



Morse Code Generator

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Morse Code Generator – CamJam EduKit 1

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Objective

We shall be using the powers of EduBlocks to create a Morse Code generator. Morse code is a method of transmitting text information as a series of on-off tones

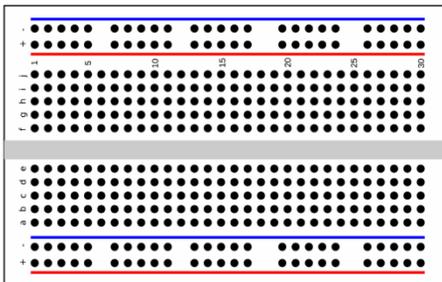
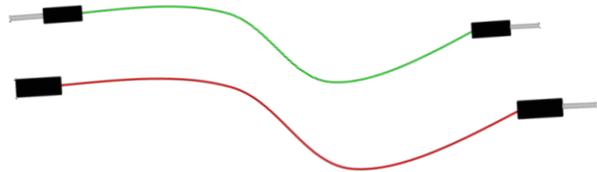
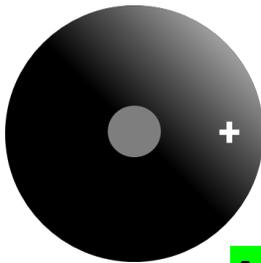
Getting Started

1. Double click on the EduBlocks desktop icon to open up the program. You are now ready to start coding.

Circuit

You will need the following equipment from your CamJam EduKit 1:

Buzzer
2 M/F Wires
1 M/M Wire
Breadboard



A buzzer has a positive and negative connection. The positive is marked by a + symbol on the top or side of the buzzer.

The CamJam EduKit 1 can be bought from The PiHut. Although, if you have this equipment separately then it should still work but these worksheets have only been tested with CamJam equipment.



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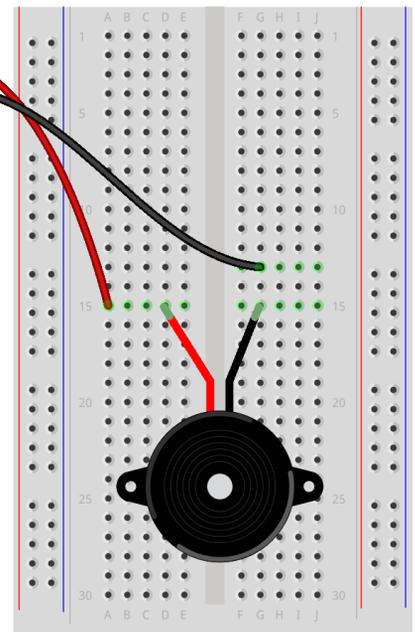
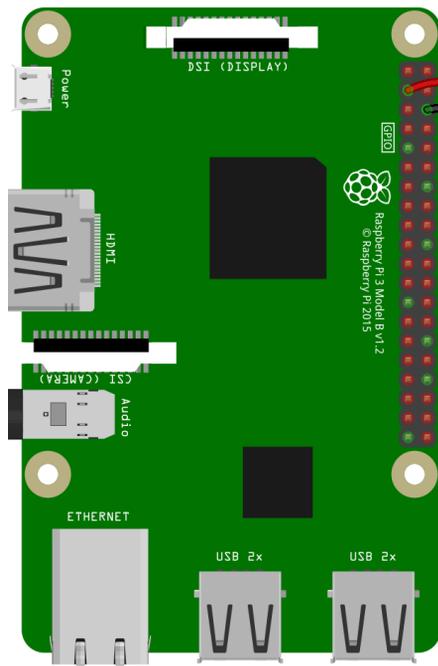
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Circuit

Now its time to build our circuit. Use the components you have a gathered from the CamJam EduKit 1 to build your Morse Code Generator circuit.

GND wire = GND
Buzzer = 2



fritzing

Important Key Information:

We call the positive and negative in the buzzer polarity. Make sure the buzzer is wired the correct way round and check your wiring is correct before coding.



