Lab1

#define LED\_PIN\_0 8

#define LED\_PIN\_1 9

#define LED\_PIN\_2 10

#define INT\_PIN 3

int one=0;

int time=0;

void setup()

{ Serial.begin(9600);

pinMode(LED\_PIN\_0, OUTPUT);

pinMode(LED\_PIN\_1, OUTPUT);

pinMode(INT\_PIN, INPUT);

/\*noInterrupts();

TCCR1A= 0;

TCCR1B= 0;

timer1\_counter =1;

TCNT1 =timer1\_counter;

TCCR1B |= (1<<CS12);

TIMSK1 |= (1<<TOIE1);

interrupts();\*/

attachInterrupt(digitalPinToInterrupt(INT\_PIN),IDK,RISING);

}

void loop()

{

digitalWrite(LED\_PIN\_0, HIGH);

delay(time); // Wait for 1000 millisecond(s)

digitalWrite(LED\_PIN\_0, LOW);

delay(time); // Wait for 1000 millisecond(s)

}

void IDK() {

if(one==0){

time=1000;

one++;

}

else if(one==1){

time=2000;

one++;

}

else if(one==2){

time=3000;

one=0;

}

}

/\*ISR (TIMER1\_OVF\_vect){

TCNT1 =timer1\_counter;

digitalWrite(LED\_PIN\_1, toggle);

toggle = !toggle;

}\*/

Lab2

#define LED\_PIN\_0 8

#define LED\_PIN\_1 9

#define LED\_PIN\_2 10

int timer1\_counter;

int toggle=0;

int one=0;

int time=0;

void setup()

{ Serial.begin(9600);

pinMode(LED\_PIN\_0, OUTPUT);

pinMode(LED\_PIN\_1, OUTPUT);

noInterrupts();

TCCR1A = 0;

TCCR1B = 0;

TCNT1 = 0;

OCR1A = 65535;

TCCR1B |= (1 << WGM12);

TCCR1B |= (1 << CS12) | (1 << CS10); // 1024

TIMSK1 |= (1 << OCIE1A);

interrupts();

Serial.println(OCR1A);

}

void loop()

{

digitalWrite(LED\_PIN\_0, HIGH);

delay(time);

digitalWrite(LED\_PIN\_0, LOW);

delay(time);

}

ISR (TIMER1\_COMPA\_vect){

if(one==0){

time=1000;

one++;

}

else if(one==1){

time=2000;

one++;

}

else if(one==2){

time=3000;

one=0;

}

Serial.println(time);

}

Lab3

#include<SPI.h>

#define DATA\_PIN 11

#define CLOCK\_PIN 13

#define SS\_PIN\_1 10

int digitArray[10]={

0b00111111, //0

0b00000110, //1

0b01011011, //2

0b01001111, //3

0b01100110, //4

0b01101101, //5

0b01111101, //6

0b00000111, //7

0b01111111, //8

0b01101111 //9

};

int calculateOCR(double frequency, long prescaler) {

const long CLOCK\_FREQ = 16000000;

return (CLOCK\_FREQ / (frequency \* prescaler)) - 1.0;

}

void spi\_write\_1(unsigned char cData){

shiftOut(DATA\_PIN,CLOCK\_PIN,MSBFIRST,cData);

digitalWrite(SS\_PIN\_1,HIGH);

digitalWrite(SS\_PIN\_1,LOW);

}

int timer1\_counter;

int toggle=0;

int one=0;

void setup()

{ Serial.begin(9600);

pinMode(13, OUTPUT);

pinMode(11, OUTPUT);

pinMode(10, OUTPUT);

noInterrupts();

TCCR1A = 0;

TCCR1B = 0;

TCNT1 = 0;

OCR1A = calculateOCR(1, 1024);

TCCR1B |= (1 << WGM12);

TCCR1B |= (1 << CS12) | (1 << CS10); // 1024

TIMSK1 |= (1 << OCIE1A);

interrupts();

}

void loop()

{

Serial.println(one);

delay(1000);

}

ISR (TIMER1\_COMPA\_vect){

spi\_write\_1(digitArray[one]);

one++;

if(one==10){

one=0;}

}