3TA4 Lab 5 Report

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1. The angular resolution of the motor that makes 48 steps per revolution is:

$$\frac{360°}{48\ steps}$$

$$= 7.5°/step$$

2. Student number is 400113347 so the period of one revolution is 47 seconds.

3. Time between steps is defined by the period of one revolution divided by the number of steps.

Full Step Period	Half Step Period
$\frac{47\ s}{48\ steps}$ $= 0.9792\ seconds/step$	$\frac{47\ s}{96\ steps}$ $= 0.4896\ seconds/step$

4.

Full Step Period	Half Step Period
System Clock Frequency = 4MHz Prescaler = (4MHz/5kHz – 1) = 799 Timer Frequency = 5kHz OCR = 47/48*5000 - 1 = 4894	System Clock Frequency = 4MHz Prescaler = (4MHz/5kHz – 1) = 799 Timer Frequency = 5kHz OCR = 47/96*5000 - 1= 2446

5. See code in zip file.

6.

a) When A1 and A2 are exchanged without changing the program the direction of rotation is inverted.

b) When A1 and A2 are exchanged with B1 and B2 without changing the program the stepper motor goes back and forth infinitely instead of maintaining one direction.