MP3 Playing 90's BoomBox

Design your own real working boom box from cardboard. Play MP3s Old School style!

Written By: Natasha Dzurny



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INTRODUCTION

[video: https://youtu.be/prEz6npFjUs]

TOOLS:

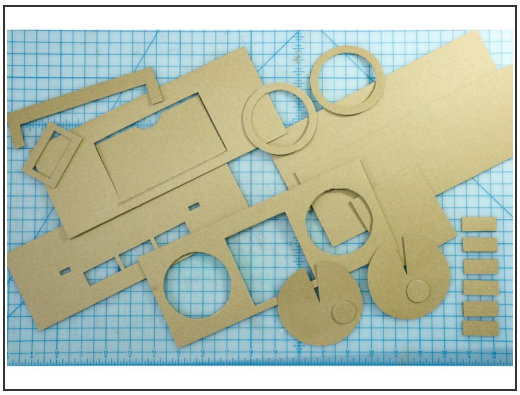
- Printer (to print out the template) (1)
- Utility Knife (1)
- Ruler (1)
- Paint or Markers (1)
- Super Glue (1)
- Hot Glue Gun (1)

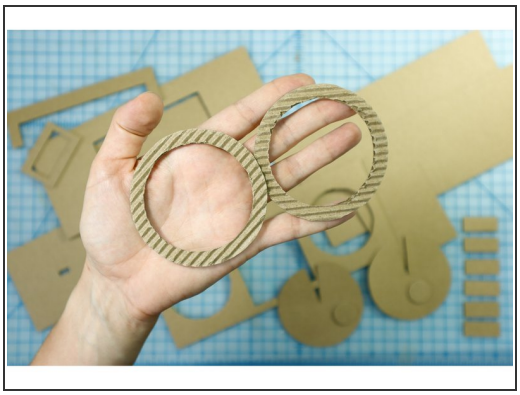
PARTS:

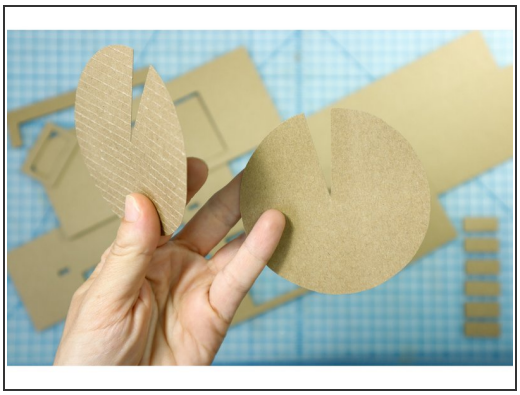
- micro:bit (1)
- Crazy Circuits Bit Board (1)
- YX5300 MP3 Player Module (1)
- Small USB Powered Speakers (1)
- USB Power Bank (With 2 Ports) (1)
- USB Cable (1)
- Cardboard (1)

