



INTRODUCTION TO Raspberry Pi



Raspberry Pi

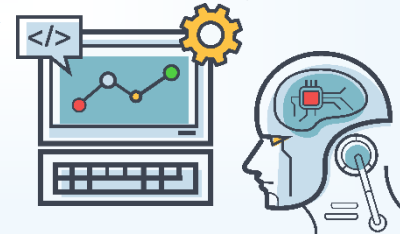
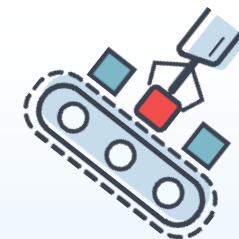
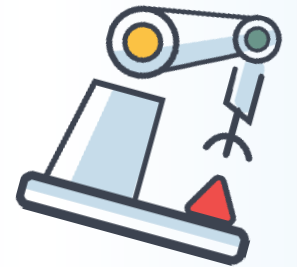
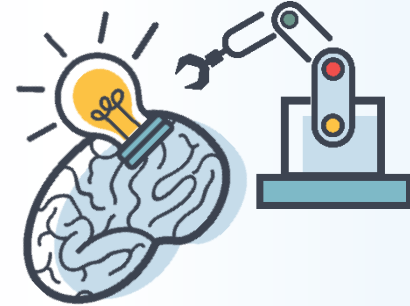
The Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote teaching of basic computer science in schools and in developing countries





Activity

- Observe the raspberry pi & its components embedded on Green PCB.
- Now complete the Q1 in the worksheet.



Hardware Information

01

USB ports — these are used to connect a mouse and keyboard. You can also connect other components, such as a USB drive.

02

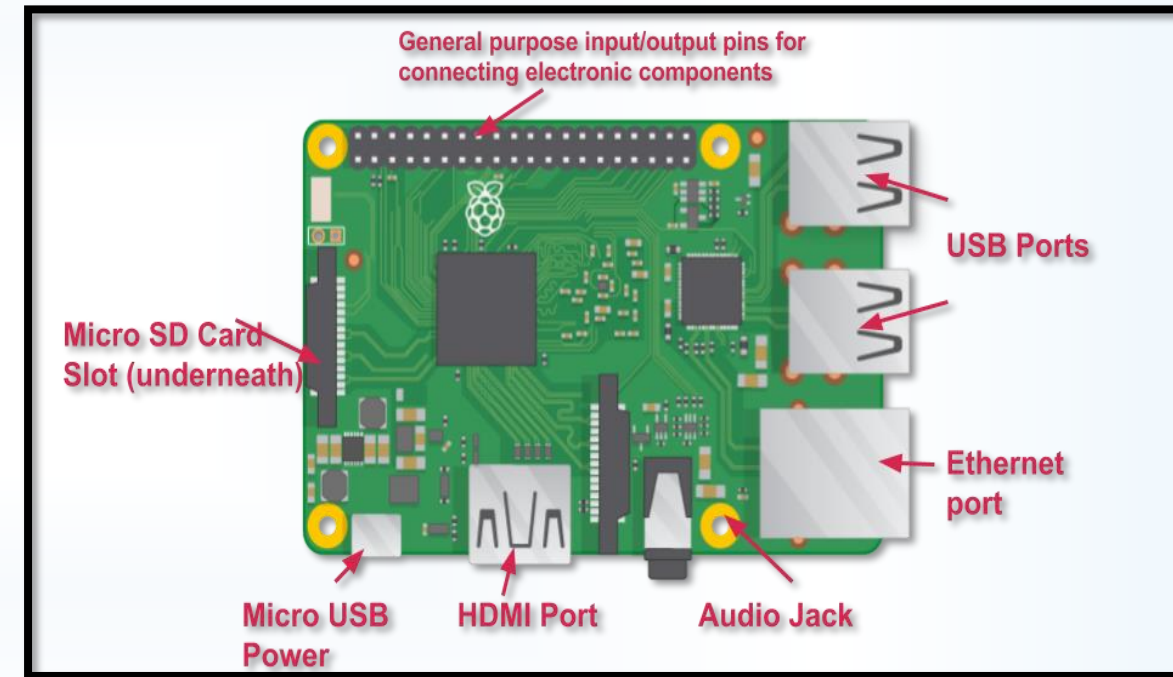
SD card slot — you can insert the SD card here.

