

Smart system for visual impaired people

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Types of Canes



Fig. 1. White Cane



Fig. 2. Red and White
Cane



Fig. 3. Green Cane



White Cane



DISCAPACIDAD VISUAL TOTAL

Fig. 4. White Cane example

Design Process

Problem definition

- Advance notification

Definition of restrictions and criteria

- Restriction:
 - Use a system of sound and vibration
 - No light system
- Criteria:
 - Ease to use
 - Cane color

Generate and discard solutions

- Implement the system on glasses
 - Heavy
 - Uncomfortable
- Implement the system in footwear
 - Easier to get wet and dirtier
 - Uncomfortable

Specifications of the chosen solution

- White cane
- Microcontroller (Nano)
- Ultrasonic sensor
- Buzzer
- Vibration motor
- Switch
- 9V battery
- Cables
- Connectors



Fig. 5. Cane prototype

Circuit

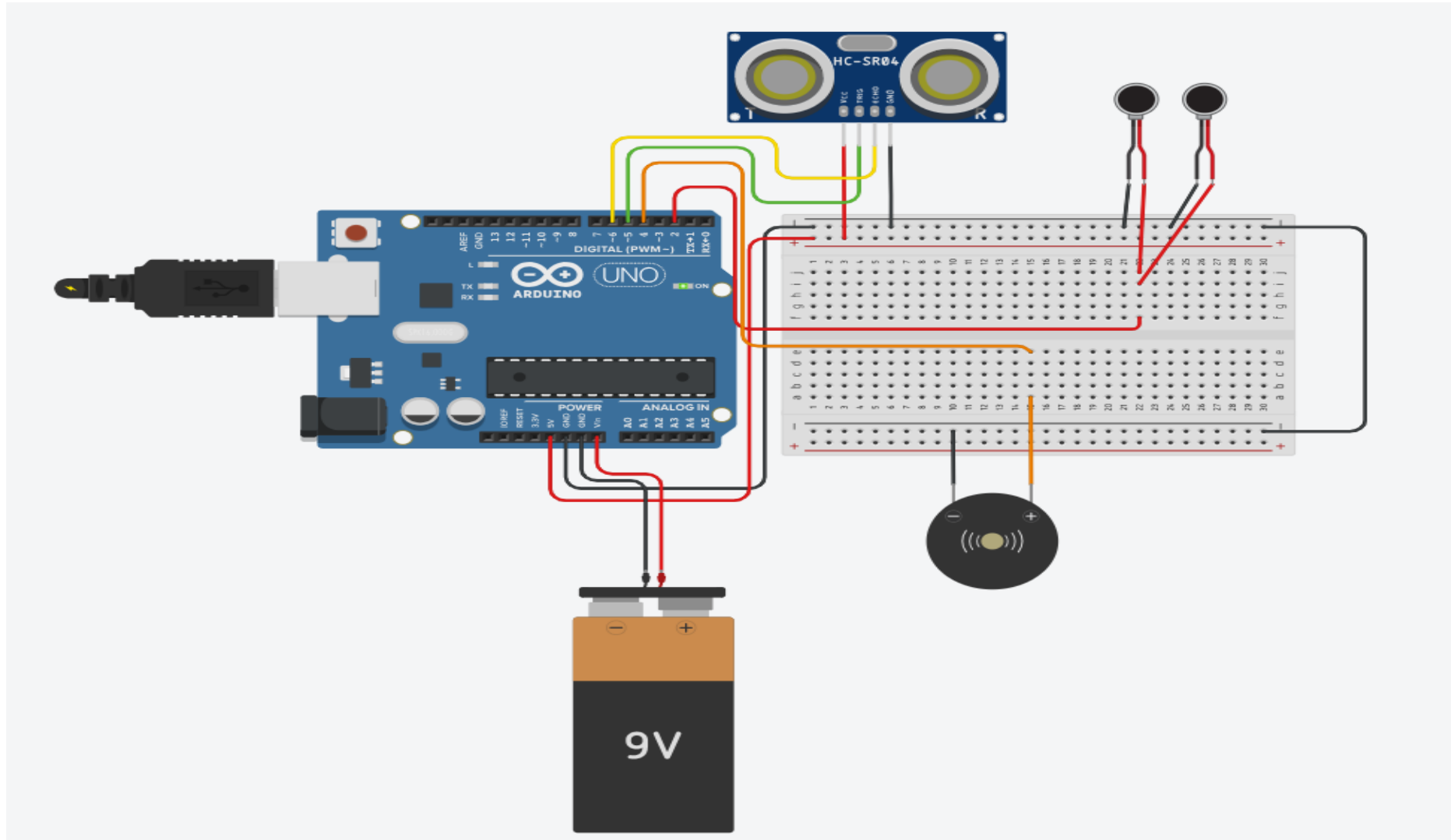


Fig. 6. Circuit in Tinkercad - <https://www.tinkercad.com/things/kurLizvJ26R-final-project-circuit/editel>

