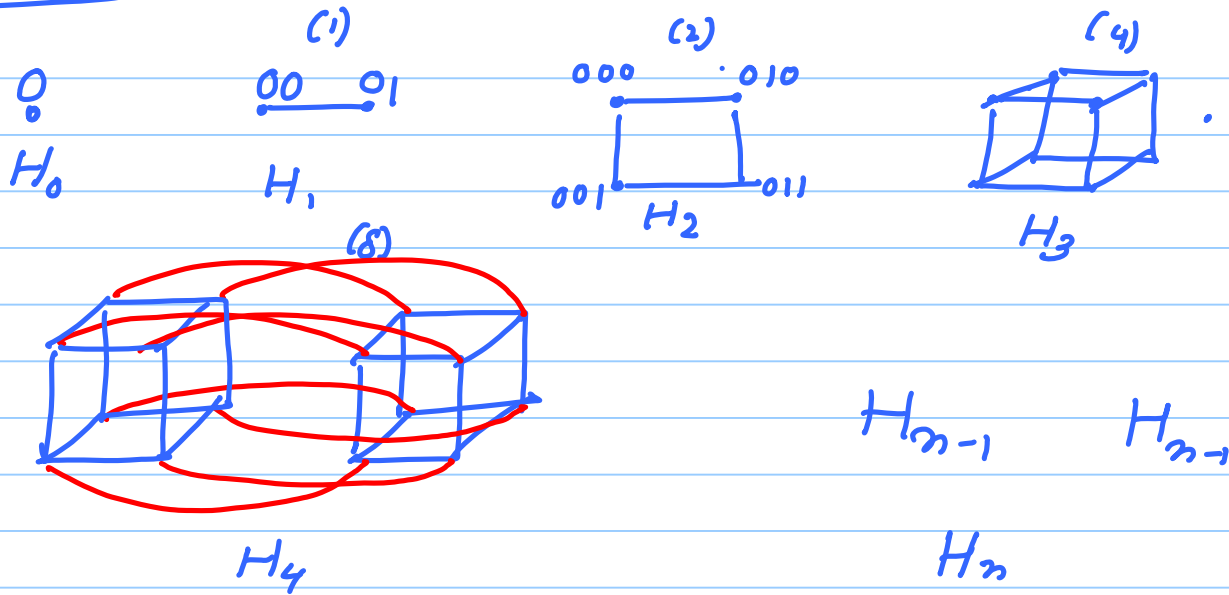
$H_{n-1} \qquad H_{n-1}$

H_n

BB: 2^{n-1}

Diam: n

Matrix- Multiply

Multicore

[JAVA PTHREADS]

Multi-Threaded

[JAVA PThreads]

MESH (MPI)

HYPERCUBE (MPI

Torus CMPI
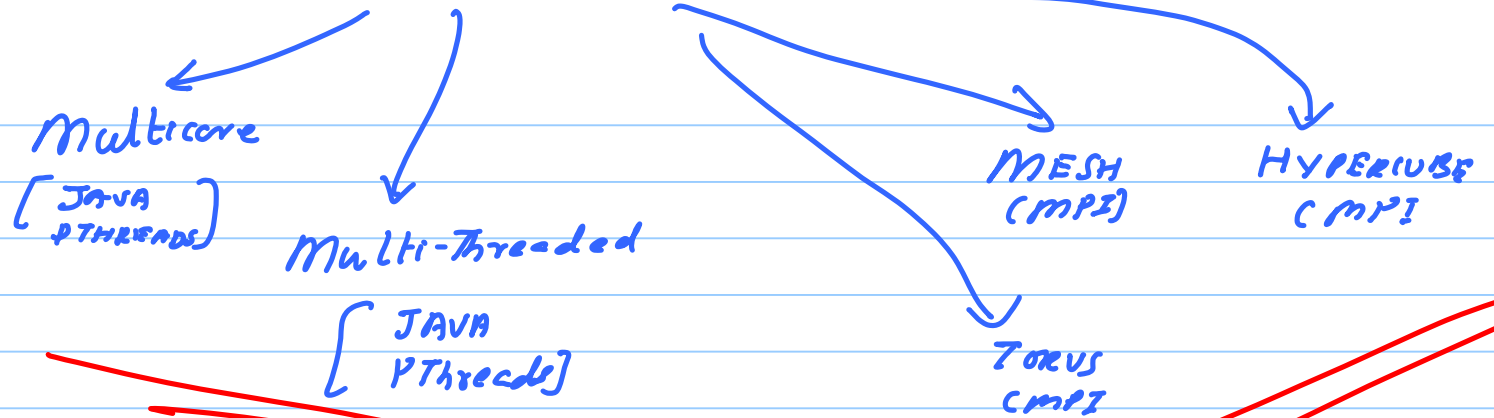
SHARED MEM SW Threads

DISTRIBUTED MEM SW processes