Part I.

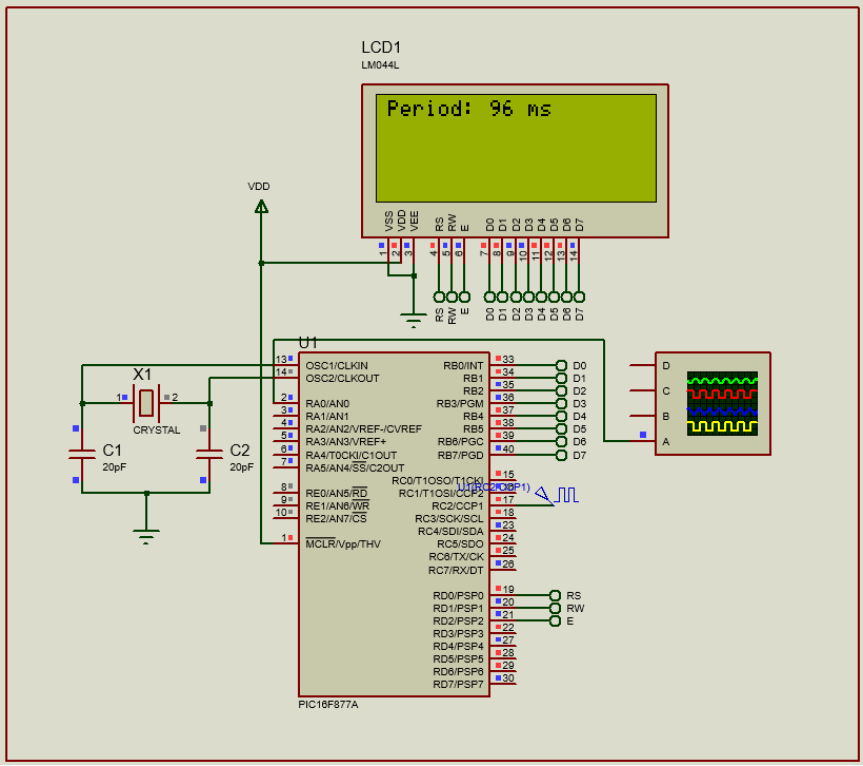

Figure 2. Schematic Diagram of LE4_6

Frequency (Hz)	Period
1	475
10	96
50	16
100	8

Table 1. Measured Period Values for Different Input Frequencies

Part II.

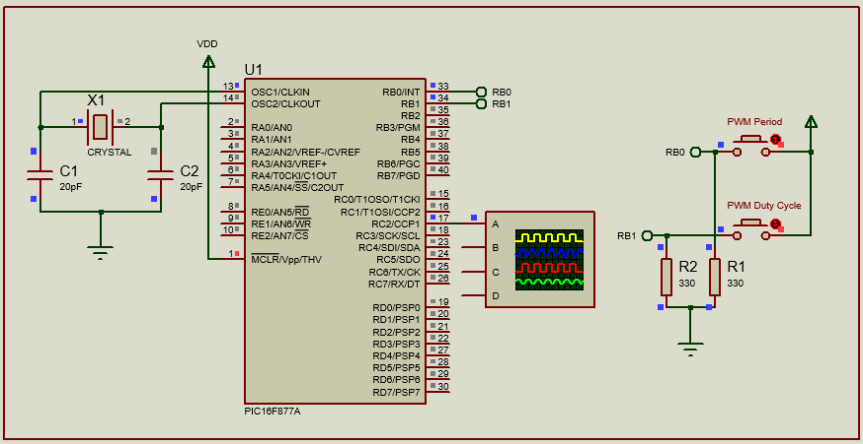

Figure 2. Schematic Diagram of LE4_7

Frequency	Duty Cycle	CCPR1L:CCP1CON <5:4> in Decimal	CCPR1L:CCP1CON <5:4> in BInary	CCPR1L	CCP1CON
1000 Hz	10%	25	0000 0110 01	0x06	0x1C
	25%	63	0000 1111 11	0x0F	0x3C
	50%	125	0001 1111 01	0x1F	0x1C
	75%	188	0010 1111 00	0x2F	0x0C
	95%	225	0011 1000 01	0x38	0x1C
1500 Hz	10%	17	0000 0100 01	0x04	0x1C
	25%	42	0000 1010 10	0x0A	0x2C
	50%	83	0001 0100 11	0x14	0x3C
	75%	125	0001 1111 01	0x1F	0x1C
	95%	150	0010 0101 10	0x25	0x2C
10000 Hz	10%	3	0000 0000 11	0x00	0x3C
	25%	6	0000 0001 10	0x01	0x2C
	50%	13	0000 0011 01	0x03	0x1C
	75%	19	0000 0100 11	0x04	0x3C
	95%	23	0001 0111	0x05	0x3C

Table 2. CCPR1L and CCP1CON<5:4> Values for Different Frequencies and Duty Cycles

Part II. Calculations

1k Hz:

$$PR2 = \frac{(1/1000\ Hz)}{4 * 16 * (2.5x10^{-7})} - 1$$

10% Duty Cycle:

$$= \frac{(0.1 * (\frac{1}{1000})) * 4x10^{6}}{16} = 25$$

25% Duty Cycle:

$$= \frac{(0.25 * (\frac{1}{1000})) * 4x10^{6}}{16} = 62.5 = 63$$

50% Duty Cycle:

$$= \frac{(0.50\ 9 * (\frac{1}{1000})) * 4x10^{6}}{16} = 125$$

75% Duty Cycle:

$$= \frac{(0.75 * (\frac{1}{1000})) * 4x10^{6}}{16} = 187.5 = 188$$

90% Duty Cycle:

$$= \frac{(0.90 * (\frac{1}{1000})) * 4x10^{6}}{16} = 225$$

1.5k Hz:

$$PR2 = \frac{(1/1500\ Hz)}{4 * 16 * (2.5x10^{-7})} - 1$$

10% Duty Cycle:

$$= \frac{(0.1 * (\frac{1}{1500})) * 4x10^{6}}{16} = 16.7 = 17$$

25% Duty Cycle:

$$= \frac{(0.25 * (\frac{1}{1500})) * 4x10^{6}}{16} = 41.7 = 42$$

50% Duty Cycle:

$$Cycle = \frac{(0.50\ 9 * (\frac{1}{1500})) * 4x10^{6}}{16} = 83.3 = 83$$

75% Duty Cycle:

$$Cycle = \frac{(0.75 * (\frac{1}{1500})) * 4x10^{6}}{16} = 125$$

90% Duty Cycle:

$$Cycle = \frac{(0.90 * (\frac{1}{1500})) * 4x10^{6}}{16} = 150$$

10k Hz:

$$PR2 = \frac{(1/10000\ Hz)}{4 * 16 * (2.5x10^{-7})} - 1$$

10% Duty Cycle:

$$Cycle = \frac{(0.1 * (\frac{1}{10000})) * 4x10^{6}}{16} = 2.5 = 3$$

25% Duty Cycle:

$$Cycle = \frac{(0.25 * (\frac{1}{10000})) * 4x10^{6}}{16} = 6.25 = 6$$

50% Duty Cycle:

$$Cycle = \frac{(0.50\ 9 * (\frac{1}{10000})) * 4x10^{6}}{16} = 12.5 = 13$$

75% Duty Cycle:

$$Cycle = \frac{(0.75 * (\frac{1}{10000})) * 4x10^{6}}{16} = 18.75 = 19$$

90% Duty Cycle:

$$Cycle = \frac{(0.90 * (\frac{1}{10000})) * 4x10^{6}}{16} = 22.5 = 23$$