

Solution code

INSTRUCTOR COPY: image_solution.py. Do not hand out before students have tried.

Name: _____

Date: _____

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1 # image_solution.py (INSTRUCTOR COPY: do not hand out before students have tried)
2
3 import numpy as np
4 from PIL import Image
5 import matplotlib.pyplot as plt
6 ALPHABET = "ABCDEFGHIJKLMNOPQRSTUVWXYZ"
7
8
9 def image_path(number):
10     return "cow_message/" + str(number).zfill(2) + ".png"
11
12
13 def show_colour(red, green, blue):
14     plt.imshow([[red, green, blue]])
15     plt.axis("off")
16     plt.show()
17
18
19 def total_red(path):
20     img = Image.open(path)
21     pixels = np.array(img)
22     red = pixels[:, :, 0]
23     total = red.sum()
24     return total
25
26
27 def letter_for(path):
28     total = total_red(path)
29     position = total % 26
30     letter = ALPHABET[position]
31     return letter
32
33
34 def decode_message():
35     message = ""
36     for number in range(1, 38):
37         letter = letter_for(image_path(number))
38         message += letter
39     return message
40
41
42 print(total_red("cow-demo.jpg"))
43 print(letter_for("cow-demo.jpg"))
44 print(decode_message())
```