03

Ethernet port — this is used to connect the Raspberry Pi to a network with a cable. The Raspberry Pi can also connect to a network via wireless LAN.

04

Audio jack — you can connect headphones or speakers here.



Hardware Information

05

HDMI port — this is where you connect the HDMI cable to the monitor (or projector) that you are using to display the output from the Raspberry Pi.

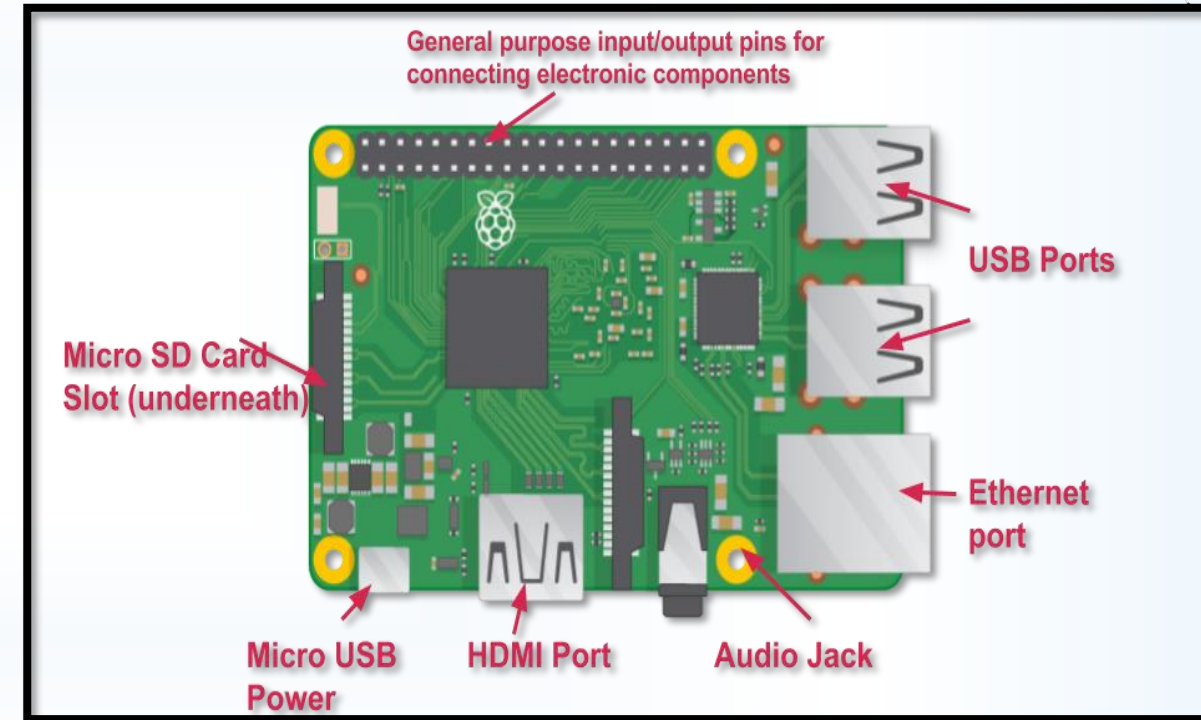
06

Micro USB power connector — this is where you connect a power supply.

Note: You should always do this last after you have connected all your other components.