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Step 1 — Cut out the shapes

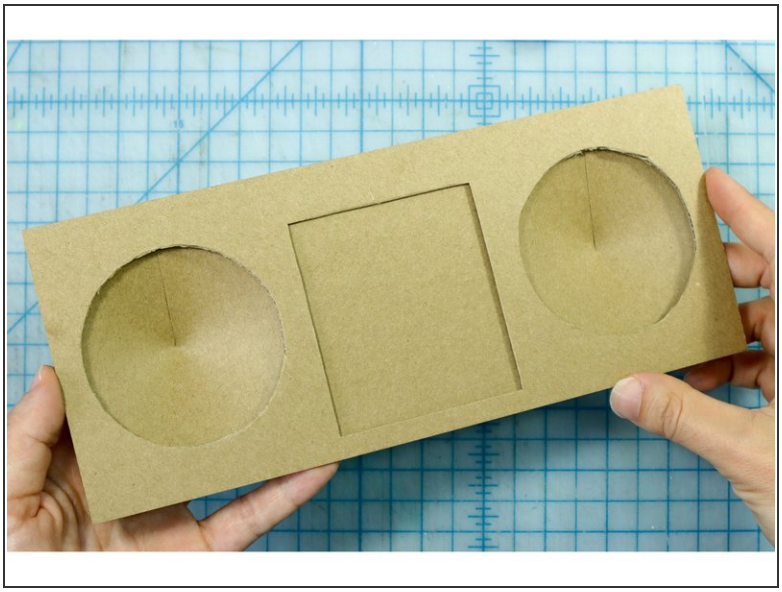


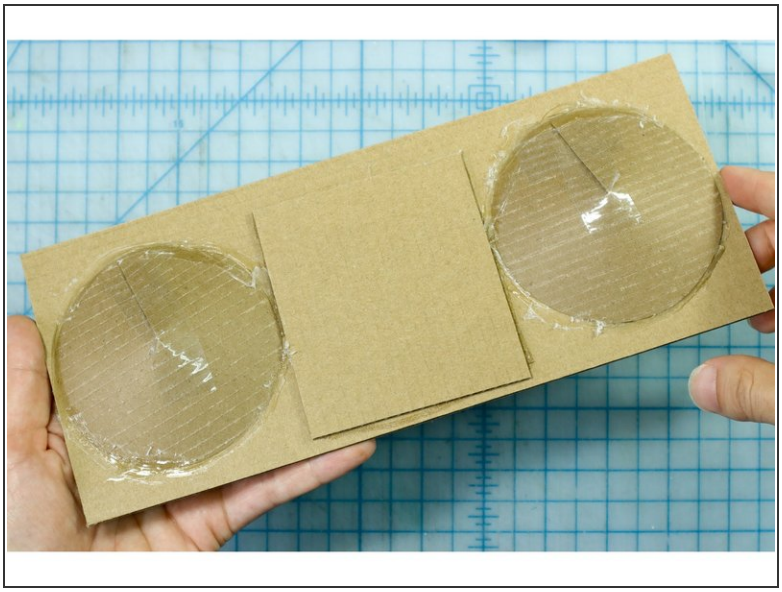




- Download the template.
- Cut the shapes out of cardboard. Before you cut the large rings and small circles, remove one side of the paper, revealing the corrugation. This will make it easier to cut the circles.
- Use the paper that you removed from the cardboard in the previous step to cut the circles with the wedge. Using a thin piece for these will make it easier to bend them into shape.

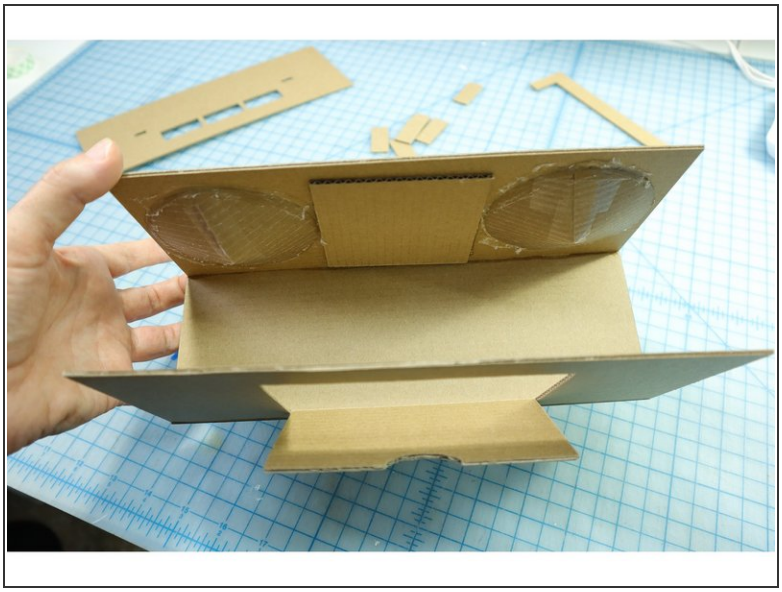
Step 2 — Make the Speaker Cones

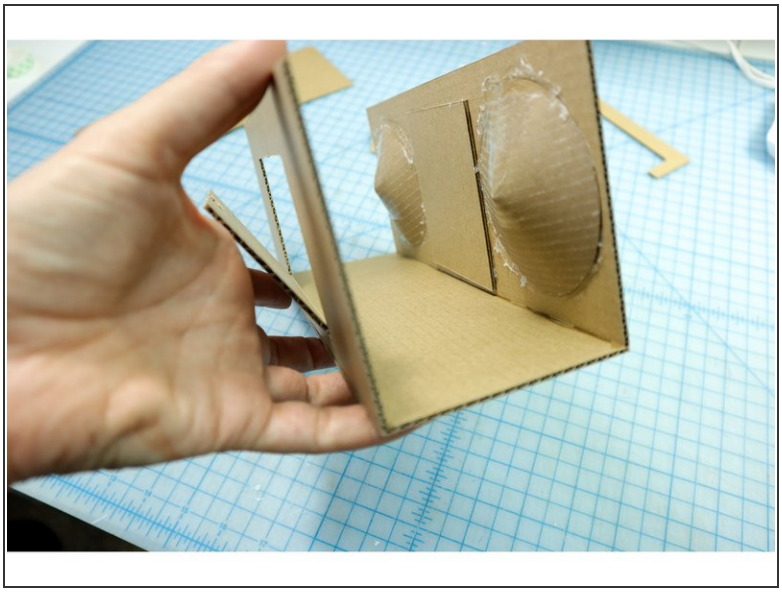




- Glue the circles with the wedge closed to create a cone shape.
- Glue the cones behind the front piece, aligning the seam with the top.
- Glue the rectangle in place behind.

