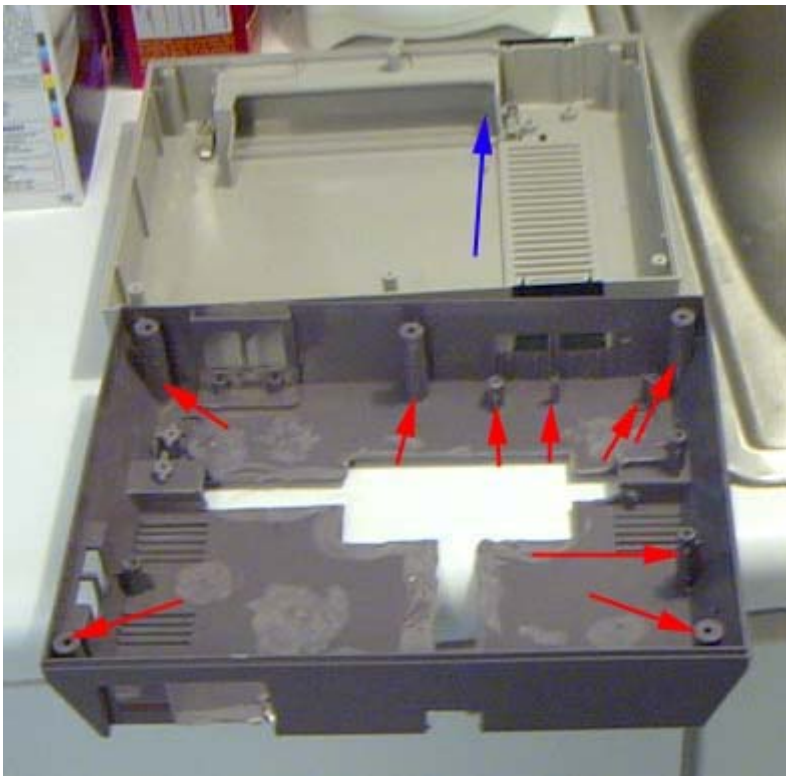
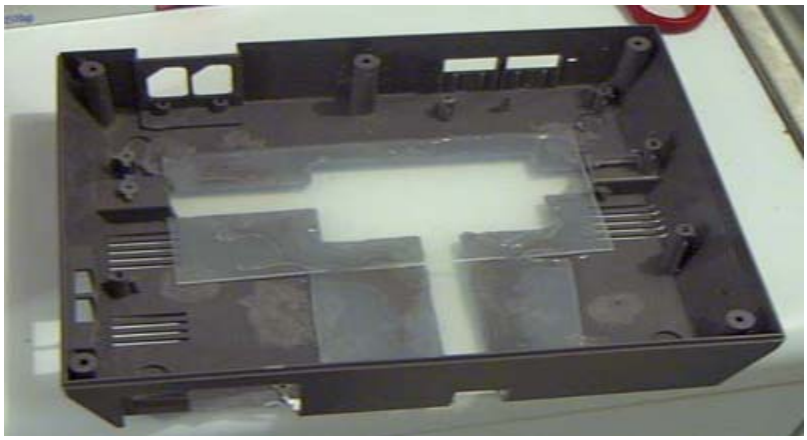
Gutting the Case

Well, of course before you can fit anything inside the system, you need to take out the old Nintendo. There's a series of about 1,000,000 screws, all phillips, holding the top of the case on, and holding the guts inside the NES. Be sure to save about 6 or 7 of these screws, because you'll need them later on. If your Nintendo worked before dismantling it, save the guts and build a new case for it.



You'll see in the picture above my gutted Nintendo. The blue arrow on the cover shows the part of the top that will need to be cut away to fit the CD drive in it. The red arrows on the bottom show the little plastic numbs THAT NEED TO STAY! I can't stress that enough. DO NOT CUT THESE OFF! They are needed later for mounting the top back on, the power buttons, or our shelf that needs to be installed later. The rest of them should be cut off, as well as the bottom "T" shaped tray. Cutting off this tray will give us an extra half inch of space that we desperately need.



