Raspberry Pi First-Time Hacker Day

University of Sheffield, Department of Computer Science / Access Space

James Wallbank, Hamish Cunningham, October 2rd 2013

Singing Jelly Baby: Code

Do `this stuff` from the "command line":

1. create a work directory
    - `mkdir work`
    - `cd work`
2. install Wiring Pi
    - `wget -O wp.deb -r tinyurl.com/wiringpi`
    - `sudo dpkg -i wp.deb`
3. get the code
    - `wget -O jb.sh -r tinyurl.com/pijellybaby`
    - `chmod +x jb.sh`
4. get the sound effects
    - `wget -O police.wav -r tinyurl.com/policewav`
5. run the thing
    - `sudo ./jb.sh`

Traffic Lights: Code

1. get the code
    - `wget -O TrafficLED.py -r tinyurl.com/pitraffic`
    - `cat TrafficLED.py`
2. run the thing
    - `sudo python TrafficLED.py`

Stay Safe!

You **must** change the password on the Pi next time you start up...

Keep in touch...

The Department of Computer Science: http://shef.ac.uk/dcs

Pi GATE: http://pi.gate.ac.uk/

Access Space: http://access-space.org/

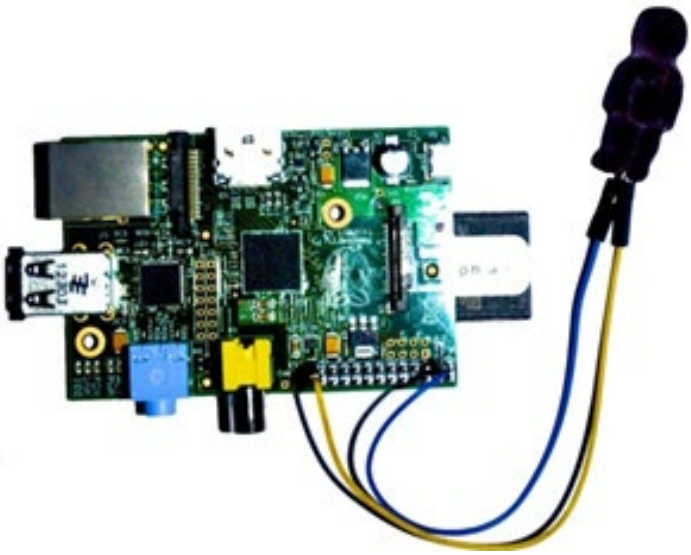
SINGING JELLY BABY RECIPE

A PHYSICAL COMPUTING PROJECT FOR THE RASPBERRY PI – NO SOLDERING REQUIRED!

This recipe has been developed by the Raspberry Pi Foundation in conjunction with OCR

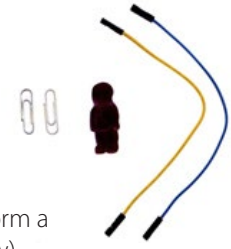
Difficulty: Basic

This recipe will allow you to turn a Jelly Baby into an input device for your Raspberry Pi and will guide you through writing a program that will make the Jelly Baby sing when you squeeze it.



Ingredients needed in addition to your Raspberry Pi:

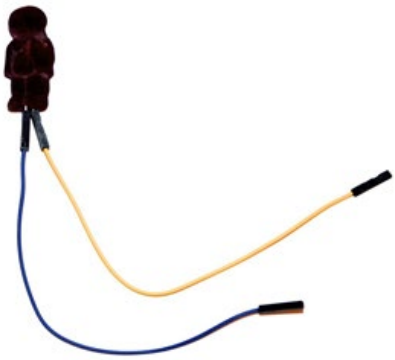
1x Jelly Baby
2x Jumper Wire (female to female)
2x (non-plastic-coated) Paper Clips
1x Headphone or Speakers



1. Take the paper clips and unbend to form a wire (should look like the image below).

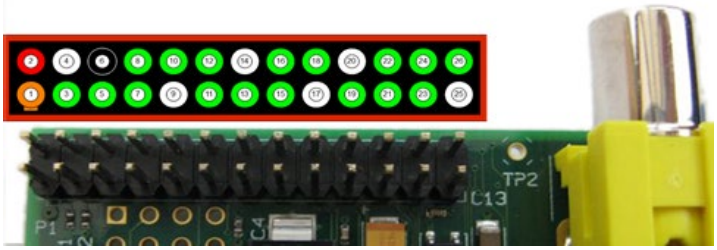
2. Push the straightened paper clips into one end of each of the jumper leads.

