Get Started with Minecraft Pi Edition & Python

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First Steps

1. Open up the “mcpi_ideas” folder on the Desktop
2. Double click on “1_Get_Started.py” and Python (IDLE) will open.
3. Open up Minecraft
   - Click on “Menu” icon in the top or bottom left of the screen (it’s usually one of these  or )
   - Then “Games” ( or )-> “Minecraft” )
   - Click “Start Game” -> “Create World”

Move about a bit

- Once in Minecraft make sure you know how to get about
- A S W D
- Space bar to jump / fly
- Mouse to look, mouse buttons to build blocks and destroy them.
- ESC to get your mouse back and get out of the Minecraft

Run your first code

1. Move the windows around so you can see this guide, IDLE and Minecraft
2. Click back into python editor (IDLE)
3. Press F5 to run the code
4. Quickly click back into Minecraft to see what happens.
5. Clicking on the Minecraft window entry in the menu bar at the top can help.

Did you see it?

If not try one more time yourself. And then wave for assistance.

Well done

You have run your first program that manipulates Minecraft

The Code Explained 1/3

```
from mcpi import minecraft
from mcpi import block

# Store the connection to Minecraft in a variable called mc
mc = minecraft.Minecraft.create()
```

Get the code that allows the python programming language to talk to Minecraft.

And create the connection, you have to be in a world in Minecraft for this to work

The Code Explained 2/3

```
# Store the position player is standing in a variable called pos
pos = mc.player.getTilePos()
```

Python asks Minecraft what tile the player is standing on

means a line is a comment in English and is not part of the program.
We use them to explain what is going on in the code.

The Code Explained 3/3

```
# Store a string which contains the x,y,z of your position
message = "You are at x="+str(pos.x)+", y="+str(pos.y)+", z="+str(pos.z)

# Print the message in the python screen
print(message)

# Send the message to the Minecraft chat
mc.postToChat(message)

# A quicker way to print the position
message2 = "You are at "+str(pos)
print(message2)
```

Make some blocks

Below your current code type

```
mc.setBlock(pos, block.DIAMOND_BLOCK)

above = pos
above.y = above.y + 4
mc.setBlock(above, block.TNT.id, 1)
```

- Run it with F5

- Look above you and below, can you see some new blocks?
- You can get a list of the blocks by typing "block." and then press CTRL + SPACE
- Experiment making different blocks and changing how far away they are

I'm walking on sunshine

Add this code below what you have already written

What does it do when you run it?

```
while True:
    pos = mc.player.getTilePos()
    mc.setBlock(pos, block.GOLD_BLOCK)
```

What happened?

Moving on

Well done. Now delete these lines from our code so we can get on .

```
mc.setBlock(pos, block.DIAMOND_BLOCK)
```

```
above = pos
above.y = above.y + 4
mc.setBlock(above, block.TNT.id, 1)
while True:
    pos = mc.player.getTilePos()
    mc.setBlock(pos, block.GOLD_BLOCK)
```

Rainbow Road

Now add this piece of code

```
while True:
  pos = mc.player.getTilePos()
  num = (pox.x+pos.y+pos.z) % 16
  mc.setBlock(pos, block.WOOL.id, num)
```

- There is a mistake in this on purpose.
- It will appear in red in the Python window.
- See if you can see what the problem is and fix it.
- Once it works can you work out what the code is doing?

Well done you have completed this bit

Teleporting

Open File

1. Open “2_Teleporting.py”
2. Press F5

What has happened?

Find out your IP address

1. Click on “LX Terminal” or “Terminal” ( or  or )
2. Type

   ```
   ifconfig | grep "inet addr:"
   ```

3. The text after “inet addr” is your IP address (it has 4 sets of number and dots in between each set) (You may have a Wifi or Wired IP address)
4. Write down your IP address and swap it with a friend

Controlling Someone Elses Minecraft

1. On the 4th line in “teleport.py” swap “127.0.0.1” for your friends IP address
2. Run it and see what happens
3. Can you make them move forward quickly?
4. Can you make them teleport off the world?

Buildings

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First Steps

1. Open up the “mcpi_ideas” folder
2. Double click on “3_Buildings.py” and Python will open.

Code Explained

Same code at the top.

```
pos = mc.player.getPos() #Find the players position

print(pos) # print the position

mc.player.setPos(0,50,0) # Teleport Steve into the sky in the centre of the world.
mc.setBlocks(0,-1,0,6,6,6,block.STONE_BRICK) # Make a solid box of blocks between 0,-1,0 and 6,6,6
mc.setBlocks(1,0,1,5,5,5,block.AIR)
```

Can you think how to :-

1. Make the building out of another material (this site might help http://www.stuffaboutcode.com/p/minecraft-api-reference.html)
2. Make it look like your house
3. Do a roof
4. Make it build near your player

Look at the "Castle.py" and "Large Tower.py" in the "misc" folder for inspiration.

Pictures in the sky - Using weird numbers (binary) to make big pictures

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Open the file

1. Open "4_Pictures_in_the_sky.py"
2. Run it, what does it do?

Variables and lists.

We have used variables before but here we are using an array, a list of values.

```
img = [
    0b00011000,
    0b00111100,
    0b01111110,
    0b11011011,
    0b11111111,
    0b00100100,
    0b01011010,
    0b10100101
    ]
```

Find this code? All the other lines that start `img = [` do EXACTLY the same thing.

Draw a picture

1. Draw you picture on the squared paper by filling in each box.
2. Draw a box which contains your picture.
3. For each row have a look at the left hand square if it is filled in write a 1 if empty write a 0
4. Copy those numbers into the lines starting 0b (you need to keep the 0b and the commas.
5. Run the code.

We are out of time

To help us get ready fo the next session could you please

1. Save your work
2. Close the Python editor (IDLE) and any Python windows
3. Close Minecraft
4. In the "mcpi_ideas" folder, double click on "end_session.sh"
5. Click the "Execute" button
6. Enter your name (without spaces)
7. Hit enter (this will create a github branch for your work and save it there)

Thank you

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This session and all the supporting code is available to download at our GitHub.

https://github.com/UTC-Sheffield/mcpi_ideas