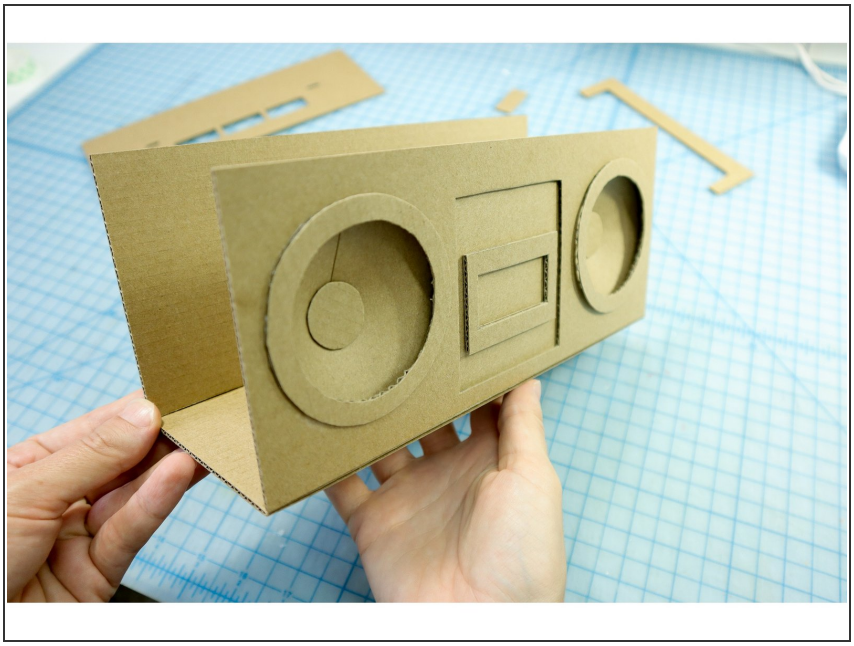
Step 3 — Glue the Bottom and Back





- Glue the bottom and back pieces in place. It can be helpful to use a box or other 90 degree angled object to align the angle.

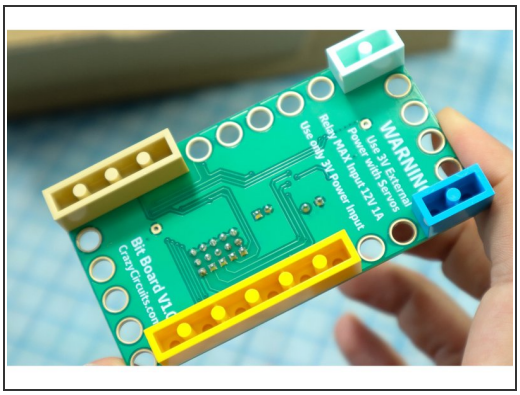
Step 4 — Add the Details

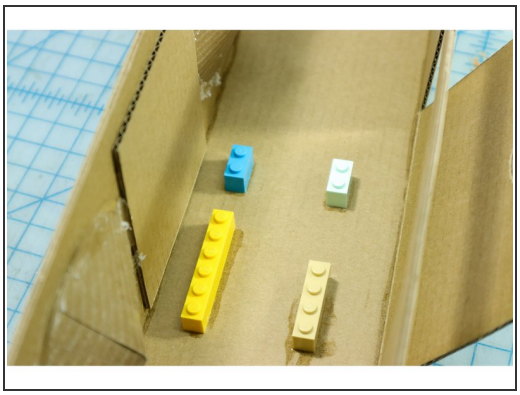
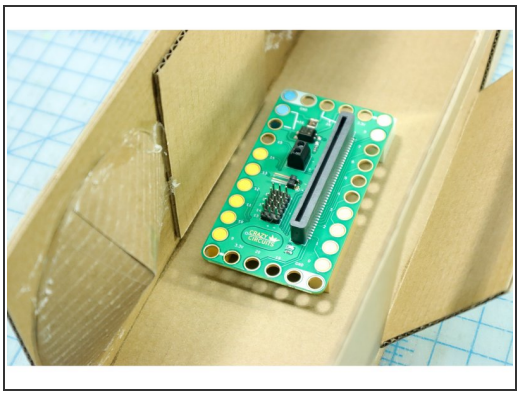


- Glue the circles over the edge of the speakers.
- Glue the small circles into the center of the speakers.
- Glue the Tape Deck piece in the middle.

