Matric No:- 17/sci01/011

Assignment

Briefly explain the following interconnection networks

1) The Crossbar Network
2) Cube Interconnection Network
3) Fat Tree Connection

Answer

1) The Crossbar Network:- This allows any processor in the system to connect to any processor or memory unit so that many processors can communicate simultaneously without contention.

A crossbar can be defined as a switching network with N inputs and M outputs, which allows up to min {N, M} one-to-one interconnections without contention

2) Cube Interconnection Network:- It is a type of network topology used to connect multiple processors with memory modules and accurately route data. Hyper cube networks consists of $2^m$ nodes. These nodes form the vertices of squares to create an internetwork connection. A hyper cube is basically a multidimensional mesh network with two nodes in each dimension

3) The fat
network for
by Charles
of Technol
In a
thickness,
they are
low band
top of
branches
network,
thickness
more

3) The fat tree Connection:- This is a universal network for provably efficient communication. It was invented by Charles E. Leiserson of the Massachusetts Institute of Technology in 1985.

In a tree structure, every branch has the same thickness, regardless of their place in the hierarchy - they are all "skinny" (Skinny in this context means low bandwidth). In a fat tree, branches near the top of the hierarchy are "fatter" (thicker) than branches further down the hierarchy. In a telecommunications network, the branches are data links, the varied thickness (bandwidth) of the data links allows for more efficient and technology-specific use.