

## C programming of the AVR TWI in master operating mode

Program 18-3 shows how a master writes 11110000 to a slave with address 1101000. This program is the C version of Program 18-1.

Program 18-4 shows how a master reads from a slave with address 1101000 and displays the result on Port A. This program is the C version of Program 18-2.

```
#include <avr/io.h>

void i2c_write(unsigned char data)
{
    TWDR = data ;
    TWCR = (1<< TWINT) | (1<<TWEN);
    while ((TWCR & (1 <<TWINT)) == 0);
}

//*****

void i2c_start(void)
{
    TWCR = (1 << TWINT) | (1 << TWSTA) | (1 << TWEN);
    while ((TWCR & (1 << TWINT)) == 0);
}

//*****

void i2c_stop()
{
    TWCR = (1<< TWINT) | (1<<TWEN) | (1<<TWSTO);
}

//*****

void i2c_init(void)
{
    TWSR=0x00;           //set prescaler bits to zero
    TWBR=0x47;           //SCL frequency is 50K for XTAL = 8M
    TWCR=0x04;           //enable the TWI module
}

//*****

int main (void)
{
    i2c_init();
    i2c_start();          //transmit START condition
    i2c_write(0b11010000); //transmit SLA + W(0)
    i2c_write(0b11110000); //transmit data
    i2c_stop();           //transmit STOP condition
    while(1);             //stay here forever
    return 0 ;
}
```

**Program 18-3: Writing a Byte in Master Mode in C**