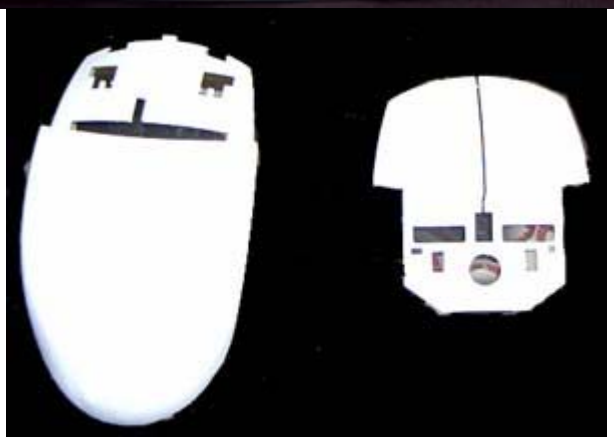
Because you don't want the bottom of the motherboard sticking out of the computer, it's important to line the bottom of the Nintendo with something to keep it off the ground. Any thin plastic will do. I used clear plastic, because I thought it looked cool. It's being held down with some epoxy, but any glue will do.

Now you line up the motherboard to where it will fit inside the Nintendo (be careful you've cleared enough room for your controllers and power switches), and mark where the motherboard will go. I took it a step further here and cut actual holes for each plug. Alternatively, you could cut out the entire back plane and use the silver cover that came with your motherboard, although that will weaken your case quite a bit. Also notice I had to cut off a section of the indent where the RF and power plug used to be. This was a lucky accident, as you will see in the modding the keyboard and mouse section.

You'll need a place to plug in your power. It's also extremely important to keep the air in the case circulating. The power supply will get very hot, and it's mounted very close to the processor. You have to keep the air moving out, or you will have heating problems. Above is an image of what the top of my case looked like after cutting all the holes. The fans I bought at a local computer shop for $3.00 each. The one on the left blends in perfectly with the black stripe along the top.

This step is completely and totally optional. You may or may not want to even bother with this, so be sure to read the whole tutorial before starting this section. Personally, I think it's a cool addition, but others may disagree.

I had a dream. I wanted my keyboard and mouse to plug into the regular Nintendo controller plugs AND WORK! But, I didn't even know if it was possible. Basically what I ended up doing was using the Nintendo controller plug as simply an extension. The standard plug goes out from the standard port and into the Nintendo controller, then out from the Nintendo contoller into the regular inputs for the keyboard and mouse. It makes sense if you think about it for a few seconds. Read below for more of an explanation.



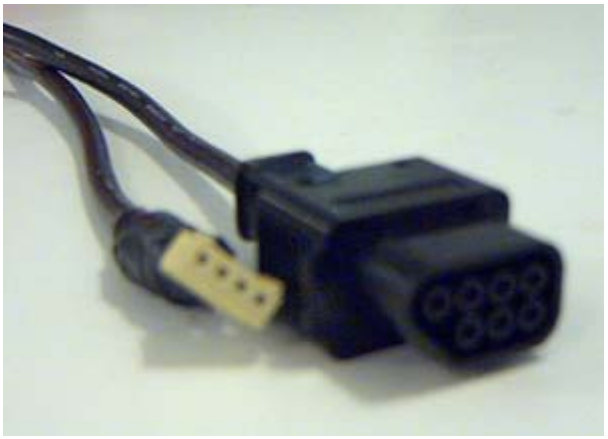
First, you have to take apart your keyboard and mouse. While I did this, I also painted them to look more Nintendo-ish. There are plenty of painting tutorials on the 'net, so I don't need to get into how I did this. Every keyboard and mouse is different, so you'll need to adapt my plans to your own set.

This is what makes my keyboard work. I had to cut the cable at this point and put in the Nintendo cable instead. If I were you, I would write down colors so you don't forget. For example...

Keyboard	**Nintendo**
red	red
white	white
green	yellow

You'll need to make sure these connections stay the same. For example, the keyboard green goes into the Nintendo yellow. At the other end, the Nintendo yellow will need to go back into keyboard green. The Nintendo yellow just carries the keyboard green signal. Are you starting to get it now? Read on.