Flowchart

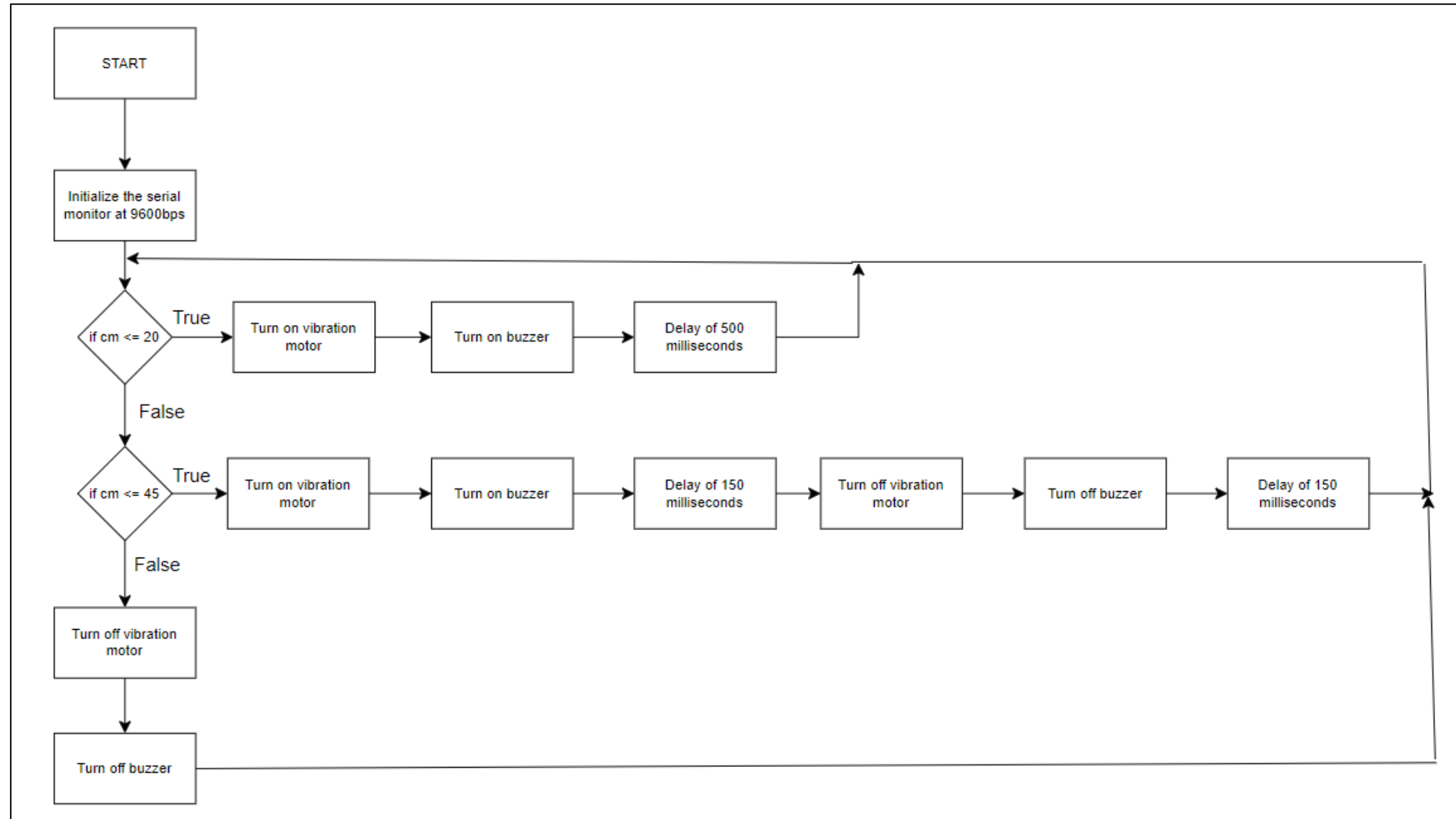


Fig. 7. Flowchart

Problems faced

- Angle for the ultrasonic sensor
- Position/Amount of the vibration motors
- Sensibility on the ultrasonic sensor

Conclusion

- In this project was applied several things we learned in class like the use of a microcontroller. It was fun working with the ultrasonic sensor which we only had use in simulation in Tinkercad. It was interesting making it sound a buzzer and vibrates the motors according to some specific distance. Also, it was a big challenge getting set the complete circuit on the cane, without using a breadboard.

References

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