



# MAGIC BAND READER V1

Designed: Dominick Civitano

Parts list:

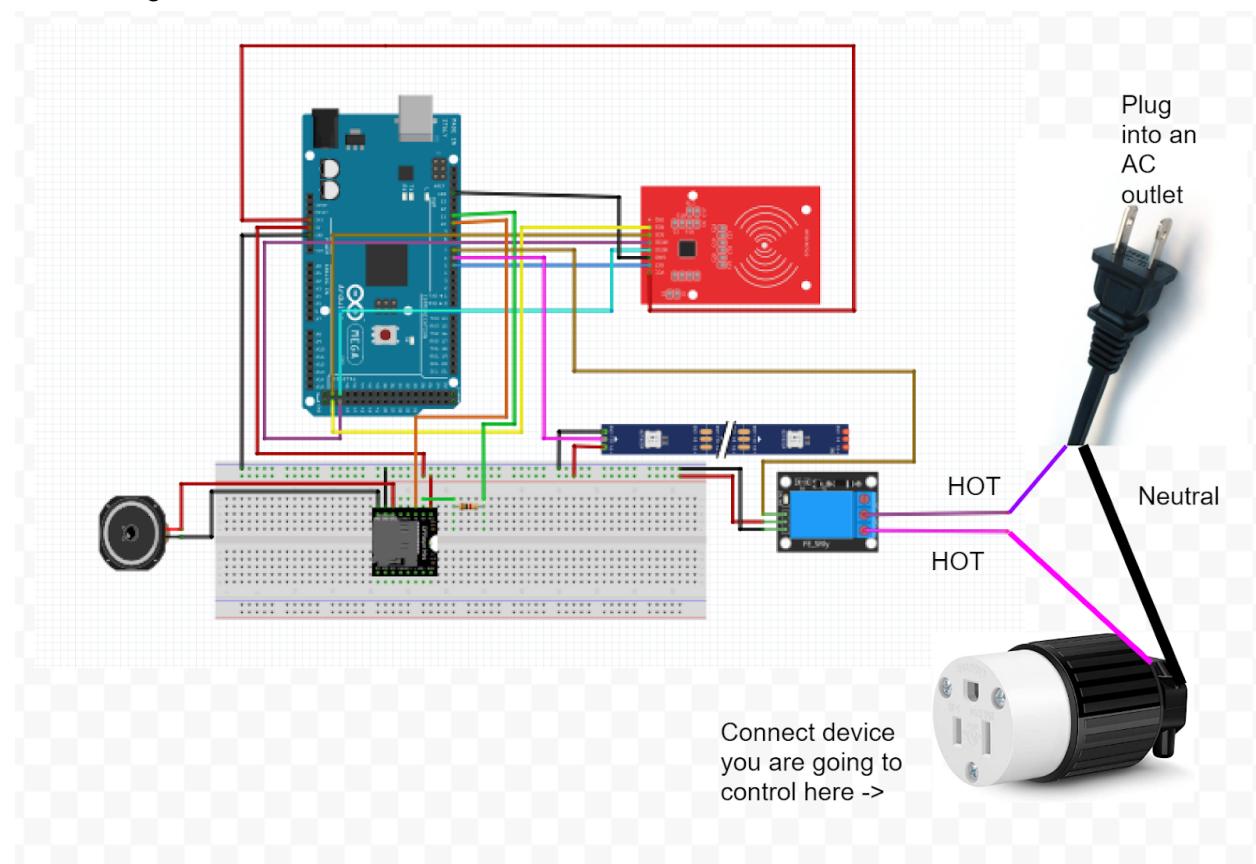
Part	link	Price
• 3D printed parts	<a href="https://www.thingiverse.com/thing:460759">https://www.thingiverse.com/thing:460759</a>	Prices may vary but if you need someone to print parts message me!
• Arduino Mega (this can be changed to either an uno or nano but in this version it's the one I used)	<a href="https://www.amazon.com/ARDUINO-MEGA-2560-REV3-A000067/dp/B0046AMGW0">https://www.amazon.com/ARDUINO-MEGA-2560-REV3-A000067/dp/B0046AMGW0</a>	\$31 (keep an eye out for a sale)
• Mini MP3 Audio module (DFPlayer-mini)	<a href="https://www.amazon.com/gp/product/B07Y2KYRS/ref=ppx_yo_dt_b_asin_image_o06_s00?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B07Y2KYRS/ref=ppx_yo_dt_b_asin_image_o06_s00?ie=UTF8&amp;psc=1</a>	\$10
• 5V relay standard arduino relay	<a href="https://www.amazon.com/gp/product/B07BVXT1ZK/ref=ppx_yo_dt_b_asin_title_o01_s00?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B07BVXT1ZK/ref=ppx_yo_dt_b_asin_title_o01_s00?ie=UTF8&amp;psc=1</a>	\$8
• jumper wires both male to male and male to female (you probably don't need this many but it is always good to have these on hand)	<a href="https://www.amazon.com/gp/product/B07GD2BWPY/ref=ppx_yo_dt_b_asin_image_o00_s00?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B07GD2BWPY/ref=ppx_yo_dt_b_asin_image_o00_s00?ie=UTF8&amp;psc=1</a>	\$5.79
• LED strip	<a href="https://www.amazon.com/gp/product/B07C2W2ZQK/ref=ppx_yo_dt_b_asin_title_o09_s00?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B07C2W2ZQK/ref=ppx_yo_dt_b_asin_title_o09_s00?ie=UTF8&amp;psc=1</a>	\$10
• <b>1 K ohm resistor</b>	<a href="https://www.amazon.com/Projects-100EP5121K00-Ohm-Resistors-Pack/dp/B0185FIJ9A/ref=sr_1_3?dchild=1&amp;keywords=1k+ohm+resistor&amp;qid=1605366999&amp;sr=8-3">https://www.amazon.com/Projects-100EP5121K00-Ohm-Resistors-Pack/dp/B0185FIJ9A/ref=sr_1_3?dchild=1&amp;keywords=1k+ohm+resistor&amp;qid=1605366999&amp;sr=8-3</a>	\$6.31

