University of Massachusetts Lowell ECE
EECE 1070 Introduction to Electrical and Computer Engineering
Alternate Arduino Project: Sailboat Racing Starter

Background: Small Sailboats use a 3 minute starting sequence during which the boats jockey for position at the starting line. You are going to design a Sailboat Racing Starter. Note you need to take the times required to make the sound in your overall calculation. It needs to be accurate to within 1 second!

Definition: Long= 1 second on followed by 1 second off
Definition: Short= ½ second on followed by ½ second off

Hardware Requirements:
Arduino Processor: (include all pull down or pull up resistors as required)
   a) A push button switch that will create sound when it is pushed (a.k.a. Attention!)
   b) A reset button that will cancel the starting sequence
   c) A button that will start the sequence and will continue to the end unless the reset button is pushed.
   d) A speaker for the audible tone. This can be replaced by a power transistor which will power a relay which will power an air horn.

Starting Sequence (3-minute dinghy rules)

Preparatory signal: 5 Long followed by 5 seconds off
3-minute warning: 3 long
2-minute warning: 2 long
1.5-Minute Warning: 1 long followed by 3 short
1-minute warning: 1 long
30-second warning: 3 short
20-second warning: 2 short
10-second warning: 1 short
Final 5 second countdown: 5 short
Race Start: 5 second blast

The start of the Race start must occur exactly 3 minutes from the first 3-minute warning.

I am not going to tell you how to implement this, but if you can make it modular so it is easy to change that would be good.

What to hand in:

   a) Your code
   b) Demonstrate to your TA that it works
   c) Hardware schematic