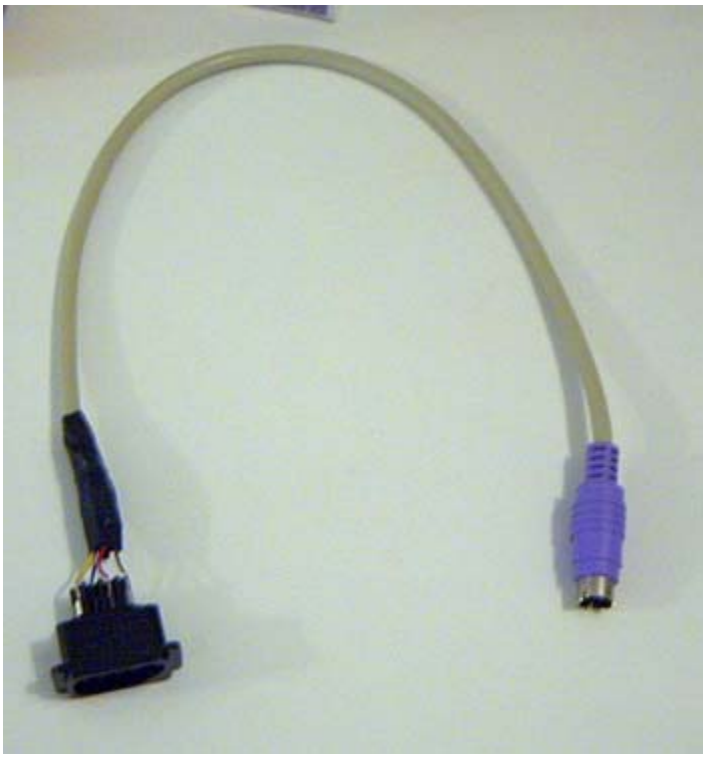
Here's the cut end of the Nintendo controller. The wires are shown above. While stripping these wires, you may get a bit frightened. They're not exactly wires you see every day. They're tightly wound strips of metal. While stripping, you'll probably unwind this metal and make it very thin. I recommend using an X-Acto knife to cut away the cover rather than regular wire cutters for this reason. However, you solder these wires exactly the way you solder regular wires.



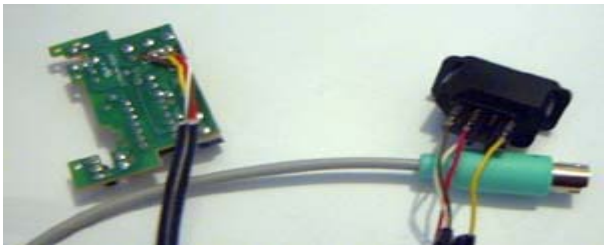
Here I soldered on the Nintendo wires to the keyboard wires in the picture above, making sure to remember which color wire connected to which.

Here's the new Nintendo wire installed in my keyboard.

I cut off a small section of the regular keyboard wire and stripped the wires inside.



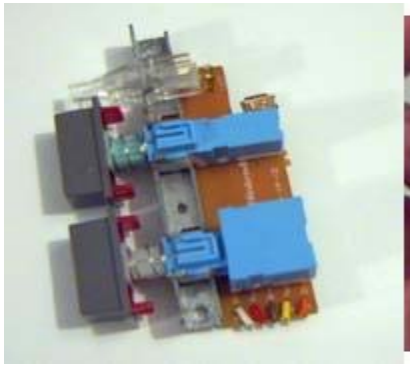
Now, I connected the keyboard wire to the Nintendo plug. So keyboard red went to Nintendo brown which went to keyboard red. All the connections remained the same, but you just inserted different wires in the middle. I know it's a bit confusing at first, but if you really want to make this work, it's not that hard to figure out. The mouse needed to be modified the same way, with 1 little exception.

