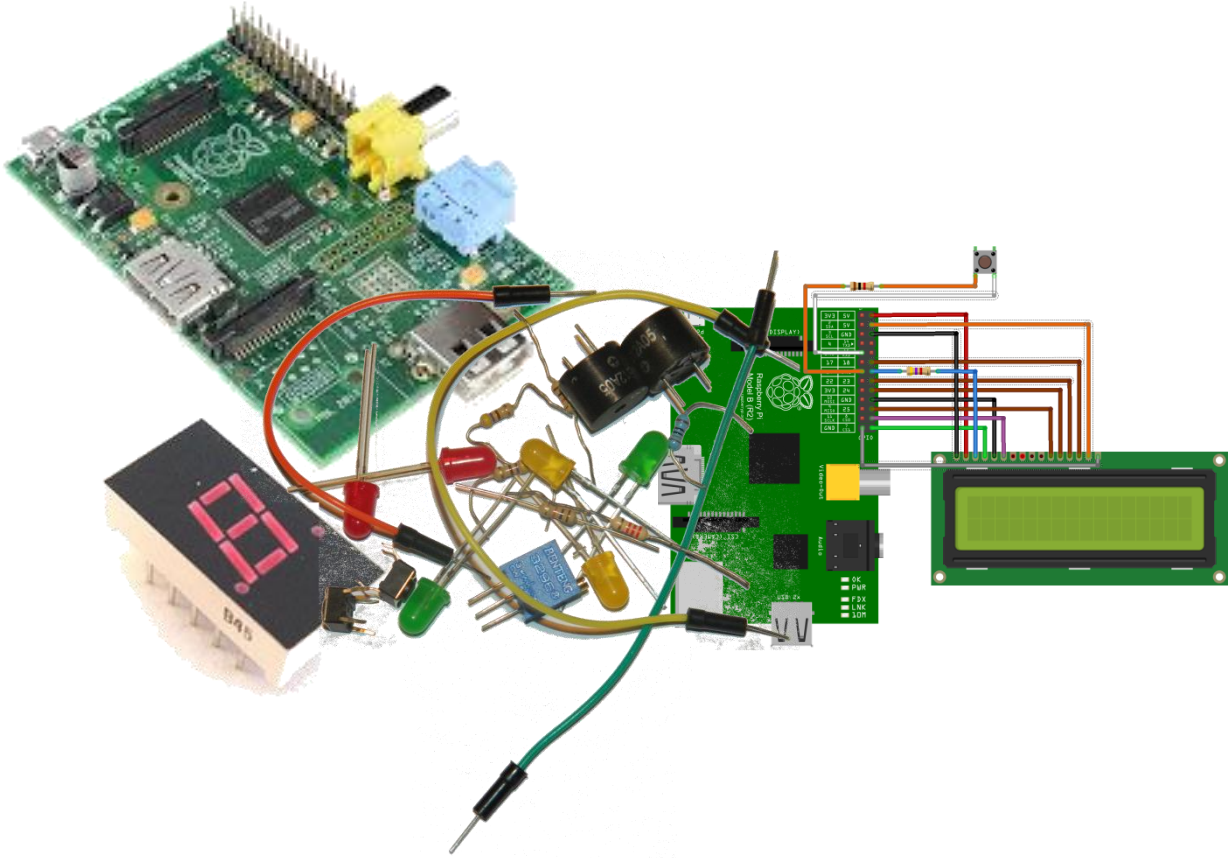
