Abstract

This project will consist of a stand-alone alarm clock with dynamic features designed to wake the user quickly and effectively. The alarm's sound will be unpredictable, and the user will have to think and interact with the clock to turn the alarm off. The technical challenges of the project will be primarily software-related: writing the programs to allow the user to set the clock and the alarm, as well as programs to control the alarm and the routines to allow the user to shut it off. Hardware challenges will deal with the implementation of the speaker and display screen for the clock and a variety of different sensors that will be used in the disabling routines.
Similar Products

Figure 1. Sony ICF-CD815 AM/FM Stereo CD Clock Radio with Dual Alarm
Source: http://www.amazon.com

Figure 2. iLive IC618B Clock Radio
Source: http://www.amazon.com
Similar Products

Figure 3. Clocky
Source: http://www.uberreview.com

Figure 4. Flying Alarm Clock
Source: http://wwwslashgear.com
Features

The Protean Alarm Clock will:

- digitally display the time as set by the user
- sound an alarm at one or more user-selected times
- "randomly" choose an alarm from among pre-stored tunes
- require that the user input data in order to disable the alarm
- have a user-controlled volume setting
- allow the user to exclude particular alarms from being played
- run on battery power
High-Level Design

Figure 5. High-level system diagram
Alternate Design

Figure 6. Alternate design with two displays
Anticipated Cost

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmega32</td>
<td>$0.00</td>
</tr>
<tr>
<td>2 LCDs</td>
<td>$10.00</td>
</tr>
<tr>
<td>EEPROM</td>
<td>$0.50</td>
</tr>
<tr>
<td>Speaker</td>
<td>$5.00</td>
</tr>
<tr>
<td>Batteries</td>
<td>$5.00</td>
</tr>
<tr>
<td>Sensors</td>
<td>$5.00</td>
</tr>
<tr>
<td>Buttons</td>
<td>$5.00</td>
</tr>
<tr>
<td>Resistors, etc</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$30.50</strong></td>
</tr>
</tbody>
</table>

Table 1. Expected Cost
Bibliography


