11/10/17
Researched for all 3 projects on www.instructables.com
Found plush game controller and remote control car very easily.
I looked for a mechanical keyboard design for a long time but was unable to find a great design.
My brother built a mechanical keyboard design himself and I will ask him for it.
Deciding between game controller and keyboard because both would be useful and serve real functions for me to use everyday.
After learning about cost and necessary materials for keyboard I will choose between 2 projects.

11/13/17
Today I finished all of the soldering for my Brain Game project. The soldering all went successful. I started to put the screws into the battery pack but they seemed too small. Next class I will put batteries into the battery pack and try to fit the screws into the pack. I hope to finish my brain game next class.

11/14/17
Today I worked for a few minutes on my Brain Game project and shortened the lengths of the ends of the wires in order to fit my screws onto the battery pack. The screws will now fit into the battery pack when I try to screw them in next class. I found all of my materials for my Personal Project. The cost is $29 right now so I may look to see if we already have some of the materials in the lab so I can get to the budget cost. I had planned to use an arduino instead of a FLORA, but it seems now that I will have to use a FLORA, even though it is arduino compatible. The FLORA costs $14.95 which put me over the budget limit.

11/15/17
Today we learned about project management and setting deadlines for our projects. Setting deadlines will save stress if you realize that you are very far behind when the project is due soon. I researched all of my parts again today and my final cost seems to be $29.30 right now. This is $9.30 over the budget so I will look again to see if any of the materials are already in the lab and are available for use. I will set deadlines or use the ones provided by Mr. Dubick to ensure that I will not fall behind on my project and have it done on time.

11/16/17
Made a spreadsheet of all materials. Came up with final cost: $29.30. This is $9.30 above my budget but I may be able to cut down on the cost if some of the materials are already in the lab or can be substituted for another material that we already have. I also researched the FLORA on adafruit.com. The FLORA is a beginner tool which does not use batteries. Also, if a light is connected with too much voltage it will not burn on the FLORA. I currently plan on not using lights, however putting a light in the center of my game controller which indicates whether it is on or off will be a cool addition if I have the time.

11/17/17

Today I did more research and I am now finished with my project specs. I still need to have Mr. Dubick check both my specs and materials list but they seem to be finished and well done. I have all the links for my materials but am not sure if they are all needed to be bought. My design specs have all the dimensions and parts and capabilities for my finished project. I may put bluetooth into my project later if I have time so I will not have to have a cable connected to my project. This would make it more portable, and able to connect to a phone, iPad, or computer without a cable.

11/20/17

Today I wrote my materials that I need into the order form provided by Mr. Dubick. As I was putting in my materials I realized that the project required both fiber fill and an iron-on adhesive in order to complete the project. Those brought the cost of the project up to $43.79 which is much higher above the budget than I would've liked. I will still try to see if some of the materials are already available to me so I do not have to buy them. My project also says that it needs an iron but I believe that I already own one so I will not need to buy one. If I do not have an iron I believe that I'll be able to complete my project without one, or using another tool.

11/21/17

Today I finalized my materials list with Mr. Dubick and he approved my websites and all of my parts. I am over the budget and I will cover the cost of what I am over. Mr. Dubick told me that he has some of the parts for my project already in the FAB lab. This will lower the cost of my project so I will not be as over the budget as I am currently. I updated all of my documents to reflect my final materials list with the total cost being $43.79.

11/27/17

Today I saw that my materials list has been finalized and ordered. I was correct as 4 of the materials are already in the Fablab and do not need to be ordered. This will save me some money because I do not need to order those parts myself. Next I opened my file of the pattern of the layout for my controller and started to create hairline measurements around the parts of the document that are going to be cut out. I have to do this because the file is not meant to be laser cut out so I am preparing it to be able to be laser cut out.
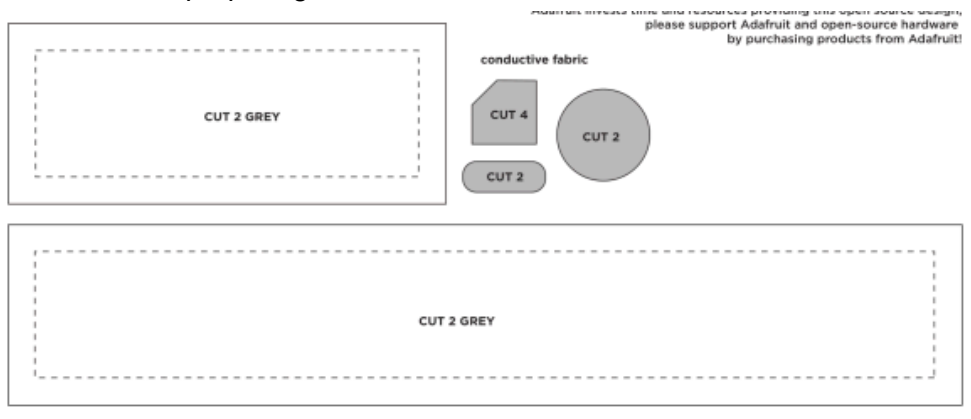
11/28/17