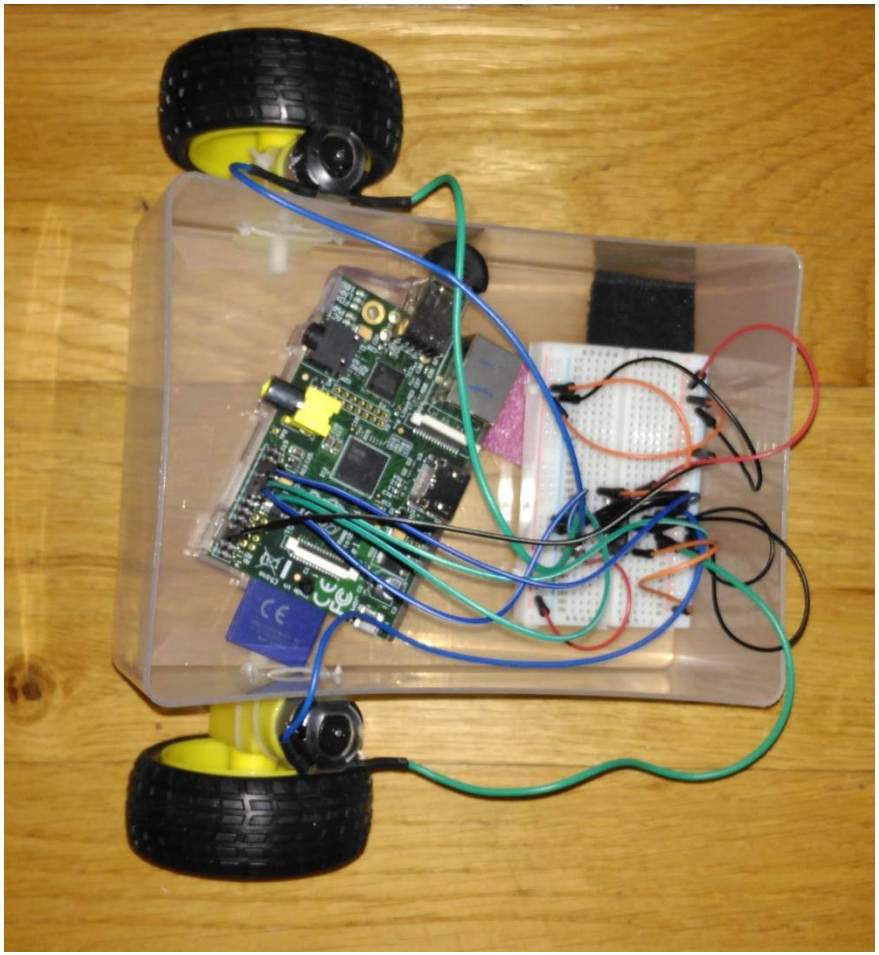
Raspberry Pi and Electronics



