Media Technology

Prof. Dr.-Ing. Andreas Schrader
December 6th, 2003

Assignment 2

Please process the following tasks. Each course participant should provide an ***own*** solution (copies will not be graded). The results have to be delivered in either handwritten or printed form to my inbox in the secretary office.
No Email attachment accepted.

Deadline: Wednesday, December 17th, 2003.

Task 2.1 (Communication Theory)

Explain in your ***own*** words the terms (maximum four sentences per term!):

- Entropy
- Redundancy
- Irrelevancy

Task 2.2 (Huffman Code)

Let's assume a Markoff process of zero order with the alphabet $A = \{a, b, c, d, r\}$ is the source of the following message: 'abracadabra'. The probability set of the source is not known and has to be estimated from the message itself.

(a) Estimate the probability of the alphabet symbols from the message.
(b) Calculate the entropy of the source from this estimation.
(c) Construct a Huffman code for the source. Is there just one code mapping table possible?
(d) What is the average code length of your code?
(e) Code the message using your code table. How long is the resulting bit sequence?