



Projects

BURPING JELLY BABIES



WHAT YOU WILL MAKE:

You will learn how to turn a jelly baby into an input device for your Raspberry Pi. You will then create a program to make it burp when it is squeezed.

WHAT YOU WILL LEARN:

By following this tutorial to make a jelly baby sweet burp you will learn:

- What GPIO pins are and how to connect them to real world objects.
- How to create a program to play a sound when the jelly baby is squeezed.

WHAT YOU WILL NEED:

- Speakers or headphones
- 2 x female-to-female jumper wires
- Metal paper clip
- Jelly babies

In this resource, you can make a jelly baby burp whenever you give it a squeeze. To turn a simple, and very yummy jelly baby into a switch, you will attach cables to it and then connect them to the GPIO pins on a Raspberry Pi.

There are 40 pins on the Raspberry Pi and they perform various functions. You can use our RasPiO pin label to help identify what each pin is used for. Make sure your pin label is placed with the key-ring hole facing the USB ports, pointed outwards. You'll see pins labelled as 3V3, 5V, GND, GP2, GP3, and so on:

3V3	3.3 volts	Anything connected to these pins will always get 3.3V of power.
5V	5 volts	Anything connected to these pins will always get 5V of power,
GND	Ground	Zero volts. Used to complete a circuit.
GP2	GPIO pin 2	These pins are for general-purpose use and can be configured as input or output pins.
ID_SC/ID_SD/DNC	Special purpose pins	



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WIRING UP THE JELLY BABY:

- Take two metal paper clips and unfold them to make a straight wire.
- Take a female-to-female jumper lead and push the paper clip wire into one of the ends.
- Do the same to the other wire, so that you have two identical jumper cables with paper clip wires in one end.
- Insert the paper clips into a jelly baby, so that they're close to each other but not touching.
- Now attach the free ends of the jumper leads to **GPIO 3** and any **GND** pin.

SOUND OF A BURP:

So far, you've created your input device and have your Raspberry Pi set up and running. You now need to find a burping sound file and move it into a new folder. This can all be achieved in a terminal window, which can be opened by pressing **Ctrl + Alt + T**.

- Create a new folder called **jellybaby** with the following command:

```
mkdir jellybaby
```

- Enter the folder with **cd jellybaby**.
- Download a copy of a burp sound effect with the following command:

```
wget http://rpf.io/burp -O burp.wav
```

- Now test that you can play the sound file using **aplay** by typing:

```
aplay burp.wav
```

aplay will play the sound file and you should hear it from the speakers or headphones connected to your Pi.



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WRITE A PROGRAM IN PYTHON:

The final step to make your jelly baby burp is to write a program in Python. The program will detect when you press the jelly baby input device and will output the burp sound.

- Go to **Menu** > **Programming** > **Python 3 (IDLE)**
- Once IDLE 3 has opened, click on **File** and **New File**. This will open a blank file. Click on **File** and **Save As** and name the file **burp.py**. Make sure you save the file in the **jellybaby** folder you created earlier.
- Begin your program by importing the modules and libraries needed to make it work. Type the following:

```
from gpiozero import Button
import pygame
from time import sleep
```

This allows you to find out when the button has been pushed using **gpiozero** and allows you to use **pygame** to play a sound. The **time** library is used to pause the program for a while.

- Next, you need to tell your program which GPIO pin the jelly baby is attached to:

```
jelly_baby = Button(3)
```

- You also need to initialise **pygame** and import the sound into your program:

```
pygame.init()
pygame.mixer.init()

burp = pygame.mixer.Sound("burp.wav")
```



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- Lastly you can use an infinite loop to wait for the jelly baby to be pushed and then play the sound:

```
while True:  
    jelly_baby.wait_for_press()  
    burp.play()  
    sleep(2)  
    burp.stop()
```

- Save the file by clicking on **File** and **Save**.
- Finally, run the program by clicking on **Run** and **Run Module**.



Congratulations! Now when you press the jelly baby, the wires will touch, and the burp sound file will play.



At York Pi Jam we provide coding and digital making activities for children and adults to participate in. We are also volunteers of the Raspberry Pi Foundation (UK Registered Charity 1129409)

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