Hello World

Every discussion of programming starts with a “Hello World” program, our journey is no different but we’ll begin with getting set up to use our two languages.

Getting Python

If you are working with Linux, including Raspian on a Raspberry Pi, Python is included and most likely loaded. We will be working Python 2.7.x (where the x is 6 or less). If you are using a Mac with OS X you may have Python already installed. On Windows you’ll need to go to www.python.org and download Python for Windows. Install Python from the msi file. Then go to http://sourceforge.net/projects/pywin32/ and download the PythonWin extensions. This provides an IDE that works well in Windows.

Getting Scratch

Scratch is also included in Raspian. On other Linux it may be available through your package management system. We will be using Scratch 1.4 which is the version on the Raspberry Pi. You can download Scratch from scratch.mit.edu/scratch_1.4. There are versions for Mac and Windows at that location. Download the installer and execute it on your computer. This will load the Scratch IDE to your system.

Working in a Browser

Scratch 2.0 is a web based version of the language that you can try out without loading anything to your computer. It requires Flash in order to use. You can access it by going to scratch.mit.edu and clicking on **Try it Out**.

Python is also available online it is one of several languages available at the repl.it site. Go to http://repl.it/languages and select Python from the list. You then get a interactive Python console.

“Hello Python”

Start Python by clicking on the PythonWin entry on Windows or by opening a command line console on Linux and typing **`python`**. Once in the python console (the bottom frame of the PythonWin window) type the following line at the **>>>** prompt:

```
print ‘Hello Python!’
```

Press the **enter** key and the words **Hello Python!** will show up on the next line. That’s what it takes to print anything in python. Let’s extend our python by using a **print format**. Type the following at the **>>>** prompt: (anything in angle brackets indicates a particular key to be pressed or something you should substitute.)

```
me = '<your name>' <enter>
print 'Hello %s, welcome to Python!' % (me) <enter>
```

The **%s** is a placeholder that indicates that a **string** value will be printed there. What is substituted is the first element parentheses following the % after the print string. We will discuss these placeholders more next month when we look at variable.

Starting with Scratch

Scratch is a different kind of programming environment and we will get started with a simple script based on many introductory tutorials. Scratch uses sprites and when you load Scratch there is a sprite loaded. This is the Scratch Cat, the logo/mascot of Scratch. We are going to make the cat move back and forth as an introduction to writing Scratch scripts. Open the Scratch system. The left hand side of the interface shows the various code blocks you can use. The center section is where you layout your script. You can also modify the look of your sprite on the Costumes tab and add sounds on the sound tab. We will only be using the Script section for now. Do the following steps to get the script in place:

1. Click on the **Control** section (gold color, top button, right column)
2. Find the the code block labeled **When <Green Flag> Clicked** it should be the top block
3. Drag the block into the Script area
4. Click on the **Motion** section (blue color, top button, left column)
5. Grab the **Move 10 Steps**, drag it to the script area and attach it to the bottom of the first block.
6. Click on the 10 and change it to 100.
7. Go back to Control and find the **Wait 1 Sec** block. Drag it to the bottom of the script
8. Go to Motion and add another Move 10 Steps block. Change the 10 to -200. This will move the sprite backward.
9. Add another Wait 1 sec from the Control section.
10. Add one more Move 10 Steps block and change the 10 to 100.

Click on the Green Flag in the top right of the area with the sprite in it. Watch your cat “dance” back and forth. Welcome to Scratch!