3. Insert the paper clips into the Jelly Baby so that they are close to each other but not touching (this may require a couple of attempts to get right!)



4. Take the other end of one of the jumper leads and push onto pin 3 of the General Purpose Input-Output (GPIO) header which is connected to one of the GPIO channels.

5. Take the end of the other jumper lead and push onto pin 25 of the GPIO header which is connected to ground.



Raspberry Pi GPIO header pins. The diagram above the pins shows the pin numbers. You will be using pin 3 and pin 25. ***Warning! You can damage your Raspberry Pi if you do not use the GPIO pins correctly!***

Congratulations! You have now turned a Jelly Baby into a switch that you can use to trigger events in your programs for the Raspberry Pi.

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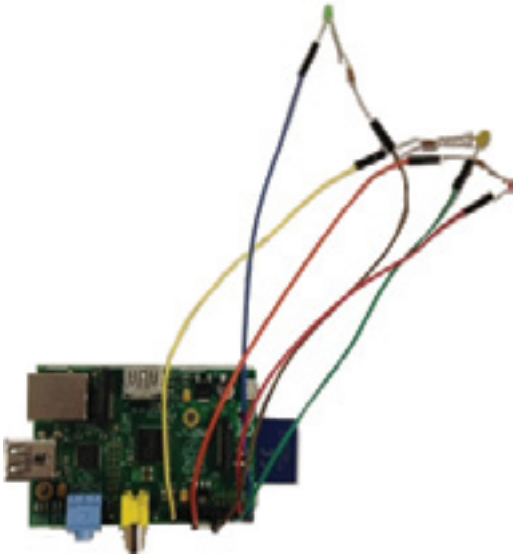
TRAFFIC LIGHTS LED RECIPE

A PHYSICAL COMPUTING PROJECT FOR THE RASPBERRY PI – NO SOLDERING, TOOLS OR INTERNET ACCESS REQUIRED!

Difficulty: Basic

This recipe will allow you to create a set of traffic lights by turning LEDs into output devices for your Raspberry Pi – we will guide you through writing a program to get them to light in the correct sequence.



Ingredients needed in addition to your Raspberry Pi:

3 x LEDs (red, yellow, green)

3 x 220Ω Resistors

6 x Jumper Wires (female to female)

A small rectangular piece of black card – with three holes for the LEDs

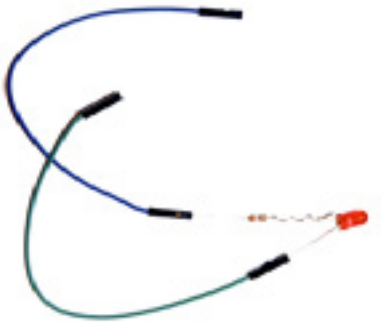
Method:

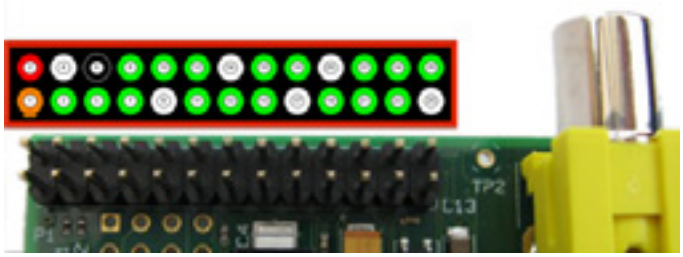
Turn the 3 x LEDs into outputs for your program

1. Take one end of the resistor and twist it around the cathode of the LED (nearest flat edge and the shorter lead) so that it forms a strong connection.

2. Push both the anode (longer lead) of the LED and the other end of the resistor into each of the jumper wires. Repeat this for all 3 LEDs.

3. For each LED take the end of the jumper lead connected to the cathode of the LED (flat edge, shorter wire) and push onto pins 17, 20 and 25 of the GPIO headers which are connected to ground.





Raspberry Pi GPIO header pins. The diagram above the pins shows the pin numbers. You will be using pins 3, 5, 7, 17, 20 and 25. ***Warning! You can damage your Raspberry Pi if you do not use the GPIO pins correctly!***

4. Then take the end of the other jumper lead and push onto pin 3 for the red LED, pin 5 for the yellow LED and pin 7 for the green LED of the General Purpose Input-Output (GPIO) header which is connected to the GPIO channels.

5. Push the LEDs through your black card in the correct order for traffic lights.

Congratulations! You have now attached the LEDs to your Raspberry Pi which can be used as an output in your programs.

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