At startup U2 free runs as a multivibrator at 15Hz which makes the leds cycle around in a circle The frequency calculation for the multi-vibrator is .

U5 operates in a monostable operation which has the timer function as a one shot. Normally U5 output is low which allows U2 to freely run and U7 is held in reset. When the button is pressed, U5 output goes high for 5.17 seconds,. When it goes high, U6 pin 2 goes low which stops U2 from running for the 5.17 seconds which freezes the light at the location it was at when the button was pressed. If U4 pin12 which is the signal for the yellow light is low along with the signal from the button press, then U6.3 and U6.9 will be low which will make their outputs high. If they are high this will make U7 run as a multivibrator at 1.6Hz,, which will flash all the lights at this frequency to show that you won. If Led 1 wasn’t on when the button was pressed, then U7 won’t be enabled and the light will just pause for the 5.17 seconds from U5 and then they will start cycling around again waiting for the next button press.

U3 is a 4 bit counter which turns the clock pulses from U2 into a counter that counts from 0 to 7. The 3 lines from the counter are fed into U4 which is a 3 line to 8 line decoder. Each count from the counter lights the corresponding output to feed to the leds. U8 and U9 are and gates used to light the leds from the decoder or from the U7 mulit-vibrator when there is a match of the yellow light and the button press.