# Sine wave 50Hz Inverter Programe

Begin

```c
#include <avr/io.h>
#include <avr/interrupt.h>
#include <math.h>

#define SinDivisions (200)

static int microMHz = 16;
static int freq = 50;
static long int period;
static unsigned int lookUp[SinDivisions];
static char theTCCR1A = 0b10000010;

void setup(){
  double temp;
  period = microMHz*1e6/freq/SinDivisions;
  for(int i = 0; i < SinDivisions/2; i++)
  {
    temp = sin(i*2*M_PI/SinDivisions)*period;
    lookUp[i] = (int)(temp+0.5);
  }
  TCCR1A = theTCCR1A;
  TCCR1B = 0b00011001;
  TIMSK1 = 0b00000001;
  ICR1   = period;
  sei();
  DDRB = 0b00000110;
  pinMode(13, OUTPUT);
}

void loop(){;}

ISR(TIMER1_OVF_vect)
{
    static int num;
    static int delay1;
    static char trig;

    if(delay1 == 1)
    {
      theTCCR1A ^= 0b10100000;
      TCCR1A = theTCCR1A;
      delay1 = 0;
    }
    else if(num >= SinDivisions/2)
    {
      num = 0;
      delay1++;
      trig ^=0b00000001;
      digitalWrite(13,trig);
    }
      OCR1A = OCR1B = lookUp[num];
    num++;
}
```

The End