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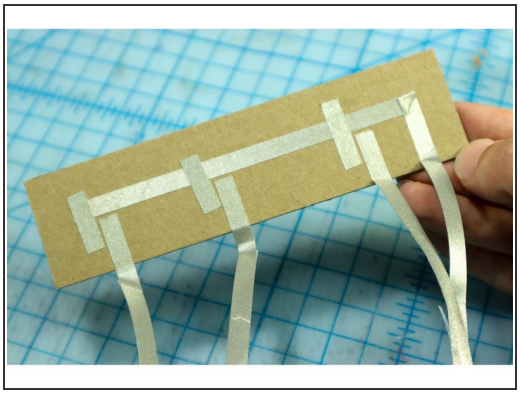
Step 5 — Place the Crazy Circuits Board

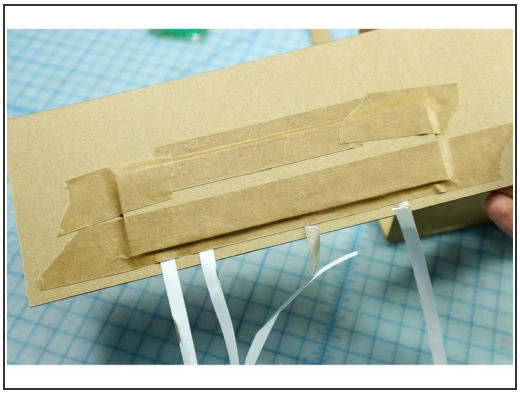


- Place LEGO on the bottom of the board, making sure to cover pins 9-14 and ground (-).
- Add other LEGO to stabilize the board at the corners, and use superglue to place the board inside the Boom Box.

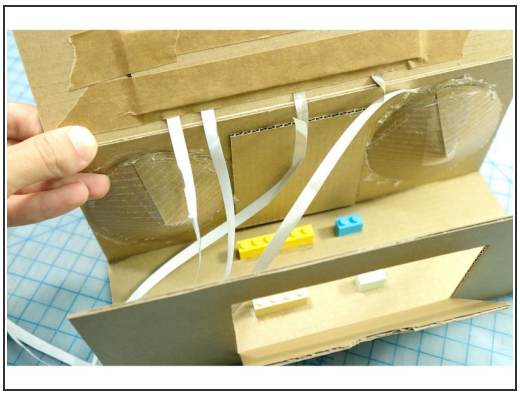
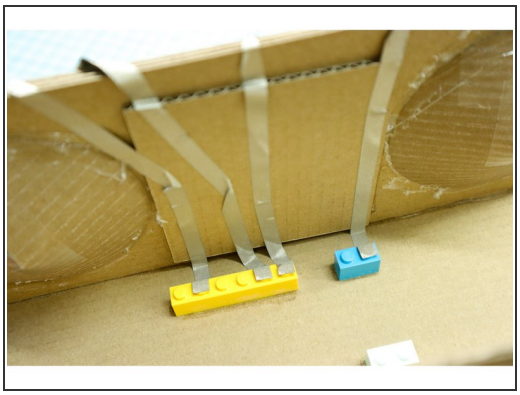
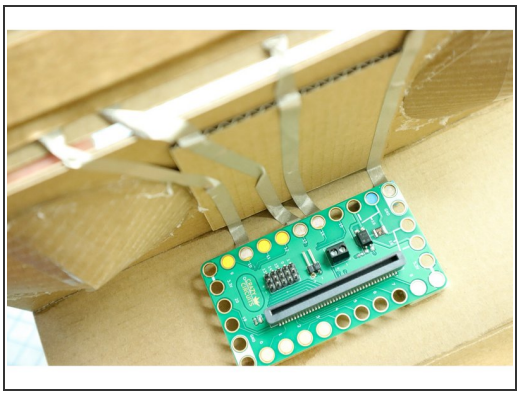
Step 6 — Create the Controller





