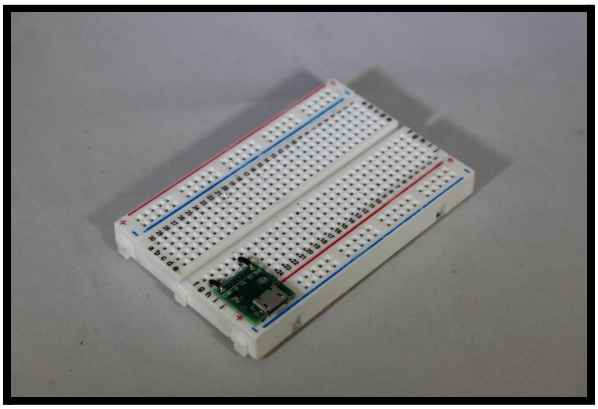
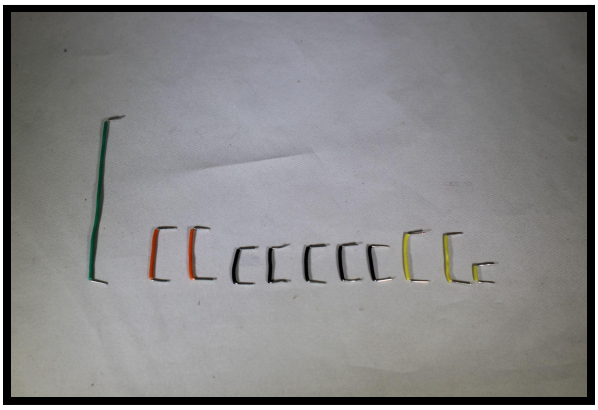
KAT9000 Makebox Instructions - Judge Edition

A. Inventory - in your box, you will find the following:

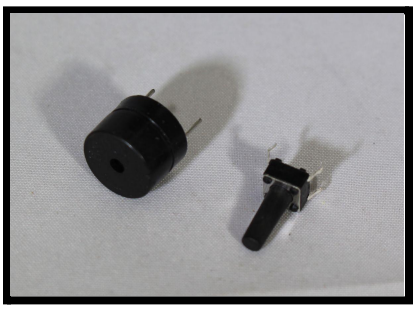
1. Breadboard with attached Micro USB port



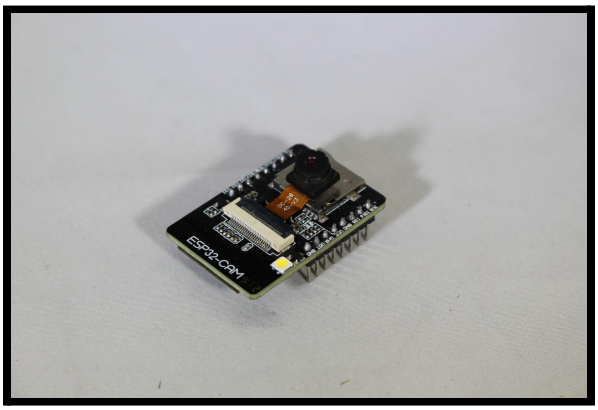
2. Breadboard connector wires of varying length and color



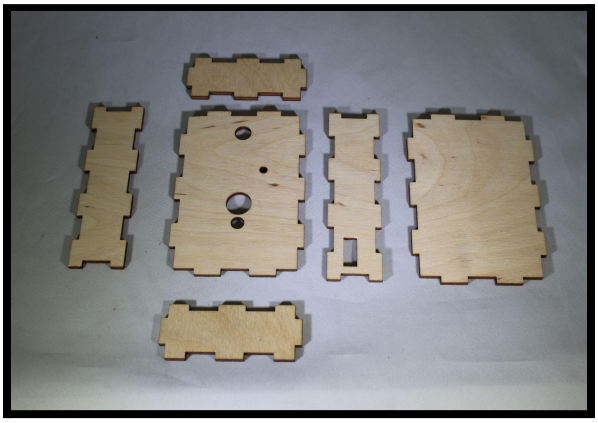
3. A small round buzzer with 2 pins out the bottom and a long pushbutton



