AdaBox 005

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Guide Contents

Introduction

Hi there!

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[If you're looking to buy AdaBox002 click here!](http://adafru.it/3235) (http://adafru.it/3235)

[If you're looking to subscribe to AdaBox, click here!](http://adafru.it/tNC)(http://adafru.it/tNC)

If you're here, it's because you were given the gift of electronics with an AdaBox! You are a beginner who is getting started with your AdaBox or you just want to relive what it's like being a beginner at electronics again. But most of all, you want to learn how to build and make stuff with electronics! ([If, rather than learn electronics, you'd like to look at pictures of cats instead, please check https://www.adafruit.com/galleries/cats-of-engineering](http://adafru.it/oAd) (http://adafru.it/oAd))

And, you're in luck: there's *never* been a better time.

Gone are the days where you need thousands of dollars of equipment and lots physics/math background. Nowadays, if you want to learn to work with electronics, you can jump right in for $100 or less, and any sort of computer. And we're talking about learning *a lot* of electronics - from the basics of analog to the complexities of firmware. With a good pack of parts, you can build a base of knowledge that will take you from your first blinking LED to someone who can start prototyping and inventing custom products.

Who is this for?

Anyone with a computer they can install software on, an Arduino or compatible and the ability to type and click a mouse. That's pretty much the minimum. Remember, this guide is specifically for people who have purchased or received an AdaBox subscription!

You don't need to know a lot of physics or math and just like an Art Degree isn't required for making art and being creative, **you *don't* need to have a computer science degree**. It helps if you're comfortable using computers but that's a skill most people pick up through life.

If you know how to program already - great! If not, don't worry, we'll teach you

enough to be dangerous.

Who isn't this for?

While you can follow along without an AdaBox, it will not make as much sense unless you have *all* of the components and more which either came as a gift or purchased yourself - remember, the goal is helping beginners!

If you're an expert, please visit our hundreds other tutorials and jump right in at learn.adafruit.com (http://adafru.it/rdw)

Who are you?

Great question. This is me:

I'm Ladyada, and I love to teach people how to build stuff and how they can be creative with technology.

So, are you ready?

Let's do this thing!

Unboxing AdaBox 005

You've consumed four AdaBoxes - the equivalent of a delicious, nutritious, meal of DIY electronics. And now it's time for dessert.

Pour yourself some coffee (or a nice cold glass of milk) because it is finally time for Raspberry Pi.

Kit Contents

- Raspberry Pi Zero (http://adafru.it/sTA) - This is the slimmest, most pared down Raspberry Pi to date. It's kind of like the little cousin to the Pi 2 (http://adafru.it/eCB) - with just a micro SD card slot, a mini HDMI port, two micro USB ports (one for power, one for USB), and 512MB of RAM. It has a single-core 1 GHz processor chip, similar

to the Pi A+ and B+.

- [Adafruit Joy Bonnet](http://adafru.it/vMC) (http://adafru.it/vMC) - Pocket-sized fun is the name of this game, with the **Joy Bonnet** – our most fun Bonnet ever (no we didn't even think that was possible, either!). This Bonnet fits perfectly on top of your Raspberry Pi Zero (any kind) and gives you adorable hand-held arcade controls. Once you install our script onto your Pi, the controls will act like a keyboard, for easy use with any emulator or media player.
- [Raspberry Pi Zero Case](http://adafru.it/vbF) (http://adafru.it/vbF) - This is a basic, classic **Pi Zero enclosure** with a black base and a clear top. The case is as minimal as it gets, coming in just two pieces of polycarbonate that snap snugly together. This case will keep your Pi Zero safe and secure while also looking super sleek.
- [Mini HDMI Cable](http://adafru.it/vbG) (http://adafru.it/vbG)
- [USB MicroSD Card Reader](http://adafru.it/ree) (http://adafru.it/ree)
- [Hammer Headers](http://adafru.it/yvd) (http://adafru.it/yvd) - courtesy of our friends at Pimoroni - **Absolutely no soldering required!** All that's needed is a few gentle taps with a hammer and bazinga! Your header is securely attached to your Pi Zero.
- [USB Power Supply](http://adafru.it/e5A) (http://adafru.it/e5A)
- [8GB SD Card](http://adafru.it/sTB) (http://adafru.it/sTB)

Bonus parts (for subscribers only!)

