Morning Menace Machine

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How can we create a more helpful alarm clock for high school students?

Background Knowledge

- High School students struggle with waking up in the morning

What causes them to struggle to wake up?
- Tired
- Most alarms are on phones which cause distractions
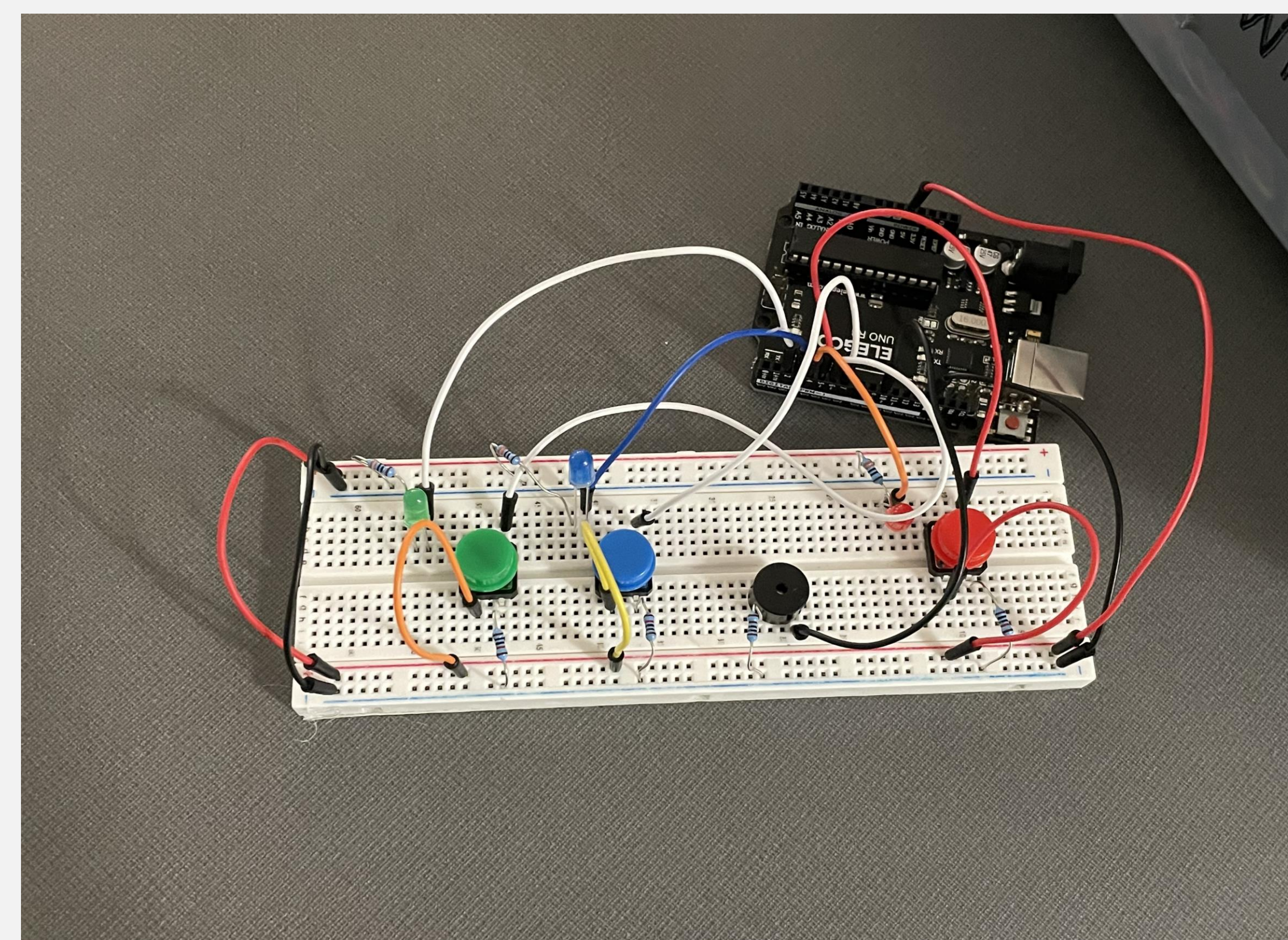- It's easy to silence most alarms after waking up

Ideation

The user group (high school students) need an alarm clock that will wake them up in the morning while not providing any additional distractions the way a phone or other electronic device would. Alongside not providing distractions, this alarm should force the user to move or be active to effectively wake them up through an activity that is stimulating physically and mentally.

Concept Design

To meet all the previously listed needs of the user group, my plan is to create an alarm clock that requires a combination of walking (physical stimulation) and memorization (mental stimulation) to turn it off. The alarm will consist of three interactive panels. In terms of physical stimulation, the alarm will not be able to be turned off until all three panels, located on different walls of a room, are interacted with correctly. In terms of mental stimulation, to actually turn the alarm off, the user will need to memorize and repeat a color pattern on each panel. The process for turning the alarm off is as follows.

Alarm goes off --> first panel sequence displays --> user enters correct sequence -- > second panel sequence displays --> user enters correct sequence --> third panel sequence displays --> user enters correct sequence --> alarm turns off

Progress Pieces

Design Goals

Physical Requirements
- Reasonable size compared to most alarm clocks
- Ability to be place onto walls easily
- Aesthetically pleasing shape/hide majority of technical side

Functional Requirements
- Generate random sequences each day
- Display three different light sequences consisting of three colors/required inputs each
- Only move on to next sequence when correct buttons are pushed for previous one
- Continuously play alarm until all sequences are replicated correctly
- Turn alarm off when all sequences are replicated correctly

Methods/Materials/Conclusion

Materials
- Elegoo Uno
- Arcade Buttons
- Half Breadboards
- Passive Buzzer
- Leds
- RTC (real time clock module)

Methods
- Built in < 20 hours
- Concept designed off user group feedback from online and in person data

Conclusion

Although the design works as intended, it would benefit highly from utilizing Bluetooth or other wireless applications to allow the panels to be connected without physical wires.