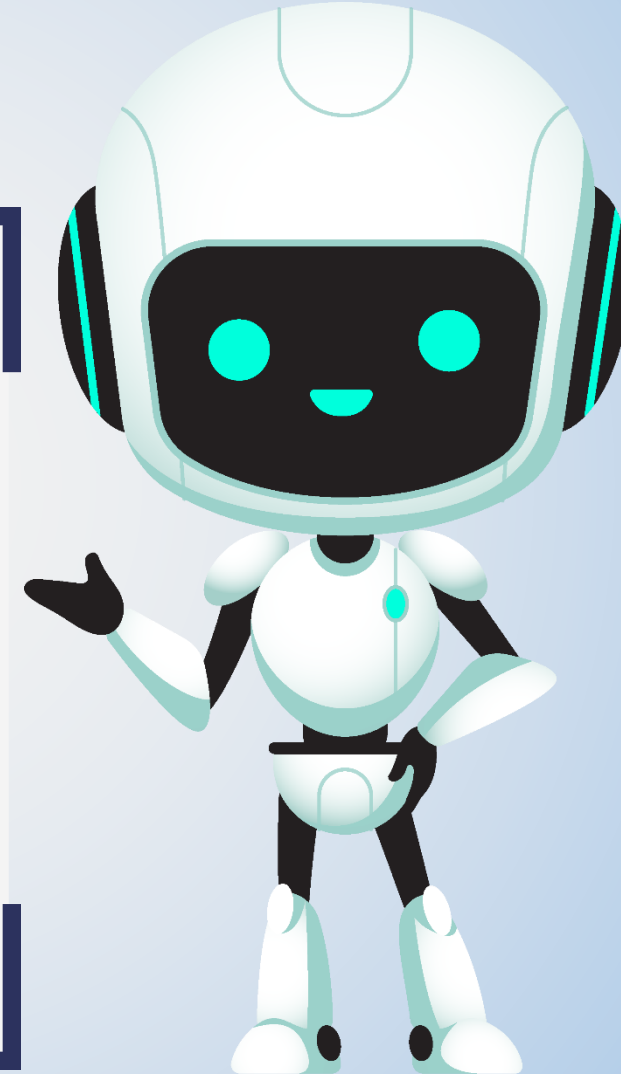
07

GPIO ports — these allow you to connect electronic components such as LEDs and buttons to the Raspberry Pi.





Operating System Installation (Raspbian)



Downloading NOOBS:

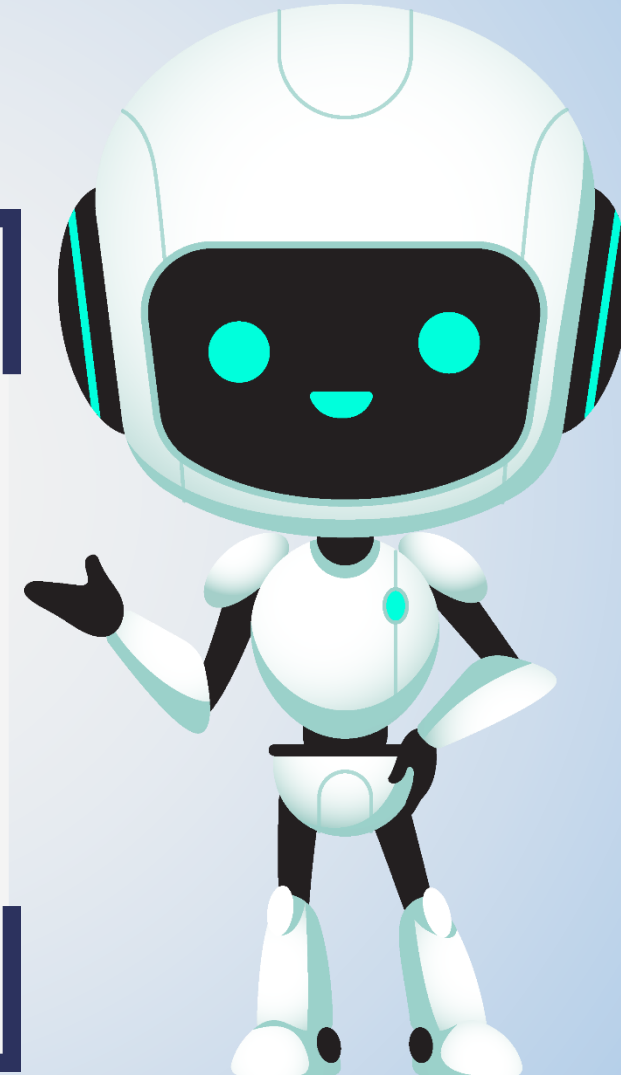
www.raspberrypi.org/downloads/





Operating System Installation (Raspbian)