• Speaker	<a href="https://www.amazon.com/Yootop-Internal-Magnet-Loudspeaker-Speaker/dp/B07FMR5JGX/ref=sr_1_4?crid=2K87N6KVKY9V2&amp;dchild=1&amp;keywords=speaker+arduino&amp;qid=1605367054&amp;suffix=speaker+arduino%2Caps%2C143&amp;sr=8-4">https://www.amazon.com/Yootop-Internal-Magnet-Loudspeaker-Speaker/dp/B07FMR5JGX/ref=sr_1_4?crid=2K87N6KVKY9V2&amp;dchild=1&amp;keywords=speaker+arduino&amp;qid=1605367054&amp;suffix=speaker+arduino%2Caps%2C143&amp;sr=8-4</a>	\$9
• RFID reader	<a href="https://www.aliexpress.com/item/105001543022507.html?spm=a2g0o.productlist.0.0.2228e5c2ludWkE&amp;algo_pvid=4a07b899-7219-49a6-9ee4-7fc097820709&amp;algo_expid=4a07b899-7219-49a6-9ee4-7fc097820709-12&amp;btsid=0bb0623c16053672112166469e25d3&amp;ws_ab_test=searchweb0_0.searchweb201602_searchweb201603">https://www.aliexpress.com/item/105001543022507.html?spm=a2g0o.productlist.0.0.2228e5c2ludWkE&amp;algo_pvid=4a07b899-7219-49a6-9ee4-7fc097820709&amp;algo_expid=4a07b899-7219-49a6-9ee4-7fc097820709-12&amp;btsid=0bb0623c16053672112166469e25d3&amp;ws_ab_test=searchweb0_0.searchweb201602_searchweb201603</a>	\$1.27
• Extension cord (a standard AC extension cord will work)	<a href="https://www.harborfreight.com/12-ft-x-16-gauge-indoor-extension-cord-62910.html">https://www.harborfreight.com/12-ft-x-16-gauge-indoor-extension-cord-62910.html</a>	\$4.29
• Breadboard	<a href="https://www.amazon.com/Breadboards-Solderless-Breadboard-Distribution-Connecting/dp/B07DL13RZH/ref=sr_1_3?dchild=1&amp;keywords=breadboard&amp;qid=1605368580&amp;sr=8-3">www.amazon.com/Breadboards-Solderless-Breadboard-Distribution-Connecting/dp/B07DL13RZH/ref=sr_1_3?dchild=1&amp;keywords=breadboard&amp;qid=1605368580&amp;sr=8-3</a>	\$10
TOTAL		\$95.66+ printed part costs

