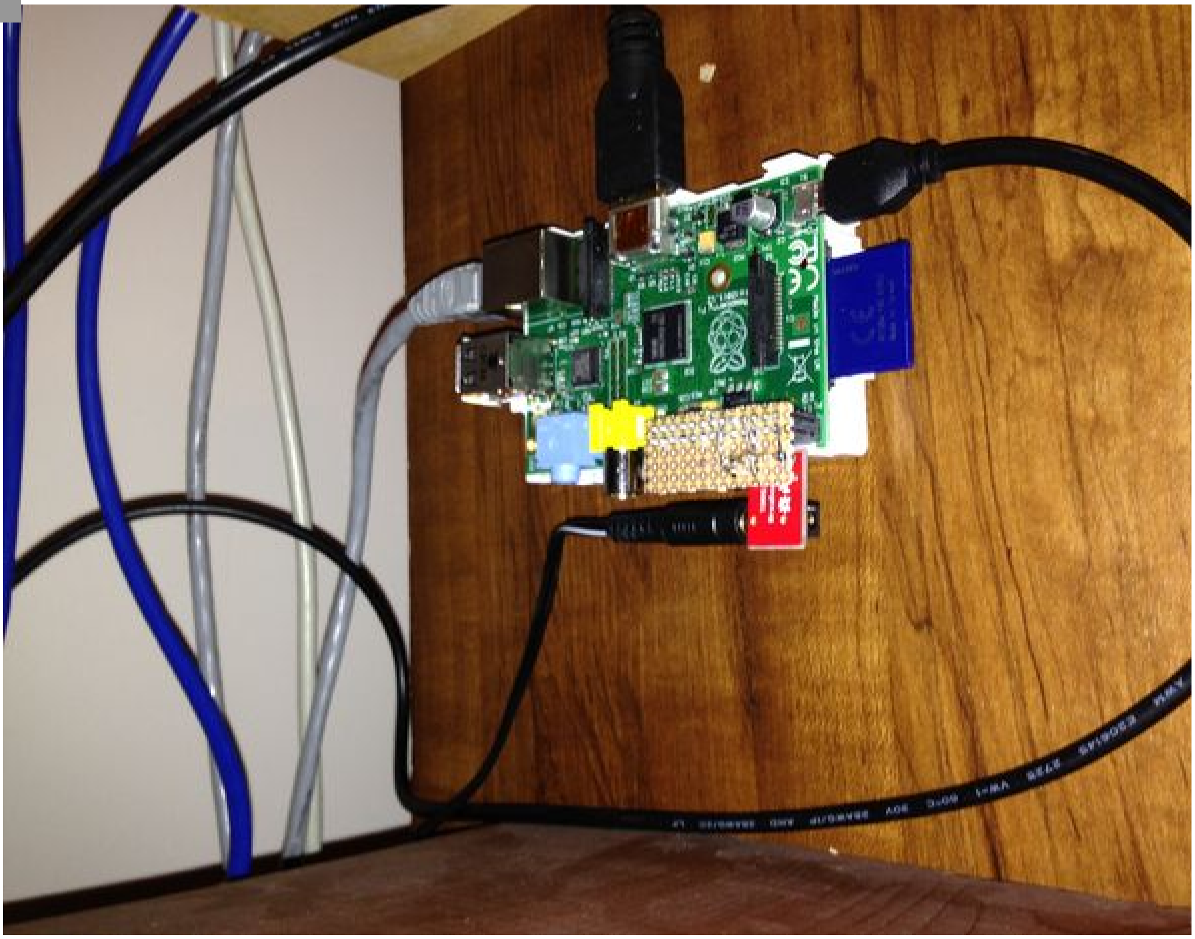

Raspberry Pi Universal Remote

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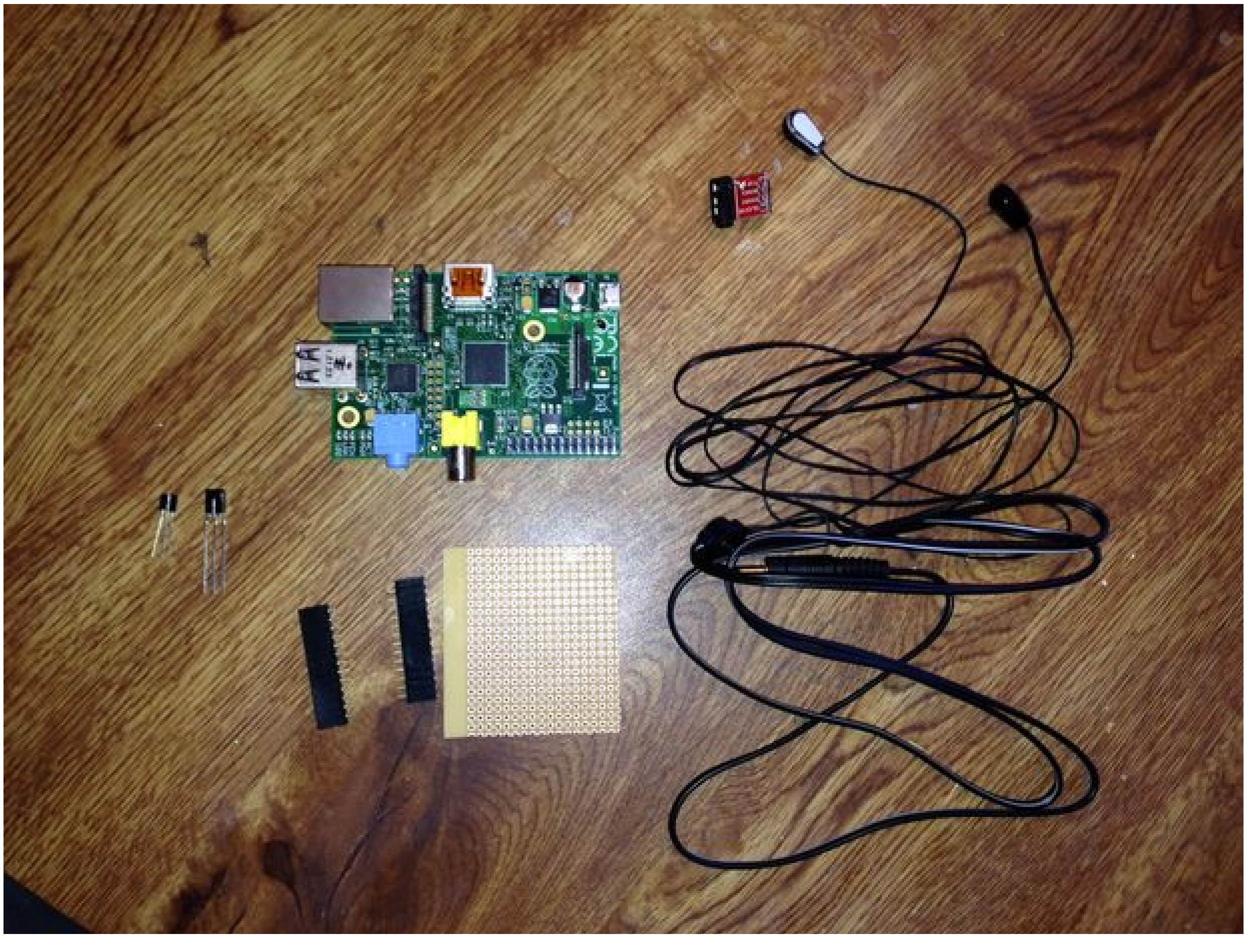
LIRC

Linux Infrared Remote Conrol

In this tutorial I hope to convince you that this is the ultimate universal remote built using a raspberry pi.

LIRC is the perfect for this job. It simplifies many of the more difficult tasks that we need to accomplish.

Step 1: Parts



Step 2: Setting up the Software

There are a lot of steps in this that I will try to explain.

