

EEE101 DESIGN PROJECT

DIGITAL MANUAL COMMUNICATION

Due date: 12, 14 December 2006

The purpose of this project is to design a complete digital communications scheme between two partners over an available very slow half-duplex channel.

Two students (we will assign the partners) will design and implement a communications protocol, including basic signaling, coding, compression, error handling, etc. over a single very slow half-duplex communications channel. Students will examine the channel, and design simple end-units to transmit alphanumeric information between them: Both partners will receive simple data, and each will transmit this data to the other partner. Sample data are shown below:

aaaaaghhhhhgggg884444 44444 wwwwwwgggghhe434 ddddq

jjjjjjdjjddd 3333 3333 333 3333 hffhhhhh uuuuuqwwwww

767676777767777767676767676 fgfgfg 333333 dfff

ss frfrfr gggggggggg ggggggg fffff shshshshsh

During the design of the end-units, no voice transmitter, nor advanced communications devices can be used; what is allowed is a design which utilizes rather simpler components like, batteries, small lamps or LEDs, simple electronic components, etc.

The goal is to transmit **correct** data in **shortest** time. The performance measure is:

$$P = (1200 - T)(3 - E)$$

where T is the time elapsed between the start of the coding until you declare that it is “done” in seconds, and, E is the total number of erroneous characters. The set of characters is all lower-case English letters, blank, and the numbers 0 through 9. Negative performance measures will not be allowed; no completion in 1200 seconds, or three or more errors will result in $P = 0$.

The total cost of the two end-units cannot be more than 20YTL.