- Digikey's Corner - Our good friends at Digikey threw in a 25% discount on the perfect 5" Color TFT Display to turn your Joy Bonnet into a compact gaming rig. Click here to get your screen.
- EAGLE insert - Check out the EAGLE design for the Adafruit Joy Bonnet! This is the real design, with some nifty colors, so you can get a sense of what it's like to design a PCB. Autodesk's EAGLE is a great way to start designing electronics. Makers and students can download EAGLE for free.
- Pimoroni insert - Pimoroni's our good friends based out of the UK. They helped us bring AdaBox005 to an EU audience so we're offering a 15% discount on Pimoroni products in the Adafruit store with your AdaBox discount code. If you like shopping in the UK, use the code ADABOX to get 10% off at pimoroni.com (http://adafru.it/zab)
- Pi Foundation swag - it wouldn't be a pi-break without some fun stuff from the Raspberry Pi foundation. They've included the latest MagPi magazine, a fun offer for MagPi subscribers, and a few stickers to show your love of all things Pi.

- Limited Edition Collectible Pin - Joy is the super fun game controller friend you've always wanted. While most everything makes her smile, DIY gaming rigs make her grin tooth to tooth.

Getting started with your new AdaBox

With this AdaBox, you will be able to create a tiny gaming machine that will fit in your pocket. Take it out, attach to power and your tv and play all of your favorite classic games.

