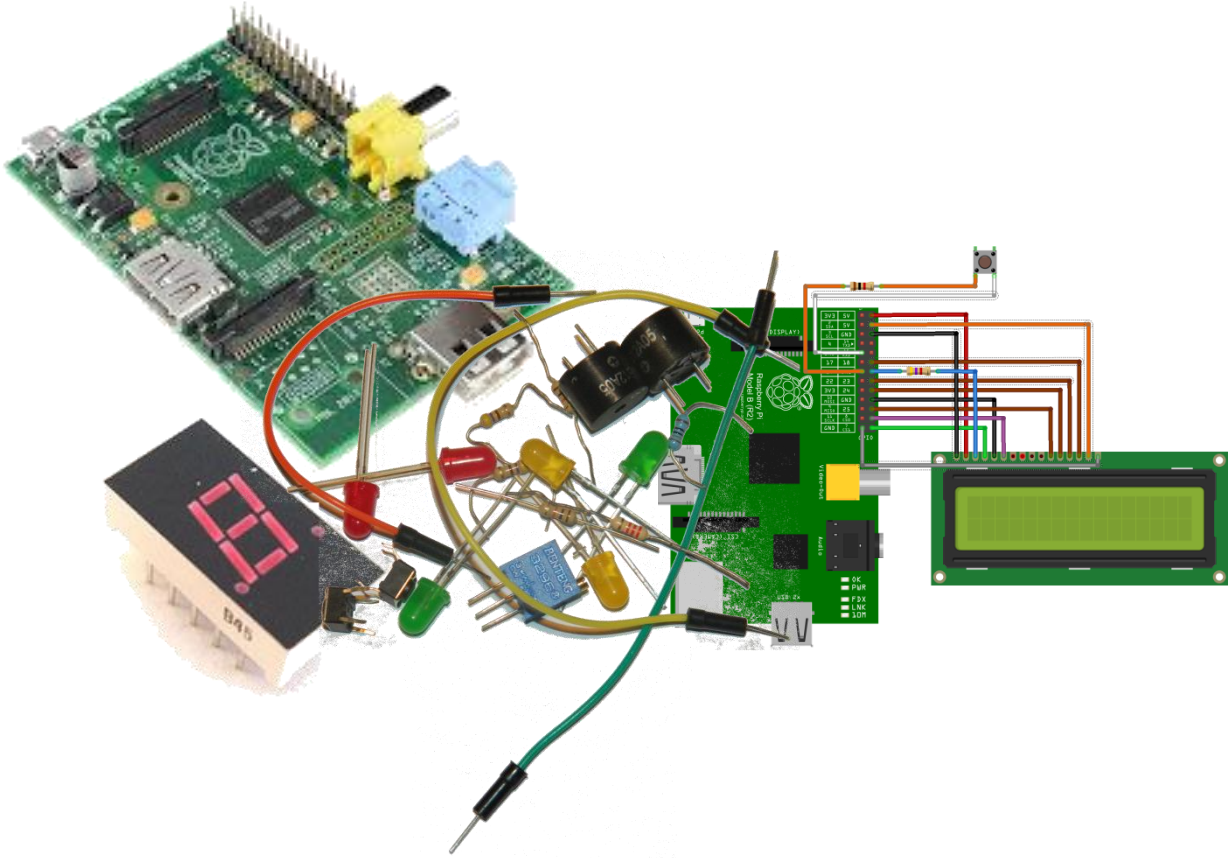
Raspberry Pi and Electronics



Taster Session

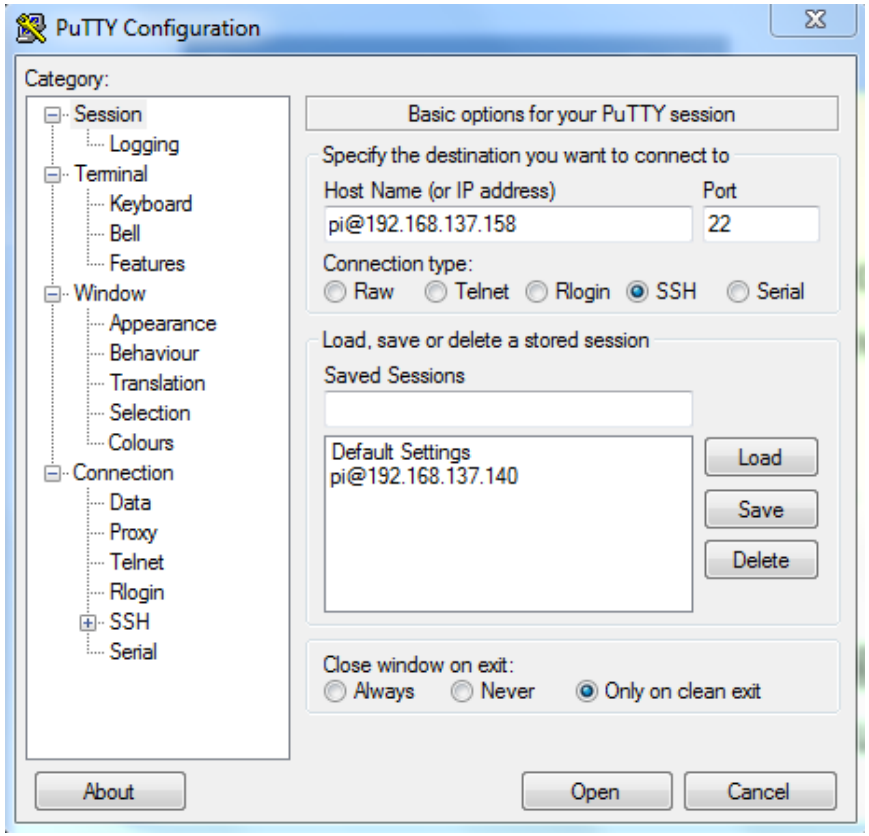
Today we're going to get some hands on experience with the Raspberry Pi.
This group is about physical computing.

What is Physical Computing

https://www.raspberrypi.org/help/physical-computing/

Installing Putty

We're going to connect to our Raspberry Pi using SSH. Secure Shell, or SSH, is encrypted network protocol to allow remote login and other network services to operate securely over an insecure network. Common applications include remote command-line login and remote command execution.

