

Week 8: Python Programming - Consolidation

In this week's session we will focus on programming with two additional resources

- 1) An environment called EasyGui which allows the use of windows and buttons
- 2) The BBC micro:bit which was issued to all year 7 students in 2016.

Part 1: Using EasyGui to make forms and dialog boxes in Python

EasyGui is a module that can be imported into a Python program to enable simple graphical user interfaces to be developed.

To start using EasyGui, copy the program `easygui.py` into the folder that you are using for your python programs. It is available as a zipped file at <http://teachinglondoncomputing.org/ks3-week-8>

Then open the starter program and run it. For the first program the output is shown. See if you can predict what the other examples will do then run the programs to test them .

Program	Predicted output
<pre>def example_1(): msgbox("Hello World!")</pre>	
<pre>def example_2(): msgbox('Hello World!', 'My first program')</pre>	<p>Predict then run to test (and for all the other examples)</p>
<pre>def example_3(): msgbox('Hello World!', 'My first program', 'Click here!')</pre>	
<pre>def example_4(): ynbox("Do you like bananas? ", image="bananas.jpg")</pre>	

<pre>def example_5(): answer = ynbox("Do you like bananas? ", image="bananas.jpg") if answer == True: msgbox("Me too! ") else: msgbox("Don't forget your five a day!!")</pre>	
<pre>def example_6(): question = "What is the name of this fruit? " reply = buttonbox(question, image="bananas.jpg", choices=["apple", "banana", "plum"]) if reply == "banana": msgbox("Correct") else: msgbox("Incorrect")</pre>	

Task 2: Annotate the code in Examples 1 – 6 to explain how you think it works. Make sure you are confident that you have run and understand the code in the examples before continuing with the exercises.

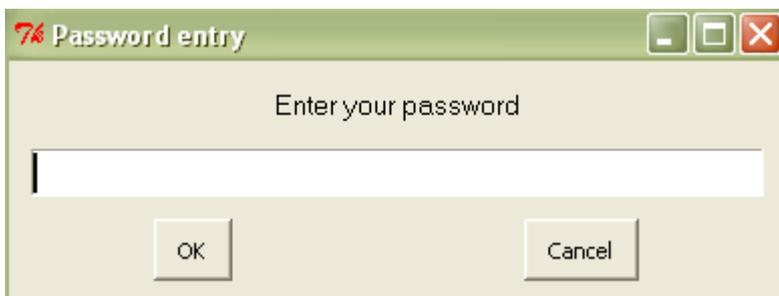
Below are a range of exercises to try using the different boxes available in EasyGui.

Task 3: Exercises

Exercise 1: Use the banana example to develop two of your own quiz questions using the code we developed in Week 3.

Reflection: Could you use this method to develop some lessons for KS3 around building a quiz? It would give lots of practice with if statements.

Exercise 2: Write a password program using EasyGui. There is a type of box called `passwordbox()` that you can use for this. Try it out and see what happens.



There are different boxes that you can use for different effects. Here are a few:

Name of box	Function
choicebox	Allowing the user to select from a list of items
enterbox	A simple way of letting the user enter a string
passwordbox	A way of letting the user enter a password (asterisks appear as it is typed in)
integerbox	A way of letting the user enter a number
multenterbox	A way of letting the user enter more than one string in different boxes, for example, their name and address.
textbox	To display text

Help on how to use all these different dialog boxes is given at:

http://easygui.sourceforge.net/current_version/tutorial/index.html. EasyGui is free and easy to download at home from <http://easygui.sourceforge.net>

Exercise 3: Numbers

Create a program which asks the user to enter two numbers and display the sum, using two integer boxes and a msgbox.

Exercise 4: Guessing game

Create the Guessing Game which you made earlier in Python but this time using EasyGui. Use an integer box to input each guess and a msgbox when the user has got the answer correct.

Exercise 5: Films

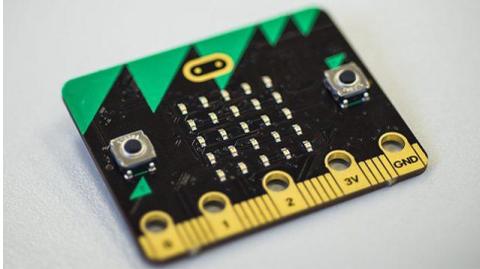
Create a program which asks the user to choose their favourite film from a list of films given (use a choicebox). Once they have selected their film, use a msgbox to say which film they have selected.

Exercise 6: Extending the password program

Extend the password program above so that you allow the user three tries to get it right before giving the message 'Login unsuccessful!'

