Electrical, Computer, and Systems Engineering
ECSE-4670: CCN
Fall 1999

Problem Set 1- Due Tuesday, September 17th 1999

Your Name	

Notes:

1. Be brief.
2. A part of the homework credit is given to reading. Reading assignments will be quizzed in both informal and formal quizzes
3. Please write your answers on separate sheets and staple it along with the questions to facilitate easy grading.

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1	2	3	4	Total
20	10	10	10	50

TA Signature :___________________________________

1. ***Reading assignment:***
   - Read the textbook (Tanenbaum) Chap 1. Summarize key concepts and issues NOT covered in class.
2. ***Concepts: (Multiplexing)*** What is multiplexing and how does it improve system design ? Why is statistical multiplexing not good for systems whose load characteristics have no variation ? Why is packet switching more efficient than circuit switching ?
3. ***Concepts: (Virtualization)*** A switch, using a switching table, moves packets from one port to another. What is the virtualization provided by a switch ? Where are the "multiplexing" and "indirection" components required to provide this virtualization? Similarly describe the virtualization obtained when a labeled set of sources
4. ***Problem: (Metrics/Parameters)*** Metric m1 can be expressed as the following functions of parameters p1, p2 and p3:

   M1 = (0.002*p1 + 2*p2 + p3)

   Where p1 has the range [0,1], p2 has the range [10,100] and p3 has the range [1000, 10,000]. Which is the most dominant parameter amongst p1, p2 and p3, if I define "dominant" as

   a) that parameter which affects M1 by a unit change in its value?
   b) that parameter which affects M1 by varying by the maximum amount in its range ?

Suppose M1 is "response time" and I discover a design breakthrough which changes the coefficient of p2 to 1 (from 2). What is the maximum and minimum speedup I can attain, assuming p1=0 and p3=1000 ? (speedup = new M1/old M1)