Emmanuel Rodriguez Lopez

CPE301 – SPRING 2016

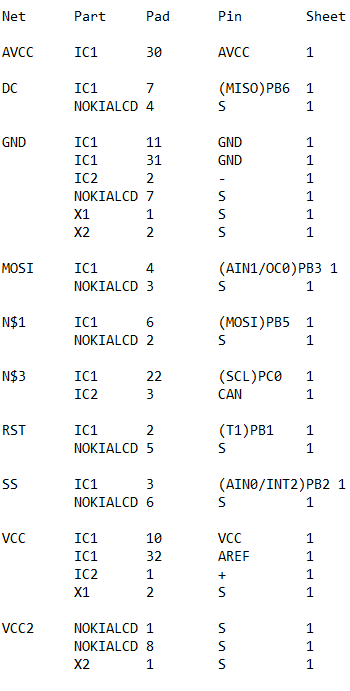
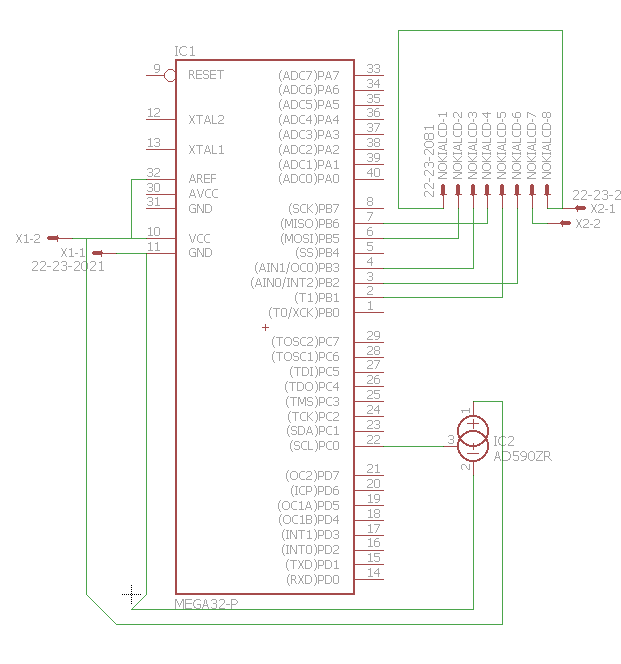
Design Assignment 6

**DO NOT REMOVE THIS PAGE DURING SUBMISSION:**

The student understands that all required components should be submitted in complete for grading of this assignment.

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| --- | --- | --- | --- |
| **NO** | **SUBMISSION ITEM** | **COMPLETED (Y/N)** | **MARKS**  **(/MAX)** |
| 0. | COMPONENTS LIST AND CONNECTION BLOCK DIAGRAM w/ PINS |  |  |
| 1. | INITIAL CODE OF TASK 1/A |  |  |
| 2. | INCREMENTAL / DIFFERENTIAL CODE OF TASK 2/B |  |  |
| 3. | INCREMENTAL / DIFFERENTIAL CODE OF TASK 3/C |  |  |
| 4. | INCREMENTAL / DIFFERENTIAL CODE OF TASK 4/D |  |  |
| 5. | INCREMENTAL / DIFFERENTIAL CODE OF TASK 5/E |  |  |
| 6. | SCHEMATICS |  |  |
| 7. | SCREENSHOTS OF EACH TASK OUTPUT |  |  |
| 8. | SCREENSHOT OF EACH DEMO |  |  |
| 9. | VIDEO LINKS OF EACH DEMO |  |  |
| 10. | GOOGLECODE LINK OF THE DA |  |  |
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| 0. | COMPONENTS LIST AND CONNECTION BLOCK DIAGRAM w/ PINS |  |  |



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| 1. | INITIAL CODE OF TASK 1 |  |  |

/\*

\* DA6NOKIA.c

\*

\* Created: 4/28/2016 8:58:41 AM

\* Author: rodrie2

\*/

#include <avr/io.h>

#include <util/delay.h>

#define *F\_CPU* 8000000UL

#include "nokia5110.c"

//full c and header files provided through github

//Original library written by SkewPL, <http://skew.tk>

//from .h

/\*#define LCD\_SCE PB2

#define LCD\_RST PB1

#define LCD\_DC PB6

#define LCD\_DIN PB3

#define LCD\_CLK PB5\*/

#define ACD\_0 PC0

int main(void)

{

int adc\_temp;

char temp[8];

DDRB = 0xFF;

SPI\_MasterInit();

//from nokia5110.c

//inserted transmit function in file.

nokia\_lcd\_init();

nokia\_lcd\_write\_string("The current", 1);

nokia\_lcd\_set\_cursor(0,10);

nokia\_lcd\_write\_string("temperature is", 1);

