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Engineering 12L

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### Circuit Lab Final Project: Digital Theramin

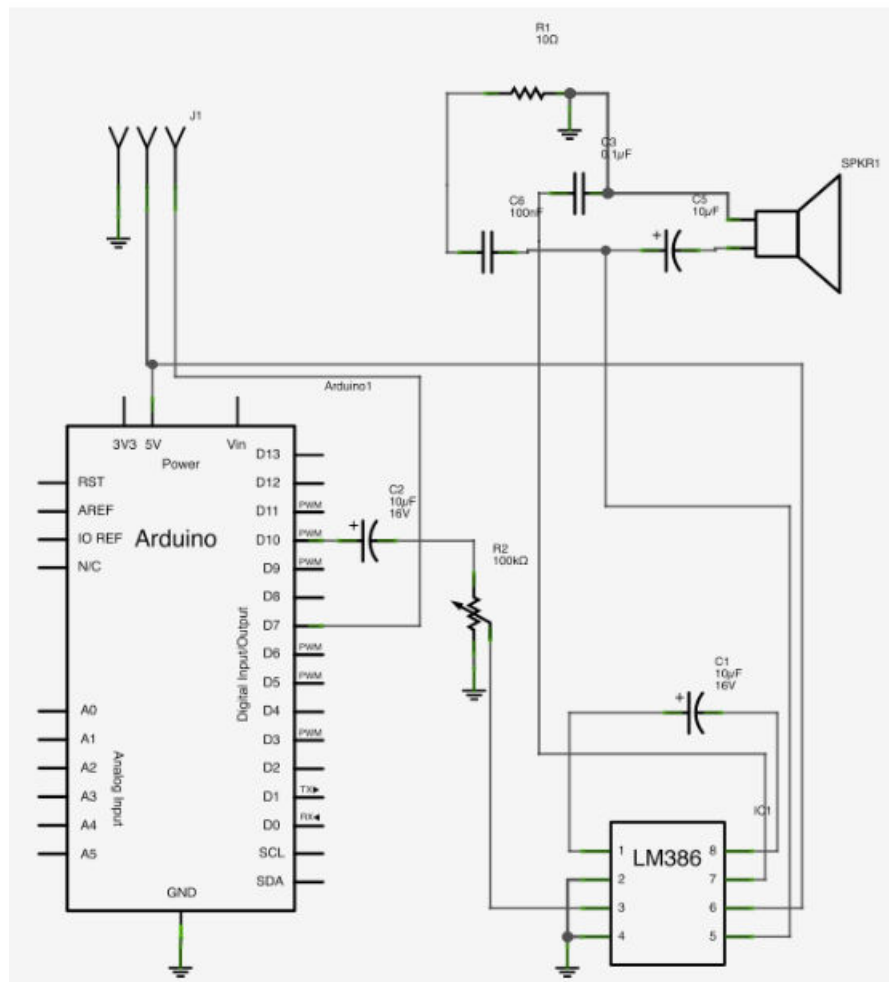
For the final project in our introductory circuits lab class we decided to make a digital theramin, picked out of the various suggestions. We choose the theramin because of the lack of bonus parts we would need to purchase. Another consideration was that we needed a project that would not take too much time to build or find parts for, in the interest of time.

The theramin needed several extra parts that we were easily able to find and use, such as a specific USB-B type of connection cable with which to link our Arduino micro-controller to the computer to receive commands. The project took us very little time to finish as expected, with most of the circuitry being finished in around twenty minutes of work. The only problem we did face was that our software that we used from the source page for this project was incorrect, and was thus the micro-controller was unable to compile correctly. We had to search on the web for a replacement “tone library,” where the specifications of the micro-controller's control over the signal receiver could be managed correctly.

The project ended up working very well, with our theramin producing a very clear and musical sound through the tiny speaker that we had attached. The device had a sensor built into it that would sense movement at certain distances, and could modulate the sound coming from the speakers, thus you could create music by waving your hand back and forth in front of the theramin.

We would recommend this project to groups seeking a fun but not too challenging project, the Arduino is not difficult to work with, and nothing in the project is too demanding on either your time schedule or on your budget.

Here is the schematic for the circuit that we used. We did not have the exact same sensor that the project specified, so our connections were slightly different.



Here is the link for the main body of the project. We found that the tone-library they provided did not work well, so we found the another website with a tone-library that worked better.

[http://www.radioshack.com/graphics/uc/rsk/Support/ProductManuals/RadioShackDIY\\_theramin.pdf](http://www.radioshack.com/graphics/uc/rsk/Support/ProductManuals/RadioShackDIY_theramin.pdf)

Here is the link where we found the modified tone-library that we used for the Arduino micro-controller.

<http://www.roguerobotics.com/>

Here is a video showing our finished Digital Theramin:

[http://youtu.be/\\_3\\_SIsKQkOw](http://youtu.be/_3_SIsKQkOw)

And some pictures showing the theramin:

