MECHTRON 2TA4

Lab 5 – Control of a Stepper Motor

Luai Bashar – bashal1 – 400388669

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**Questions**

**1.** The angular resolution can be found by using the formula , where 360 degrees represents a full step. A total of 48 steps are made per revolution, so we can sub that into the equation:

**The resolution is 7.5 degrees,** meaning that each step traverses this number of degrees**.**

**2.** The last two numbers of my student number is 69. This number is larger than 66, so by subtracting this number by 33, **my real period is 36.**

**3.** For a **half stepping sequence**, double the number of steps is used. Instead of 48 steps, 96 steps are used. We can calculate the time it takes for a singular step with :

**A total of 0.375 seconds is taken in a half-stepping sequence.** In a **full step sequence**, 48 steps are taken. We can use the same formula to find the time it takes between two steps:

**A total of 0.75 seconds is taken in a full-stepping sequence.**

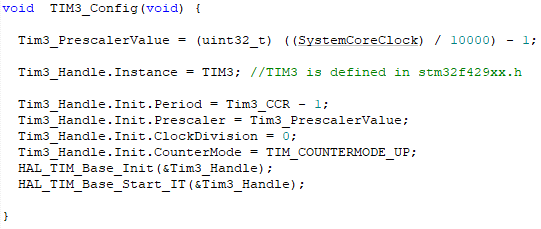
**4.** We can rearrange the Fclock equation to find a value for the prescaler, . SYSCLK is configured to 72 MHz and APB1 is configured to 36 MHz, so TIM3CLK is set as 72MHz:

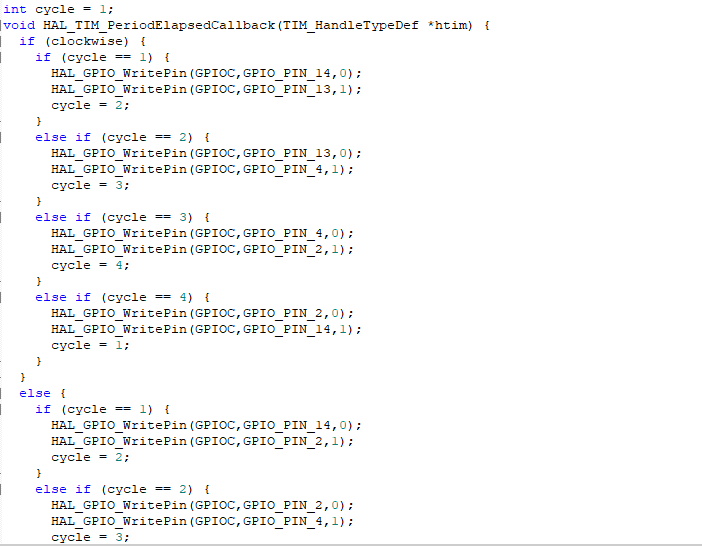
7199

Half-Step:

Full-Step:

5. Here is the code which configures the timer, the output/input pins, and the external buttons:





Table

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Text

Description automatically generated