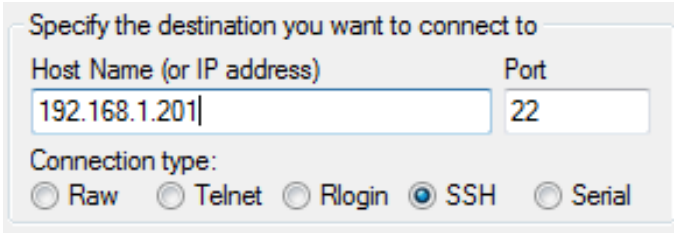


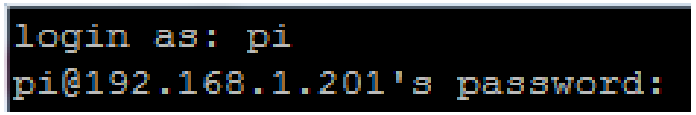
The SSH client we are going to use is called Putty. It's available here.
http://www.chiark.greenend.org.uk/~sgtatham/putty/downloadl.html

Raspberry Pi advantages

To connect to our Raspberry Pi we need to find out what it's IP Address is. To do this we can use a network scanner such as Advanced IP Scanner or Fing.

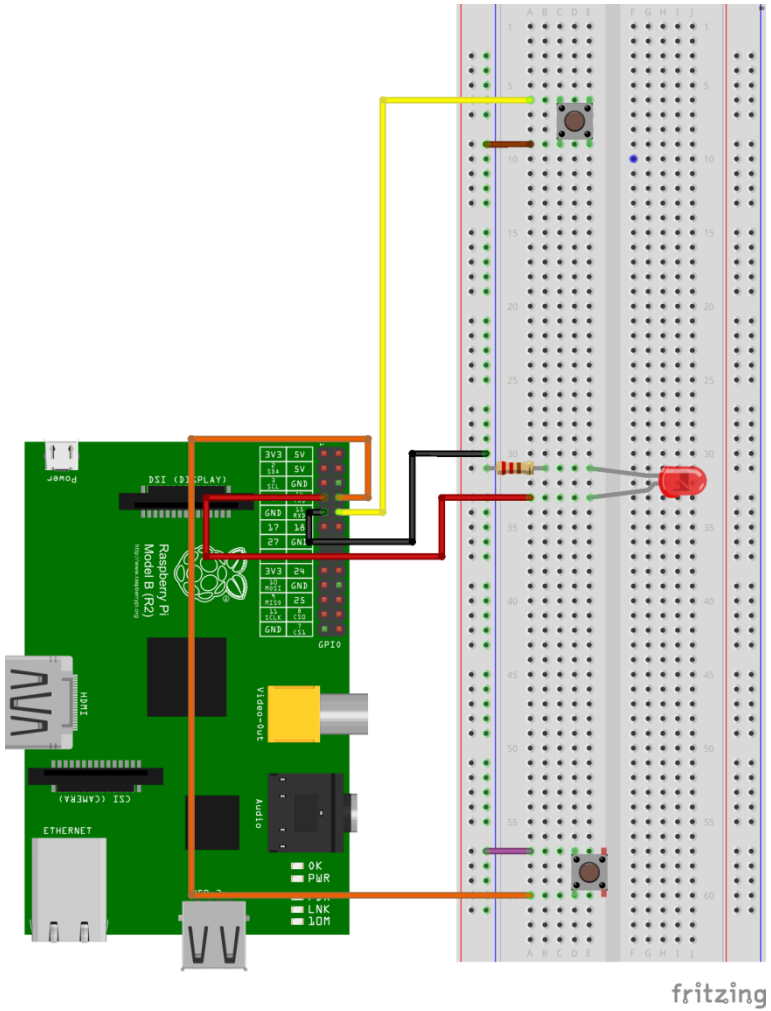
Once we have our IP Address we enter it into Putty then click open





