#include "mbed.h"

PwmOut PWM1(D3);

DigitalIn Ain(D2);

BusOut display(D6, D7, D9, D10, D11, D5, D4, D8);

char table[10] = {0x3F, 0x06, 0x5B, 0x4F, 0x66, 0x6D, 0x7D, 0x07, 0x7F, 0x6F};

int main() {

 PWM1.period(1);

 PWM1 = 0.75;

 int change=0;

 int lastSignal=0;

 float cnt0=0;

 float cnt1=0;

 float dutyRatio;

 int num1, num2;

 int start=0;

 while(!start) {

 if(lastSignal == ! Ain) start = !start;

 lastSignal = Ain;

 wait(0.001);

 }

 while(start) {

 if(lastSignal == ! Ain) change++;

 if(change==2) start = !start;

 if(Ain) cnt1++;

 else cnt0++;

 lastSignal = Ain;

 wait(0.001);

 }

 dutyRatio=cnt1/(cnt0+cnt1);

 num1=dutyRatio\*10;

 num2=dutyRatio\*100;

 num2%=10;

 while(1) {

 display=0xBF;

 wait(1);

 display=table[num1];

 wait(1);

 display=table[num2];

 wait(1);

 }

}

#include "mbed.h"

AnalogOut Aout(DAC0\_OUT);

DigitalIn Ain(D2);

BusOut display(D6, D7, D9, D10, D11, D5, D4, D8);

char table[10] = {0x3F, 0x06, 0x5B, 0x4F, 0x66, 0x6D, 0x7D, 0x07, 0x7F, 0x6F};

char tableDP[10] = {0xBF, 0x86, 0xDB, 0xCF, 0xE6, 0xED, 0xFD, 0x87, 0xFF, 0xDF};

int main() {

 int change;

 int lastSignal;

 float cnt0,cnt1;

 float period, freq;

 int num1, num2, num3, num4, num5;

 int start;

 float i;

 while(1){

 for( i=0; i<2; i+=0.005 ){

 Aout = 0.5 + 0.5\*sin(i\*3.14159);

 if(!start) {

 if(lastSignal == !Ain) start = !start;

 lastSignal = Ain;

 } else if(start) {

 if(lastSignal == ! Ain) change++;

 if(change==2) start = !start;

 if(Ain) cnt1++;

 else cnt0++;

 lastSignal = Ain;

 }

 wait(0.0001);

 }

 if(change==2) {

 period=0.0001\*(cnt0+cnt1);

 freq=1/period;

 num1=freq/10;

 num2=(int)freq%10;

 num3=freq\*10;

 num3%=10;

 num4=freq\*100;

 num4%=10;

 num5=freq\*1000;

 num5%=10;

 if(num5>=5) num4++;

 display=table[num1];

 wait(1);

 display=tableDP[num2];

 wait(1);

 display=table[num3];

 wait(1);

 display=table[num4];

 wait(1);

 change=0;

 cnt0=0; cnt1=0;

 }

 }

}