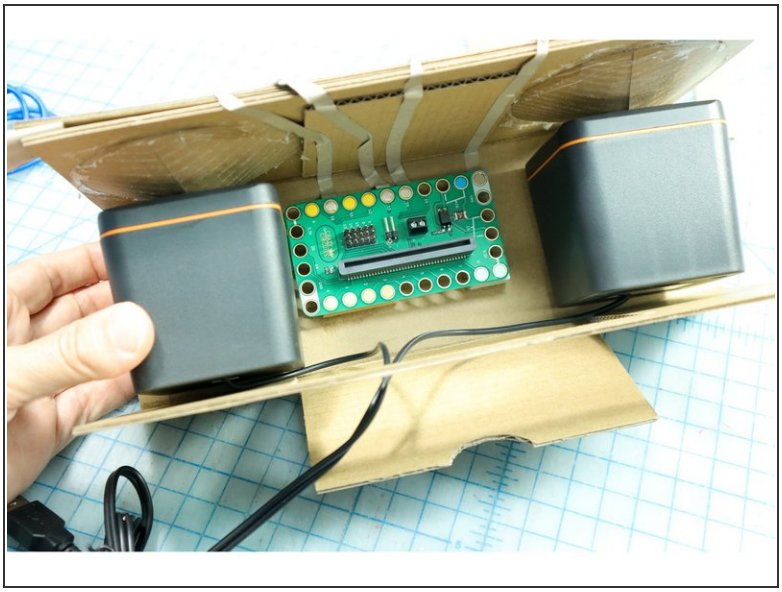
- Add Maker Tape to the button base piece as shown. All switches are connected to ground (-), and the other pieces of Maker Tape will go to the pins.
- Place this piece below the top piece so that the parallel pieces in each switch are visible through the hole.
- Use very strong tape to tape the two pieces together from the bottom.

Step 7 — Connect the Controller

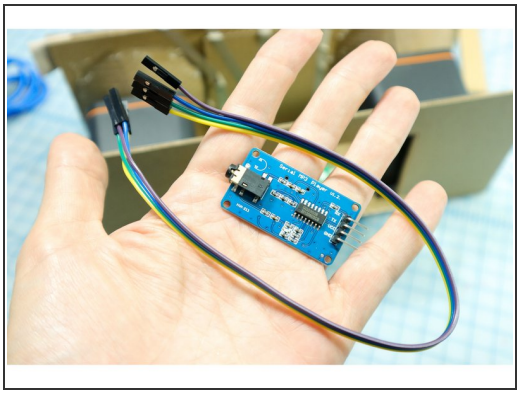
- Slowly remove the backing from the Maker Tape and run the tape to pins 10, 13, and 14, respectively.
- Run the piece of Maker Tape that connects all the switches to the ground (-) pin.
- Place the Maker Tape over the appropriate LEGO stud for each piece, trim it, then place the Bit Board on top.

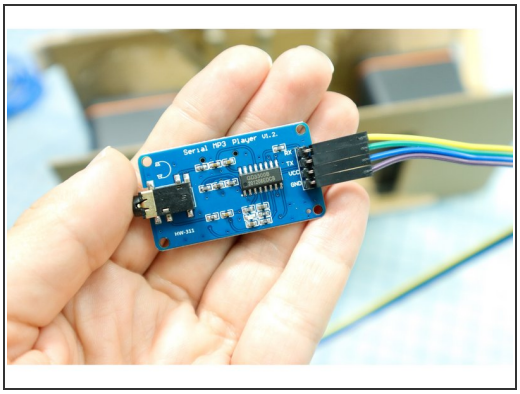
Step 8 — Place the Speakers

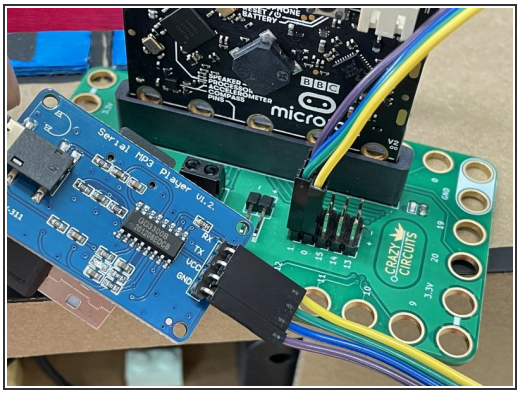



- Use foam mounting tape to place the speakers inside the box.

