Controller For Model Traffic Lights
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The circuit shown was devised to control LED traffic lights at a road junction in a model railway layout, for added realism. IC2, a decade counter, together with IC3a and IC3b, generates the normal traffic light sequence continuously at a rate determined by the oscillator formed around ICla and IC1b. A monostable formed by IClc and ICld is triggered by a '1' on the 'GREEN' output, and inhibits IC2 for a period set by C_T and R_T, thus causing the green light to be on for a longer period than the others.

IC4 selects either LIGHT 1 or LIGHT 2 to display the sequence, these being selected alternately. When one light is changing or at green, the other is held at red.

The controller is easily expanded to operate more than two lights by using further outputs from IC4, but if this is not required, IC4 could be replaced with a single flip-flop stage (eg. da 4013), set to toggle, LIGHT 1 and Light 2 being connected to the Q and $\overline{Q}$ outputs respectively. With a little ingenuity, realistic-looking traffic lights can be constructed from miniature LEDs and empty pen refill tubes.

NOTE:
IC1,6 ARE 4001
IC2,4 ARE 4017
IC3 IS 4071
IC5,7 ARE 4081
LED 1,6 ARE MINIATURE LEDs
LED1,4 ARE RED
LED2,5 ARE YELLOW
LED3,6 ARE GREEN