Arduino Uno Based Sunrise Alarm Clock

An ME 708 Individual Project

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Background Design Objectives

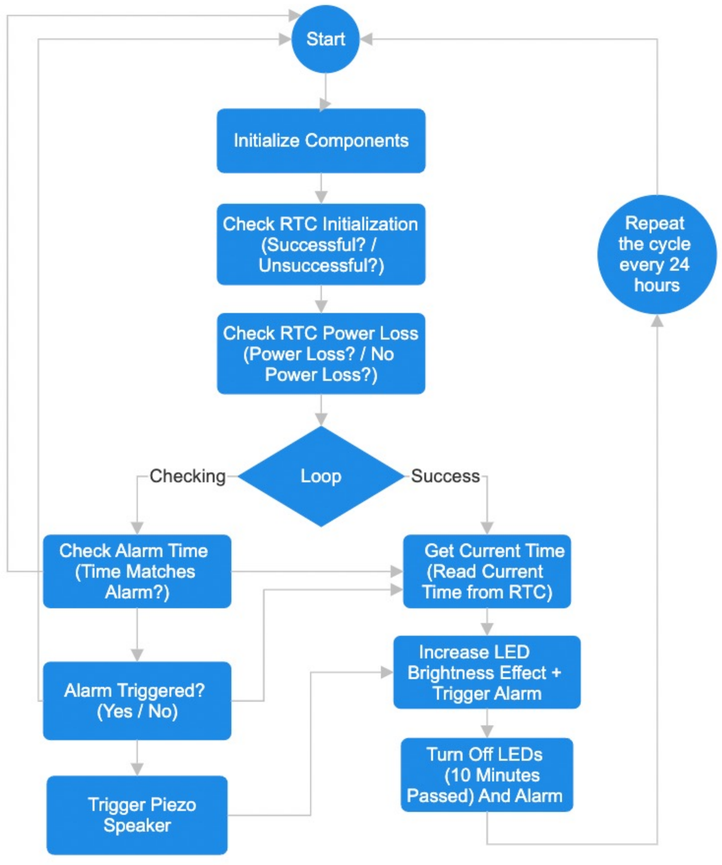
Goal: build a sunrise alarm clock
Design Objectives:

- Implement an RTC module that works along LED strip, a piezo speaker, and ultrasound sensor
- Create a prototype that wakes up at a certain time of the day by gradually increasing the LED strip brightness

Parts

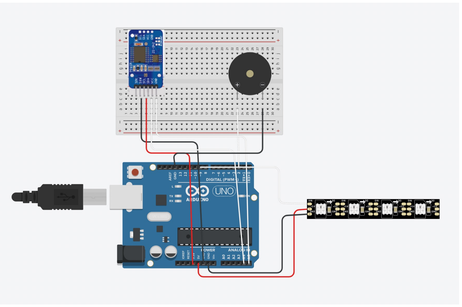
- Arduino Uno and Breadboard
- Batteries
- RTC **DS3231** Module
- Jumper wires
- **WS2812B** LED Strip
- Double Sided Tape
- 3D Printed Lamp Design
- Glue
- Piezo Speaker
- Ultrasound Sensor (not used as planned)

Code Flow Chart



Supplies Used

Circuit Diagram



Testing

- The clock successfully implemented the code and was able to work as planned. The brightness increased by 10% every minute for 10 minutes and was turned off by ultrasound sensor or by reaching the 10-minute mark

Future Thoughts

- Create a more efficient design and code logic – both Arduino and breadboard with sensors did not fit inside the lamp as initially planned
- Include more complex sensors, such as an ultrasound sensor
- Use different spray paint
- Use other lamp design materials, such as wood or metal