Installation of NOOBS in SD Card



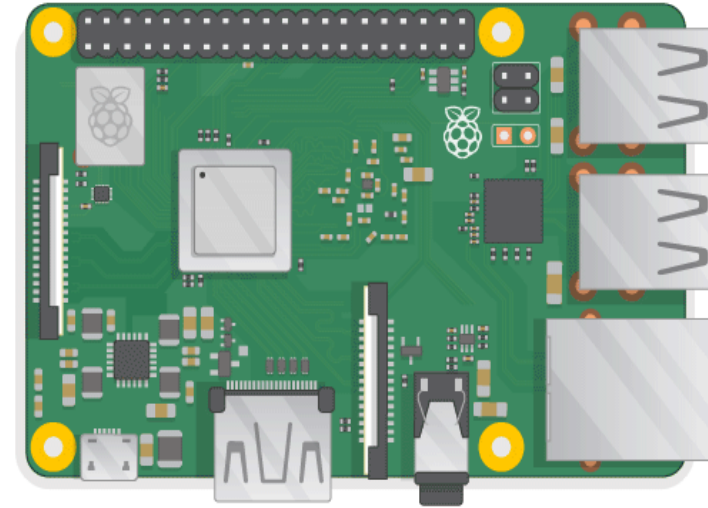
<https://www.sdcard.org/downloads/formatter/index.html>



Connecting Raspberry Pi

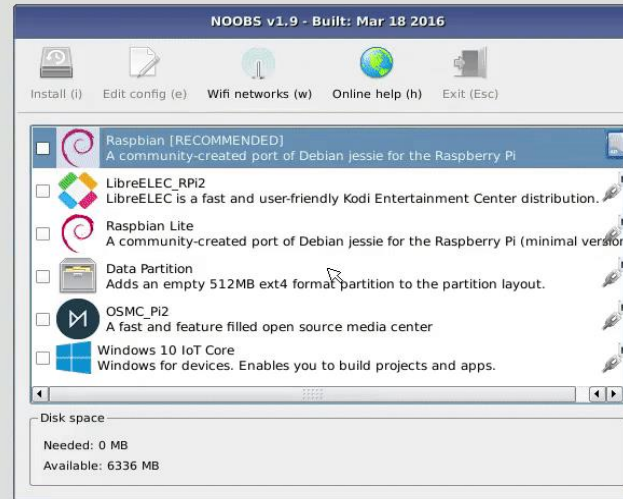
Let's connect up your Raspberry Pi and get it running.

- Insert the SD Card into your Raspberry Pi.
- Connect the mouse & keyboard to the USB ports on the Raspberry Pi.
- Make sure your monitor is plugged into a wall socket and turned on.
- Connect the monitor cable to the Pi's HDMI port.
- Plug the power supply into a socket and connect it to the micro USB power port.



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Installation Process of Raspbian



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Worksheet Time

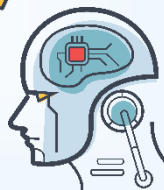
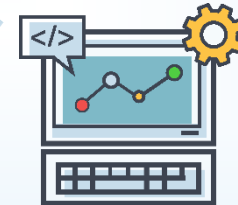
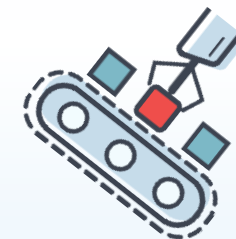
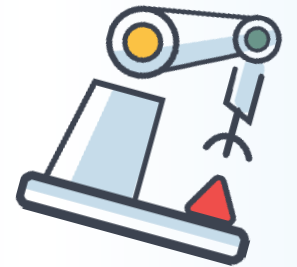
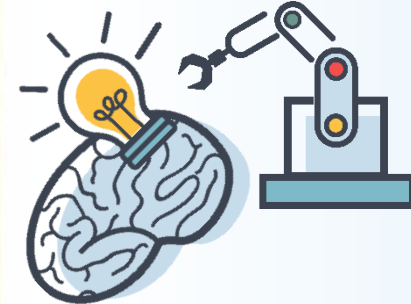
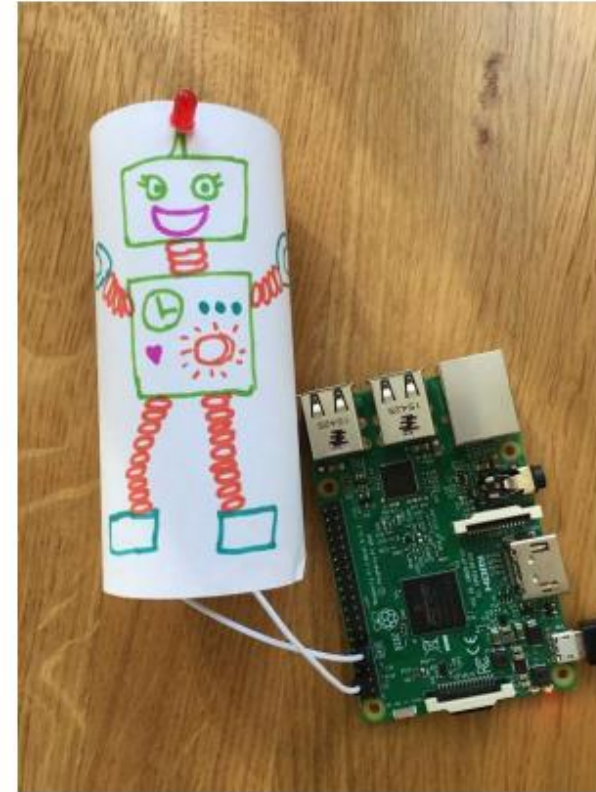




