

# Graphical Objects

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# Functions as Arguments

```
from myro import *
```

```
def hello():  
    speak("Hello")
```

```
def goodbye():  
    speak("Goodbye")
```

```
def doit(list):  
    for function in list:  
        function()
```

```
>>> doit([hello, hello, hello, hello, goodbye])
```

# Computability

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You can't write a program that will determine whether or not another program will halt.

# Colors

There are  $256 * 256 * 256$  possible colors in Myro.

16,777,216

About 17 Million Colors

# Pictures

```
>>> pic1 = takePicture()  
>>> pic2 = makePicture(WIDTH, HEIGHT)  
>>> pic3 = makePicture("http://www.100xr.com/100_XR/  
Artists/R/Regina_Spektor/Regina.Spektor-2004.jpg")  
>>> show(pic3)
```



# Making Photoshop Functions

```
def copy(pic1):  
    pic2 = makePicture(getWidth(pic1), getHeight(pic1))  
    for pixel in getPixels(pic1):  
        setPixel(pic2, getX(pixel), getY(pixel), getColor(pixel))  
    return pic2
```

# What if you wanted to control two or more robots?





# How do we currently control a robot?

```
forward(1, .5)  
turnLeft(.7, 2)
```

## **How could we indicate which robot we want to move?**

# One possible way of controlling more than one robot:

```
robot1 = Robot("Garth")
```

```
robot2 = Robot("Miley")
```

```
forward(robot1, 1, .5)
```

```
turnLeft(robot2, .7, 1.2)
```

forward() would have to know about many different kinds of Robots



# Introducing “Objects”

- Objects are “things” (often nouns) in computing
- They know how to do things (verbs) and have attributes (properties)
- We can refer to properties and tell objects to do things by using the DOT (period):
  - `robot.turnLeft(1, 2)`
  - `robot.name`
- Verbs are just functions, but we call them “methods”