

void ADC\_Init(void){

//\*\*\* students write this \*\*\*\*\*\*

SYSCTL\_RCGCADC\_R |= 1;

SYSCTL\_RCGCGPIO\_R |= 0x8;

\_\_nop();

\_\_nop();

\_\_nop();

\_\_nop();

GPIO\_PORTD\_DIR\_R &= ~(4);

GPIO\_PORTD\_DEN\_R |= 4;

GPIO\_PORTD\_AFSEL\_R |= 4;

GPIO\_PORTD\_AMSEL\_R |= 4;

ADC0\_PC\_R |= 1;

ADC0\_SSPRI\_R = 0x123;

ADC0\_ACTSS\_R &= ~8;

ADC0\_EMUX\_R &= ~(0xF000);

ADC0\_SSMUX3\_R = (ADC0\_SSMUX3\_R & 0xFFFFFFF0) + 5;

ADC0\_SSCTL3\_R = 6;

ADC0\_IM\_R &= ~(8);

ADC0\_ACTSS\_R |= 8;

ADC0\_SAC\_R = 6;

}

uint32\_t ADC\_In(void){

//\*\*\* students write this \*\*\*\*\*\*

int result;

ADC0\_PSSI\_R = 0x0008;

while((ADC0\_RIS\_R&8) == 0) {}

//read data and do what you want with it

result = ADC0\_SSFIFO3\_R&0xFFF;

ADC0\_ISC\_R &= 8;

return result; // remove this, replace with real code

}

void SysTick\_Init(unsigned long period){

//\*\*\* students write this \*\*\*\*\*\*

NVIC\_ST\_CTRL\_R = 0;

NVIC\_ST\_RELOAD\_R = period;

NVIC\_ST\_CURRENT\_R = 0;

NVIC\_ST\_CTRL\_R = 7;

}

uint32\_t SlidePot::Convert(uint32\_t n){

//\*\*\* students write this \*\*\*\*\*\*

// use calibration data to convert ADC sample to distance

return 159\*data/4096+16; // replace this with solution

}

int main(void){

\*\*\* students write this \*\*\*\*\*\*

DisableInterrupts();

TExaS\_Init(); // bus clock at 80 MHz

ST7735\_InitR(INITR\_REDTAB);

ADC\_Init(); // turn on ADC, PD2, set channel to 5

PortF\_Init();

EnableInterrupts();

SysTick\_Init(8000000);

while(1){

Sensor.Sync(); // wait for semaphore

// can call Sensor.ADCsample, Sensor.Distance, Sensor.Convert as needed

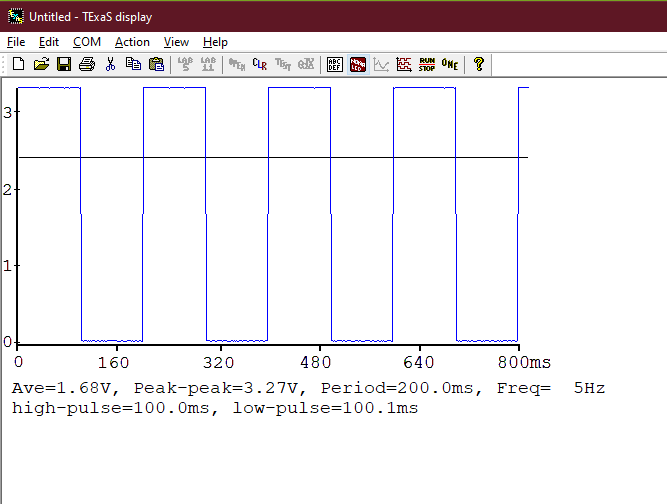
ST7735\_SetCursor(0,0);

LCD\_OutFix(Sensor.Distance());

ST7735\_OutString(" cm");

}

}



|  |  |  |
| --- | --- | --- |
| True position  xti | Measured Position  xmi | Error  xti - xmi |
| 0.3 | 0.33 | -0.030 |
| 0.6 | 0.6 | 0 |
| 1 | 0.97 | 0.030 |
| 1.4 | 1.4 | 0.000 |
| 1.6 | 1.57 | 0.030 |