Blink a led using R-pi

Robot antenna

Control a robot's antenna light with a Raspberry Pi and code blocks



Material Needed



What you will need

Hardware

- A raspberry pi and associated peripherals
- 1x LED
- 1x resistor (any resistor 100ohms will be fine)
- 4x female-to-female jumper cable
- A mini speaker or headphone

Software

- You will need the latest version of Raspbian, Which already includes Scratch 2.

Note : Scratch 3 will **only** work on Raspberry Pi 4.



What you will learn

- How to connect an LED to raspberry Pi.
- How to control an LED with Scratch 2/3

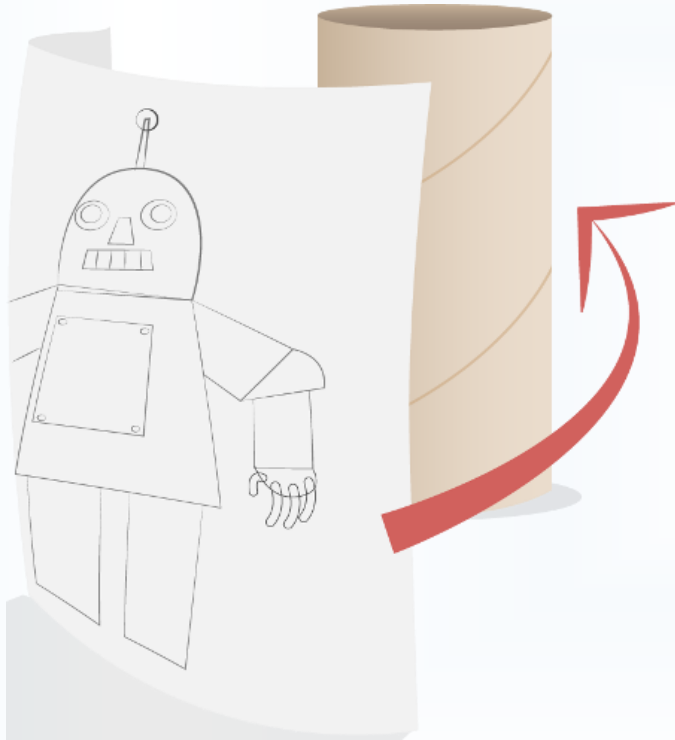
Additional Craft Materials

- Cardboard toilet roll
- One sheet of A4 paper
- Sharp Pencil
- Pens, Crayons, and other decorating materials
- Glue or tape
- Small blob of modelling Clay
- Scissors



