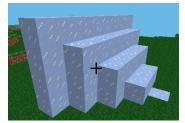


We want to be able to freeze Minecraft blocks, but have control over how far our magic powers

can reach.



Let's have the coldness spreading out from us in this shape, but only freezing blocks that are NOT air.

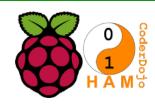


We can adjust the variable resistor to set the range of our freezing. Just like an LDR, it is an analogue component so we use a capacitor to make a timing circuit.





We're pretending the variable resistor is an LDR (LightSensor) and hacking the gpiozero class so that it does what we want.



```
from gpiozero import LightSensor, Button
2
3
4
5
6
7
8
9
10
11
12
13
      import mcpi.minecraft as minecraft
      import mcpi.block as block
      button = Button(16) # Our button is on pin 16
      # We're going to pretend our variable resistor is an LDR
      pot = LightSensor(17, charge_time_limit=0.02)
      max_spread = 10 # Adjust this value to set maximum range
      mc = minecraft.Minecraft.create() # Connect to Minecraft
      # Function to work our Freezing ray
      # We will find every block in all three directions, up to the max range we've setBlock
14
15
      # check that it is not AIR and then turn it to ICE.
# This will use 3 nested loops, one for each direction (x,y,z)
16
17
    □def freezeray(spread):
18
19
          pos = mc.player.getTilePos() # get current player's position
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
          for z_spread in range(0, spread): # First loop: Z direction
               print('Freezing distance = ' + str(z_spread))
               for x_spread in range (1- (z_spread+1), z_spread+1): # 2nd loop: X direction
                   for y_spread in range(-1, z_spread): # Final loop: Y direction
                        target_position = (pos.x + x_spread, pos.y + y_spread, pos.z + z_spread)
                        target_block = mc.getBlock(target_position) # get the block type
                        if target_block != block.AIR.id: # if block is not AIR
                            mc.setBlock(target_position, block.ICE.id) # turn to ICE
    □try:
          while True:
               # Read the value of our variable resistor (it will be between 0 and 1)
36
               # and multiply by our spread
37
38
               value = int(pot._read() * max_spread)
               print(value)
39
40
41
42
43
44
               if button.is_pressed: # When the button is pressed
                   freezeray(value) # Run the freeze ray function
    □except KeyboardInterrupt:
          exit()
```

Can you modify the code to increase the maximum range?

Can you make a lava-ray?