Today I finished my Inkscape document for the prototype for my game controller. I ran out of time and was not able to laser cut out the design. First thing in class tomorrow I am going to laser cut out my design and put it together to get an idea of the dimensions and the size of the game controller. One of the shapes that I have to cut out is not an ordinary shape so I was not sure how to make the cut out for it. However I realized that there is a straight line tool that allowed me to trace the design for the shape. I set the outline to 0.001 inches, or hairline. This will allow it to be cut out by the laser cutter.

11/29/17

Today I laser cut out the prototype for my game controller. I download a pdf from the website link of my project at https://learn.adafruit.com/assets/6307. Next I imported that file into Inkscape and traced out the different shapes that needed to be printed out. I then uploaded the file to Google Drive and opened the file on the computer that was connected to the laser cutter. I opened the file in Coreldraw but then realized that I needed to print out more than one of some of the shapes. To solve this problem I duplicated each of the shapes that I needed multiple of. Also, in Coreldraw I deleted the background file which had different words describing the file on it. This allowed me to just print out the different shapes. The print went successfully and I was able to fully assemble my project. It was the correct dimensions, however to me it looked much bigger than I thought it would be. It seemed a lot bigger to hold in my hands than I thought it would be. I had some trouble trying to get the pieces to balance together so I could build my prototype. However I was able to successfully put it together.
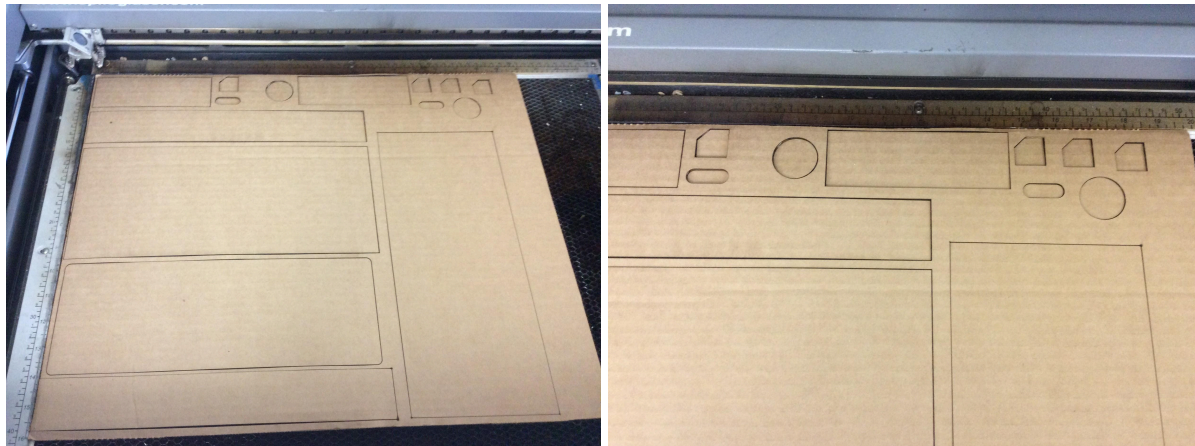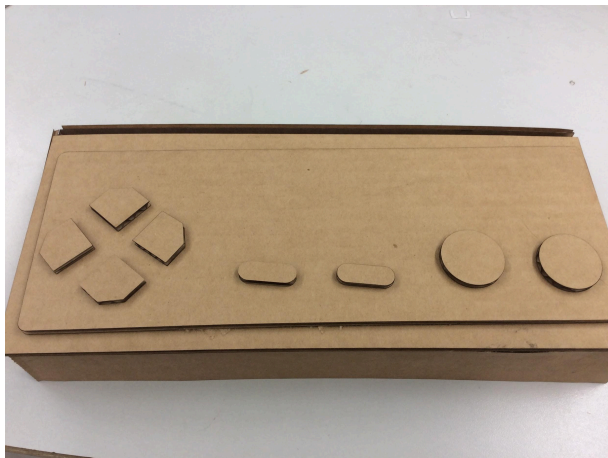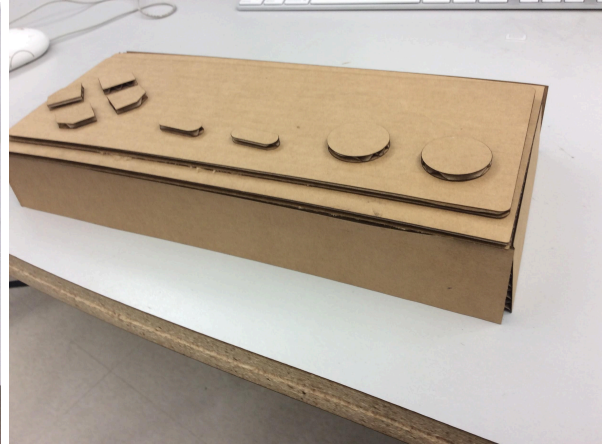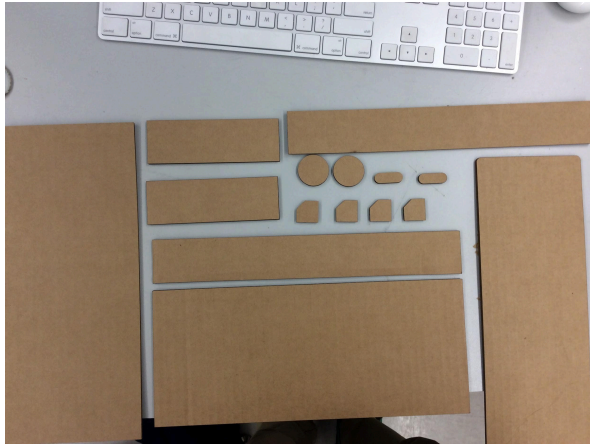
11/30/17

