- Questions
- Mysteries
  - (first one on paper)
  - mutable vs immutable
    - ```
      t = ("a", "b", "c")
      t[0] = "z"
      print(t)

      s = "abc"
      s[0] = "z"
      print(s)

      li = ["a", "b", "c"]
      li[0] = "z"
      print(li)
      ```
  - slicing
    - ```
      t = ("a", "b", "c")
      t = t[:1] + ("MOOO",) + t[1:]
      print(t)

      s = "abc"
      s = s[:1] + "MOOO" + s[1:]
      print(s)

      li = ["a", "b", "c"]
      li = li[:1] + ["MOOO"] + li[1:]
      print(li)
      ```
  - while
    - ```
      def f(x):
          while x > 0 or x < 0:
              print(x)
              if abs(x) > 10:
                  return x * 2
              x += 3
          return x / 2
      x = f(10)
      y = f(-6)
      z = f(-4)
      print(x > y and z < x)
      ```
  - alias
      ```

- grid = [[-1, 0, 1], [-2, 0, 2], [-1, 0, 1]]
  row0 = grid[0]
  x = grid
  row0[2] = 7
  x[0][1] -= 1
  print(grid)
  print(x)
  print(row0)

Image data

How to represent color?

printing on paper: CMYK (cyan, magenta, yellow, black)

- https://upload.wikimedia.org/wikipedia/commons/c/c9/CMYK_subtractive_color_mixing.svg
-

digital: RGB (red, green, blue)

on screens, tightly packed red, green, and blue elements light with different intensities

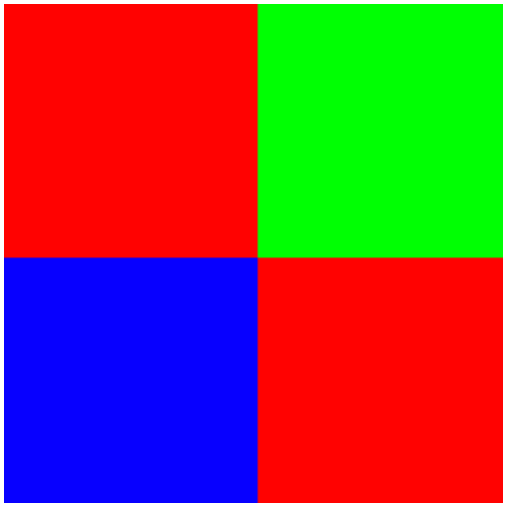
- https://en.wikipedia.org/wiki/Pixel#/media/File:Pixel_geometry_01_Pengo.jpg
- https://upload.wikimedia.org/wikipedia/commons/3/34/RGB_pixels.jpg
- https://www.exploratorium.edu/snacks/pixels-pictures-phones

in image files, divided up into grid, each cell is called a **pixel**, each pixel has a mix of red, green, and blue

- Color picker: https://www.google.com/search?q=color+picker

represent an image in Python (2x2 example)

-



3D list!

- ```
  [[[1, 0, 0], [0, 1, 0]],
  [[0, 0, 1], [1, 0, 0]]]
  ```
  ```

Announcements

- new partners for hw 5 and 6
- quiz reflections back
- quiz on Friday, will not include image stuff, will be asked to write a small amount of code