Step 9 — Connect the MP3 Player Circuit

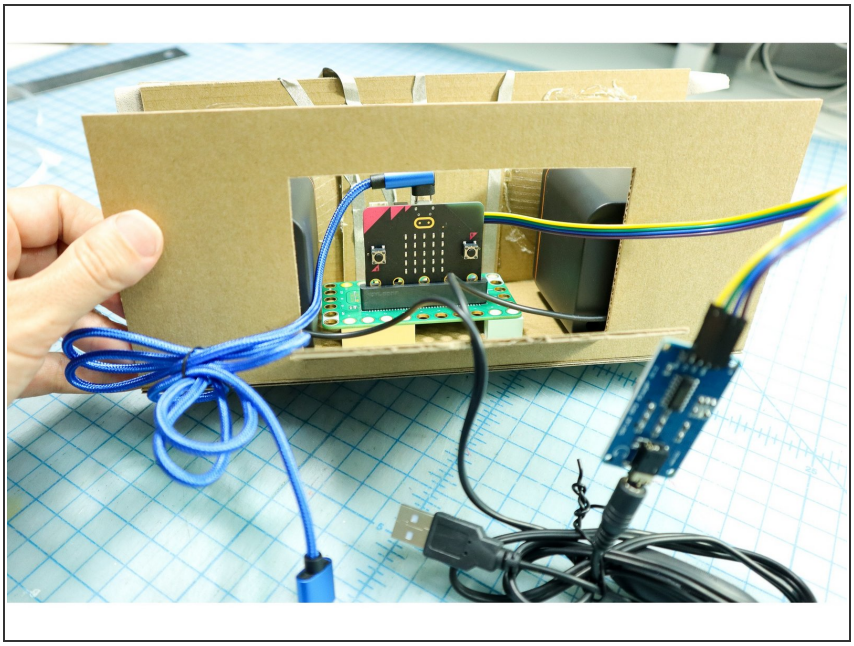






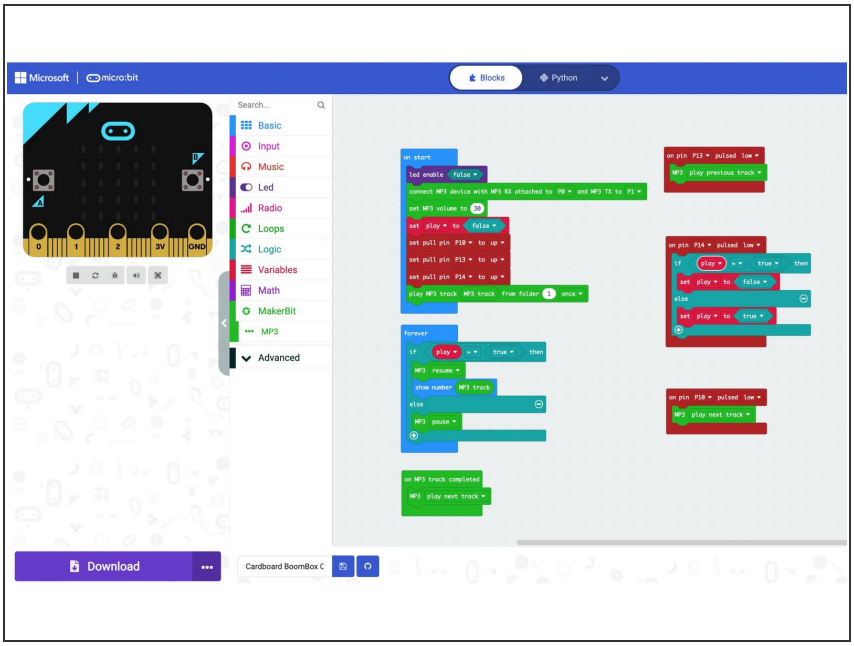
- Connect the MP3 Player Circuit.
- RX = Pin P0
- TX = Pin P1
- VCC = **+**
- GND = **-**

Step 10 — Add the micro:bit



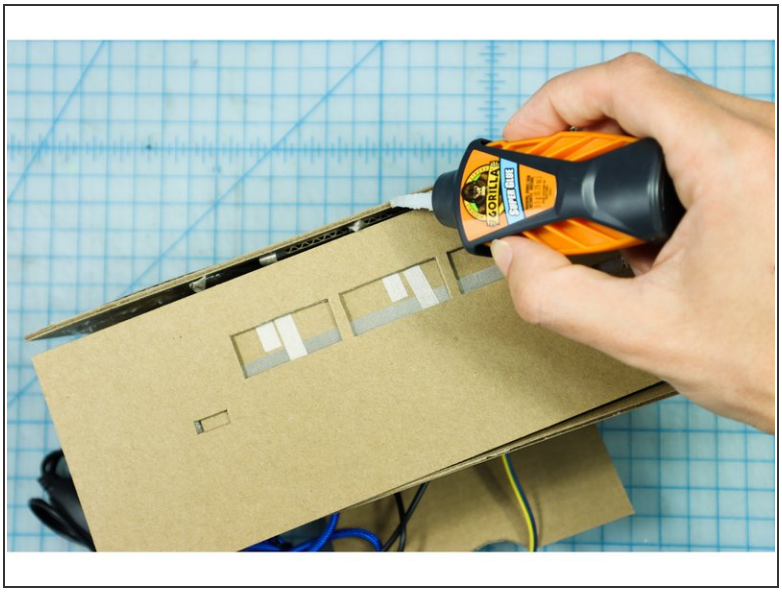
- Add the micro:bit to the Bit Board.

