Advanced Computer Networks
263-3501-00
Exercise Session 3

Spring Semester 2015
Q1: Service models

- **Packaged Software**
  - Applications
  - Data
  - Runtime
  - Middleware
  - O/S
  - Virtualization
  - Servers
  - Storage
  - Networking

- **Infrastructure (as a Service)**
  - Applications
  - Data
  - Runtime
  - Middleware
  - O/S
  - Virtualization
  - Servers
  - Storage
  - Networking

- **Platform (as a Service)**
  - Applications
  - Data
  - Runtime
  - Middleware
  - O/S
  - Virtualization
  - Servers
  - Storage
  - Networking

- **Software (as a Service)**
  - Applications
  - Data
  - Runtime
  - Middleware
  - O/S
  - Virtualization
  - Servers
  - Storage
  - Networking
Q2: Network topologies

Linear Array

Torus

Torus arranged to use short wires

\[ d = 0 \]
\[ k = \{\} \]

\[ d = 1 \]
\[ k = \{2\} \]

\[ d = 2 \]
\[ k = \{2, 3\} \]

\[ d = 3 \]
\[ k = \{2, 2, 2\} \]
Q2: Properties of Network topologies

• Diameter:
  Maximum distance between two nodes

• Cross-section bandwidth (CBB)
  – Maximum possible bandwidth between two halves of the topology
  – Minimum number of links to disconnect the topology in two parts
Q3: Tree topologies
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• Differences between tree and a fat tree?

• Can fat tree cause any complication which is not present in normal tree?

• How would you design a fat tree? In presence of different types of switches?
Q4: Design your datacenter!

• What information you will need?
• What questions would you ask?
• Why would you need that information?