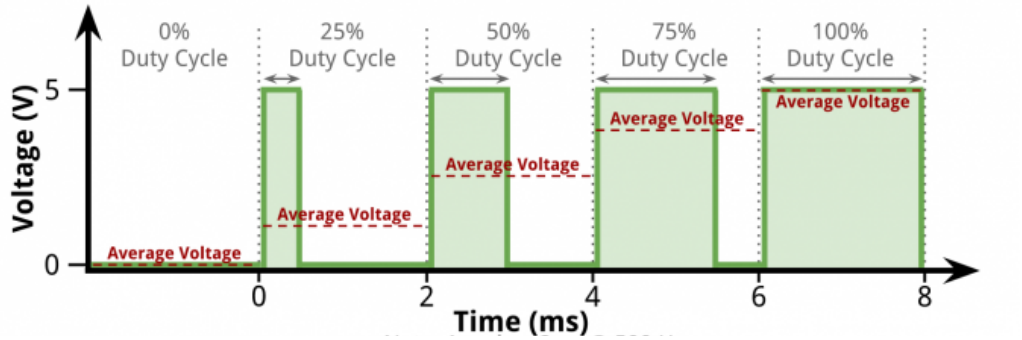
Create symbols *button_1*, *button_2*, *button_3*, *out_1*, *out_2, out_3*. Bind the created symbols to the available buttons and lamps.

Task 1. Prepare a solution that meets the following parameters:

1. Start condition - *button_1* | *button_2* & *button_3*.
2. 5[s] after start condition occurrence *out_2* should be switched on.
3. *out_2* should be switched on for 10[s].
4. *Button_2* adds new 10[s] to the timer.
5. *Button_3* stops the 10s Timer.

Task 2. Create an LD program that produces a 4Hz 25% PWM signal on *out_2*. Pressing *button_1* changes the frequency to 2Hz. Pressing *button_2* changes the duty cycle to 75%. Pressing *button_3* resets the system.

Pulse Width Modulation, or PWM, is a technique for getting analog results with digital means. Digital control is used to create a square wave, a signal switched between on(HIGH = 24V) and off(LOW = 0V). This on-off pattern can simulate voltages by changing the portion of the time the signal spends on versus the time that the signal spends off. The duty cycle (time_high/(time_high + time_low) * 100%) is proportional to the average voltage on the selected PWM pin.



*robotic-controls.com

Task 3. Create an LD program that produces a 2Hz 60% PWM signal on *out_3* 5[s] after *button_1* is pressed. The PWM signal should be generated for 30[s]. While the PWM signal is active the *out_3* should blink. *Out_2* should indicate the end of the cycle. *Button_3* should reset the system.

Task 4. Create a solution to check if a user pressed a button 5 times during the 12s time period. The necessary indicators should be included.

Task 5. Prepare a solution that meets the following parameters:

1. Start condition - *button_2 & (button_3* pressed 3 times).
2. 3[s]after start condition occurrence 2Hz 50% PWM signal should be generated on *out_1*.
3. *out_2* should blink when the PWM signal is present.
4. *Button_1* stops the system.

Task 6. Create a solution that produces 2s blink indicating that 10 parts have been put into the box. Every 10-piece pack should be confirmed with a blink.