

1.)

PWM signal – Signal that oscillates between a high and low state to change the state of the circuit.

PWM duty cycle – A duty cycle describes the proportion of “ON” time versus “OFF” time over the period of the cycle. This is usually expressed as a percent, with 100% being fully on for the entire period.

2.)

a.

Period = 1 / frequency

Period = 1 / 50 Hz

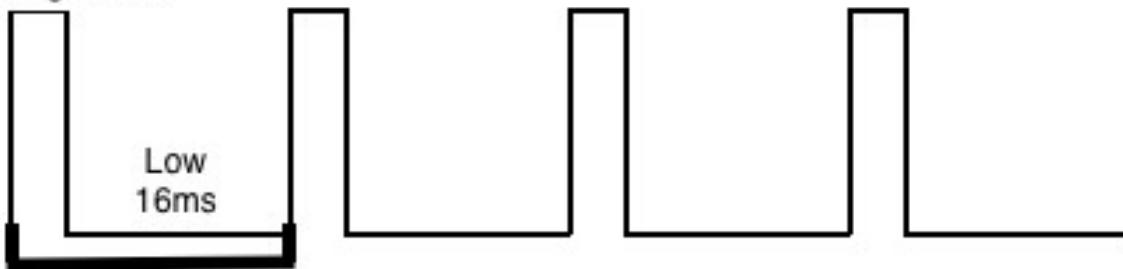
Period = 1 / (50 cycles / sec)

Period = 20ms

b.

Duty Cycle: 20%

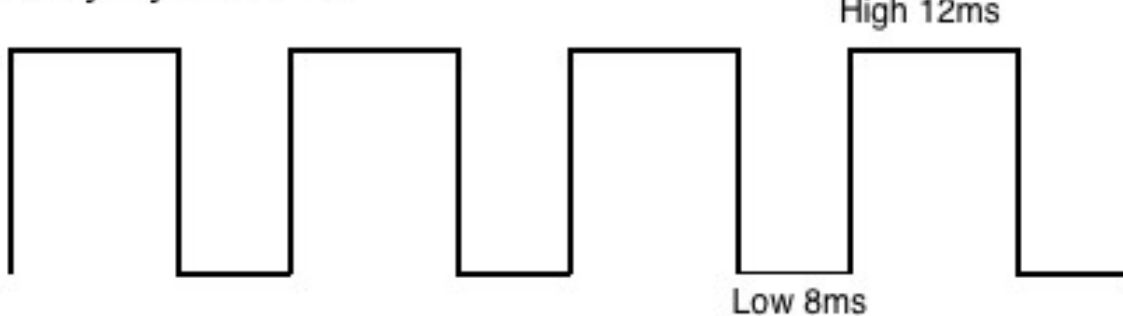
High 4ms



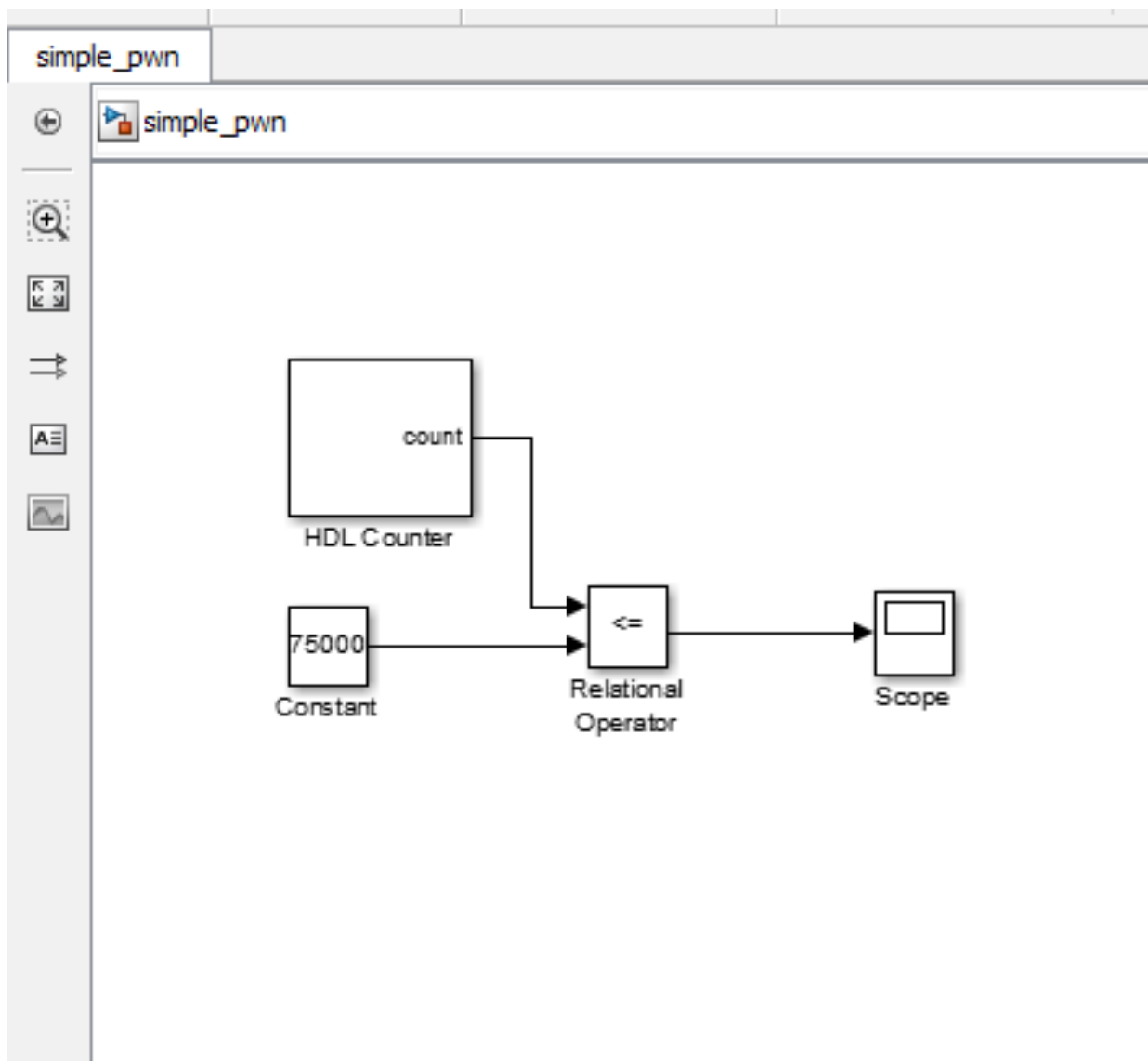
Period 20ms

Calculations:  $1 / (\text{Duty cycle for that part \%}) * \text{Period}$

Duty Cycle: 60%



3.)



Calculations:

$$50\text{MHz} = 1 / 50\text{M} = .0002\text{ms period}$$

$$20\text{ms} / .0002\text{ms} = 1\text{M cycles for the HDL Counter}$$

$$(1.5\text{ms}/20\text{ms}) * 1\text{M} = 75000\text{ cycles for the constant}$$

4.)

a).

$$(.6\text{ms} / 20\text{ms}) * 1\text{M counts} = \text{The count would be at } 30000$$

b).

$$(1.5\text{ms} / 20\text{ms}) * 1\text{M counts} = \text{The count would be at } 75000$$

c).

$(2.4 \text{ ms} / 20 \text{ ms}) * 1\text{M counts} = \text{The count would be at } 120000$