Exercise Multimedia Technology WS 2004/2005

Sheet 10 (January 21st 2005)

10.1 Eight-to-Fourteen Modulation

a) Describe the Eight-to-Fourteen Modulation.

b) Write a routine in pseudo code that counts the number of "1"s in a given code word.

c) Write a function in pseudo code that decides if a given code word is valid according to the Eight-to-Fourteen Modulation.

d) Verify that the number of valid code words is 267 using the Eight-to-Fourteen Modulation.

e) Write a function in pseudo code that decides if the concatenation of two given code words is valid according to the Eight-to-Fourteen Modulation without the use of filling bits.

f) Write a program that computes a valid code table using the Eight-to-Fourteen Modulation. How many bits are necessary for a single code word without the use of filling bits?

g) Now consider the possibility of using filling bits. Determine the minimal number of bits per code word and the minimal number of filling bits.

h) To minimize the running time of the algorithms, try to find some heuristics you could use.