Today I uploaded my files from the computer connected to the laser cutter to the computer I have been using to upload files to Google Drive. I slightly edited my file that I used to laser cut to make it easier to see and understand what I cut out. I also found and copied all of the code that will make my project able to run. I tried to run the code but forget to connect an arduino to the computer so I got an error for that. I ran out of time to connect an arduino so tomorrow I am going to connect an arduino to my computer and verify the code to make sure that it will run successfully.

12/4/17

Today my FLORA and iron-on adhesive arrived. I started setting up the FLORA by downloading an updated arduino software because the FLORA is compatible with Arduino software. I downloaded version 1.8.5 of Arduino software. I did not have time to test the code today so I will

do that next class. I got a micro-usb that plugs into my FLORA (picture below). This has a USB that plugs into my computer for power for the FLORA. I also hot glued together my prototype today. It is sturdy but still seems bigger than I thought it would be originally. If this becomes a problem I can always decrease the size of my project. I learned today that the FLORA has a built in neopixel so I may decide to set it up so I can have a light turn on when the controller is on. I can set it up at https://learn.adafruit.com/getting-started-with-flora/blink-onboard-led. I have my code in a file called game_controller_code in Arduino.

12/6/17

Today I continued to work on my code. I downloaded a neopixel code to check if the neopixel on the FLORA is functional. The code worked and the neopixel lit up. I also downloaded a required library for my controller that will allow it to work with a keyboard at https://github.com/moderndevice/CapSense. I also finalized my prototype and am going to keep the same dimensions. I talked to Mr. Dubick and he said that a bigger controller just for fun would be a good idea. I am still getting an invalid library error, but I will work with Mr. Dubick to fix it.

12/7/17

Today I uploaded my code again and used my fingers on the FLORA to check if, when the circuit was completed, the code would work and certain keys would act as if they had been pressed. When I used my fingers with my feet "grounded" to the floor the keys did work as if they had been pressed. This error still came up about an invalid library, however the code still worked perfectly so it is not an issue. I asked Mr. Dubick for, and found woven conductive thread. This will connect the circuit to the buttons so when I press them, the circuit will cause the computer to act as if a button had been pressed. I plan on starting to put together my actual project tomorrow by looking for woven conductive fabric.

12/8/17

Today I looked for and found my woven conductive fabric. I was not sure if it had come yet, but it had come. I still need to get grey fabric to make my controller out of. Next class I hope to iron the conductive fabric onto the double-sided iron-on adhesive. I will then cut out the buttons for my controller and iron those buttons onto the fabric. I will embroider the conductive thread through the fabric to connect the buttons to the FLORA, and therefore to the computer. I will run the code and check to see if the code fully functions. After testing yesterday, I believe that the code will work correctly.