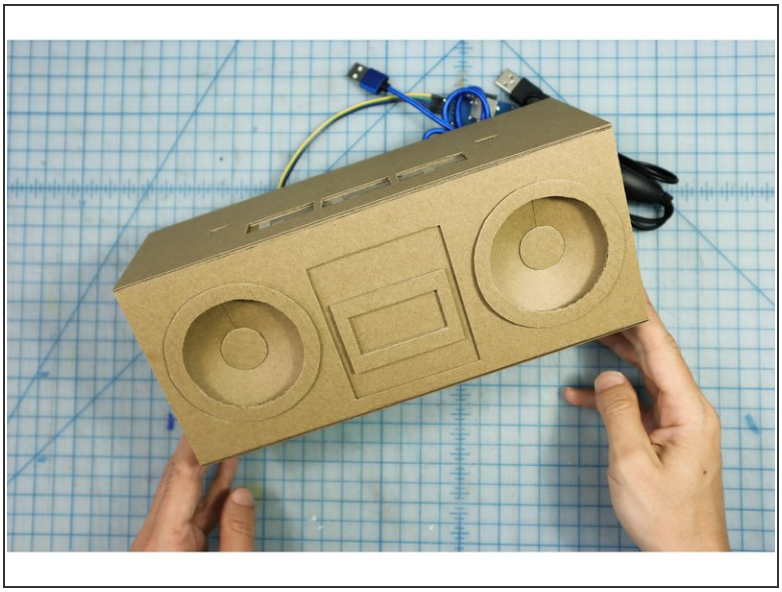
Step 11 — Upload the Code



- Upload the code to the micro:bit, [available here.]
- You will also need to add your playlist of songs to your memory card in a very specific way. [View the instructions here.]

Step 12 — Glue the Top





- Glue the top of the box to the front and back with Super Glue

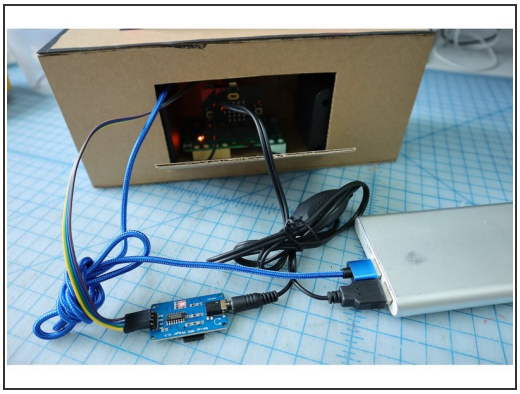
Step 13 — Glue the Sides

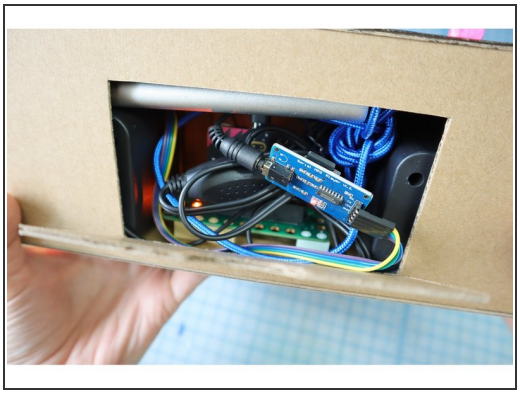




- Because the side pieces dimensions depend on the thickness of the cardboard, you'll have to measure this one. Measure the width and height of the interior of the sides and cut a piece of cardboard to fit.
- Glue in place.

Step 14 — Stuff everything inside!

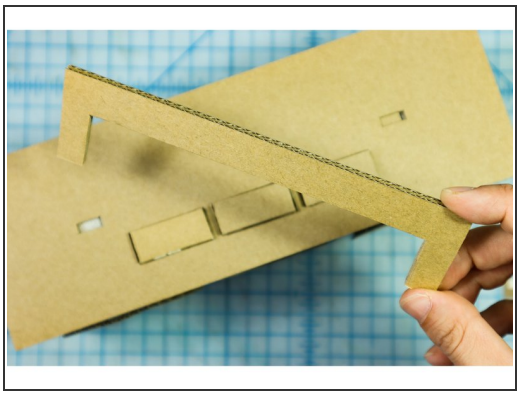
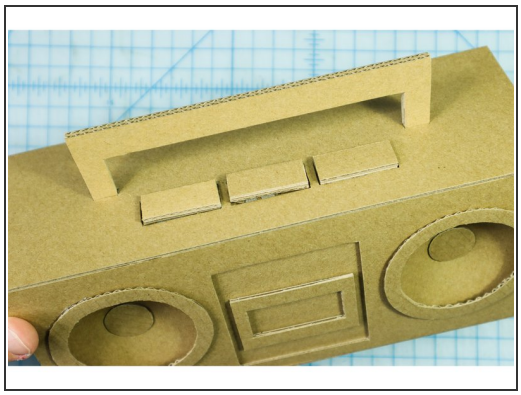






- Plug in the two USB cables (one connected to the micro:bit and the other connected to the speakers) into a USB battery pack to make the project portable.
- Stuff everything inside the box. If your speakers have a volume adjustment, set it to full volume before closing the door.

