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\*Filename : lightsensor.c

\*Description :use a photoresistor to allow the LED to breathe

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#include <unistd.h>

#include <stdint.h>

#include <string.h>

#include <errno.h>

#include <wiringPi.h>

#include <stdio.h>

#include <stdlib.h>

#include <wiringPiSPI.h>

//pin 1(BCM GPIO 18) is PWM port

#define LEDPIN 1

#define CHAN\_CONFIG\_SINGLE 8

#define SPICHANNEL 0

#define ANALOGCHANNEL 0

static int myFd ;

void spiSetup (int spiChannel)

{

if ((myFd = wiringPiSPISetup (spiChannel, 10000)) < 0)

{

fprintf (stderr, "Can't open the SPI bus: %s\n", strerror (errno)) ;

exit (EXIT\_FAILURE) ;

}

}

int myAnalogRead(int spiChannel,int channelConfig,int analogChannel)

{

if(analogChannel<0 || analogChannel>7)

return -1;

unsigned char buffer[3] = {1}; // start bit

buffer[1] = (channelConfig+analogChannel) << 4;

wiringPiSPIDataRW(spiChannel, buffer, 3);

return ( (buffer[1] & 3 ) << 8 ) + buffer[2]; // get last 10 bits

}

void print\_info()

{

printf("\n");

printf("|\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*|\n");

printf("| MCP3008 read lightsensor |\n");

printf("| ------------------------- |\n");

printf("| | ADC | | Pi | |\n");

printf("| |-----|-----------|-----| |\n");

printf("| | CS | connect to| CE0 | |\n");

printf("| | Din | connect to| MOSI| |\n");

printf("| | Dout| connect to| MISO| |\n");

printf("| | CLK | connect to| SCLK| |\n");

printf("| | CH0 | connect to| 3.3V| |\n");

printf("| | CH1 | connect to| GND | |\n");

printf("|\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*|\n");

printf("| LED connect to GPIO1 |\n");

printf("| |\n");

printf("|\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*|\n");

printf("\n");

}

int main()

{

int adc;

if(wiringPiSetup()<0)

{

printf("setup wiringPi failed!\n");

printf("please check your setup\n");

exit(1);

}

spiSetup(SPICHANNEL);

pinMode(LEDPIN,PWM\_OUTPUT);

print\_info();

for(;;)

{

adc = myAnalogRead(SPICHANNEL,CHAN\_CONFIG\_SINGLE,ANALOGCHANNEL);

printf("ADC = %d\n",adc);

pwmWrite(LEDPIN,1023-adc);

delay(1000);

}

}