Robot

Today we're going to look at controlling our robot from the keyboard

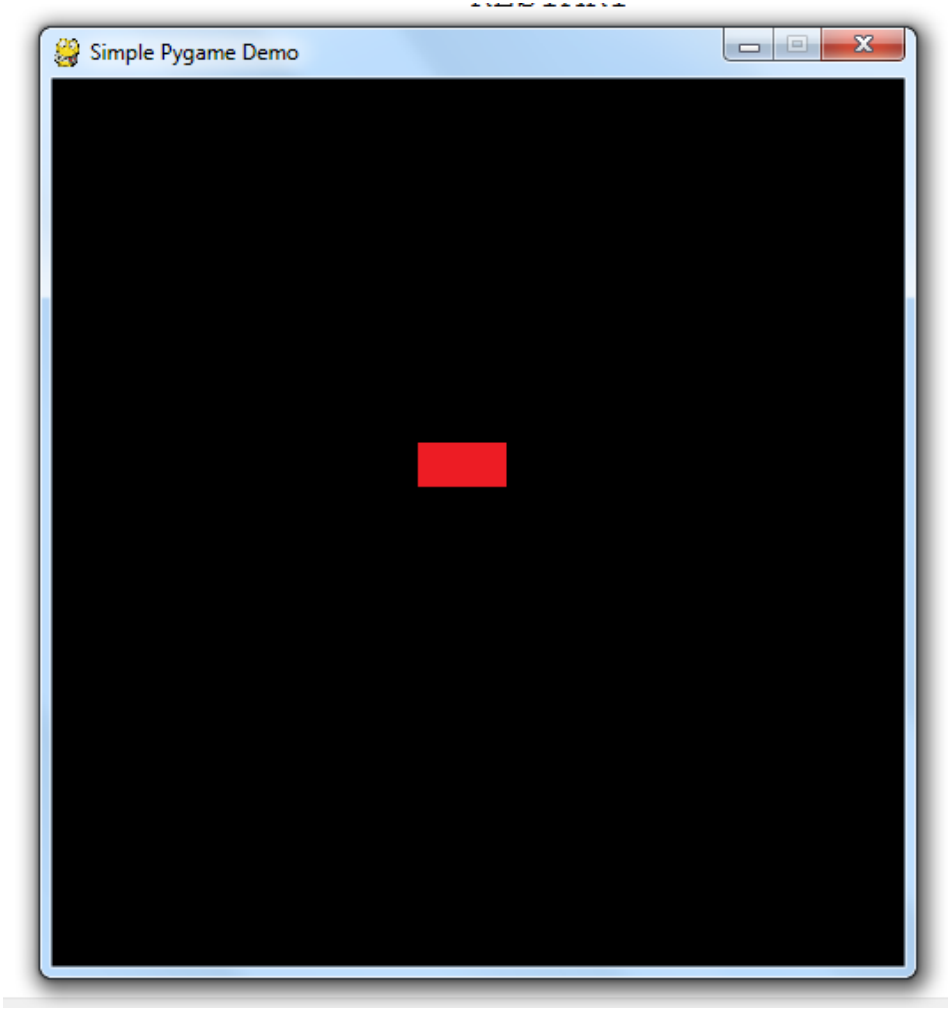


Robot

To do this we'll use Pygame. Pygame is a set of Python modules designed for writing video games. It includes computer graphics and sound libraries designed to be used with Python.

Robot

We are going to look at a program that has a few basic Pygame concepts.



Robot

```
import pygame
from pygame.locals import *
```

The first line imports the Pygame module
The second line imports constants that are already set up in python which we will use to access the keyboard.

```
pygame.init()
screen = pygame.display.set_mode((480,500))
```

These lines start Pygame and set up the display window

Robot

```
player = pygame.image.load("resources/images/block.png")
```

This line loads our image into memory

```
block_x = 200
block_y = 200
keys=[False,False,False,False]
```

Here we set up some variables

block_x and block_y are the x and y positions of our block sprite

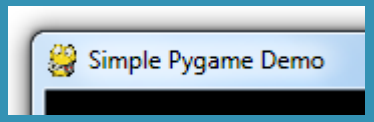
keys is a list of Boolean values which we will use for our arrow keys

Robot

```
main_loop = 1
while main_loop:
```

Here we set up our main program loop. In Pygame the illusion of sprites moving around is created by constantly updating the screen.

```
pygame.display.set_caption('Simple Pygame Demo')
```



This sets up our window caption

```
screen.fill(0)
```

This fills the screen with black

Robot

```
screen.blit(player,(block_x,block_y))
```

This draws our sprite on the screen (display surface)

This updates the screen

```
pygame.display.flip()
```

In Pygame all interactions with the program are called events. This line checks for such events.

```
for event in pygame.event.get():
```

Robot

```
if event.type==pygame.QUIT:
```

If the close button is pressed

```
if event.type == pygame.KEYDOWN:
```

Is there a key being pressed

```
if event.type == pygame.KEYUP:
```

Is there a key being released

```
if event.key==K_LEFT:
```

Is there something happening to the left arrow key

Robot

```
if keys[0]==True:
    block_x-= 0.1
```

This is the code that moves our sprite.
It does so by changing the x position of our sprite every time the left button is pressed by - 0.1 pixels.
If we pressed the right button our code would change our x position be + 0.1 pixels.
The same would apply for the up/down keys and our y position.

Robot

We can reuse most of this code to control our robot by just changing this

```
if keys[0]==True:
    block_x-= 0.1
```

To this

```
if keys[0]==True:
    robot.left()
```