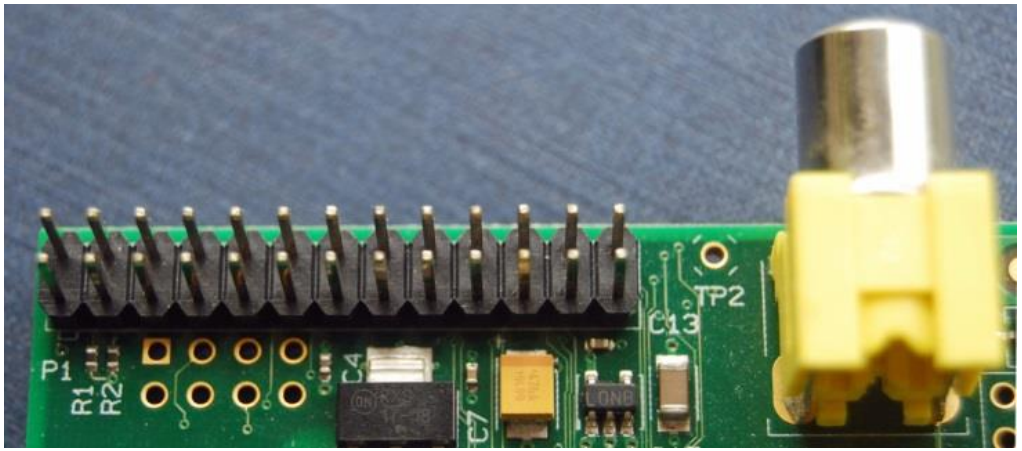
The login is pi and the password is raspberry
When we get something like this we are ready to go