Make a Cardboard Robot

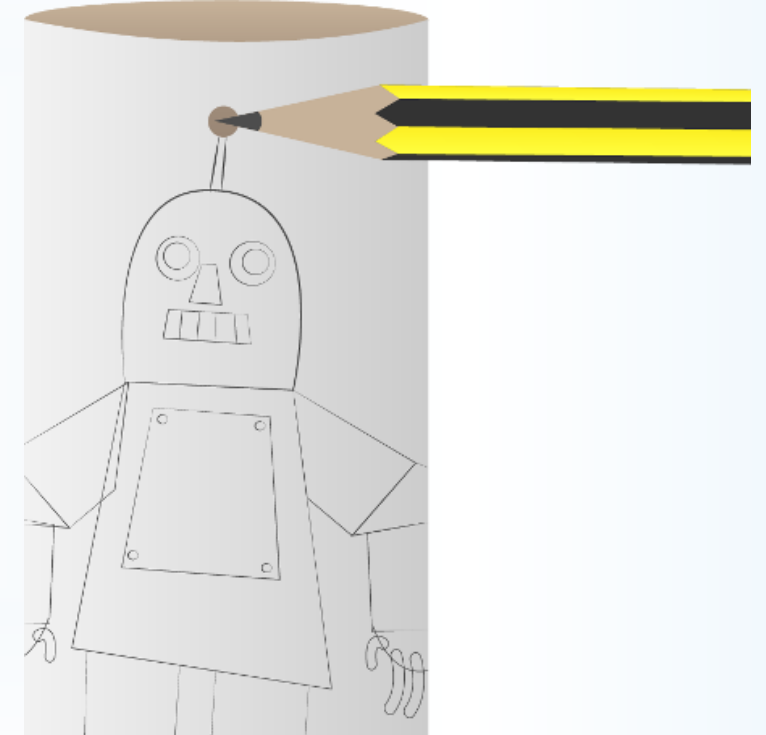
- On a sheet of A4 paper, draw or print your own robot design. It doesn't have to be a person robot — maybe it could be a car or an animal! Just make sure it has an antenna. Color in the robot picture and cut it out carefully.



- Wrap the robot around the cardboard tube lengthways



- Stick some modelling clay behind the robot's antenna inside the cardboard tube.



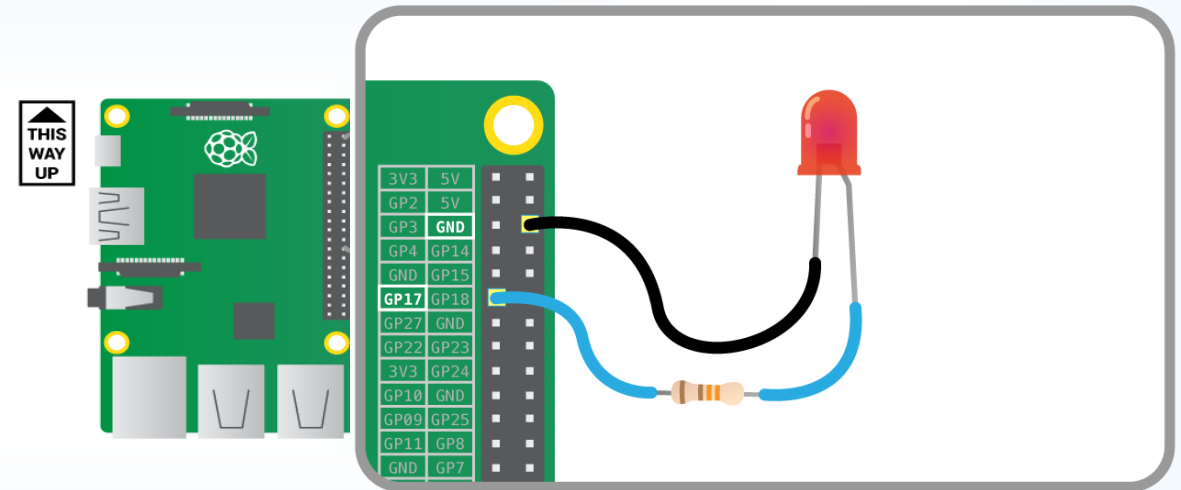
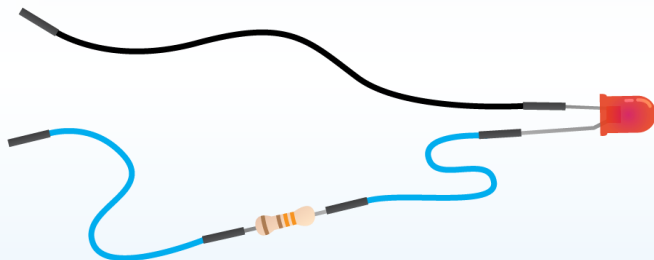
- Push a pencil into the antenna to make a hole through the cardboard tube

Connecting LED with R-PI

- Firstly Look at your LED. It has a short leg and a long leg.

