

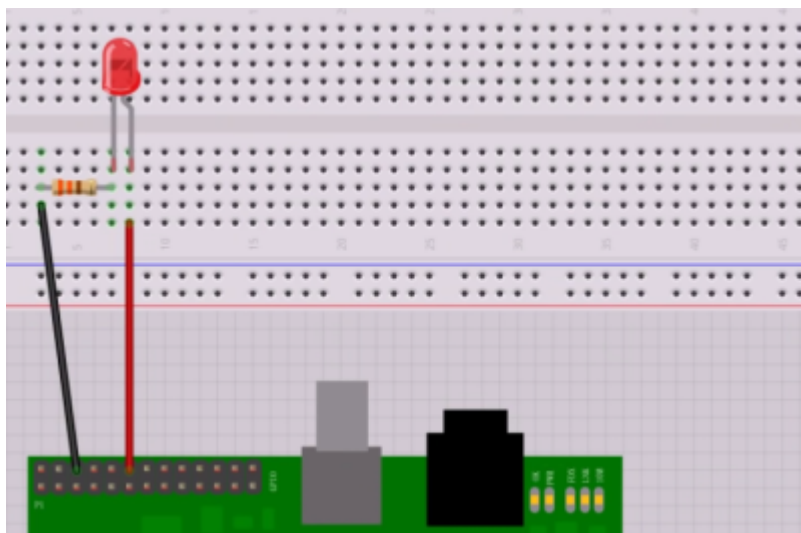
GPIO LED Control

Since the Raspberry Pi Model B+ (the second version of the Pi 1) the Raspberry Pi has had a 40 Pin header (24 Pins on the very first Pi). These pins provide some very useful functions, but what we are interested in are the GPIO pins that we can turn on and off (some pins have dedicated functions).

An easy way to see if we are actually turning a pin on or off is to use an LED that will light up upon the pin becoming active.

Please be aware, the GPIO pins are 3.3v Logic, and are restricted to 16mA

Here is a simple circuit of an LED connected to a GPIO Pin.



This is a red LED that has a 2V drop across it, so $3.3\text{V} - 2\text{V} = 1.3\text{V}$. The LED only needs around 5mA, so $R = V/I = 1.3/0.005 = 260\text{ Ohms}$.

When the Pin goes high (under our software control) it will provide 3.3v, and thus the LED will light (famous last words)

If you are using your Raspberry Pi via SSH or a Remote Desktop session, you need to enable remote access of the GPIO Pins, to do this from the command line, do the following:

```
sudo raspi-config
```

Raspberry Pi Software Configuration Tool (raspi-config)

- | | |
|--------------------------------|--|
| 1 Expand Filesystem | Ensures that all of the SD card storage is |
| 2 Change User Password | Change password for the default user (pi) |
| 3 Boot Options | Choose whether to boot into a desktop envi |
| 4 Wait for Network at Boot | Choose whether to wait for network connect |
| 5 Internationalisation Options | Set up language and regional settings to m |
| 6 Enable Camera | Enable this Pi to work with the Raspberry |
| 7 Add to Rastrack | Add this Pi to the online Raspberry Pi Map |
| 8 Overclock | Configure overclocking for your Pi |
| 9 Advanced Options | Configure advanced settings |
| 0 About raspi-config | Information about this configuration tool |

<Select>

<Finish>

Advanced Options:

Raspberry Pi Software Configuration Tool (raspi-config)

- | | | |
|-----------------|--|---|
| A1 Overscan | You may need to configure overscan if blac | ↑ |
| A2 Hostname | Set the visible name for this Pi on a netw | ■ |
| A3 Memory Split | Change the amount of memory made available | ▢ |
| A4 SSH | Enable/Disable remote command line access | ▢ |

A5 SPI	Enable/Disable automatic loading of SPI ke	⌘
A6 I2C	Enable/Disable automatic loading of I2C ke	⌘
A7 Serial	Enable/Disable shell and kernel messages o	⌘
A8 Audio	Force audio out through HDMI or 3.5mm jack	⌘
A9 1-Wire	Enable/Disable one-wire interface	⌘
AA GPIO Server	Enable/Disable remote access to GPIO pins	↓

<Select>

<Back>

Select GPIO Server

Would you like the GPIO server to be accessible over the network?

<Yes>

<No>

You will get a confirmation that the GPIO Server is available.

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<Select>

<Finish>

Now Select Finish - You will be back at the command prompt (you may need to reboot)

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