(Most of this step is from: http://alexba.in/blog/2013/01/06/setting-up-lirc-on-the-raspberrypi/)

For the sake of this tutorial i'm assuming this is on a clean Raspbian image.

```
sudo apt-get upgrade
sudo apt-get update
```

Install LAMP

```
sudo apt-get install apache2 php5 mysql-client mysql-server tomcat6 vsftpd
```

Install LIRC

```
sudo apt-get install lirc
```

Set up the GPIO pins (remember this for later if you want to use other pins)

```
sudo nano /etc/modules
```

Add these 2 lines to the bottom of the file

```
lirc_dev
lirc_rpi gpio_in_pin=23 gpio_out_pin=22
```

(CONTROL + C will save and exit)

Configure the hardware file.

```
sudo nano /etc/lirc/hardware.conf
```

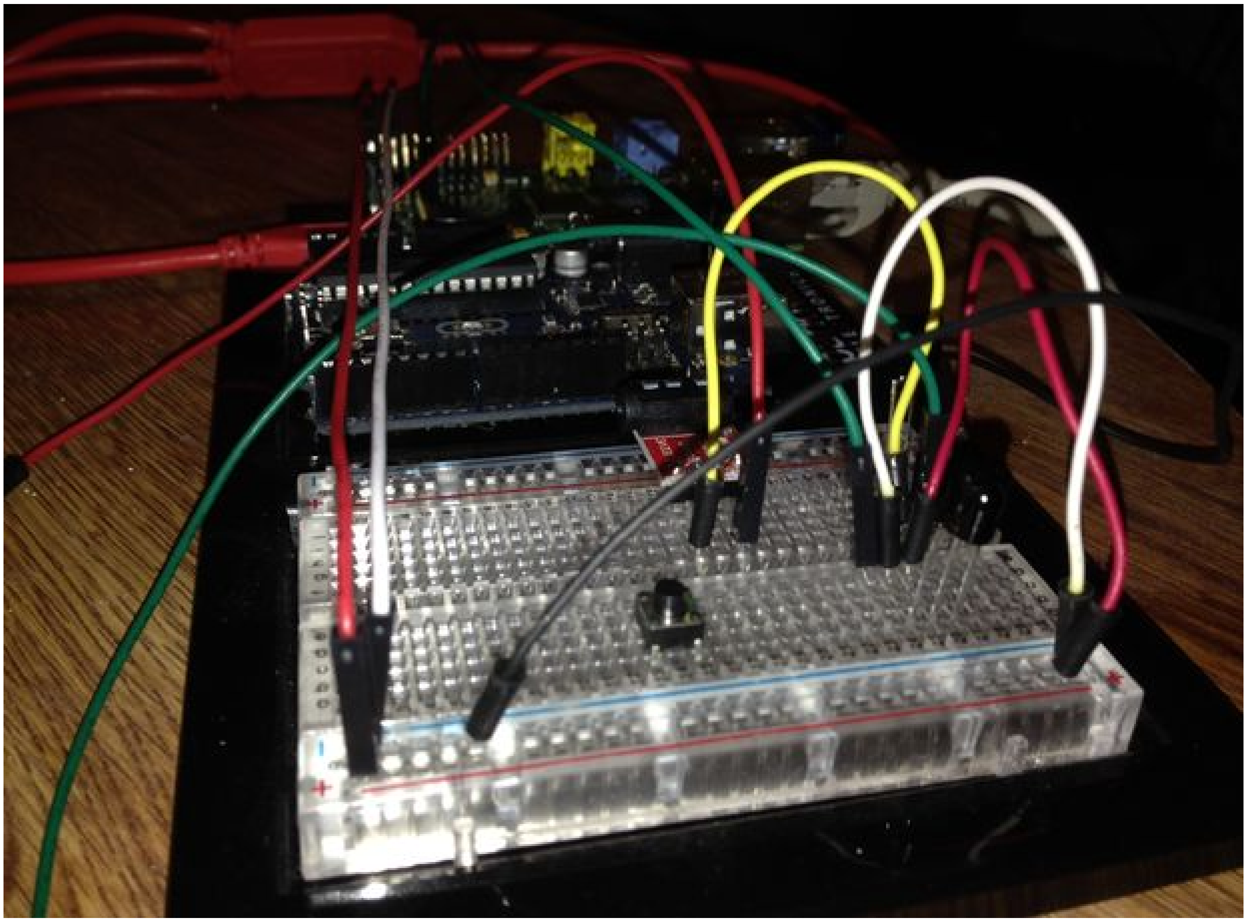
Erase the contents and paste this file

```
########################################################
# /etc/lirc/hardware.conf
#
# Arguments which will be used when launching lircd
LIRCD_ARGS="--uinput"

# Don't start lircmd even if there seems to be a good config file
# START_LIRCMD=false

# Don't start irexec, even if a good config file seems to exist.
# START_IREXEC=false

# Try to load appropriate kernel modules
LOAD_MODULES=true

# Run "lircd --driver=help" for a list of supported drivers.
DRIVER="default"

# usually /dev/lirc0 is the correct setting for systems using udev
DEVICE="/dev/lirc0"
MODULES="lirc_rpi"

# Default configuration files for your hardware if any
LIRCD_CONF=""
LIRCMD_CONF=""
########################################################
```

