Professor Eness,

As you can tell from my prior assignments, I am very enthusiastic about Arduinos. This open-source board is a learning tool for programming an Atmel AVR microcontroller unit (MCU). The MCU allows users to use the C programming language to communicate with electronics. The Arduino website has several tutorials that utilize the Arduino libraries. I would like to design a tutorial that will teach users to code the MCU without those libraries.

My target audience would be "Arduinophiles" such as my self that want to learn more about the AVR architecture and code the MCU directly. They should have some experience in C and with the make tool. I myself have taking CS229 which was based in C and C++, and thus have the capability to do this.

My objective is to create a series of three web based tutorials. I have some experience with coding web pages, but if I find it becomes too much of a hassle, I will switch the project to pdf format. This contingency plan is easily downloadable and can still be considered web based.

PART 1 - Setting up the Programing Environment

> Breaking away from Arduino's IDE, I will describe what (free) tools users will need to download. Since my experience is with Eclipse, avr-gcc, make and linux, this is the environment I will describe. I will show readers how to setup these tools and how to upload programs to the Arduino.

PART 2 - Including the Arduino Libraries

> Here I will explain how to use the Arduino libraries in the new environment. This is a great way to test the environment but more importantly I will explain what some of the libraries do. This is a great way to learn what is going on behind the scenes and transition into the next tutorial.

PART 3 - Blink in Pure C

> Every new Arduino owner's first program is Blink. It is the Hello World in Arduino. This tutorial will write the Blink program coding the MCU directly utilizing Atmel's data sheets. I will explain why these data sheets are gold as they explain the AVR architecture and contain many examples and tutorials within them. I will then explain line by line what the code is doing.

I believe the first two tutorials will require a total of three weeks to prepare and the third tutorial will require the remaining two weeks. This is because my experience with the data sheets is fairly new and I believe it might require some additional research on my part. Fortunately I have friend who is a TA for a class that programs Atmel MCUs directly.

I am very excited to produce these tutorials. Honestly, I chose this topic to give myself an excuse to further explore my own interest in Arduinos and in Atmel. I would love to end up with a professional looking document that I could offer to the Arduino community as my way of giving back. There is a lot of information on both Arduino and Atmel MCUs. I have yet to see a transitional tutorial that teaches how to make the jump. I believe I can provide this to the Arduino community and hope that you consider my proposal as viable option for my next assignment.

Sincerely,
Jim