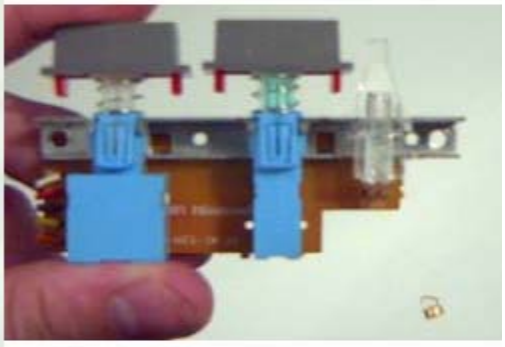


With my mouse, the Nintendo controller wires had to be soldered directly onto the circuit board inside my mouse. However, the basic priciples remained the same. I just had to make sure the wire in my board was connected to the wire that connected to the right wire in my mouse plug. I know it sounds confusing, but it's not that bad, really.

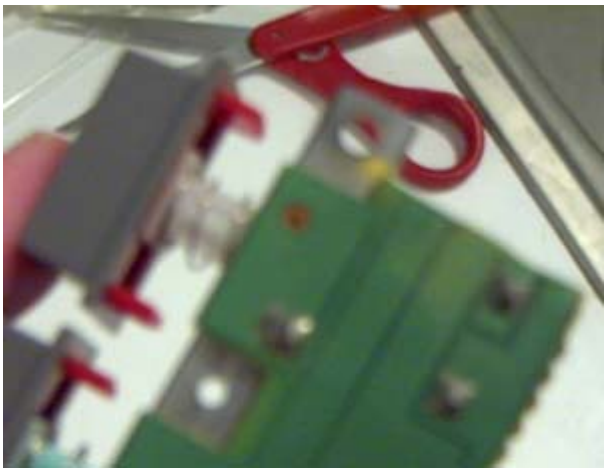
Here's the finished products, all done and ready to go. I did this project while waiting for other parts to get shipped to me. It's a neat little addition, but I recommend doing it only if you have a keyboard that you wouldn't care if it got broken.

Ah, this is the fun part. For your Nintendo computer to be really cool, the regular power and reset buttons need to work, as well as the regular LED light.

