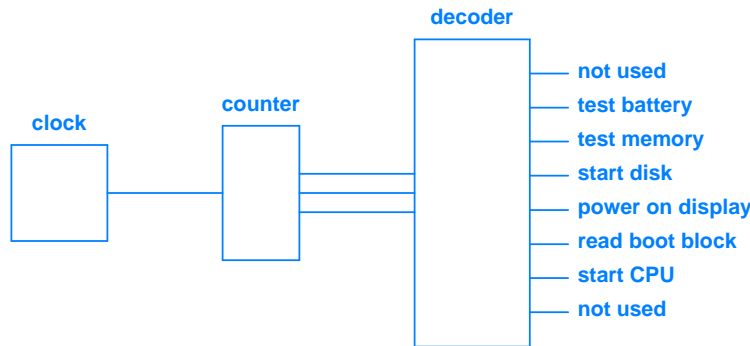


Figure 2.20 Illustration of a decoder with three input lines and eight output lines. When inputs x, y, and z have the values 0, 1, and 1, the fourth output from the top is selected.

When used as a decoder, the device merely selects one of its outputs; when used as a demultiplexer, the device takes an extra input which it passes to the selected output. Both the decoder function and the more complex demultiplexer function can be constructed from Boolean gates.

A decoder provides the last piece needed for our simplistic sequencing mechanism when we combine a clock, counter, and decoder, the resulting circuit can execute a series of steps. For example, Figure 2.21 shows the interconnection in which the output of a clock is used as input to a binary counter, and the output of a binary counter is used as input to a decoder.



that performs a sequence of six steps. Output lines from the counter connect directly to input lines of the decoder."