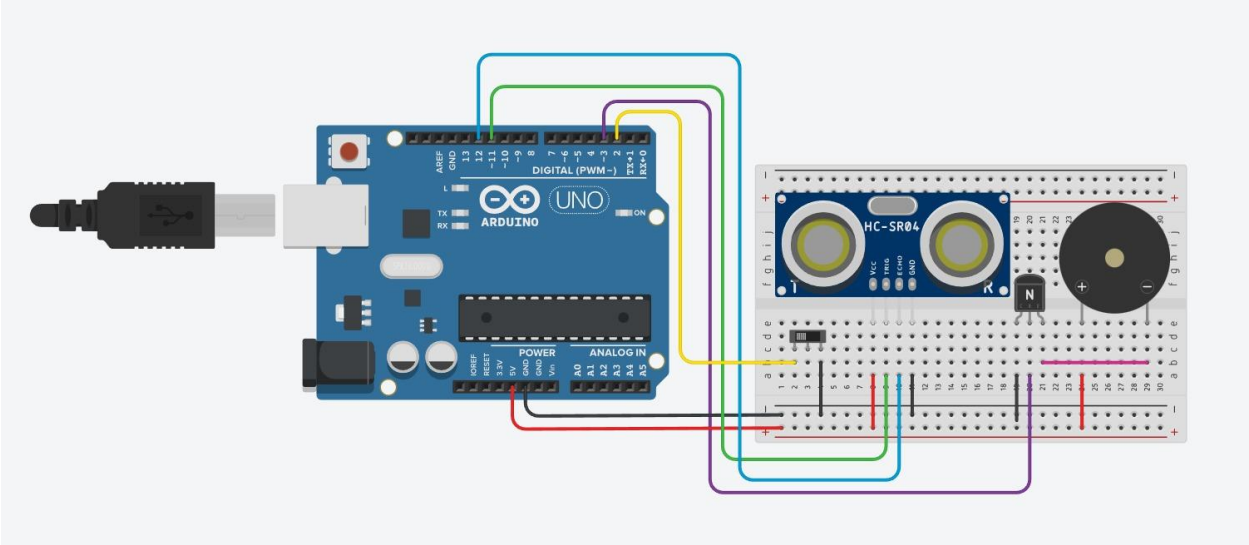
Part 1 - CAD

1.1 - Download all provided DXF files.

1.2 - Upload the DXF files to Illustrator and modify them so that all outlines are red and 0.001mm thick - then, print to laser cutting software. The following pieces should be cut:

- Bottom x 1
- Lid x 1
- Chamber acrylic donut x 1
- Rectangle sides x 2
- Speaker side x 1
- Switch side x 1
- Disc x 6

Part 2 - Electronics and Software



Required materials:

- Computer with Arduino IDE installed
- Arduino Uno
- Breadboard
- Wires
- HC-SR04 Ultrasonic Distance Sensor
- Speaker driver
- NPN transistor
- Toggle switch
- 9V battery and adapter
- USB type A to B cable

2.1 - Use the circuit diagram and connect every component to the breadboard accordingly.

2.2 - Connect Arduino Uno into computer and run Arduino IDE.

2.3 - Download Talkie: https://github.com/adafruit/Talkie

2.4 - Click Sketch > Include Library > Add .ZIP Library… and choose Talkie-master.zip

2.5 - Copy the following code and paste into Arduino IDE.

2.6 - Copy code version 3.2.0 from the following repository:
https://github.com/aribaza/scenario-6/blob/main/V3.2.0
2.6 - Upload the code into the board. Once uploaded, disconnect the Arduino Uno.

Part 3 - Manufacturing
Required materials:

- Laser cutter
- Hack saw
- Saw workbench with clamps
- Hot glue gun
- Epoxy resin
- Scissors
- Sandpaper
- Velcro strips
- Opaque 3mm acrylic plate
- GEVACRIL D=50x47mm L=2000mm Polycarbonate Tube
- Flexible PVC pipe

3.1 - Retrieve laser cut pieces from step 1.
3.2 - The laser cutter will have cut six identical discs. Stack the discs individually, applying a very thin layer of hot glue between them. There should ideally be no spacing between each disc layer. Secure the discs with clamps and let them dry, ensuring that the discs are aligned and don't stick out. Once cooled, sand the edges.
3.3 - Assemble the box in reference to the CAD file. Use hot glue to seal the edges. Leave out one of the 120x85mm "Rectangle sides.dxf" side plates for now.
3.4 - Cut four 3x120mm velcro strips and stick them on the open side of the box and the remaining plate. This should allow for the side plate to detach and reattach.
3.5 - Get GEVACRIL D=50x47mm L=2000mm Polycarbonate Tube. Using a ruler measure out the 28cm point from the edge and mark it along the tube using a pen. Clamp the tube and cut through the mark. Sand down the sharp edge of the new 28cm tube using sandpaper.
3.6 - Using epoxy resin, join the acrylic disc piece with the hole to the 28cm tube.
3.7 - Place the stacked disks inside the tube, and join the empty side of the tube with the top part of the box. Centre the two holes in the acrylic plate with the tube.
3.8 - Using hot glue, secure the ultrasonic sensor in the box. The receiver and the emitter of the sensor should be sticking up to the tube from the holes in the acrylic plates.
3.9 - Using hot glue, secure the speaker in the oval hole in the side of the box.
3.10 - Unscrew the nut on the toggle switch, stick the switch from inside of the box through the the designated hole on the side of the box and secure from the outside using the nut.,
3.11 - Put the 9V battery into the adapter and connect the adapter to the Arduino.
3.12 - Insert flexible mouth tube into acrylic donut