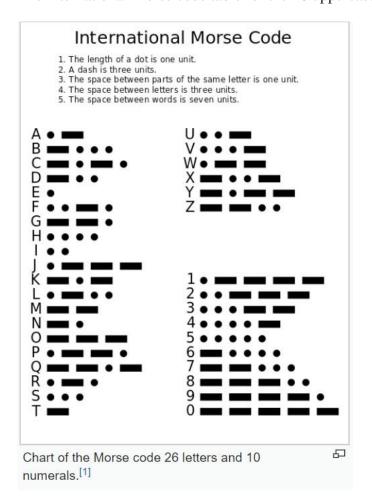**Morse code** is a method used in telecommunication to encode text characters (uppercase letters and digits) as standardized sequences of two different signal durations, called *dots* and *dashes* (or *dits* and *dahs*).

The international Morse code table for the 26 uppercase letters and 10 numerals is shown below.

International Morse Code

1. The length of a dot is one unit.
2. A dash is three units.
3. The space between parts of the same letter is one unit.
4. The space between letters is three units.
5. The space between words is seven units.

Chart of the Morse code 26 letters and 10 numerals.[1]

Morse code is usually transmitted by on-off keying of an information-carrying medium such as electric current, radio waves, visible light, or sound waves.

In this exercise, we use '0' and '1' to represent the electrical signals generated with on-off keying. '0' represents off, and '1' represents on.

Examples:
The sequence 10101 represents the letter S.
The sequence 11101110111 represents the letter O.
The sequence 10101000111011101110001010101 represents to the message "SOS".

You need to complete the implementation of the `class MorseCode`.

An efficient way to perform decoding is to construct a binary tree that represents the code table.