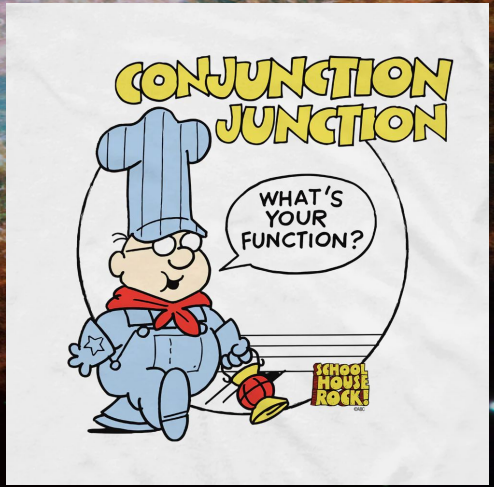

Lecture 3
Introduction to Functions


Workshop 1 Review

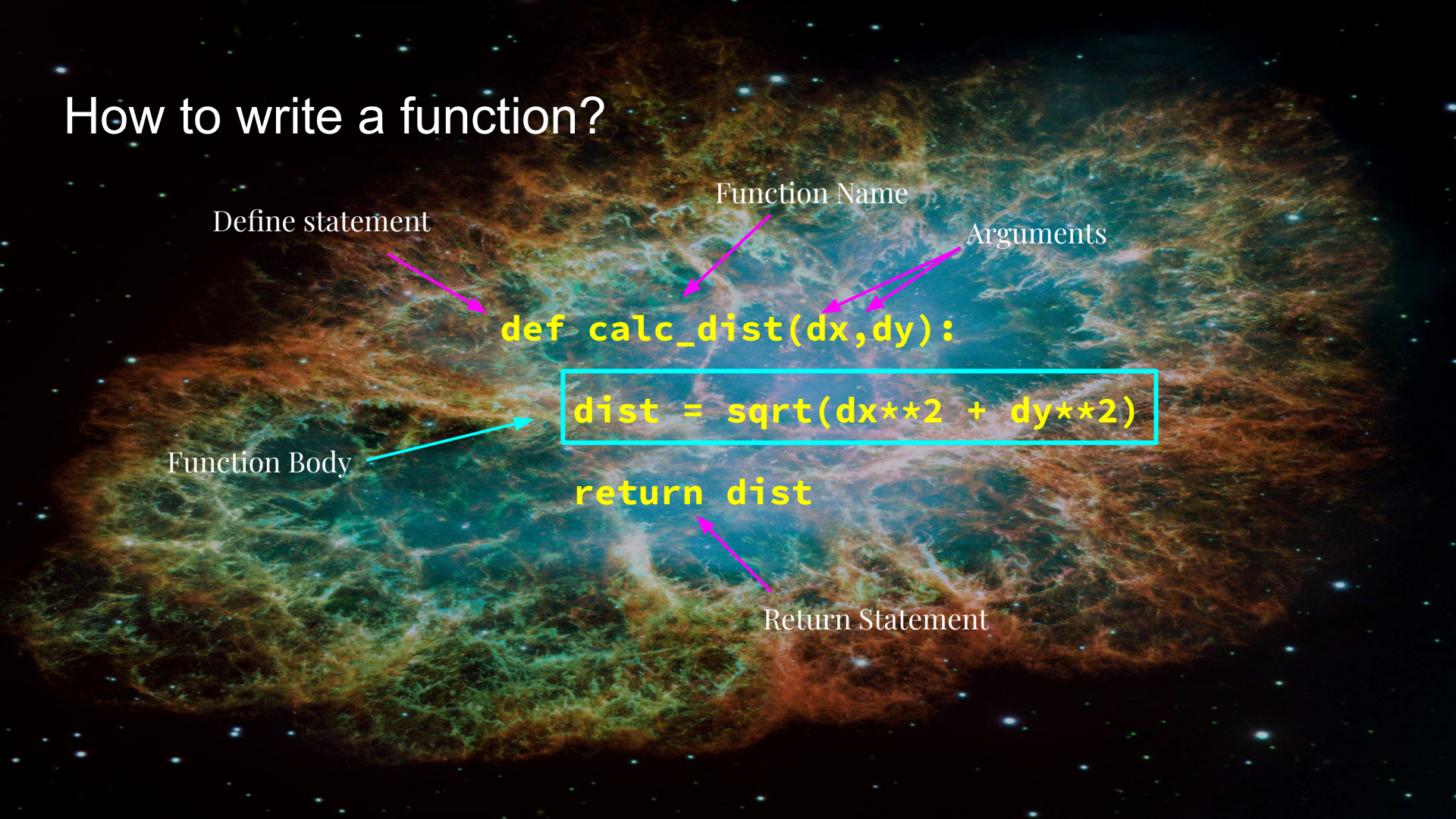
What is a function?

- Much like any number of mathematical functions you know about
- Takes in an independent variable(s) and returns the result of the dependent variable(s)
- Built-in functions
  - `print`, `abs`, `max`, `min`

```
def func(x):
    y = x**100 + 23*x**2 + 56
    return y
```



How to write a function?