<p>Homework: Finish all these exercises. Email Sue and John with any queries</p>

Part 2: Programming with the BBC Micro:bit

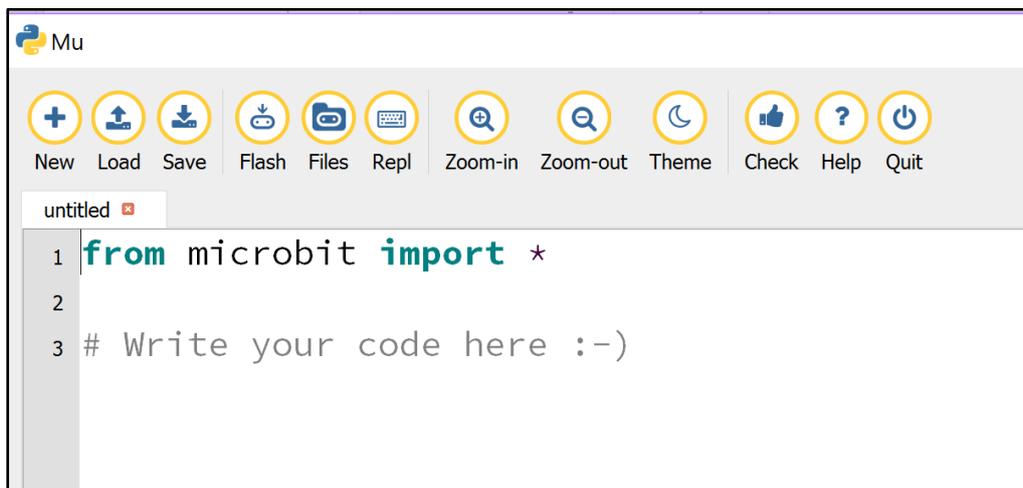


The BBC micro:bit is a programmable device with 25 LEDs, two buttons, an accelerometer, Bluetooth and a compass. It was developed in 2015/2016 by the BBC and 27 other partners. One million were distributed free to every year 7 child in the UK in the spring of 2016.

For this part of the session we will use Alex Hadwen-Bennett's series of lessons on using the BBC micro:bit with microPython. MicroPython is a version of Python that works with small devices.

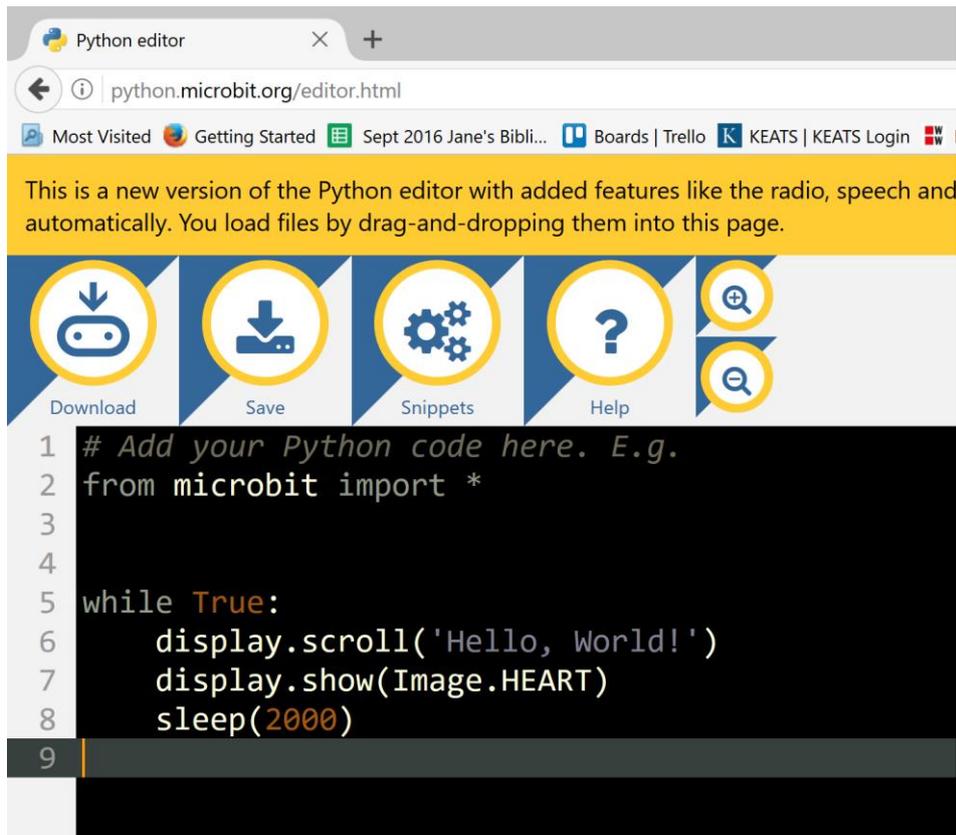
There are two ways to use MicroPython and the MicroBit:

1. Use Mu (installed on our network). Run by searching for **Mu editor** and the following window will appear.



Type in the MicroPython code and select Flash to run on the MicroBit. Select Save to save for later and Load to load a program you wrote previously.

2. Use MicroPython on the <http://microbit.org> website. In this version, you select Download to send the code to your Downloads folder and then copy the microbit.hex file from your Downloads to the micro:bit itself which appears like an additional drive (like a memory stick).



The first exercise involves using this code, which is available at <http://teachinglondoncomputing.org/ks3-week-8> as starter_micro.py

<pre> 1 from microbit import * 2 3 display.scroll("Hello") 4 display.scroll("World") 5 </pre>	<p>This code will show the string Hello World scrolling across the screen.</p>
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Download and unzip Alex's resources. Then work through the exercises, starting at Session 1:

1. Sequencing
2. Variables and Lists
3. Iteration and Selection
4. Accelerometer
5. Music
6. Networking

For sessions 5 and 6 you will need crocodile clips and for session 5 you will need speakers or headphones.

Reflection

How could you use the BBC micro:bit with your students. How will this support their learning of Python programming?

Finally, do try some other resources for programming at KS3

At <http://teachinglondoncomputing.org/ks3-week-8> there are other resources for you to try out.