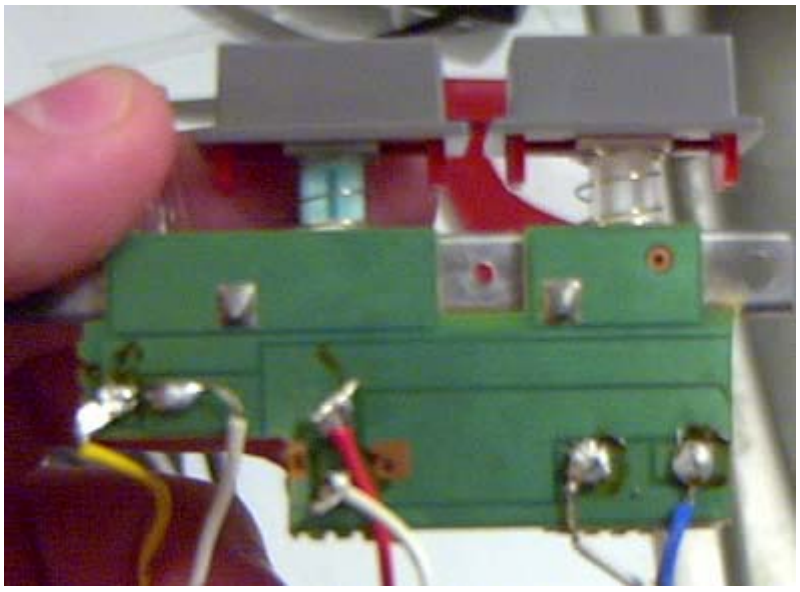




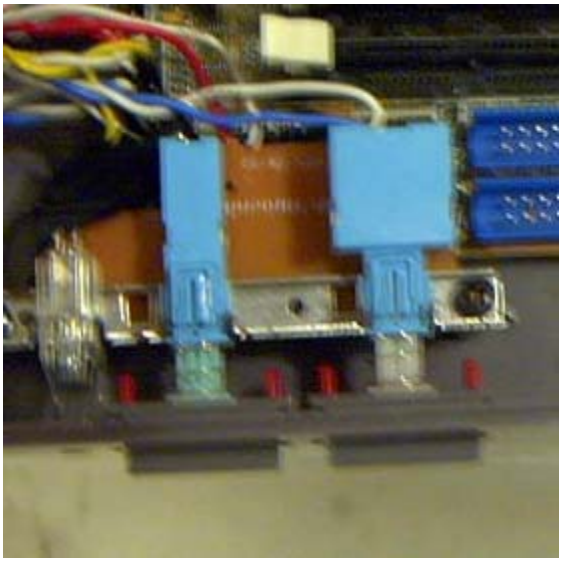
The stock Nintendo switch is one of those "push on/push off" buttons. However, a computer button operates differently. You'll need to remove a couple of metal springs to make the power button work like a computer power button. In the top left picture, you'll see that the power button (the smaller blue box) has had a small copper piece of metal removed (the piece can be seen on the counter next to it). This is part of the mechanism that holds the button in rather than releasing it. It can be removed with a small screwdriver. The last piece that needs to be removed is something that looks like a small staple. I removed this by simply turning the power switch upside down. However, if it sticks, it can be removed with a small screwdriver or tweezers. The 2 metal pieces can be seen on the counter in the lower left.



Because it's such tight quarters, I had to chop off a section of the power switches to make it fit. This can be seen in the image above. I did this with a standard Dremel tool.



Here I soldered on all the wires to make it work. On the left are the 2 wires for the LED light. In the midde, the power switch. On the right, the reset button. I also coated the back of the switches with electrical tape at this point. It was so close to the motherboard that I didn't trust it unprotected. The electrical tape stops any electrical interference that may happen, because it is non-conductive.



Here I placed the motherboard and buttons where they belong to make sure they fit. You can see that I wouldn't have had room to keep the part of the switches I cut off, because the motherboard IDE slots are there. With the chunk cut off, it fits perfectly.

Building the shelf

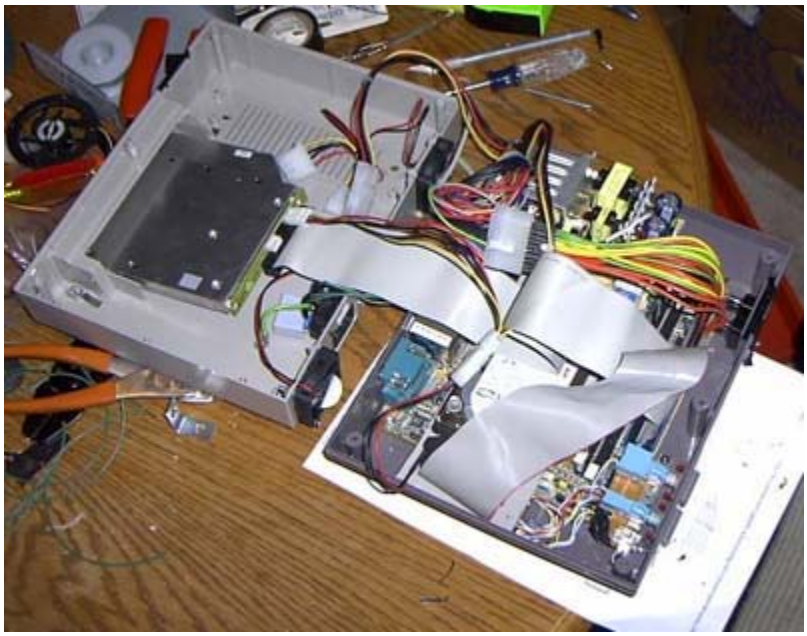
This is a short, but important, section. This shelf is extremely important, believe it or not. It wouldn't work without it. The shelf holds the hard drive and power supply without needing to glue them to the top, or run bolts through the top.

I laid the motherboard in where it belonged, and measured how large my shelf should be. It's 3 inches by 7 inches. The screw holding it in on the left side screws into the regular nub that we left while gutting the case. The right side is held on by 2 L brackets that are hidden in the indent

where the audio/video plugs are on the Nintendo. Also, remember to cut a hole in this shelf for the processor to breathe. If you don't cut this hole, the processor will overheat, which is bad. It needs the circulation.

note, note, note - This tutorial was written before a lot of people got on the NESPC bandwagon, and these people have improved the original design quite a bit. It is now apparent that the shelf is unnecessary. You can simply velcro the PSU to the top of the case to eliminate the shelf.