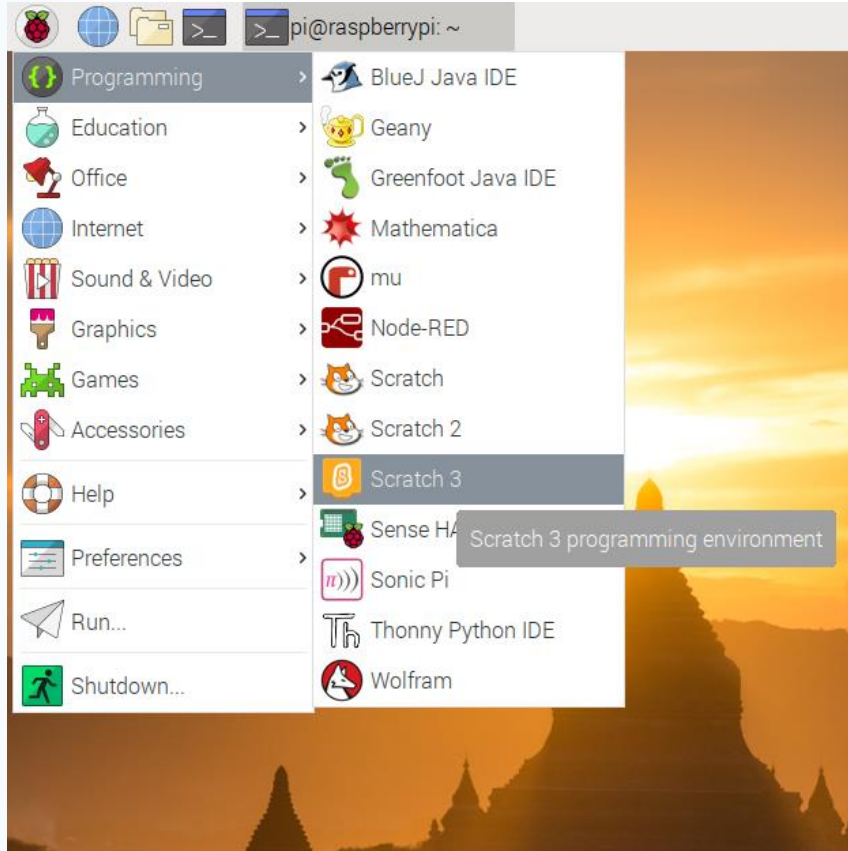


- Slot a jumper wire onto the end of the long leg, Slot the resistor into the other end of the same jumper wire. It doesn't matter which way round it goes. Add another jumper wire to the other end of the resistor.
- Take another jumper wire and slot one end onto the short leg of the LED.
- You should end up with something that looks like this:

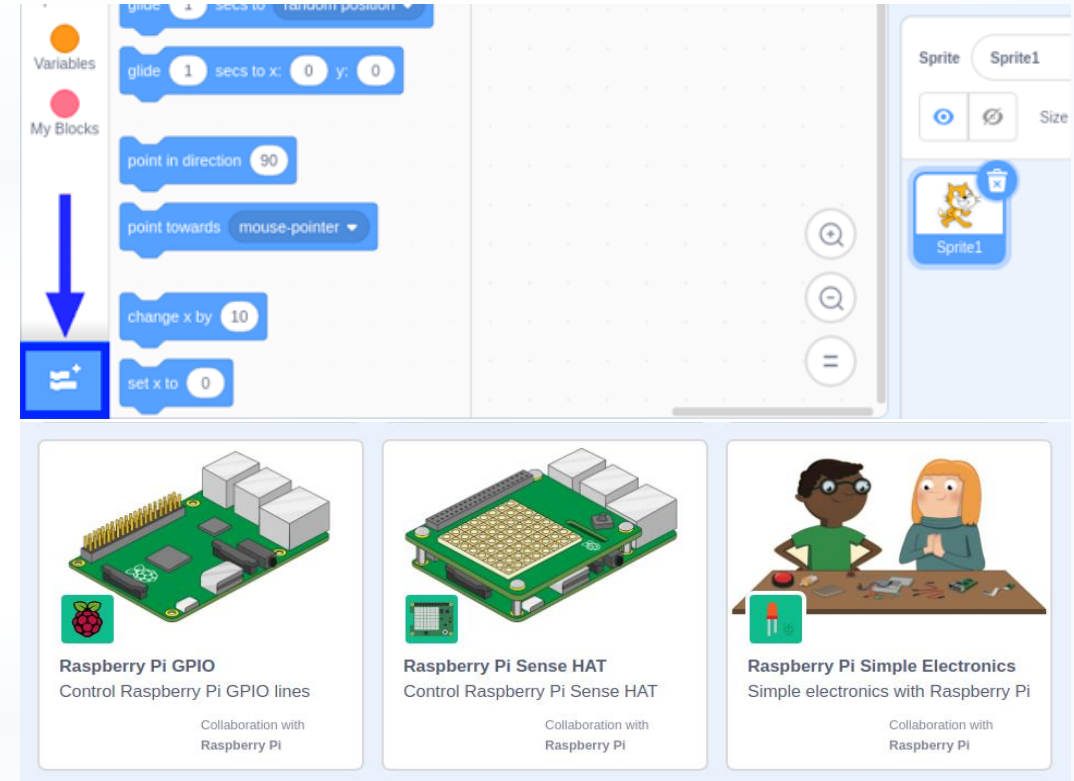


- Connect the long end of LED to GPIO 17 & short end to GND as shown in the figure

Writing a code



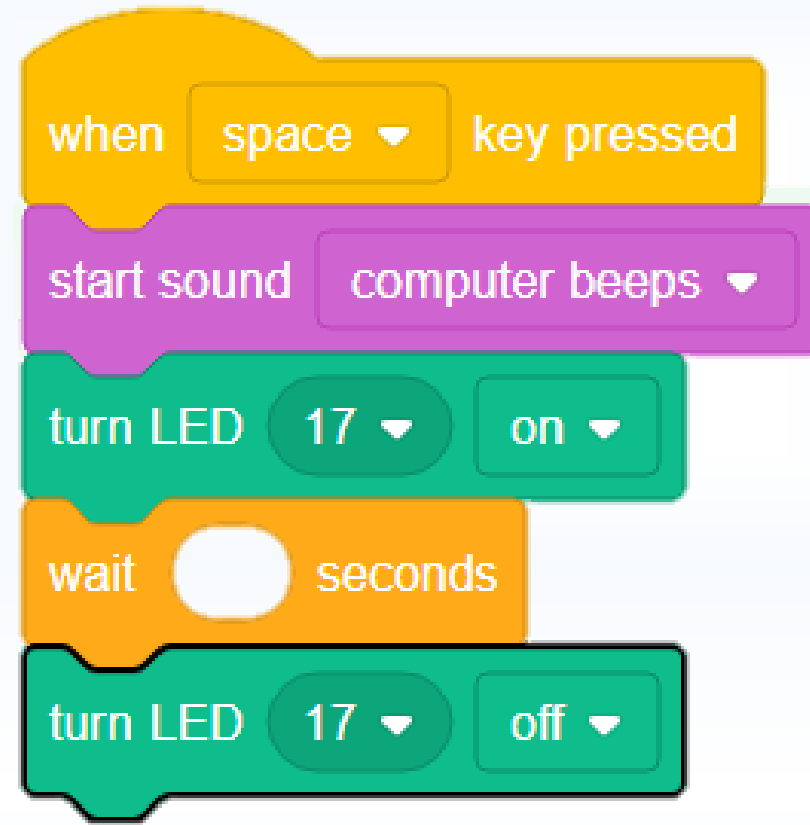
- Open Scratch 3/Scratch 2
click on R-pi icon → Programming → Scratch 3



- Click on Add Extension and then click on Raspberry Pi simple Electronics

Writing a code

- Test your program by pressing the space key. You should see the LED turn on for a second and then turn off, and your robot should beep.





Worksheet Time