12/11/17

I realized that I needed a grey fabric to surround my controller over the weekend. At home I looked for the fabric and found an old pillow case that no one in my family uses anymore. Instead of ordering and paying for a new fabric I am going to reuse and cut out the shapes I need from the pillow case. I showed it to Mr. Dubick just to make sure that there wouldn't be any problems with it. I took a video showing that the code worked when I used my finger to close the circuit. I showed the serial monitor which showed that the code successfully detected when my finger was both on or off of the FLORA. I uploaded the video to my digital portfolio. I asked Mr. Dubick and he said that the Invalid library error has nothing to do with my code and it does not affect how my code runs at all. Therefore my code is complete and I can simply adjust which keys it is bound to if I would like.

12/12/17

Today I had planned on starting my project by ironing together my fabric with iron-on adhesive and conductive fabric. However, I asked about an iron and Mr. Dubick said to ask Mr. Fletcher, an art teacher. I asked him, but he did not have an iron himself. However, he was unsure if any other teacher would have one. Tomorrow I plan on asking all of the art teachers that I can find if they have irons. Today I set up all my materials to be able to do my project, as I was not able to actually start today. If I can't find an iron tomorrow I plan on ironing together those parts of my project at my house. Today I found an entire video on creating the whole game controller. I

watched through the video twice and have all of the materials necessary to complete the project. The code already works so I should be able to successfully complete my project once I find an iron.

12/13/17

Today I brought in a Black and Decker iron from home. I looked up the cost and it is $9.97. This brings my total cost of my project to $53.76. I started building my project today by ironing together iron-on adhesive and woven conductive fabric. I tested out the process twice before actually ironing out the right amount of material. It went successfully and tomorrow in class I am going to cut out the shapes I need for my controls.

12/14/17

Today I began to cut out the shapes for my controls and am more than halfway done. I had difficulty getting the scissors to cut through the adhesive and the fabric. However I switched to a smaller pair of scissors and was able to cut through the fabric easily. Next class back from break I am going to finish cutting out my pieces and continue with the project.

1/3/17

Today I finished cutting out the pieces for my controller. I had trouble cutting out the pieces again and had to re-cut one of pieces. However, I was able to finish all of the pieces successfully. I set up all of my pieces to be ironed onto my fabric and tried to iron 1 piece onto the fabric. However the piece stuck to the iron. I think that I had the iron on the wrong setting or did not give the iron enough time to heat up because I was in a rush. Next class I will be sure that the iron is set up correctly when I iron the pieces to the fabric.

1/4/17

Today I ironed all of my pieces onto the fabric. I forgot to fill the iron with water to start the class and I spent 10 minutes trying to iron without any water. This was a problem because I was trying to use a steam setting and without any water this was not possible. After I realized my mistake I filled the iron with water and was able to successfully iron on my pieces. Next class I will use the conductive yarn to connect the buttons to the FLORA.


1/5/17

Today I drew out the lines for my conductive thread that I am going to sew on. I began to sew the first strand of conductive thread. It was going very well, however I made an error by not bringing the thread back to the front of the fabric and I was working on fixing the thread when class ended. Next class I will fix the thread and hopefully finish all of the conductive fabric and be able to test my code using the buttons.

1/8/18

Today I continued sewing in the conductive thread. I am about halfway done after class and plan on finishing sowing after school today. The project says to use nail polish to keep the thread together. However I did not have access to nail polish in class. I used hot glue instead which will work as well. After school I finished all of my sewing which was much harder than I had anticipated. I did not budget enough time for all of the sewing that I had to do. I then ironed down all parts of the fabric to make sure that everything would stay in place. I plugged my project into a computer and uploaded the code. The project worked exactly as it was supposed to. There is a video uploaded to my digital portfolio.
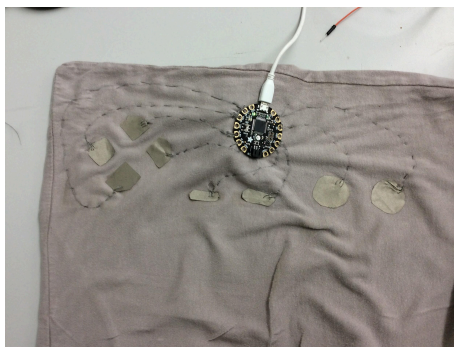
1/9/18

The project is due tomorrow so I will finish putting together my project today. I re-tested the code and it works perfectly. I began cutting out extra fabric for my project but I then realized that I could simply cut out the area of my project from the fabric and sew the rest together. However, I first tested the scissors of a separate part of the fabric and the cut did not come out smoothly. Thankfully, I was able to ask Mr. Hawgood, an art teacher at Latin, for a better pair of scissors and he had a new pair that cut through the fabric perfectly. I cut out my design to the exact dimensions of the original layout. I then sewed together the ends of the fabric in order to keep it in one piece. I successfully completed my project.