EE4263
Microprocessors in Digital Design

Project X
Project Title

Full Name
(ID Number)

Due: Month Day, Year
Submitted: Month Day, Year

Table of Contents

Abstract

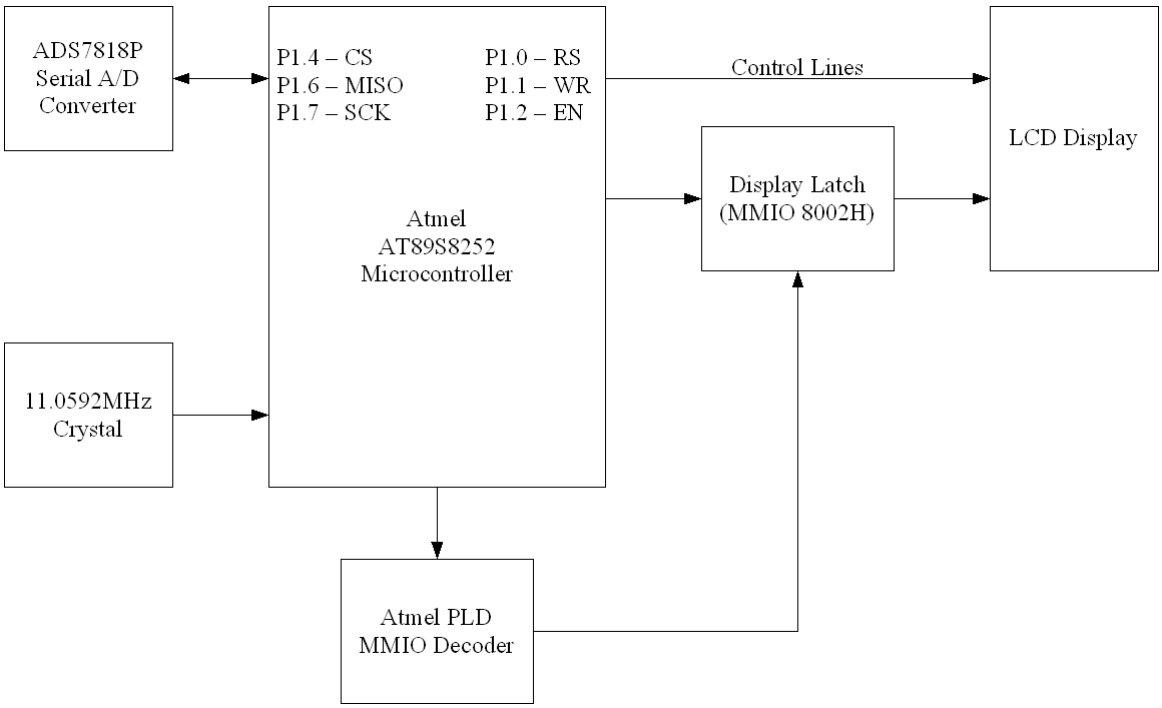
The *Abstract* should give the project definition. It should be adequate that an unfamiliar person can read it and determine what the project is about. The length should be less than 250 words.

Executive Summary

The *Executive Summary* should give the conclusions and solutions statement. There should be a brief statement of problems. One sentence should discuss future applications and improvements on what you did. The length should be less than 400 words. The *Abstract* and *Executive Summary* should tell the complete story. Keep It Simple, Sam!