How to Use a Function

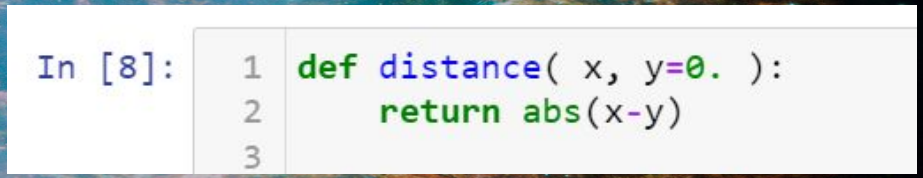
- The name of your function is what you will use to call it later in your code
- You will also need to define the variables for your function to use

```
def magic_guessing_game(k):
    double = 2 * n
    plus_k = double + k
    divide_by_2 = plus_k / 2
    subtract_original_number = divide_by_2 - n
    print("The number you have now is:" + str(subtract_original_number))
    return subtract_original_number

# Pick a number 1-10, in this case we pick 7
n = 7
abracadabra = magic_guessing_game(12)
abracadabra
```

Defining Arguments

- Your argument is one of the most important parts of your function
- It defines the function's input, content, and output
- If you know what value will be used most of the time for an argument, you can cheat and pre-define it
- Watch your argument type, this will be where a lot of your errors come from



Functions True/False

- For each of the following snippets of code, answer True if you believe the code will work, or answer False if you believe the code will error for any reason

```
def add_one:(n)
    return n + 1

add_one(7)
```

```
def miles_to_feet(miles):
    return miles * 5280

miles_to_feet(26.2)
```

```
def area_of_circle_with_radius(r):
    r = area_of_circle_with_radius(10)
    return 3.14 * (10 ** 2)

area_of_circle_with_radius(10)
```

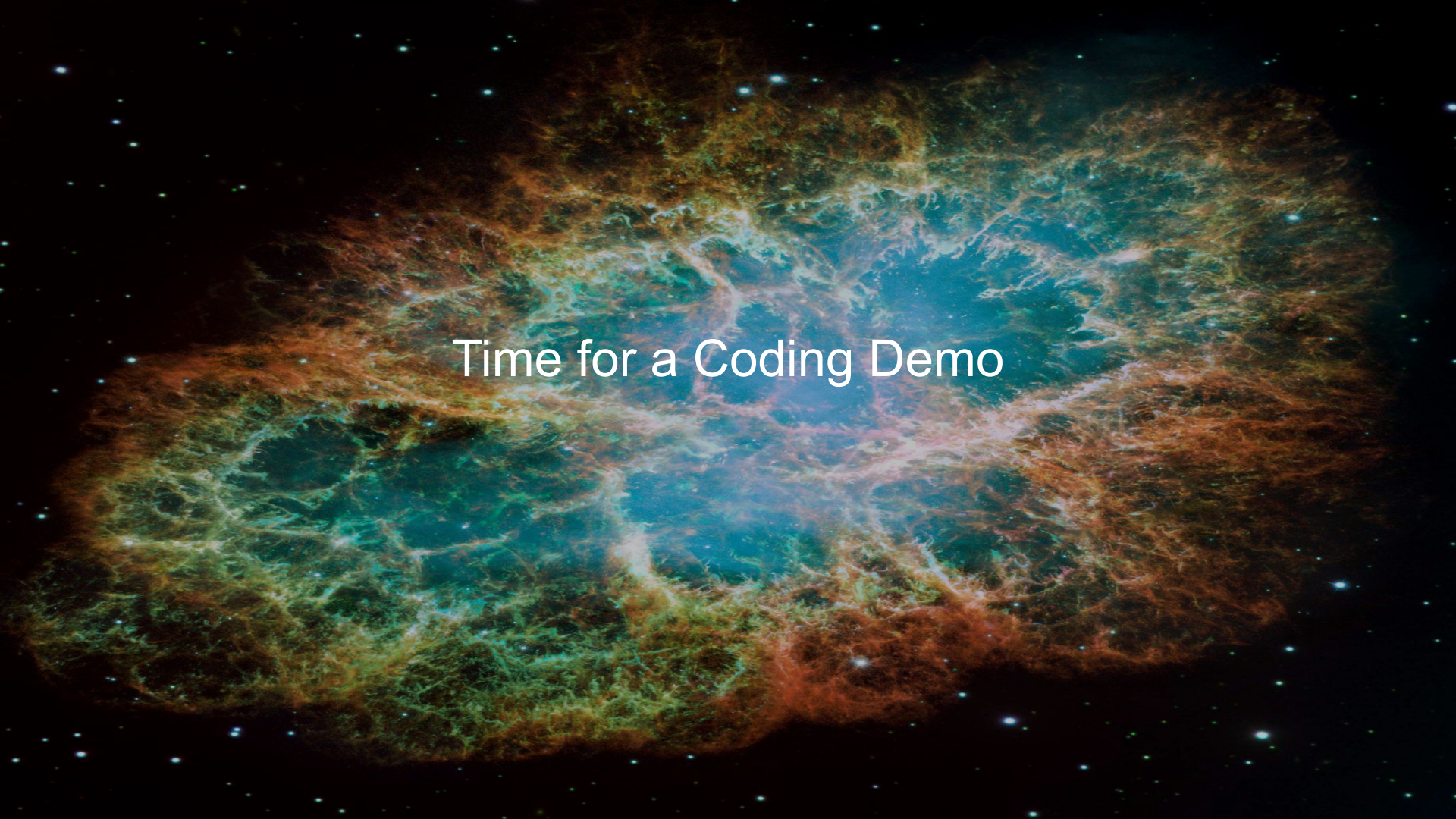
Variable Scope

- Outside functions = Global variable
- Inside functions = Local variable

Global

```
G = 6.67e-11 #kg^-1 m^3 s^-2
pi = 3.14
def Luminosity(radius, temp):
    sigma_sb = 5.67e-8 #watt m^-2 K^-4
    L = 4*pi*radius**2 * sigma_sb * temp**4
    return L
```

Local


Time for a Coding Demo