PROBLEM 4.

Let's consider messages written by using only capital letters /A-Z/ and the eight symbols . , + - : / ? !

These messages are sent through a communication channel as a sequence of bytes. The number of 1's in each byte must be even.

1. Propose a coding for the above characters by binary sequences, such that unambiguous decoding is assured and the least possible number of bits is sent through the channel.

2. Write a program that:
   2.1. Given the text of message prints its encoded form ready for sending as a sequence of hexadecimal digits.
   2.2. Given a received encoded message decodes it and displays the original text.