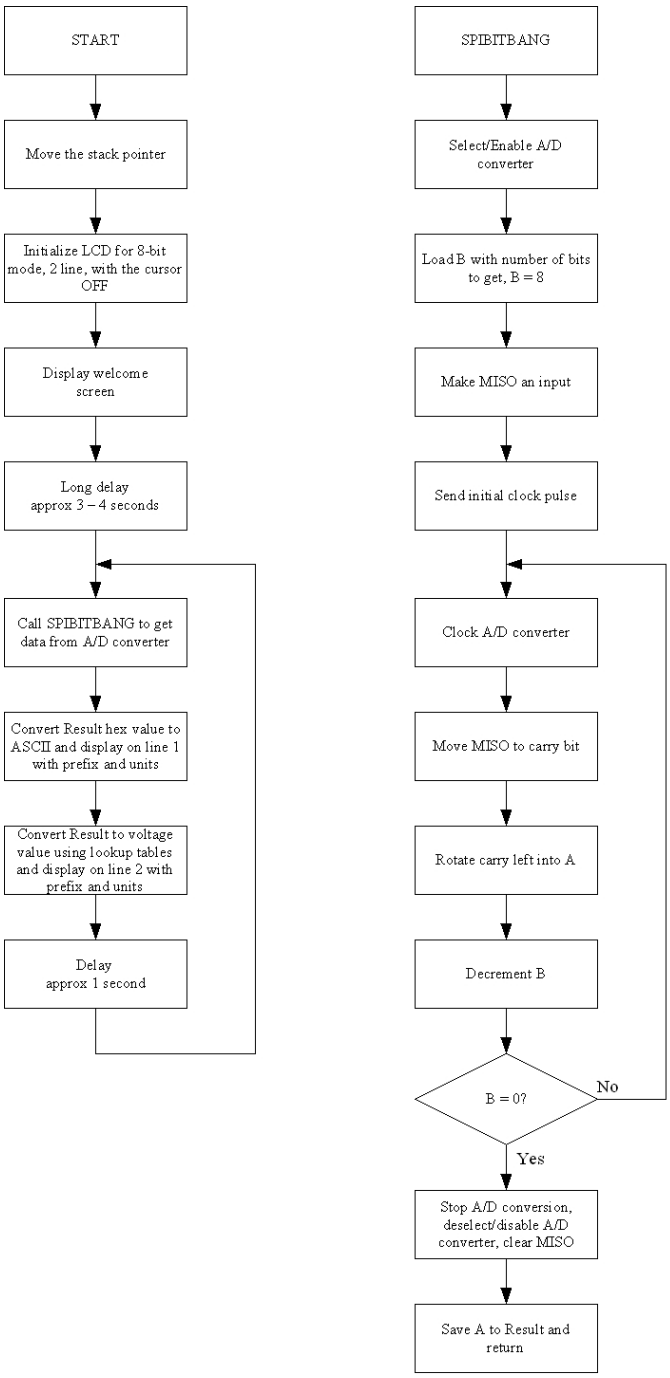
Hardware Block Diagram

The *Hardware Block Diagram* will illustrate the major building blocks of the equipment. OpenOffice.org includes an easy-to-use software package (called Draw) for creating block diagrams, and is available for free at http://www.openoffice.org.