4. An ESP32 CAM microcontroller



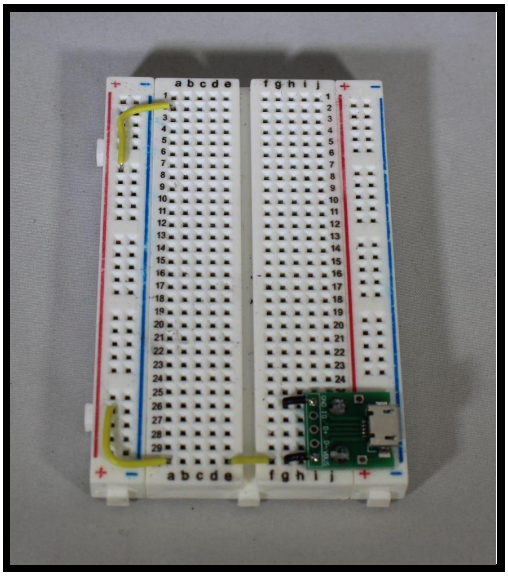
5. Wood panels with cutouts



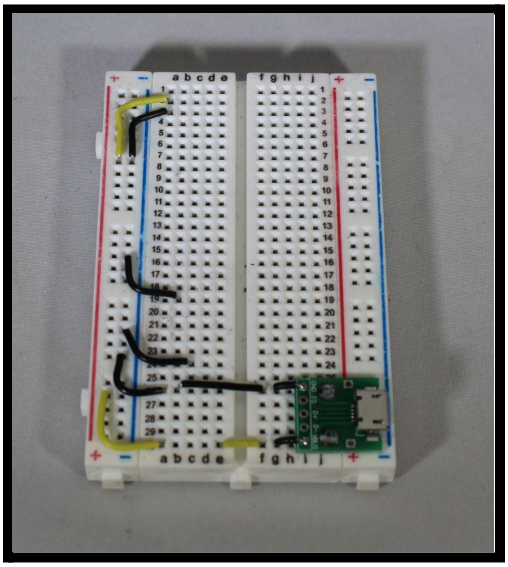
6. Superglue (borrow from Callen’s box if needed)

B. Assembly - Circuit

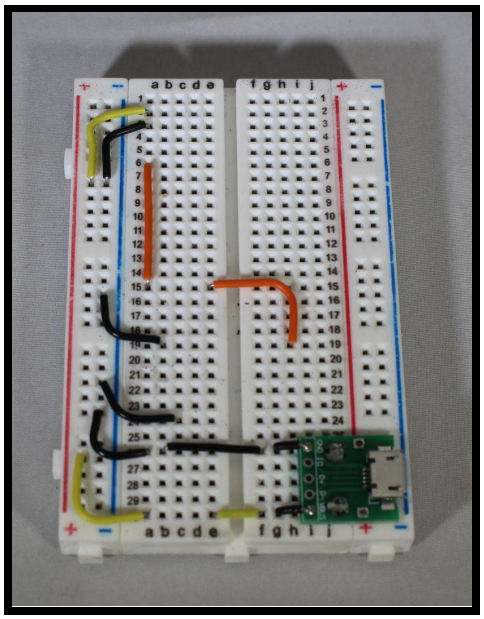
1. Run the yellow wires as shown. These will power the board.



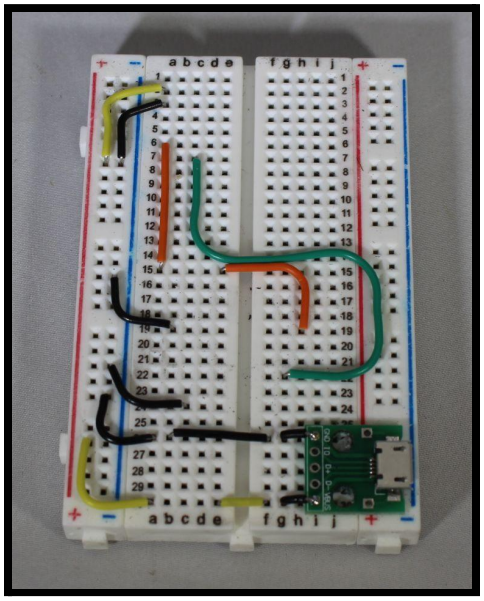
2. Run the black wires as shown. These are all the ground wires.



