RASPBERRY JAM

Coventry and Warwickshire

Hackpack Anthology
Volume II
V.0.2

You can access Hack pack anthology volume 1 here:
https://github.com/ncscomputing/Hackpack/raw/master/Hackpack%20Anthology%20V1.1.pdf

In version 0.1 of anthology volume 2 there were two hack. The original got corrupted. You can access it here:
https://github.com/ncscomputing/Hackpack/raw/master/Hackpack%20Anthology%20V2%200.1.pdf

You can also access the collection of Micro:bit resources that were made for CPC here:
http://warksjammy.blogspot.co.uk/2017/04/blog-8-what-can-ucreate-with-microbit_17.html

This V0.2 will add the following hacks over the coming weeks/ months:

1. Liverpool Make Fest Minecraft Pixel Art bot.
2. Edu Blocks graphing Sense hat emulator data in Minecraft
3. David Whale's "Micro:bit IO" library: "Drop and display the random block"
4. David Whale's "Micro:bit IO" library: "Build the world in Minecraft and travel the world with Mincraft"
5. David Whale's "Micro:bit IO" library: "Graphing Sense hat emulator data triggered by Micro:bit"

Hack 1: Liverpool Make Fest Minecraft Pixel Art bot. @ncscomputing

For Liverpool MakeFest I created a Minecraft twitter bot that tweeted a screen capture of pixelart coded using Python and EduBlocks.

I have used the following Raspberry Pi tutorials as part of this build when dealing with Twitter:
https://www.raspberrypi.org/learning/microbit-selfies/worksheet/

Here is what I wanted it to do:

1. Provide a quickish way(5mins approx) of people being able to create some Minecraft Pixelart without being able to forced to sit and code for 20 mins.

2. Furthermore share their creation with the world via Twitter. Ideally use a Microbit to trigger the tweet. (This is still hit and miss)

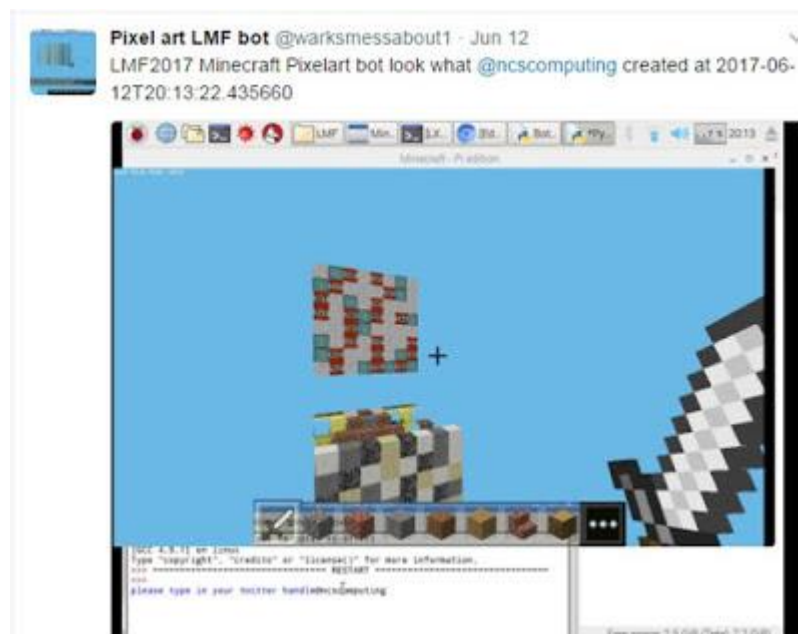Current review: It does one and two is still in the mixer.

Here is version one which worked perfectly:

Here is version 2, which doesn't work so reliably when it comes to the Microbit part.
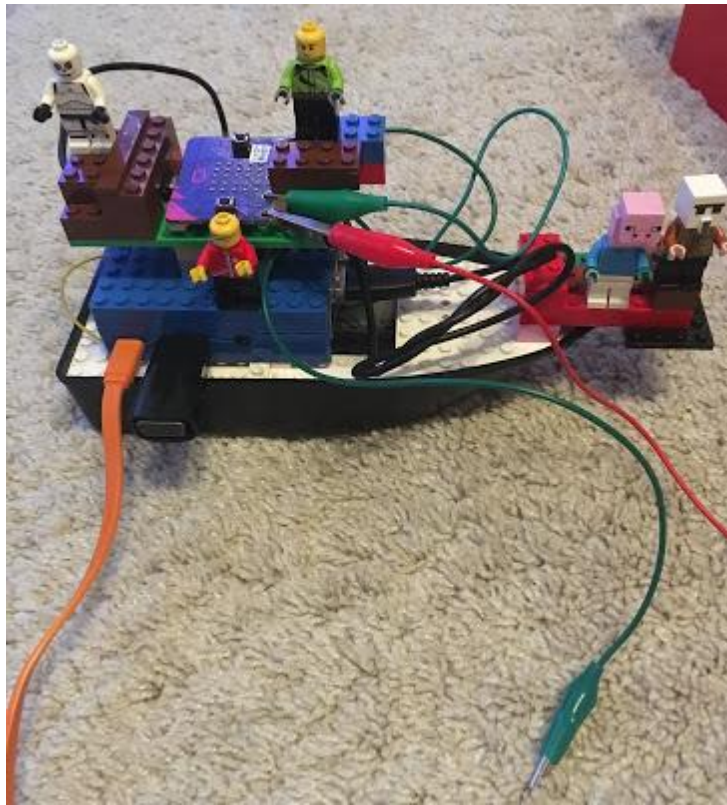
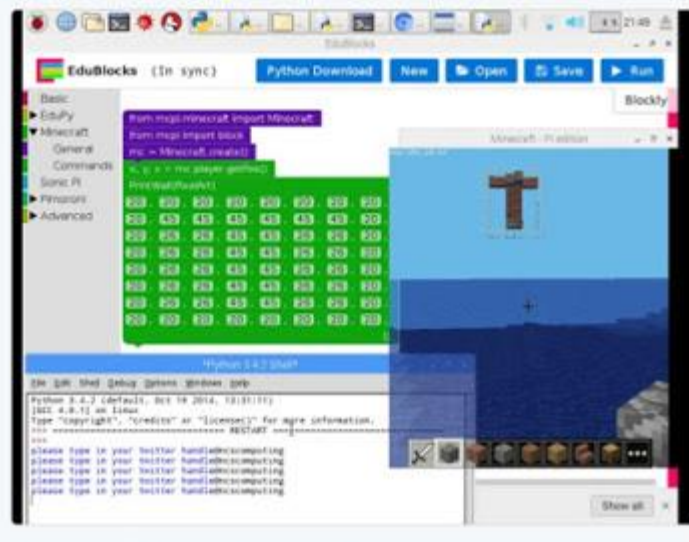**Here are examples of what it produced:**

Pixel art LMF bot @warksmessabout1 · Jun 2
LMF2017 Minecraft Pixelart bot look what @ncscomputing created

Pixel art LMF bot @warksmessabout1 · Jun 7
LMF2017 Minecraft Pixelart bot look what @ncscomputing created at 2017-06-07T21:49:36.780573

Code for micro:bit taken from RPi tutorial :

https://www.raspberrypi.org/learning/microbit-selfies/worksheet/

```python
while True:

    if pin0.is_touched():

        display.scroll("say cheese!")

        sleep(500)

        pin1.write_digital(1)

        sleep(5000)

        pin1.write_digital(0)
```

Code for Twitter bot:

```python
from gpiozero import Button
from time import sleep
from signal import pause

from datetime import datetime

import subprocess
#from mcpi.minecraft import Minecraft
from mcpi import minecraft as minecraft
from time import sleep, time
import sys

from twython import Twython
#once you have created your own Twitter app put in your info below


consumer_key = ''
consumer_secret = ''
access_token = ''
access_token_secret = ''

mc = minecraft.Minecraft.create()

api = Twython(consumer_key,consumer_secret,access_token,access_token_secret)
```

```python
def Tweet(handle):

    timestamp = datetime.now().isoformat()
    msg = "#LivMF17 Pixelart bot! look what "+handle+" created at "+timestamp
    mc.postToChat(msg)
    a=subprocess.check_output('./raspi2png -d 3 -p "myscreenshot.png"',shell=True)
    photo = open('myscreenshot.png', 'rb')
    api.update_status_with_media(status=msg, media=photo)

button = Button(4,pull_up = False)
while True:
    button.wait_for_press()
    handle = input("please type in your twitter handle")
    Tweet(handle)
    sleep(4)
```
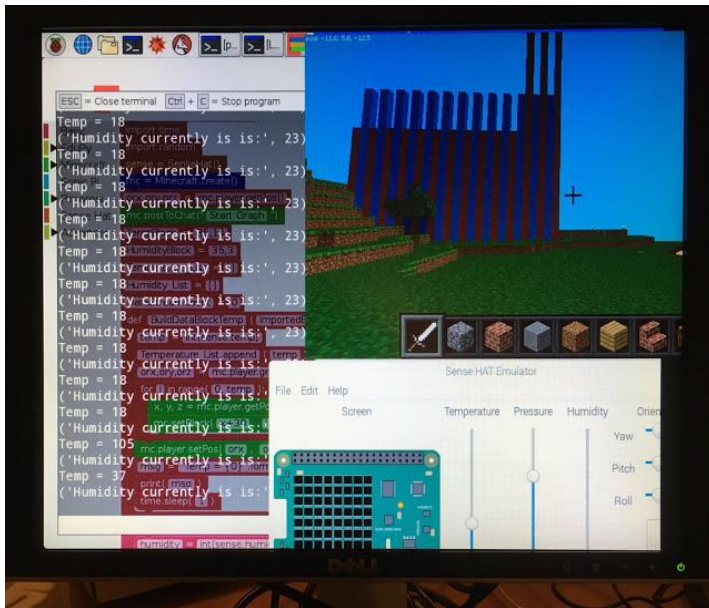
here is the link for the Block ids sheet I've borrowed them from and Raspberry Pi spy this is sourced in the document:

https://github.com/ncscomputing/Hackpack/blob/master/Minecraft%20Pixel%20Art%20sheet.pdf

Hack 2: Edu Blocks graphing Sense hat emulator data in Minecraft

Picture of code working

This code graphs data from the sense hat emulator in Minecraft using EduBlocks.
The potential of Edublocks to introduce Python to secondary students

Python 3 code:

from sense_emu import SenseHat
import mcpi.minecraft as minecraft
import mcpi.block as block
import time
import random

"""

NCS team Pixel Astro Pi competition entry

We have created a bar graph in minecraft and store the values for temp and humidity in two seperate lists.

Team members are:
Archie
Tom
Adrian
"""

sense = SenseHat()

```python
mc = minecraft.Minecraft.create()
orx,ory,orz = mc.player.getPos()

mc.postToChat("Start Graph")

TempBlock = 35,14

HumidityBlock = 35,3
Temperature_List = []#stores temp data
Humidity_List = []#stores humidity data

DataStreamCount= 0

def BuildDataBlockTemp(ImportedBlock):# take data for temp
    temp = int(sense.temp)
    Temperature_List.append(temp)
    orx,ory,orz = mc.player.getPos()

    for i in range (0,temp):
        x,y,z = mc.player.getPos()
        mc.setBlock(x+30,i,z,ImportedBlock)
    mc.player.setPos(orx,ory,orz+1)
    msg = "Temp = {0}".format(temp)
    #sense.show_message(msg, scroll_speed=0.10 )
    print(msg)
    time.sleep(1)
def BuildDataBlockHumidity(ImportedBlock):# take data for humidity
    humidity = int(sense.humidity)
    Humidity_List.append(humidity)
    orx,ory,orz = mc.player.getPos()
    for i in range (0,humidity):
        x,y,z = mc.player.getPos()
        mc.setBlock(x+30,i,z,ImportedBlock)
    mc.player.setPos(orx,ory,orz+1)
    msg = "Humidity currently is: ",humidity
    print(msg)
    msg = "humidity = {0}".format(humidity)

    time.sleep(4)


while True:
    BuildDataBlockTemp(TempBlock) # 46
    BuildDataBlockHumidity(HumidityBlock)
```

EduBlocks code:

Top of code:

```python
from mcpi.minecraft import Minecraft
from sense_emu import SenseHat
import mcpi.block as block
import time
import random
sense = SenseHat()
mc = Minecraft.create()
orx,ory,orz = mc.player.getPos()
mc.postToChat(" Start Graph ")
TempBlock = 35,14
HumidityBlock = 35,3
Temperature_List = []
Humidity_List = []
DataStreamCount = 0
def BuildDataBlockTemp ( ImportedBlock ):
    temp = int(sense.temp)
    Temperature_List.append ( temp )
    orx,ory,orz = mc.player.getPos()
    for i in range( 0, temp ):
        x, y, z = mc.player.getPos()
        mc.setBlock( x+30 , i , z , ImportedBlock )
    mc.player.setPos( orx , ory , orz+1 )
    msg = "Temp = {0}".format(temp)
    print( msg )
```

Second half of code:

```python
    print( msg )
    time.sleep( 1 )

def BuildDataBlockHumidity ( ImportedBlock ):
    humidity = int(sense.humidity)
    Humidity_List.append ( humidity )
    orx,ory,orz = mc.player.getPos()
    for i in range( 0, humidity ):
        x, y, z = mc.player.getPos()
        mc.setBlock( x+30 , i , z , ImportedBlock )
    mc.player.setPos( orx , ory , orz+1 )
    msg = "Humidity currently is is:", humidity
    print( msg )
    msg = "Humidity = {0}".format(humidity)
    time.sleep( 4 )

while True:
    BuildDataBlockTemp ( TempBlock )
    BuildDataBlockHumidity ( HumidityBlock )
```