For all of these parts, should you find cheaper ones you can use those EXCEPT the rfid reader. That version is the only one I have been able to find that can read a magic band. Why? Well frankly I'm not an electronics expert and have no idea but use the one I linked and the system will work.

**Disclaimer: The following process is what I used. Should you choose to follow these directions and/or change these instructions you do so at your own risk. The designer can not be liable should any accident or damages that could be incurred during the build process.**

## Circuit Diagram:



## Instructions:

1. Print or have printed the 3d parts from the link in the parts list. The parts press fit into one another and their assembly instructions are on the thingiverse link.
2. Assemble the circuit diagram above. The extension cord will need to be cut and stripped, there will be 2 wires in the extension cord. Keep one intact and the other will need to be cut and inserted into the relay as demonstrated by the pink and purple wires above.
3. Place the RFID tag reader on the center of the inside of the mickey face. It helps to add a piece of tape to keep it secure.
4. When placing the Neopixel strip, cut the neopixel strip once the LEDs wrap around the outer clear ring. Should you want to add more neopixels, the code will need to be adjusted.
5. Upload the arduino code from the github link. After uploading the arduino code, there will need to be some adjustments made in order to have your magic band work.

6. First you'll need to do a test scan you're magic band and have the arduino serial monitor open. Once you scan, text will be displayed that should look something like this:

```
Card UID: 04 91 28 8A D5 2C 80
Card SAK: 20
PICC type: PICC compliant with ISO/IEC 14443-4
Name: Authentication failed: Timeout in communication.
**Card Detected:**
UID tag : 04 91 28 8A D5 2C 80
Message : Authorized access
Relay off
```

7. The difference between my display and yours will be that it says Authorized Access but for you it will say Access Denied. What you will need to do is to pay attention the the card UID

```
Card UID: 04 91 28 8A D5 2C 80
Card SAK: 20
PICC type: PICC compliant with ISO/IEC 14443-4
Name: Authentication failed: Timeout in communication.
**Card Detected:**
UID tag : 04 91 28 8A D5 2C 80
Message : Authorized access
Relay off
```

This code is your identifier for your magic band. What you'll need to do is take my magic band off the access list and add yours. In the code their will be a section that looks like this:

```
if (content.substring(1) == "04 91 28 8A D5 2C 80") //change here the UID of the card/cards that you want to give access
{
    Serial.println("Authorized access");
    disney();
    disney();
    disney();
    disney();
    disneyaccess();
    player.play(1);
    delay(2000);
    disneyoff();
    Serial.println();
```

Remove the part in quotations and replace it with the new code your magic band identifies with

```
if (content.substring(1) == "04 91 28 8A D5 2C 80") //change here the UID of the card/cards that you want to give access
{
    Serial.println("Authorized access");
    disney();
    disney();
    disney();
    disneyaccess();
    player.play(1);
    delay(2000);
    disneyoff();
    Serial.println();
}
```

9. For the audio module you will need to download the magic band sound as an mp3. The part in the code that says player.play(1) is responsible for which sound is played upon access. It will play whatever is first on the list on the SD card so this can be changed should you want the sound to be something other than the traditional magic band chime.

8. Reupload the code, screw on the back casing, and you should be ready to make some disney magic! Enjoy! If you have any questions feel free to message me on facebook or instagram.

Facebook: <https://www.facebook.com/dominick.civitano/>

Instagram: [https://www.instagram.com/dominick\\_civitano/](https://www.instagram.com/dominick_civitano/)

