

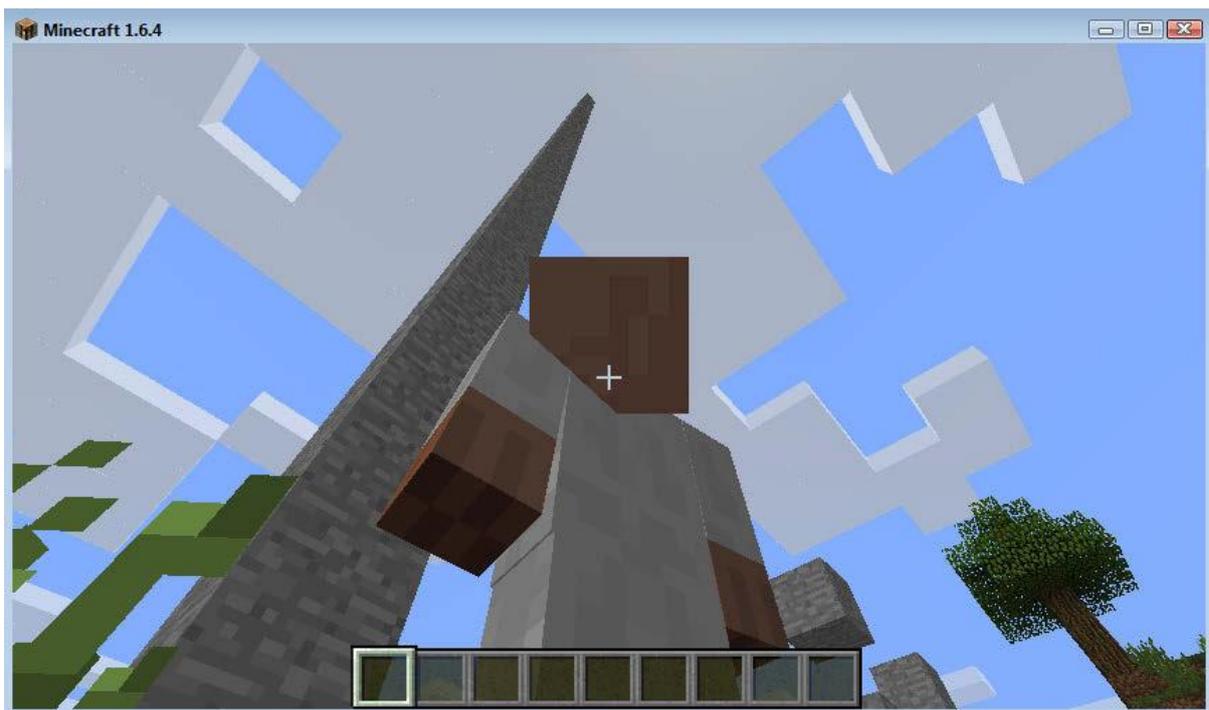
Activity Two: Modifying Scripts (Hacking!)

Now that we know a little bit about how python works in minecraft, we can start to look at the code other people have written, to see if we can learn from it and modify it to do what **we** want it to do!

To open a pre-written file click on `File > Open` in the Python Shell, and find the folder with `Adventure1`, `Adventure2` etc. Our first example is in the folder `Adventure3` and is called `tower.py` . Go ahead and open that up!

BUILD A TOWER!

This program will build a tower as tall as you like, using a 'for' loop. As you can see, the code is already written for you all you need to do to run the program is hit the F5 key!



But how does this work? Let's have a look at the code:

```
# Import necessary modules
import mcpi.minecraft as minecraft
import mcpi.block as block

# Connect to the Minecraft game
mc = minecraft.Minecraft.create()

# Get the player position
pos = mc.player.getTilePos()

# Build a tower 50 blocks high
for a in range(50):
    # Each block is at height: y+a
    mc.setBlock(pos.x+3, pos.y+a, pos.z, block.STONE.id)
```

This is an example of a simple FOR LOOP. Try changing the number of times it loops by adjusting the number inside `range()`, or the block type like we did before.

