



Computer Architecture III - WS 03
(due: 01/23/2004)

Excercise 1: (Greedy Algorithm)

(3 + 1 points)

1. Proof that if the greedy routing algorithm presented in the lecture delivers some packet to its destination in steps T and T' , then it delivers some packet to its destination during every step in the interval $[T, T']$.
2. Using the fact from part 1 show a trivial upper bound on the time the greedy algorithm needs to deliver all packets to their destinations.

Excercise 2: (Elementary Calculus)

(3 points)

Show that the function $f(x) = -\frac{\log\left(\frac{2x}{\log x}\right)}{\log x}$ has for $x \geq 2$ a single maximum satisfying $\log x = 2e$.

Excercise 3: (Probability)

(1 points)

Where in the proof of theorem 1 have we used mutual independence of probability events?

Remember that some events $A_1, \dots, A_s \in \Omega$ are called mutually independent if $\forall I \subset \{1, \dots, s\} :$
 $pr(\bigcap_{i \in I} A_i) = \prod_{i \in I} pr(A_i)$.