



# Minecraft Traffic Lights By Joshua Lowe

Original Example By Martin O'Hanlon



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#### Objective

Minecraft Traffic Lights (Joshua Lowe) We are going to create a realistic traffic light in Minecraft using EduBlocks. More advanced users will move on to an extended Physical Computing task.

## **Getting Started**

- Start by going into the Raspberry Pi menu and clicking on games, then 1. Minecraft Pi. Select Start Game then Create New. Press ESC on your keyboard and minimise the window.
- 2. To load up EduBlocks, go to the Raspberry Pi menu in the top left hand corner of your screen. Go to Programming and select EduBlocks.

### Let's Code

Now its time to build our code. We can drag our code blocks from the EduBlocks toolbar which is on the left hand side of the screen. The purple blocks in our code can be found in the Minecraft >> General tab and the pink ones in the BASIC tab. Take a look, they are colour co-ordinated. Drag the blocks onto the workspace as shown in the diagram.

from mcpi.mir	necraft import Minecraft
import mcpi.b	lock as block
import time	
mc = Minecra	ft.create()
	edublocks.org

## INFO:

This section of code will import the Minecraft & Time libraries. Also, the last block will connect to the Minecraft Server.



blocks click inside - you can tab across.



INFO: The first 2 blocks will clear the area if there are any
 mountains around us and then lay some Grass in the area. Then the third block will build the Traffic Light Pole.

Our next 3 blocks can also be found in the Minecraft>>Commands section of the toolbar. These 3 blocks will complete the building of our Traffic Light in Minecraft.



INFO: These 3 blocks build the 3 lights on the Traffic Light
 pole. The first 3 numbers of each block represent the
 X,Y,Z coordinates.



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Now let's move onto controlling our Traffic Light in Minecraft. In a traffic light sequence, the first thing to happen is a red light, then a yellow light with the red light turned on then the green light on it's own. The green blocks can be found in the Minecraft >> Commands section and the pink ones in Basic. **Don't forget** you can right click on a block to DUPLICATE it

while True:				
mc.setBlock(	5,	0,	14	block.WOOL.id )
time.sleep( 1)				
mc.setBlock(	. 4 .	0,	4	block.WOOL.id )
time.sleep( 1)				
mc.setBlock(	5	0,	15	block.WOOL.id
mc.setBlock(	. 4 .	0,	15	block.WOOL.id
mc.setBlock(	. 3 .	0.	5	block.WOOL.id )
time.sleep( 1)				
mc.setBlock(	3,	0.	15	block.WOOL.id )

INFO: The 4<sup>th</sup> number of each block represents the wool colour for that particular light. Black – 15, Red – 14, Yellow – 4, Green - 5



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## Save Your Code

#### Here is the full code:

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Page 4 Page 4	
Save Your Code	Joshua
Here is the full code:	Lowel
from mcpi.minecraft import Minecraft import mcpi.block as block import time	
<pre>mc = Minecraft.create() mc.setBlocks( =10 , 0 , =10 , 60 , 50 , 50 , block.AIR.id , 0 ) mc.setBlocks( =10 , -1 , =10 , 60 , =1 , 10 , block.GRASS.id , 0 ) mc.setBlocks( 0 , 0 , 0 , 0 , 5 , 0 , block.IRON_BLOCK.id , 15 ) mc.setBlock( 1 , 5 , 0 , 15 , block.WOOL.id ) mc.setBlock( 1 , 4 , 0 , 15 , block.WOOL.id ) mc.setBlock( 1 , 5 , 0 , 14 , block.WOOL.id ) time.sleep( 1 ) mc.setBlock( 1 , 5 , 0 , 15 , block.WOOL.id ) mc.setBlock( 1 , 5 , 0 , 15 , block.WOOL.id ) time.sleep( 1 ) mc.setBlock( 1 , 5 , 0 , 15 , block.WOOL.id ) mc.setBlock( 1 , 5 , 0 , 15 , block.WOOL.id ) time.sleep( 1 ) mc.setBlock( 1 , 5 , 0 , 15 , block.WOOL.id ) time.sleep( 1 ) mc.setBlock( 1 , 3 , 0 , 5 , block.WOOL.id ) time.sleep( 1 )</pre>	INFO: Your program shoul look like the one the left of this INFO BOX. Go back an check through all your code to mak sure you have no made any mistak
mc.setBlock( 11, 33, 0, 15, block.WOOL.id )	

Before we run our code, lets save it. Click on the save button in the top right hand corner of the EduBlocks window. Name the file mctraffic

cks	
	× +
Cancel UK	
	Cancel OK

**INFO: Your** program should look like the one on the left of this INFO **BOX. Go back and** check through all of your code to make sure you have not made any mistakes.

