

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Department of Electrical Engineering and Computer Science
Department of Mechanical Engineering

6A32 / 2A29

Information and Entropy

Fall 1999

Date Issued: Sep 21, 1999

Homework 2

Date Due: Sep 28, 1999

TASK:

To develop a codebook that can encode a message using the fewest ASCII characters and to be able to decode the result accurately.

PRIZE:

2 Gift certificates to Toscanini's. You know you want it.

FINE PRINT:

Codebooks are used to encode a message into bits which can be decoded faithfully. The design for today's codebooks require resistance to errors, privacy, and other constraints. Don't worry about those factors. Your task is only to reduce the size of the message so that it can be transmitted in less time (a.k.a. less money).

You will pair up with another member of the class to compete with 5 other groups to devise an efficient codebook. The material to be encoded is the descriptions of courses given by the Department of Physics at MIT (Course VIII) as described in the MIT Bulletin, pages 399 - 407. These catalog descriptions have a definite format which must be present after decoding; however, for simplicity, ignore the horizontal lines and the use of bold or italic type.

The design of a codebook is an art that should make use of the knowledge of the message being encoded. For example, if you are encoding cooking recipes, then you might have special codes for "oven," "quart," "skillet," or "Bake at 350 degrees for 3 hours." Don't forget about the punctuation, numbers, and carriage returns (new lines).

SUBMISSION:

Your codebook should be similar to those used during the days of the telegraph where words or groups of letters were represented using fewer letters. E-mail <youli@mit.edu> with your codebook. Please format it with the original letters followed by the substitution separated with a space.

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electrical elect  
physics ph
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Beware the above; elect can not faithfully reproduce the word electricity!

JUDGING:

E-mail your codebooks before the next class begins and I will run a script with another course description. The winner will be announced the week after. If there are any questions, feel free to e-mail. Good luck!