Our First Device

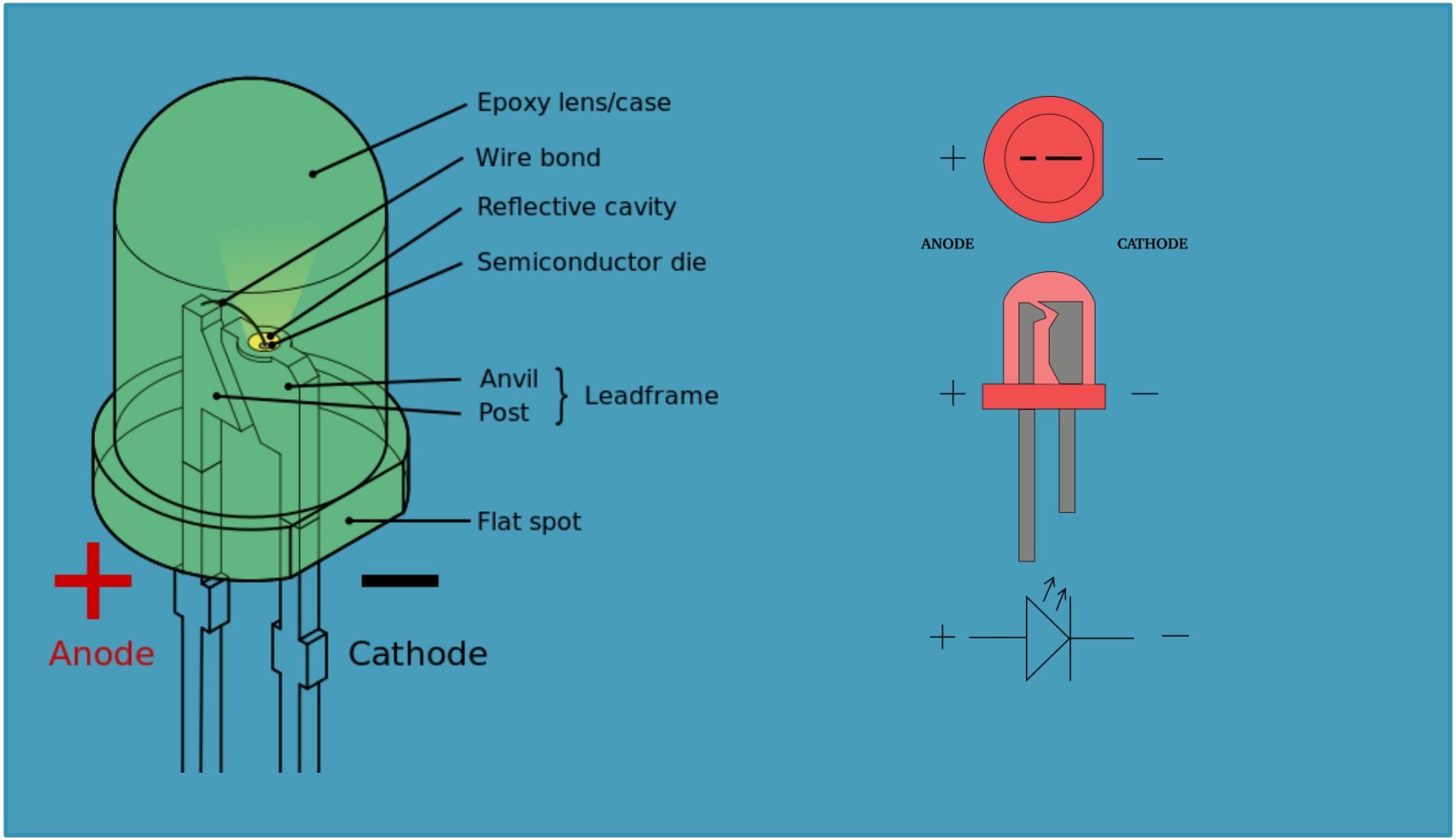


Raspberry Pi GPIO

These pins are a physical interface between the Pi and the outside world. At the simplest level, you can think of them as switches that you can turn on or off (input) or that the Pi can turn on or off (output). Seventeen of the 26 pins are GPIO pins; the others are power or ground pins.



Light Emitting Diode



What is a Resistor

https://www.youtube.com/watch?v=Gc1wVdbVI0E

Hello World

Programming from the command line

In putty type the following

```
pi@raspberrypi ~ $ nano hello.py
```

This creates a file called hello.py and opens it in the Nano text editor

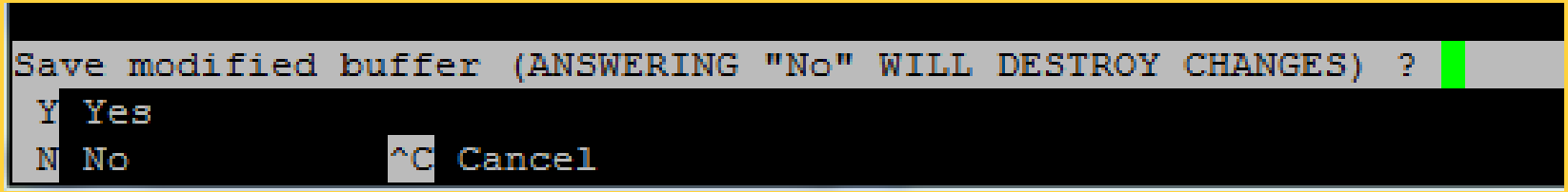
Type the following

```
  GNU nano 2.2.6                File: hello.py

print("Hello, World")
```

Hello World

Press ctrl and x



Press y
Press ENTER

In the command line type python hello.py

```
pi@raspberrypi ~ $ python hello.py
Hello, World
```

Blinking a Led

Type nano led.py
In Nano enter the following code

When finished press CTRL x to exit
Then press y, then enter to save it

```
#!/usr/bin/python3

import RPi.GPIO as GPIO
import time

GPIO.setmode(GPIO.BCM)
GPIO.setwarnings(False)

led = 4
GPIO.setup(led,GPIO.OUT)

GPIO.output(led,1)
time.sleep(5)
GPIO.output(led,0)

GPIO.cleanup()
```

We will test our code after every change

Next Session

I will recap what we covered today and go into more detail as I skimmed over some important details.

We will also look at setting up a remote desktop so we won't be stuck with the command line all the time.

If you have a Raspberry pi yourself bring it along and I'll help you get it set up.