Now select which folder you would like the save the file. The default folder 'Pi' will do.

FEATUR		
Save in folder. 📧	(iii)pi	Create Fok
P Search	blgminer	22/01/17
Recently Used	Diockly	21/01/17
	Cure Cure	22/01/17
	III Desktop	17/02/17
Cesktop	GB Documents	23/09/16
2) File System	(Y) Downloads	Sunday
	edublocks	Vesterday at 20-4
	electron-quick-start	05/02/17
	Gittub	13/02/17
	00 Music	23/09/16
	node_modules	Vesterday at 21.0
	C OctoPrint	22/01/17
	R Pictures	23/09/16
	D pi_magazine	18/01/17
	C Pimonosi	03/02/17
		EduBlocks XML



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Now it's time to run our code. Click on the run button in the top right hand corner of the EduBlocks window. Then click on the Minecraft tab to return to our Minecraft world. Now turn around and you should see your working Traffic Light!



### Outcomes

In this tutorial we have learnt how we can use the EduBlocks program to interact with Minecraft to create a realistic traffic light.

## Challenge: Continue to Page 6 for some Physical Computing!



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#### **Physical Computing**

Minecraft Traffic Lights (Joshua Lowe) We can make the game more exciting by adding a physical element like lights. In the following pages, we shall show you how you can create a Traffic Light model using. LED's, Resistors and Wires! To connect up these components we use the GPIO pins on the Raspberry Pi. It is important you understand how these work





**INFO: GPIO stands for General Purpose Input** Output. Inputs are things like buttons, keyboards and sensors. Outputs are things like lights, buzzers and signals. Above is a PINOUT diagram showing what all the pins mean.



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going to the LED's so it doesn't blow.
Use this diagram if you are using
Use this diagram if you are using

Use this diagram if you are using our 3D Printed Traffic Light Holder at: **3dtraffic.edublocks.org** 

Use this diagram if you are using a standard setup.



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Minecraft Traffic Lights (Joshua Lowe) Page 8 **Physical Computing** To make the LED's work we need to add the correct blocks into the existing code. There will be arrows pointing to where. The Import block that is being added can be found in GPIOZero>>General. from mcpi.minecraft import Minecraft import mcpi.block as block import time mc = Minecraft.create() **INFO: The** numbers 14, Now lets add the setup block to tell EduBlocks 15,18 represent where the LED's are connected to. This can be the GPIO pins our found in gpiozero >> Boards & Accessories >> 3 LED's are Traffic Lights. Drag this block underneath the connected to. green ones as as shown in the diagram below. mc.setBlocks( -10 , 0 , -10 , 60 , 50 , 50 , block.AIR.id , 0 ) mc.setBlocks( -10 , -1 , -10 , 60 , -1 , 10 , block.GRASS.id , 0 ) mc.setBlocks( 0 , 0 , 0 , 0 , 5 , 0 , block.IRON\_BLOCK.id , 15 ) mc.setBlock( 1, 5, 0, 15, block.WOOL.id ) mc.setBlock(1,4,0,15, block.WOOL.id) mc.setBlock(1,3,0,15, block.WOOL.id) traffic T = TrafficLights( 14,15,18 )



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Save your code

Now save your code exactly the same way as you did on **PAGE 4**. This time call your code **mctrafficgpio** 



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#### **Run Your Code**

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Run Your Code	Shts (Joshus
from mcpl_minecraft import Minecraft import mcpi.block as block import time hom oplozero import mc = Minecraft.create() mc.setBlocks( =10, 0, =10, 60, 50, 50, block:AIR.id, 0) mc.setBlocks( =10, -1, =10, 60, =1, =10, block:GRASS.id, 0) mc.setBlocks( =1, 5, 0, =15, block:WOOLId) mc.setBlock( =1, 3, 0, =15, block:WOOLId) traffic red on 0 time.sleep( =1) mc.setBlock( =1, 5, 0, =15, block:WOOLId) traffic amber on 0 time.sleep( =1) mc.setBlock( =1, 5, 0, =15, block:WOOLId) traffic red off 0 traffic red off 0 traffic red off 0	INFO: The image of the left of this INFO. BOX is the full code once the GPIO controls have been added. Don't forget for back and make sure your code is all correct.
traffic green on () time.sleep(1) mc.setBlock(1,3,0,15, block.WOOLid) traffic green off 0	

**INFO: The image on** the left of this INFO **BOX is the full code** once the GPIO controls have been added. Don't forget to go back and make sure your code is all correct.

## **Challenges:**

Try to change the time intervals between 1. the lights turning on and off Change the block type of the Traffic light 2. pole.



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