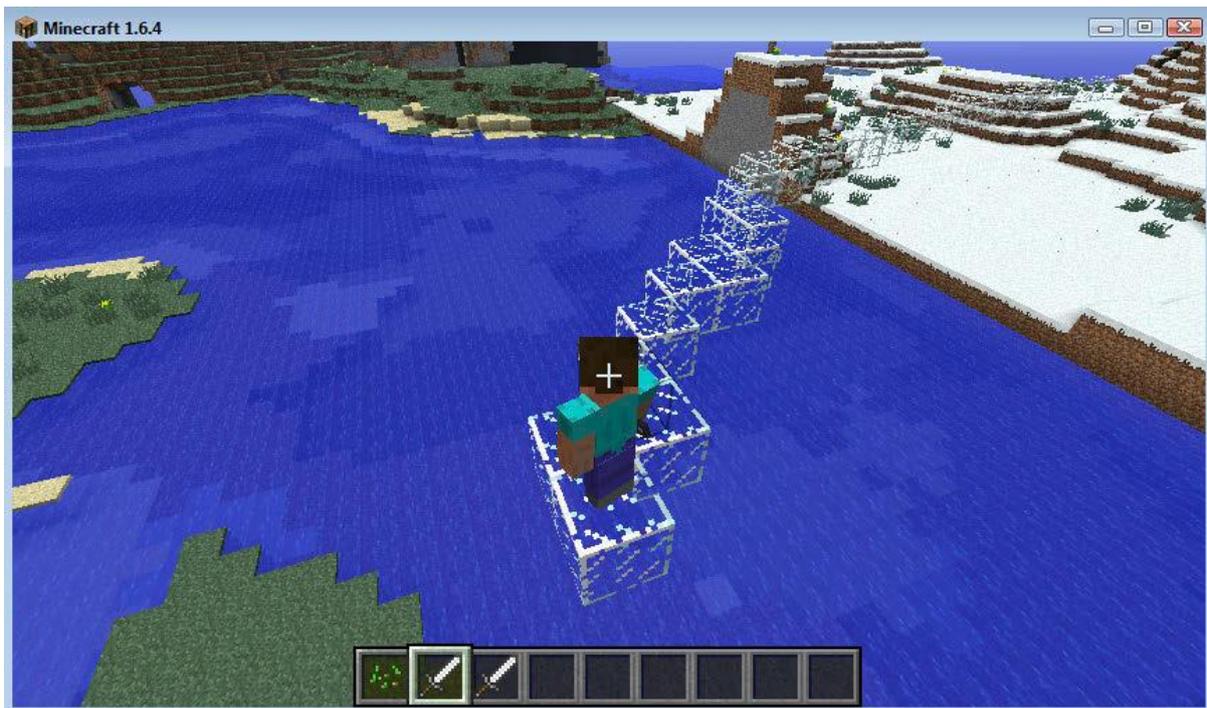
Notice the INDENT on the last line. This is important! Be careful to indent anything that should be within the for loop, like in the example above.

CHALLENGE: Can you modify the program so it builds the tower horizontally, instead of vertically?

HARDER CHALLENGE: Could we modify the program so it builds a wall? (Hint: use 2 loops...)

NEXT FILE: BUILD A BRIDGE

This next example can be found in the `Adventure4` folder, and is called `magicBridge.py`. Use the editor to open up this file like last time. Run the program again by pressing the F5 key. Now try walking over water or flying in the air using `double-space`.



Let's look at the code:

```
# Import necessary modules

import mcpi.minecraft as minecraft

import mcpi.block as block

# Connect to the Minecraft game

mc = minecraft.Minecraft.create()

# Define a function to build a bridge if your feet are not safe

# This function will be reusable in other programs

def buildBridge():

    # Get the players position
```

```

pos = mc.player.getTilePos()

# Get the block directly below your player
b = mc.getBlock(pos.x, pos.y-1, pos.z)

# Is the player unsafe?
if b == block.AIR.id or b == block.WATER_FLOWING.id or
b==block.WATER_STATIONARY.id:

    # If unsafe, build a glass block directly under the player
    mc.setBlock(pos.x, pos.y-1, pos.z, block.GLASS.id)

# Game loop
while True:

    # There is no delay here, this loop needs to run really fast

    # otherwise your bridge might not build quick enough and you will fall
off

    buildBridge()

```

Don't worry that there are a lot of new things in this file. What's important is that we find things we recognise from before, and then play around with those to find out what the rest does!

This example uses something called an IF STATEMENT. This checks if certain conditions are TRUE or FALSE. If the conditions are TRUE (in this case the block we are standing in is either air or water) then the program will execute the next line. If the conditions are FALSE (we are standing somewhere safe) then it skips that next line instead!

Try modifying the material of the bridge, or changing the code so that it is built above your head instead of below you.

STREET BUILDING CHALLENGE: can you modify the program so that it only builds the bridge on grass?