Reboot the Pi

```
    sudo reboot
```

Step 3: Making LIRC files



Wire the IR sensor to the PI with the 3 Pin to the same GPIO In pin that you defined in step 2 in the /etc/modules file

Run the command and press remote buttons at the sensor and you should get some feedback

```
sudo /etc/init.d/lirc stop
mode2 -d /dev/lirc0
```

(CONTROL + C to stop)

Next we run the fallowing command wile in the pi directory to record the remote commands

```
irrecord -d /dev/lirc0 ~/out.conf
```

Fallow the instructions provided

When it asks for key names you must use the predefined names. To get the names I like to open a new window and run the command.

```
irrecord --list-namespace
```

Once you have finished recording, open out.conf

```
sudo nano out.conf
```

copy from "begin remote" all the way to "end remote" and open /etc/lirc/lircd.conf

```
sudo nano /etc/lirc/lircd.conf
```

Erase the content and paste the code and save.

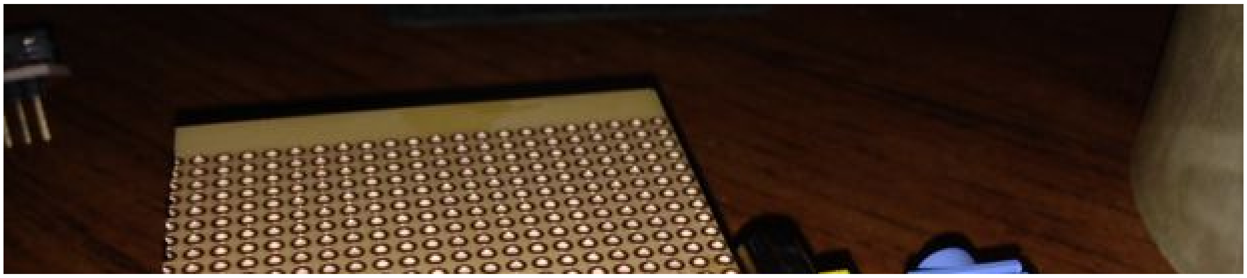
Assign a name to the remote by replacing the line in the .conf that has a file path after NAME:

Repeat this for all the remotes you want to use

Reboot the Pi

```
sudo reboot
```

Step 4: Building the board



The idea here is to build the circuit form the schematic above (the nice one) and replace the LEDs with an IR emitter instead. As you can see in the circuit above (the bad one) the tip of the headphone board is +5v and one of the rings must be connected to the transistor. The Pi does not go fast enough to run the LED itself It must have the transistor to work.

I started by soldering 2 female headers side by side on a perf board.

Then I added the circuit and trimmed the excess perf board off.

Step 5: Now what?

Now is the fun part.

execute remote command to devices with lines like

```
irsend SEND_ONCE device KEY_POWER
```

(device being the name you assigned to it)

Options.

Having a raspberry pi so close to you entertainment center with the ability to turn itself on is a great place to start.

I have set up a MySQL DB and written a PHP file to execute these. Then made a simple HTML page to call these PHP files.

You could write a batch file run a sequence of commands.

I plan to write an App on my phone that will control everything.

The possibilities are endless

As requested here are my html and php files. The SQL is a simple table with 3 fields.
The first field is the device name.
The second field is the command I give the PHP file.
The third is the key that is executed (KEY_POWER).
These files will not work with your setup but they are a good place to start

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