Like all AdaBoxes, there is no soldering required. We have partnered with are pals at Pimoroni to include the neat Hammer Headers. With this project, you should be gaming in no time.

As usual, our team of Creative Engineers have come up with some really unique projects for those who want to take the theme of this box to the next level.

Let's get started!

Step 1: Install the Hammer Headers

These awesome Hammer Headers from our friends at Pimoroni (http://adafru.it/zac) allow you to fit the male header to your Pi Zero with absolutely no soldering required. Nifty! Here, you'll learn how to fit them using the jig that comes with the kit.

It's important to hammer on a sturdy, stable, well-supported surface like a worktop or a solid wood table (although not your expensive dining table!)

The jig comes in three pieces, and has two nylon bolts. Snap apart the acrylic pieces, and peel off the protective film (although this isn't absolutely necessary).

Push the nylon bolts through the larger plastic piece with the long rectangular hole cut in it for the GPIO pins. It doesn't matter which way up this piece is.
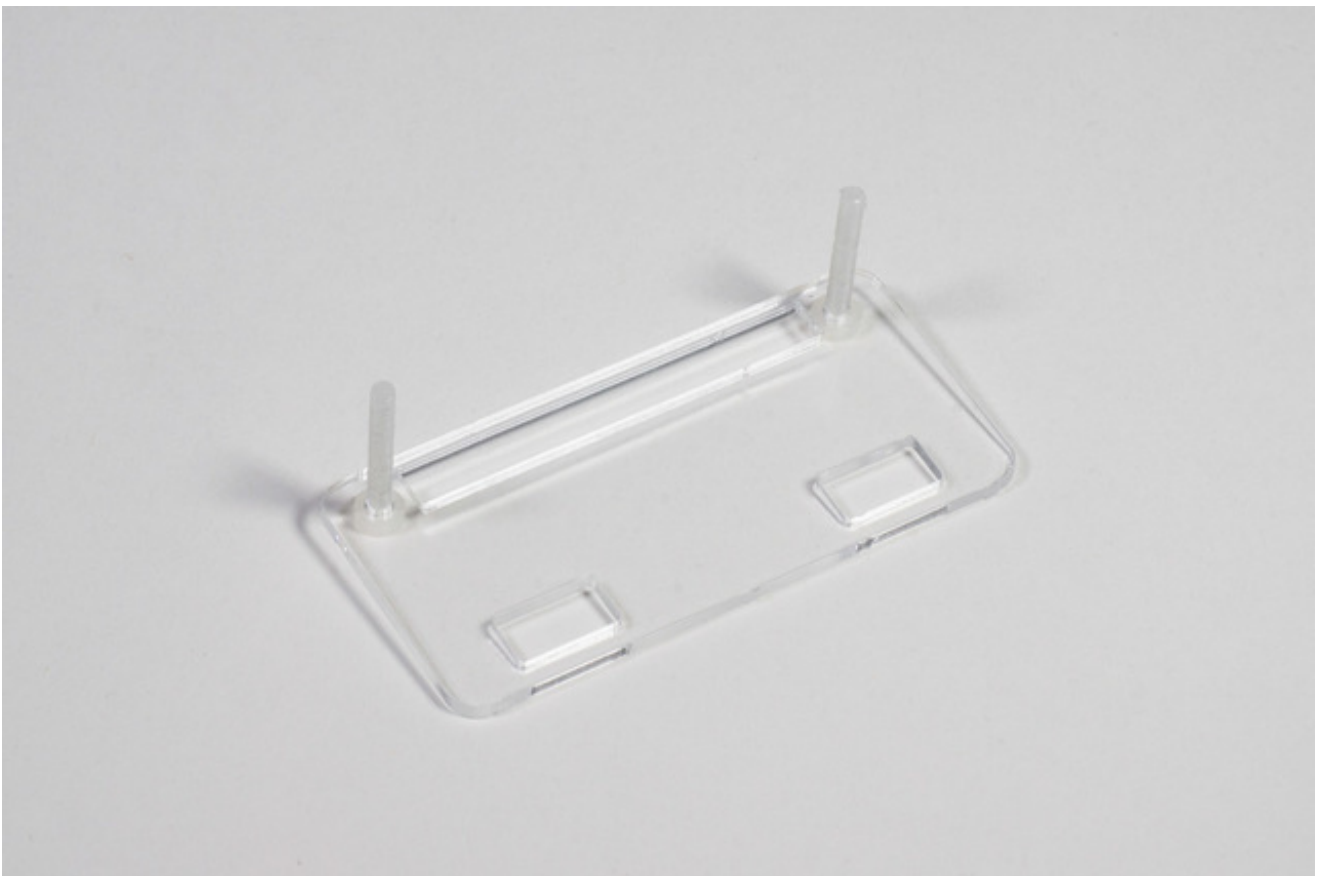
Next, put the other rectangular acrylic piece below it, so that the heads of the nylon bolts fit neatly into the two holes. This piece prevents the pins from being pushed too far through.

