2TA4 Lab 5 report

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400301521

1. The angular resolution of the given motor which makes 48 steps per revolution is
2. My student number is 400301521, this means the period of one revolution will be 21+33=54
3. The time period between two steps of the stepper motor is defined by
   1. Full step:
   2. Half step:
4. Prescaler for both full and half step
   1. Full step: OCR
   2. Half step: OCR
5. **Period is initialized to 11250.**

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void HAL\_TIM\_PeriodElapsedCallback(TIM\_HandleTypeDef \*htim) //see stm32fxx\_hal\_tim.c for different callback function names.

//for timer 3 , Timer 3 use update event initerrupt

{

BSP\_LED\_Toggle(LED4);

if(mode==0&&direction==0){

if(state==0){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_13,0);

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_14,1);

state = 1;

}

else if(state==1){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_14,0);

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_4,1);

state=2;

}

else if(state==2){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_4,0);

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_15,1);

state =3;

}

else if(state==3){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_15,0);

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_13,1);

state=0;

}

}

else if(mode==1&&direction==0){

if(stateh==0){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_14,1);

stateh = 1;

}

else if(stateh==1){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_13,0);

stateh=2;

}

else if(stateh==2){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_4,1);

stateh =3;

}

else if(stateh==3){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_14,0);

stateh=4;

}

else if(stateh==4){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_15,1);

stateh=5;

}

else if(stateh==5){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_4,0);

stateh=6;

}

else if(stateh==6){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_13,1);

stateh=7;

}

else if(stateh==7){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_15,0);

stateh=0;

}

}

else if(mode==0&&direction==1){

if(state==0){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_13,0);

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_14,1);

state = 3;

}

else if(state==1){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_14,0);

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_4,1);

state=0;

}

else if(state==2){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_4,0);

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_15,1);

state =1;

}

else if(state==3){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_15,0);

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_13,1);

state=2;

}

}

else if(mode==1&&direction==1){

if(stateh==0){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_14,1);

stateh = 7;

}

else if(stateh==1){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_13,0);

stateh=0;

}

else if(stateh==2){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_4,1);

stateh =1;

}

else if(stateh==3){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_14,0);

stateh=2;

}

else if(stateh==4){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_15,1);

stateh=3;

}

else if(stateh==5){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_4,0);

stateh=4;

}

else if(stateh==6){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_13,1);

stateh=5;

}

else if(stateh==7){

HAL\_GPIO\_WritePin(GPIOC,GPIO\_PIN\_15,0);

stateh=6;

}

}

}