ADC\_init();

while(1)

{

adc\_temp = adc\_read();

adc\_temp = (adc\_temp)/3;

*sprintf*(temp, "%d", adc\_temp); //converts temp into char string for printing

nokia\_lcd\_set\_cursor(0, 20);

nokia\_lcd\_write\_string(temp, 1);

nokia\_lcd\_write\_string(" degrees", 1);

nokia\_lcd\_set\_cursor(0, 30);

nokia\_lcd\_write\_string("Fahrenheit", 1);

nokia\_lcd\_render();

//ADCSRA |= (1<<ADIF);

*\_delay\_ms*(1000);

}

return 0;

}

int adc\_read()

{

//selects PC0 as analogue pin

ADMUX &= 0x00;

//starts converstion

ADCSRA |= (1<<ADSC);

while((ADCSRA & (1<<ADSC)));

return ADC; //returns temperature value

}

void ADC\_init(void)

{

//activates ADC

ADCSRA = (1<<ADEN);//|(1<<ADSC);//|(1<<ADIF);

}

//ADOPTED FROM ATMEGA328P DATASHEET

void SPI\_MasterInit(void)

{

/\* Set MOSI and SCK output, all others input \*/

//ALREADY DONE OUTSIDE FUNCTION

//DDR\_SPI = (1<<DD\_MOSI)|(1<<DD\_SCK);

/\* Enable SPI, Master, set clock rate fck/16 \*/

SPCR = (1<<SPE)|(1<<MSTR)|(1<<SPR0);

}

/\*

//PLACED IN OTHER FUNCTION

void SPI\_MasterTransmit(char cData)

{

/\* Start transmission //

SPDR = cData;

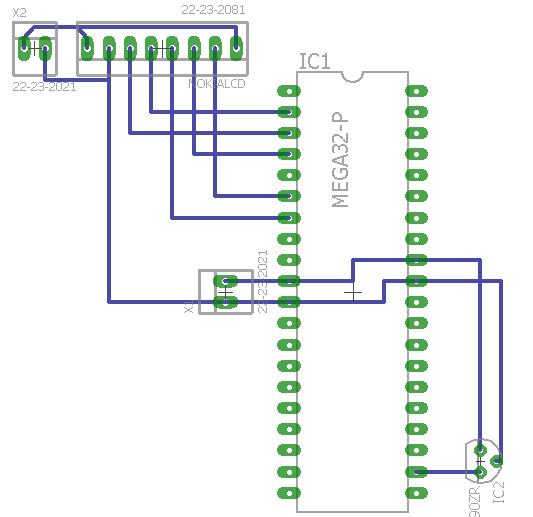
/\* Wait for transmission complete /

while(!(SPSR & (1<<SPIF)))

;

}\*/

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| 6. | SCHEMATICS |  |  |



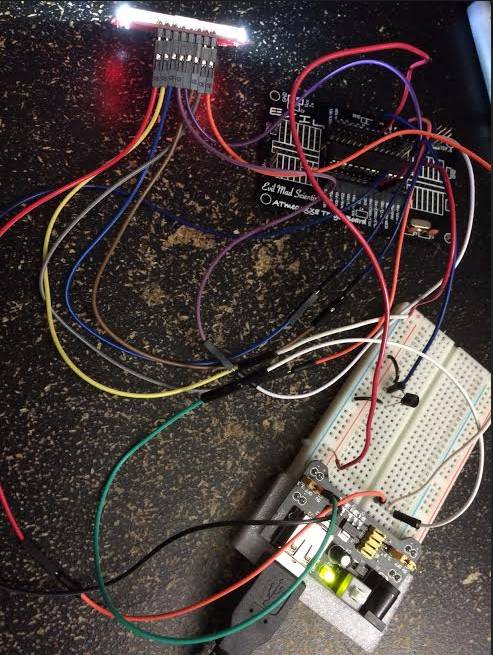
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| 7. | SCREENSHOTS OF EACH TASK OUTPUT |  |  |

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| --- | --- | --- | --- |
| 8. | SCREENSHOT OF EACH DEMO |  |  |

TASK 1  
First image shows room temperature, second shows temperature risen due to holding of sensor



Connections image



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| 9. | VIDEO LINKS OF EACH DEMO |  |  |
| https://www.youtube.com/watch?v=vPHYA3BJxb8 | | | |
| 10. | GOOGLECODE LINK OF THE DA |  |  |
| http:// @svn or github repository link | | | |

**Student Academic Misconduct Policy**

<http://studentconduct.unlv.edu/misconduct/policy.html>

“This assignment submission is my own, original work”.

Emmanuel Rodriguez Lopez