Now, push your Pi Zero PCB, right way up, onto the jig.

Place the hammer header on top of the pin holes on your Pi Zero, making sure that the longer ends of the pins (without the retaining nubbins) are pointing upwards.

Now, place the last acrylic piece on top of the pins and push it down until it touches them.

Using a hammer, gently tap back and forth on the top acrylic piece to push the pins through. Pushing one end of the header all the way it can cause the other pins to bend when you hammer them in. It's worth taking your time over this part.
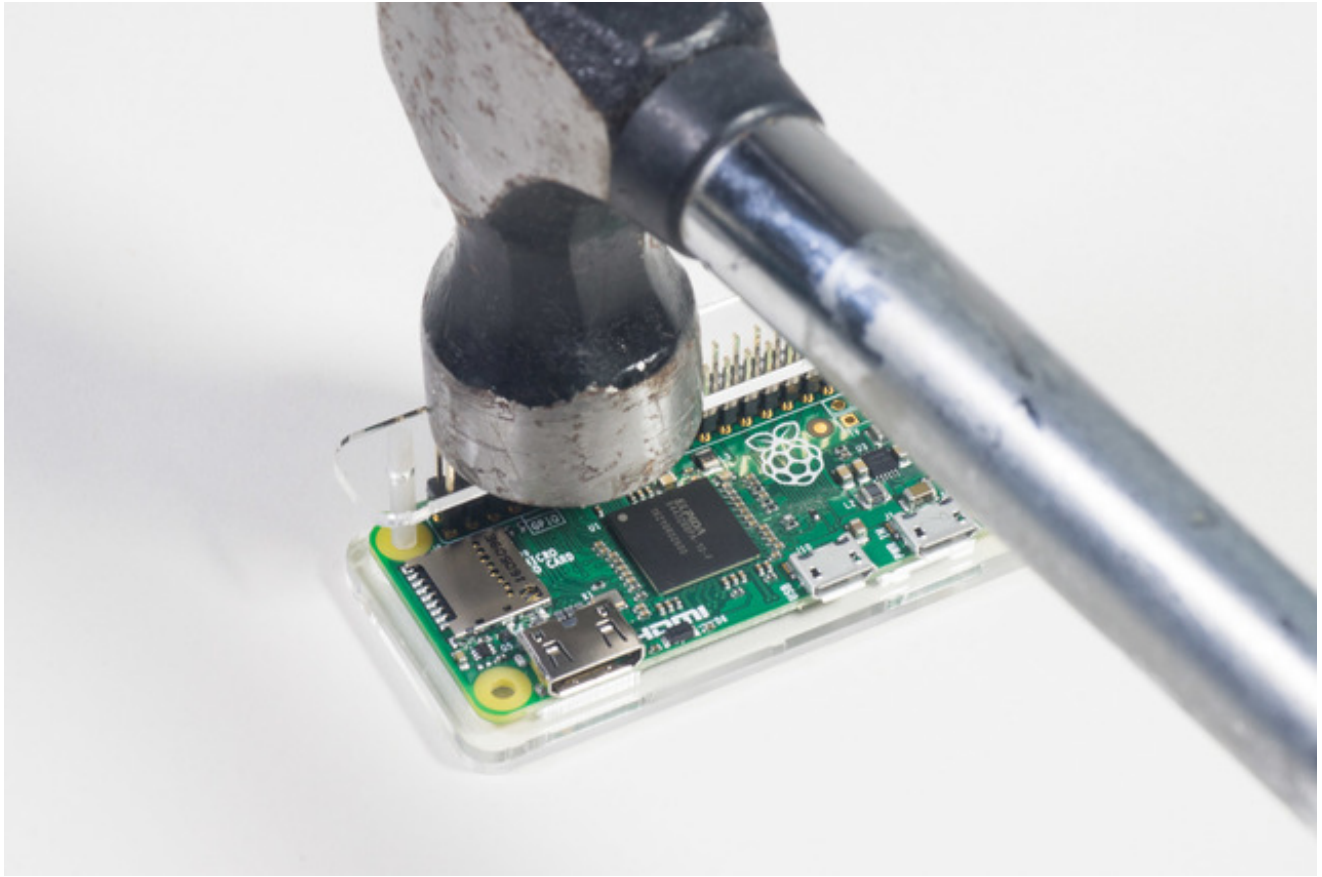
Step 2: Burn image to SD card

Next step is to burn our custom image onto the SD card. This image is a custom version of Emulation Station with games pre-loaded, and set up to work with the Joy Bonnet. Click the button below to start downloading the image. This is a large file and may take awhile.

Download Custom Image
http://adafru.it/yfI

While that image downloads, go ahead and download Etcher. A free piece of software that will easily allow you to flash the image onto your SD card. Head to Etcher.io (http://adafru.it/sOe) and download/install the correct version for your operating system.

Once the custom image file has downloaded, you will need to extract it. The file is a .rar file, so if you don't have any way to extract that file type, see below.

For Windows computers, use 7-Zip to extract the .rar file(http://adafru.it/dYy).

For Mac computers, use The Unarchiver (http://adafru.it/zad).

Flash!

