Interconnection networks

1/20/16
Announcements

• Reading: TBA

• HW due tonight- threads and barriers
Recall: Task graphs

- Representation of higher-level dependencies
  - nodes = strands (serial parts w/o parallel constructs)
  - edges = showing which strands must complete first
Draw a dependence graph for heat diffusion on domain where $X_1, X_2, \ldots$ are updates for $X$

6) For this proposed implementation:

```java
    //in diffuse:
    ...
    for(int i=0; i<numRegions; i++) {
        RTask t = new RTask(i);  //update region i
        e.submit(t);
        t.finish();
    }
```
Graph properties

- Diameter: maximum distance between nodes
- Degree: Maximum number of edges on a node
- Bisection bandwidth: Minimum number of edges that must be removed to split the network into two equal-sized parts
- Node/edge connectivity: Min. number of nodes/edges that must fail to disconnect the network
- Also: Number of edges
What is the diameter of a linear network with n nodes?

A. 1
B. 2
C. n-1
D. n
E. None of the above
What is the diameter of a linear network with n nodes?

A. 1
B. 2
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What is the bisection bandwidth of a linear network with n nodes?

A. 1

B. 2

C. n-1

D. n

E. None of the above
What is the bisection bandwidth of a linear network with $n$ nodes?

A. 1

B. 2

C. $n-1$

D. $n$

E. None of the above