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CS 485

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Never-Snooze Instructions Manual

I.   Introduction

A. Idea and Purpose

1. We at Never-Snooze are against the snooze culture that comes with the alarm clock. Research shows that using a snooze button actually makes late-risers more tired on the second wakeup than the first because of their engagement in REM sleep. To combat this, we have created the Never-Snooze, a new style of alarm clock!

2. With only the most basic functions of telling the time, setting an alarm, and a simple button game, the Never-Snooze doesn't *have* a snooze button. Instead when your alarm goes off, the Never-Snooze will make you play a simple, but engaging button game to help you wake up on time. We hope this product helps enhance user experience with early wakeup times and add some color to dark mornings.

B. CS 485 Gained Skills

1. To complete this project, I used soldering to hold the LED matrices to their metal drivers. I then coded those LED matrices to display the correct time by scrolling it across the screen. I wired up LEDs to both turn on with the alarm clock as a Power On light, and to turn on and off only when instructed to in my code. I also used tact switches as buttons and coded them to be used in a simple button game. I used a speaker to play tones as an alarm (when time) and found a way to prevent the speaker from turning off while playing the button game and then to turn off immediately once the button game is finished. I additionally used laser cutting to create an acrylic, press-fit box to hold my circuit and wiring and organize my materials into a simple and clean display. For this project I have incorporated almost every homework assignment we have been given (excluding the sensor-based ones) to represent all the skills I have learned across the semester.
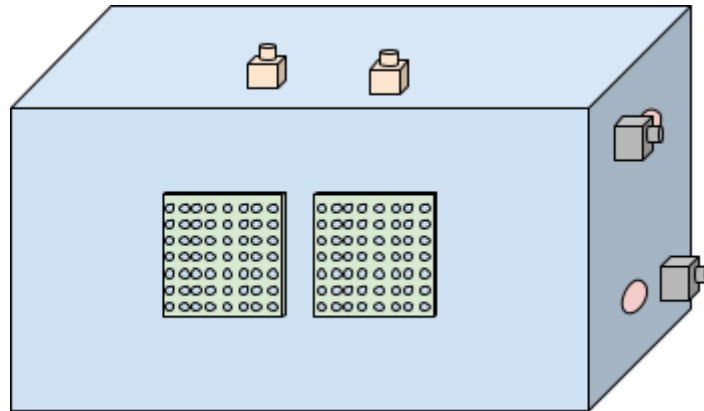
II.   Parts

Figure 1: Never-Snooze Layout Design. In this diagram we have the following items shown: LED matrices, top buttons to work the alarm system (hours on left, minutes on right), side buttons for the button game (not shown: two on the back and one on the left side of the box), and LEDs to indicate the next button in the sequence (not shown: two on the back and one on the left side of the box). The entire system is roughly 170x100x120mm. The LED matrices on the front display the current time as a scrolling message when turned on.

III.   Setting an Alarm

A. To set an alarm the user will refer to the top two buttons on our box. The left one is for hours and the right one is for minutes. When either of these buttons are pressed once, 1 unit of time will be added to the saved alarm time (either the hour or minute section as dictated by which button is pressed). The currently saved alarm time will then scroll display across the screen. If the user continues to press the hour or minute button, the alarm time will continue to change (+1 for every button press). Every time either button is pressed, the alarm time will re-scroll across the screen. The user need not wait for this scrolling display to finish before pressing the hour or minute buttons again. The only time the saved alarm time resets to 00:00 is when the alarm has played and when the program is first turned on. If the user does not set an alarm, then the alarm will never sound.

IV.   The Button Game

    A. When the current time equals our saved alarm time, The alarm sound will go off, and the button game will commence. On our box we have five buttons associated with the button game paired with five LEDs. Each LED is next to one button. Once the alarm sounds, the computer will pick a random LED to light up. The user must click the button next to this LED to turn off the LED and continue the game. This process will repeat seven times with seven random button-LED pairs. Once the user has pressed all seven buttons in the sequence, the alarm will turn off, the saved alarm time will reset to 00:00, and the clock will once again display the current time.