Once you have extracted the .rar file, you should see a file called pizerogamer.img. Go ahead and open up the Etcher app. Click the Select image button and find the pizerogamer.img file. Then pull the micro SD card out of the 8GB SD card and insert the micro SD into the micro SD card reader provided. Plug this into your computer and Etcher should automatically find the drive. If not, click the Select drive button and find the SD card. Then click the Flash! button.
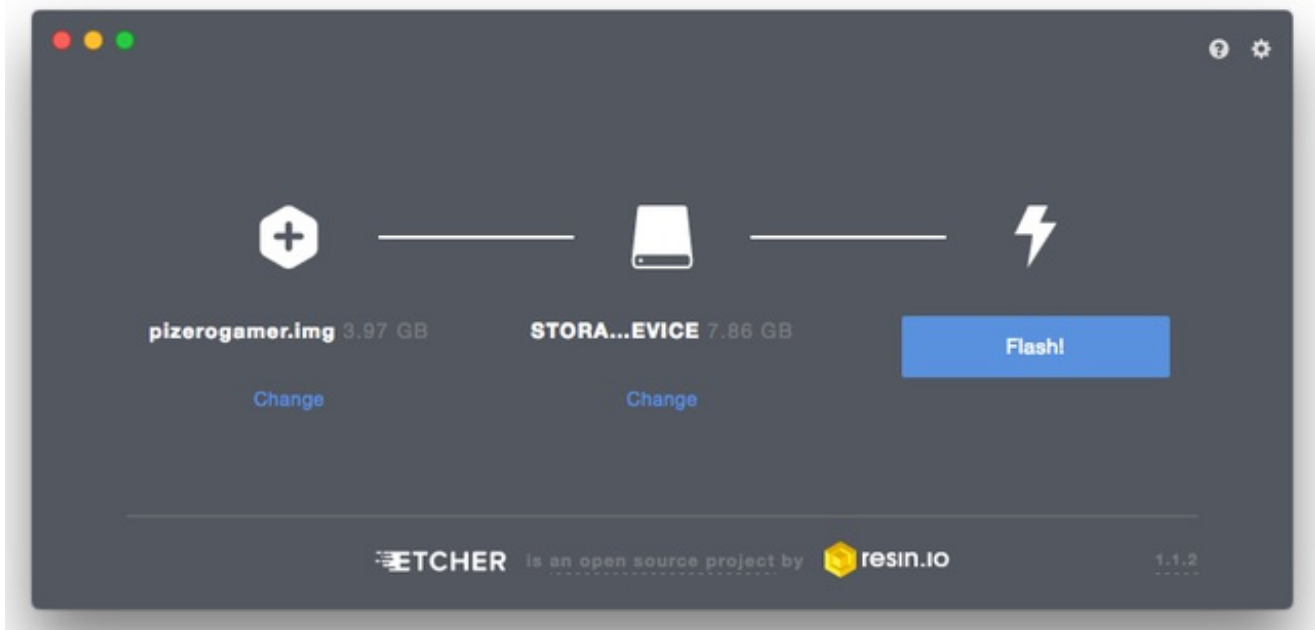
This can take some time to flash. While you wait, you can install the case onto your Pi Zero. Snap the Pi Zero into the bottom of the case, then put the top on. Once you have that done you can install your Joy Bonnet over the case like this:

Once you get the Flash Complete! screen in Etcher, go ahead and remove the micro SD card from the reader and install in your Pi Zero (there is an opening in the case to slide it in).

Step 3: Play!

First, install the micro SD card into the Raspberry Pi Zero. Then, plug in the HDMI cable to a monitor or TV. You will need to use the mini HDMI side of the cable on the Raspberry Pi Zero, and the full size HDMI for your TV or monitor. Now, use the included power adapter and plug it in to the 'PWR IN' port on the Raspberry Pi Zero.

You should see it almost instantly start to boot up into the RetroPie system. Give it plenty of time to fully boot up and you should be able to scan through all of the available emulators and we have included some free games to get you started.

Adding Games

If you want to add games to your tiny new gaming system, load them up on a USB drive as

[instructed here.](http://adafru.it/yfK) (http://adafru.it/yfK) Then, using the included micro USB adapter, transfer them using the USB port on the Raspberry Pi Zero labeled 'USB'.

Redeem your coupon code

To redeem your AdaBox coupon code, sign into your Adafruit account then click 'My Account' on the top right of the Adafruit page.
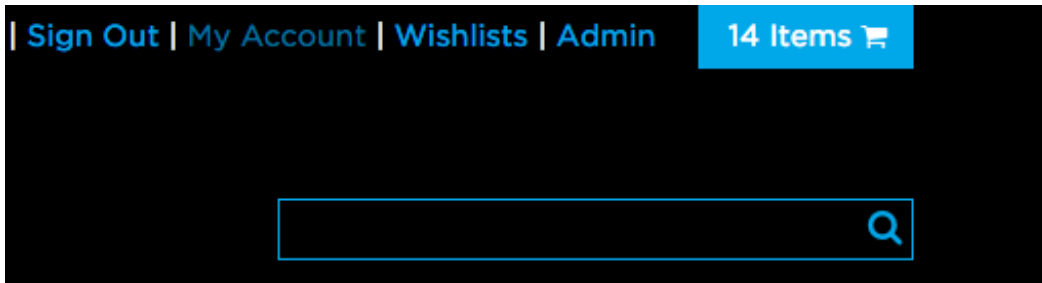
Once you're in your account page, click 'Gift Certificates and Coupons.

Your coupon code will appear under 'account coupons.'

This code is associated with your AdaBox order and can be used once per AdaBox subscription. You must be logged into the Adafruit account associated with your AdaBox order to redeem your coupon code. If you received AdaBox as a gift, the code will appear in

your account once you link your Adafruit account to the AdaBox you received.

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