Step 15 — Make the Button Covers and Handle

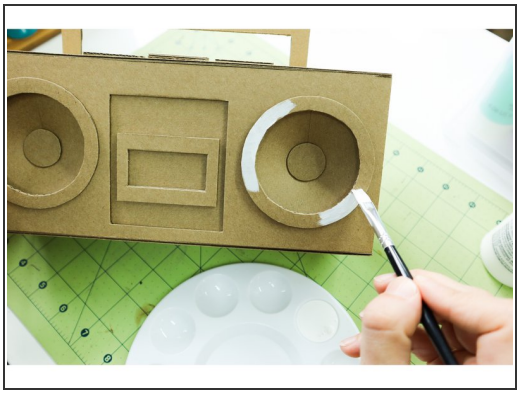




- Glue 2 of the small rectangles together to make a thick button. Repeat two more times until you have three buttons.

  ⚠ **!!! Important: Don't glue the buttons in place yet. You will finish the button cap covers in a later step.**

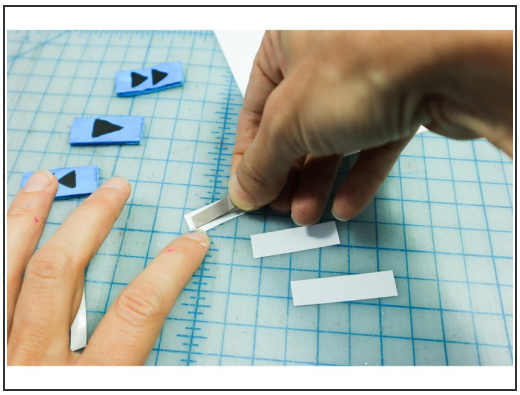
- Cut one or two handle pieces from cardboard (depending on how thick the cardboard you are using is) and glue the handle in place.

Step 16 — Paint!


- Paint the BoomBox. I used 3 layers of neon paint on top of one layer of white paint to make it pop!

Step 17 — Connect the Buttons

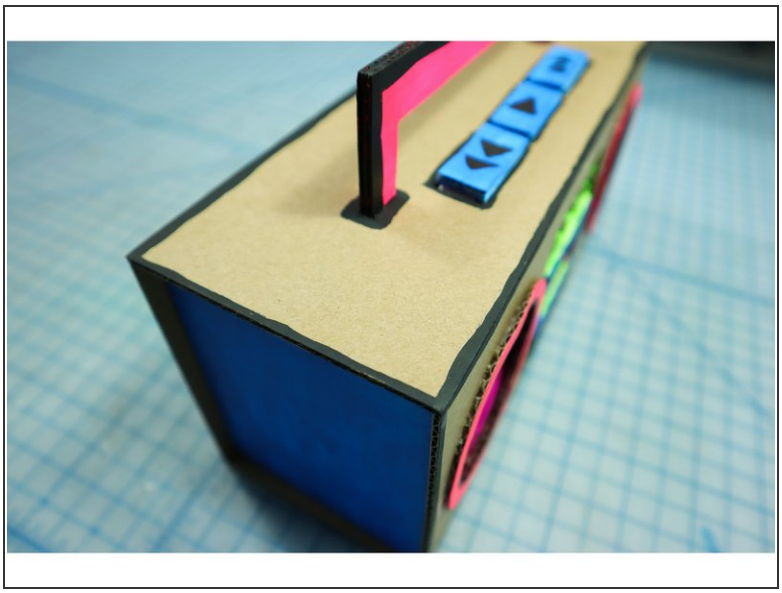




- The buttons will close the gap between the two pieces of Maker Tape.
- To do this, use a scrap of printer paper that is slightly smaller than the button rectangle. Place a piece of Maker Tape on top and fold over the edges as shown.
- Add glue to the flaps and place the piece over the gap in the Maker Tape so that pressing down on the paper closes the switch.
- Finally, add a dab of glue to the center of the printer paper and place the button cap cover on top. Now, when you press the button cover, the Maker Tape connection will be made! (Repeat for the other two buttons)

Step 18 — Play that music!





- Use the buttons to play the music! Impress your friends with your new custom BoomBox.