

KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
COLLEGE OF COMPUTER SCIENCE AND ENGINEERING
COMPUTER ENGINEERING DEPARTMENT

COE 445 – (Term 053)

Assignment #2

Name: _____

ID: _____

Due 07/31/2006

- Q1. Consider the procedure used for estimating the average delay d_i . Suppose that $u = 0.1$. Let $r_1 - t_1$ be the most recent sample delay, let $r_2 - t_2$ be the next most recent sample delay and so on.
- a. For a given audio application suppose four packets have arrived at the receiver with sample delays $r_4 - t_4$, $r_3 - t_3$, $r_2 - t_2$, and $r_1 - t_1$. Express the estimate of delay d in terms of the four samples.
 - b. Generalize your formula for n sample delays
- For the formula in Part b, let n approach infinity and give the resulting formula.
- Q2. Consider the adaptive playout strategy as described in the slides for a PC-to-PC phone conversation.
- a. How can two successive packets received at the destination have timestamps that differ by more than 20 ms when the two packets belong to the same talk spurt?
 - b. How can the receiver use sequence numbers to determine whether a packet is the first packet in a talk spurt?
- Q3. In a stored media streaming application over UDP, the sender sends packets that have a fixed size. Discuss the impact of the packet size on the efficiency of the streaming. Which size is better: Small size or large size packets?