Problem 5.16

(a) An alternating sequence of 1's and 0's

On-off signaling: The signal $g(t)$ consists of a periodic train of rectangular pulses with pulse duration $T = T_0/2$, where T_0 is the period.

Bipolar return-to-zero signaling: The signal $g(t)$ consists of a periodic train of pulses of duration T and of alternating polarity.

(b) A long sequence of 1's followed by a long sequence of 0's

On-off signaling: The signal $g(t)$ consists of a unit step function defined for negative time, tl is, $u(-t)$.

Bipolar return-to-zero signaling: The signal $g(t)$ consists of pulses of alternating polari followed by a long period of zero volts.

(c) An alternating sequence of 1's followed by a single 0 and then a long sequence of 1's

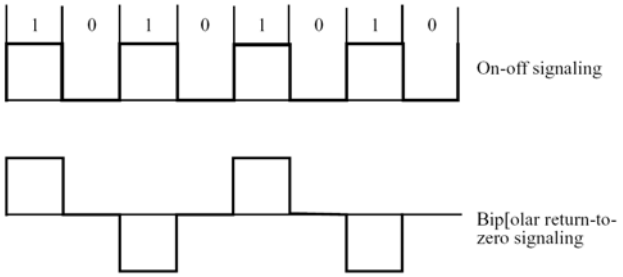
On-off signaling: The signal $g(t)$ consists of a dc component minus a rectangular pulse (of t same amplitude as the dc component).

Bipolar return-to-signal signaling: The signal $g(t)$ consists of two identically perio sequences of pulses separated by a period of zero volts.

The line codes just described are plotted in Fig. 1.

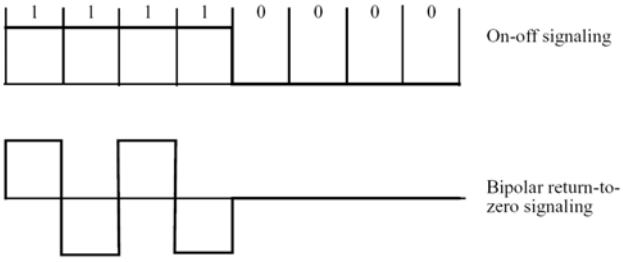
(a) An alternating sequence of 1's and 0's

(a)



(b) A long sequence of l's followed by a long sequence of 0's

(b)



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Problem 5-16 continued

(c) A long sequence of 1's followed by a single 0 and then a long sequence of 1's

(c)

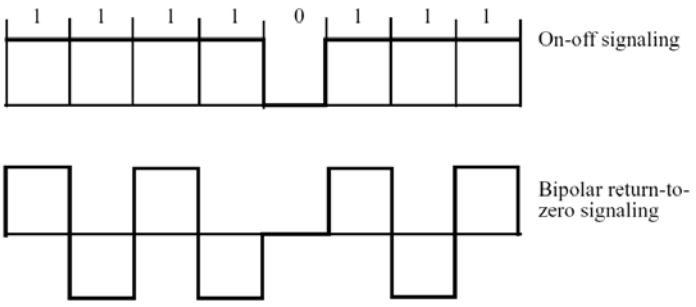

Figure 1