Now is the hard part. Making everything fit.



Here's everything laid out to make sure it all fit. All the connections are made and all the cables necessary are plugged in. This is very important.

You'll notice a few things about my power supply. First off, there's no case on it. There's simply no room for it. The case was removed, and it is mounted to the shelf using it's standard holes and a couple of bolts. Second, I needed some extensions. It's mounted in the middle of the system because that's the only place it would fit. I needed an extension to go from the PSU into the motherboard, which I purchased at a local computer store for $3.00. I also needed an extension of the wires going from the PSU into the actual plug. I did this by cutting the stock wires and soldering in wires to connect them.

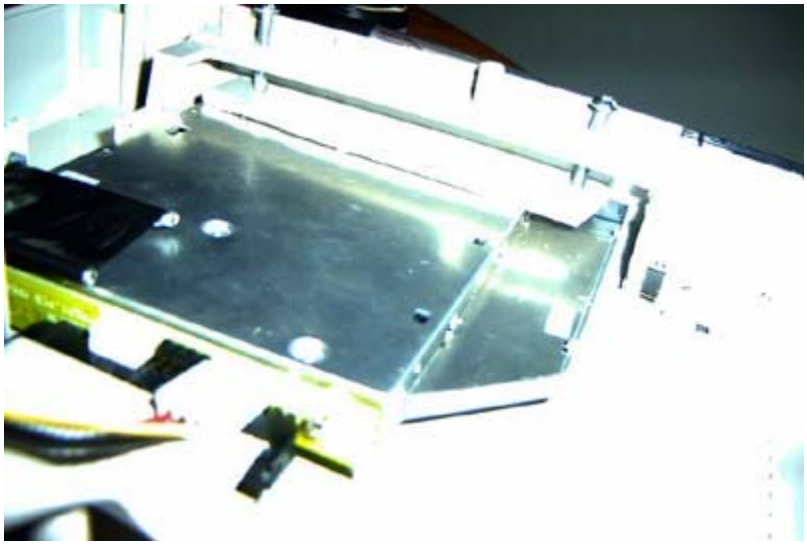
After deciding that everything fit, the next step is to bolt everything down.

Here's everything bolted down. One of the IDE cables goes underneath the shelf to save on room.The hard drive is held to the shelf using a couple pieces of plastic held together with 2 bolts. Be very careful not to tighten these bolts too much. This hard drive is very fragile and will not operate if squeezed too tightly. Alternatively, you could remove the shelf, drill 2 holes, and mount the hard drive using the standard holes. I preferred my method of sandwiching it between plastic, because I also sandwiched 1 of the IDE cables to keep it from interferring when closing the cover.

The DVD drive is held up by 1 fabricated bracket. If you look at the picture, you can see how it was made. The DVD drive is very light, so not a lot of support was necessary. It only needed to be held in place. The bracket is mounted to the top of the case using epoxy. I do not recommend any other glue for this. Superglue is unreliable. A glue gun will work, but the computer creates heat, which will weaken the bond. Epoxy is cheap and good. You can buy it anywhere.

edit edit edit It's not necessary to use these brackets anymore. Velcro will work just as well, if not better. Thanks to everyone to comes up with these new ideas.

The front of the DVD drive is held up by a piece of plastic and 2 bolts.



Here's another shot of this. I drilled 2 holes in the "lip" that is covered by the flip cover. The 2 bolts push down on a piece of plastic, which holds the drive in place. These 2 little brackets are enough to hold the drive up where it belongs.

The final step!

That's right, this is the last step in this whole long process. Fit the top on and boot it up!

There's not really a way to illustrate in pictures this process. Basically, you put the top on. It will fit, but probably won't just slide right on. You'll probably need to push some wires in along the edges while you push the top down. Flip the case upside down and put in the 5 screws which will hold the top on. That's it. You're done. Here's some shots of my computer finished up.


Nintendo