

## Cyber Girls Session 5 (April 13, 2019)

1. Introduction to Python Programming
  - a. Open the Python3 Compiler [https://rextester.com/l/python3\\_online\\_compiler](https://rextester.com/l/python3_online_compiler)
  - b. Open the Python Shell <https://www.python.org/shell/>
  - c. Open the pdf file named Introduction to Python Programming
  - d. Go through the PowerPoint
    - i. The first part of the PowerPoint teaches you the syntax for Python
    - ii. The second part of the PowerPoint has you program in Python
2. Preparing you USB
  - a. Remove the USB from you binder and plug it into your computer
  - b. Rename the USB to your name
  - c. Download the .hex file called swift-playgrounds-microbit-control
    - i. Save this .hex file to your USB
3. Introduction to micro:bit
  - a. Watch [https://www.youtube.com/watch?time\\_continue=2&v=ZIW\\_6rxYNBg](https://www.youtube.com/watch?time_continue=2&v=ZIW_6rxYNBg)
4. Preparing your micro:bit
  - a. Remove your micro:bit and the USB cable from the packaging
  - b. Plug the microUSB end of the USB cable into the micro:bit
  - c. Plug the male end of the USB cable into your computer
  - d. Once plugged in you will see a hard drive called microbit
  - e. Do not set up any network preferences for your micro:bit
5. Micro:bit MakeCode Lesson
  - a. Open the micro:bit MakeCode editor <https://makecode.microbit.org/#>
  - b. Create an Interactive Badge
    - i. Click create new project and name YourName\_Interactive\_Badge
    - ii. Delete the forever block
    - iii. Drag a show leds block into the on start block
      1. Create the image you want to show by clicking on the boxes that represent the LEDS you want to light up
    - iv. Drag out an 'on button pressed' block to code area
      1. Set the button to be A
      2. Drag a show leds block into the on button pressed block
        - a. Click on the LEDs that are going to make up a straight face
      3. Drag a pause block into the on button pressed block
        - a. Set to 300 ms
      4. Drag a show leds block into the on button pressed block
        - a. Click on the LEDs that are going to make up a happy face
    - v. Drag out an 'on button pressed' block to code area
      1. Set the button to be B
      2. Drag a show leds block into the on button pressed block
        - a. Click on the LEDs that are going to make up a straight face
      3. Drag a pause block into the on button pressed block
        - a. Set to 300 ms
      4. Drag a show leds block into the on button pressed block
        - a. Click on the LEDs that are going to make up a sad face
    - vi. Drag out an 'on button pressed' block to code area
      1. Set the button to be A+B
      2. Drag a show leds block into the on button pressed block

- a. Click on the LEDs that are going to make up a confused face
  - 3. Drag a pause block into the on button pressed block
    - a. Set to 300 ms
  - 4. Drag a show leds block into the on button pressed block
    - a. Click on the LEDs that are going to make up a confused face
- vii. Download your program's .hex file
  - 1. Save the .hex file to your desktop and USB
- viii. Flash the .hex file to your micro:bit
  - 1. Drag the program from the desktop to the micro:bit hard drive

## 6. Micro:bit MicroPython Lesson

- a. Open the micro:bit MicroPython editor <https://python.microbit.org/v/1.1>
- b. All Python programs start with the command line: `from microbit import *`
- c. Creating You Own Image
  - i. Five LED rows that each contain five LEDs
  - ii. If LED set to 0 then no brightness. If LED set to 9 then highest brightness. If LED set to 1 through 8 then the brightness ranges between off and fully on.
  - iii. Name your program YourName\_microbit\_Image
  - iv. Command line for image: `name = Image(` )

`Display.show(name)`

- 1. Inside the parenthesis place the Python for the LEDs
  - 2. A colon (:) should be at the end number sequence for the first four rows
  - 3. Double quote marks (") should be blacked around the number sequences
- v. Download your program's .hex file
  - 1. Save the .hex file to your desktop and USB
- vi. Flash the .hex file to your micro:bit
  - 1. Drag the program from the desktop to the micro:bit hard drive
- vii. Download your program's .py file
  - 1. Save the .py file to your USB

### d. Creating Your Own Animation

- i. Name your program YourName\_microbit\_Animation
- ii. Command line: `name1 = Image(` )

-Animation is composed of several images

-Delay is the time in milliseconds between images

`name2 = Image(` )

`name3 = Image(` )

`name4 = Image(` )

`all_names = [name1, name2, name3, name4]`  
`display.show(all_names, delay=200)`

- iii. Download your program's .hex file
  - 1. Save the .hex file to your desktop and USB
- iv. Flash the .hex file to your micro:bit

1. Drag the program from the desktop to the micro:bit hard drive
- v. Download your program's .py file
  1. Save the .py file to your USB