Turtle Graphics with Python!

A Teknowledge Activity

# Basics

Go to [bit.ly/tkturtle](http://bit.ly/tkturtle) in your internet browser.

For now, skip the first two lines of code (You can look at the last page in this handout, under “Fun Facts #1”, if you’re curious about what they do).

Below that, we have:

|  |  |
| --- | --- |
| 4  5  6 | turtle.Screen().bgcolor("black")  turtle.color("white")  turtle.shape("turtle") |

line #4 - sets the screen background color to black

line #5 - sets the turtle color to white

line #6 - sets the turtle to be shaped like a turtle

If you put different words inside the parenthesis and quotation marks, you can change what these lines of code will do!

**Challenge 1: Change the background color and turtle color to colors that you like!**

Tips:

* Python can recognize lots of colors other than black and white! Lines #4 and #5 can be changed to make the background or turtle a different color.
* You can also choose a different shape! Try replacing the word “turtle” on line 6 with one of these: “arrow”, “turtle”, “circle”, “square”, “triangle”, “classic”.
* Make sure that your capitalization is right when you are typing things! Sometimes programs won’t recognize things that you type if some letters are capitalized that they don’t expect.

Keywords:

* A **function** is a command that you can use to tell the program what to do. Each time you gave your partner directions, like “walk forward”, you were kind of using a function. Usually, each function goes on its own line.
* To **call** a function is just another way to say “use” a function. In each line above, you “called” a different function. This can also be used like a noun. Each line was a “call” to a function.
* An **argument** is something that you write inside the parenthesis when you are calling a function. The argument for the first function was “black”, and now it is whatever color you chose instead. When you were giving directions to your partner, the *argument* would be *how many* steps to walk or *how much* to turn.
* To **pass** an argument means to use it when you’re calling a function.

Using these keywords all together, we can say:

You **called** the “turtle.color” **function** on line 5, and **passed** the word “white” as its **argument**.

You **called** the “walk forward” **function** when talking to your partner, and **passed** “4 steps” as its **argument**.

# Let’s Get Moving

We can tell the turtle to go forward or backwards a certain number of pixels like so:

|  |
| --- |
| turtle.forward(50)  turtle.backward(100) |

The number passed into the functions “forward” and “backward” is the number of pixels to move.

**Challenge 2: Try moving the turtle off the screen forwards, then off the screen the other way, backwards, then back to the original spot.**

We can also tell the turtle to turn a certain number of degrees.

|  |
| --- |
| turtle.left(45)  turtle.right(360) |

**Challenge 3: Draw the first letter of your name (first or last name) using the turtle!**

Tips:

* Letters with curves can be hard to draw with turtle. Try to get creative so that you can use straight lines and still make it obvious what the letter is. If you want to practice on a different letter first, try a one with just a few straight lines, like “N” or “X”.
* If you’re stuck on how draw a whole letter using just forward, backward, and turning, try drawing the letter on a piece of paper without lifting it up. As you draw it, think about how far you are dragging the pen or pencil, and then what direction you have to turn in at each step.

**Fun Facts**

1. Note the first two lines of code:

|  |  |
| --- | --- |
| 1  2 | #!/bin/python3  import turtle |

* line #1 - tells trinket.io we are using python3 (not python2).
* line #2 - gives us access to magic turtle powers in this coding file.
* The “import” word means that we want to enable a new “module” of commands for use in our code below. In this case, we are using the “turtle” module.