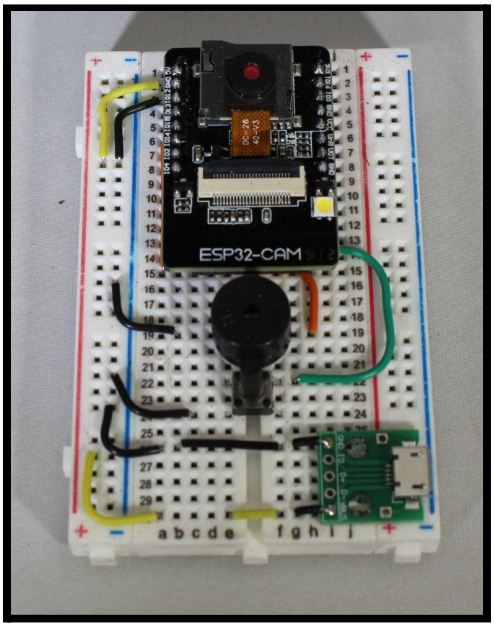
3. Run the orange wire as shown. These wires power the buzzer.



4. Run the green wire as shown. PLACE INTO EXACT COLUMN ON BREADBOARD. This wire will connect to the pushbutton used for reset, and the wire WILL RUN BELOW THE BOARD. For ease of assembly, position all wires, ESPECIALLY green, similar to as shown.



5. Place the ESP32 CAM into the board with the top-left-most pin (labeled 5V) lining up with the yellow wire. Plase the buzzer into the board with the LONG pin lining up with the bent orange wire, and the SHORT pin lining up with the black directly across from the orange. The buzzer should cross the gap in the breadboard as shown. Place the pushbutton into the breadboard below the buzzer with the four pins facing left and right and the top-right pin lining up with the green wire as shown. The bottom-left pin should now line up with a black wire.



C. Assembly - Case

1. Take the large blank piece, the long side piece with the rectangular cutout, and a short side piece and create a corner with them. This corner will be the front-right corner of the device. The breadboard has flat sides on its top and right. These sides sit flush against the sides

you made with the case pieces. Peel off the paper on the bottom of the breadboard to expose its adhesive, and stick the breadboard to the bottom case piece by using the other two pieces for alignment. The bottom piece does not get glued to the rest of the case.

2. Place the large piece with four cutouts facing down, so the one off-center cutout is on the left. The blank long side piece will be placed on the right of the top piece. It is important to make sure you do not put the long side piece with the cutout on the right, because the USB port will face the right side once the case is flipped back over.
3. Take a short side piece and create another corner with the first and second piece (the orientation for the short pieces doesn't matter). Superglue the corner, and apply some glue across each edge as well.
4. Add the long side piece with the cutout to the LEFT of the piece that's flat on the table. Make sure the cutout lines up closer to the large piece's two-hole cutout (where the button and buzzer eventually go). Superglue this in place.
5. Superglue the final short piece in place. DO NOT glue the bottom piece with the circuit into the case.
6. Align the camera, buzzer, and button with the cutouts on the case's front piece, and carefully insert the circuit into the case. The Micro USB port should line up with the side cutout.

D. Powering On

1. While holding the button on the front of the device, plug the device into a wall or computer using the provided cable. Wait 5 seconds, then release the button.
2. Find a WiFi network named “Makebox IoT32” and connect to it to set up WiFi on the device.

Once you configure the device on the website, it should show up in the list of all devices, and display information on the “My Device” section.

Notes

The whole idea of the project was to use a camera as a motion sensor and alert the user when it was triggered. The device is also supposed to capture a picture and upload it to Firebase cloud storage so the website can retrieve them. Ideally, the device will also optionally email the user and save timestamps of the capture times for the images. One of these features works.

The device does detect motion with a camera. The night before the due date, I encountered several major problems at once, and I couldn't fix them in time. I didn't know until it was too late that the other ESP32 CAM boards had different cameras, and the code couldn't run with them for some reason. Another thing to be warned about is that the wood pieces that make the case didn't seem to cut correctly, and the cutouts I spent a couple hours on ensuring they would fit correctly were messed up.

I am fully aware that this project is not up to standards as it's presented, but presenting nothing at all is not an option. During pitch day, I'll make an effort to explain exactly what this project SHOULD be.