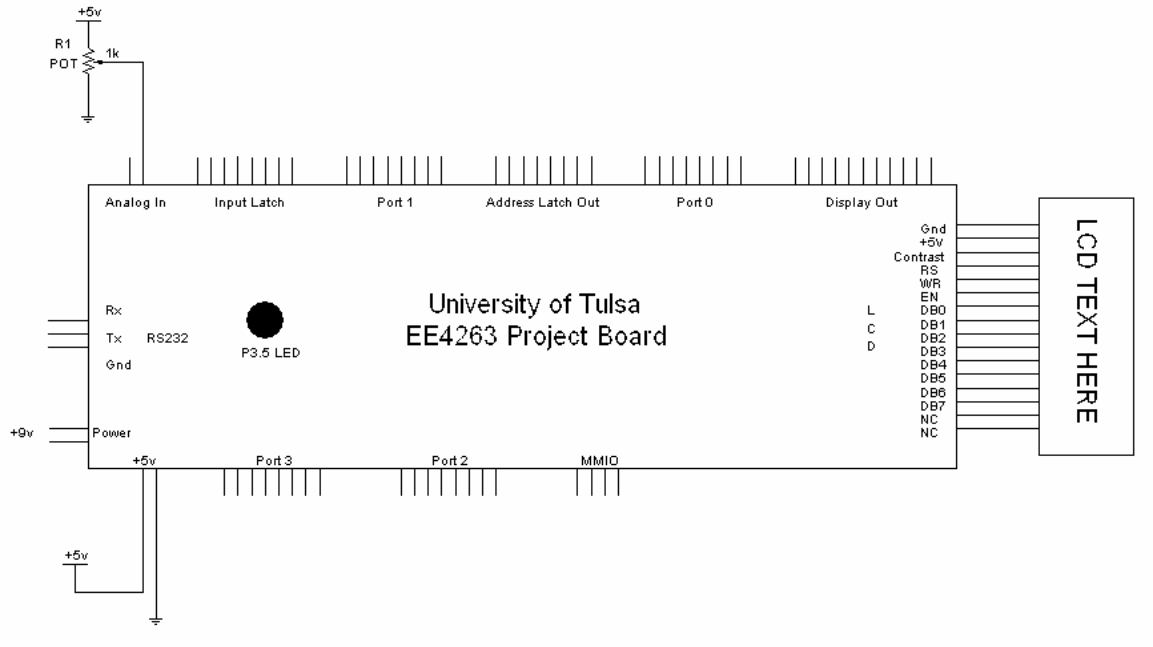
Software Block Diagram

The *Software Block Diagram* will be a flowchart of the major components of the program. OpenOffice.org includes an easy-to-use software package (called Draw) for creating flowcharts, and is available for free at http://www.openoffice.org.



Schematic

The *Schematic* will show the interconnection of all the hardware components. Using a computer-aided design (CAD) tool, you can quickly create high-quality, easily readable schematic. Hand-drawn schematics are NOT acceptable.



Software Listing

A *Software Listing* of all programs with comments is a necessary component. This should be an editable, executable version of the software. Formatting your code with the Courier (fixed width) font will preserve the formatting/spacing from the ASM file.

```
;***********************************
;***********************************
;Program: P10.ASM
;Initial: Date
;
;Author: Author's Name
;        University of Tulsa
;
;Original: Dr. Marcus O. Durham
;          November 13, 2003
;
;Purpose:
;  Read from a SPI A/D converter and display the voltage
;    on an LCD display.
;
;Microcontroller: Atmel 89S8252
;Crystal:         11.059MHz
;Assembler:       Intel ASM.51
;***********************************
;***********************************


;***********************
;***** Assignments *****
;***********************
VOnes          equ    15H                ;Ones digit for voltage
VTenths        equ    16H                ;Tenths digit for voltage
VHunds  equ    17H                       ;Hundredths digit for voltage
HexLS          equ    18H                ;Hex ASCII least significant
HexMS          equ    19H                ;HEx ASCII most significant
CharL          equ    0DH                ;Character to LCD and serial
MsgHi          equ    0EH                ;Message location High nibble
MsgLo          equ    0FH                ;Message location Low nibble
LoopC          equ    07H                ;Loop counter
Result         equ    37H                ;A/D conversion result
LcdRS          equ    090H               ;P1.0
LcdRW          equ    091H               ;P1.1
LcdEn          equ    092H               ;P1.2

AdCs           equ    94H                ;A/D chip select
Mosi           equ    95H                ;SPI Mosi from uC to slave
Miso           equ    96H                ;SPI Miso from slave to uC
Sck            equ    97H                ;SPI clock
```

Materials Cost

The *Materials Cost* contains the cost of the items used in the project. The list contains a part name, part value, part package, where the part is used, part vendor, part number, quantity, and cost. The total cost must be included.

Part Name	Value	Package	Where Used	Vendor	Part Number	Quantity	Cost
LCD	1 Line, 16 Character	Custom	Display Latch	Digikey	MDL-16166-LV	1	$10.87
Potentiometer	1 KΩ	3 Pin	A/D Converter	Digikey	3006P-1-102	1	$1.73
						Total:	**$12.60**

Time

The *Time* sheet should breakdown the time invested in each phase of the project. As a minimum, this will be planning, construction, troubleshooting, and documentation.

Description	Time (Hours)
Planning	3
Construction	0.5
Troubleshooting	6
Documentation	4
Total	**13.5**

Support Equipment

The *Support Equipment* list will include all extraneous equipment. The list could include a personal computer, any software applications, EPROM burner, power supplies, cables, and any other required items.