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Let's Code

Now its time to build our code. We can drag our code blocks from the EduBlocks toolbar which is on the left hand side of the screen. The yellow blocks GPIOZero >> General. The Red one can be found in GPIOZero >> Outputs >> Buzzer and the purple ones in Basic.

```
from gpiozero import *
import time
buzzer = Buzzer( 2 )
def dot ( ):
    buzzer . on ( )
    time.sleep( 0.1 )
    buzzer . off ( )
    time.sleep( 0.1 )
```

The first two blocks import the GPIOZero and time libraries. The def block create a function, in this case dot. When the dot function is called later in the program it will run the code inside the def block.

In this next piece of code we will create our second function. This time for a dash.

```
def dash ( ):
    buzzer . on ( )
    time.sleep( 0.3 )
    buzzer . off ( )
    time.sleep( 0.1 )
```

Morse code is made up from dots and dashes. A dot is a smaller beep and a dash is a longer beep.



Let's Code

Now lets define a letter. Our Morse code generator, once completed will play the code for SOS. This piece of code will make a function for the letter S.

```
def s ( ):
    dot ()
    dot ()
    dot ()
```

S in Morse code is 3 dots. Inside this function we are calling the dot function that we have created earlier in this the code.

In this next piece of code we create our second letter, O. This time we are calling the dash function 3 times.

```
def o ( ):
    dash ()
    dash ()
    dash ()
```

Make sure that the letter o is a lowercase o and not a uppercase o else Python will not know what you mean. You need to be specific with spelling and different cases.

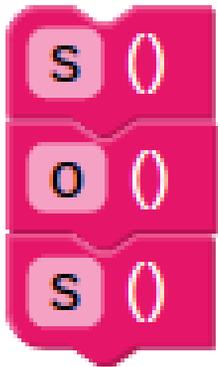


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Let's Code

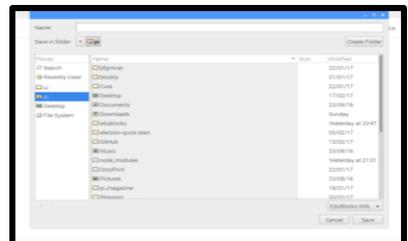
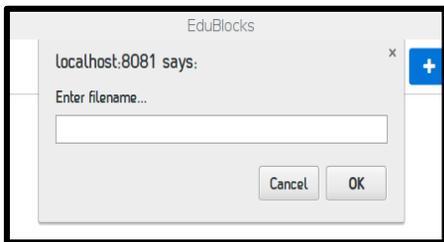
This is the final part of our program. Here we are going to call the S and the O then the S functions to play our message in Morse code.



- ← **Calls the S function**
- ← **Calls the O function**
- ← **Calls the Sfunction**

Before we run our code, lets save it. Click on the save button in the top right hand corner of the EduBlocks window. Name the file mctrainic

Now select which folder you would like the save the file. The default folder 'Pi' will do.



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Run your code

Now it's time to run our code. Click on the run button in the top right hand corner of the EduBlocks window. Your code should now run.

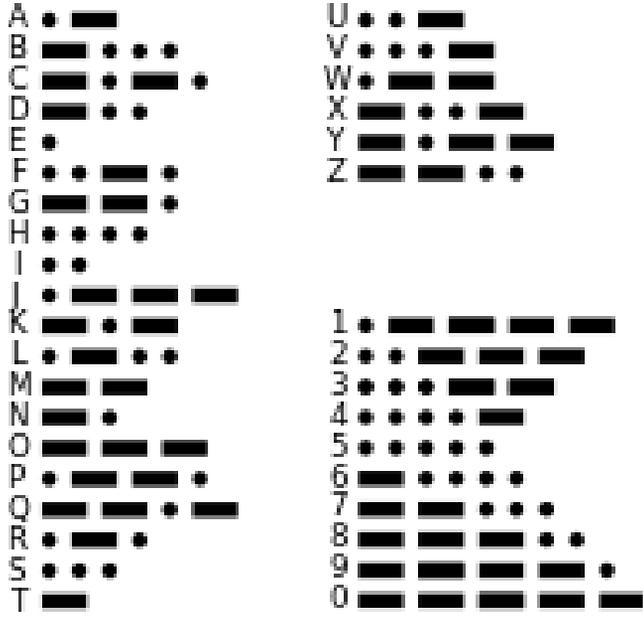
Outcome

In this tutorial we have learnt how to use Live Loops and do some Live Coding by changing the samples and play commands. You have also learnt how to perform music whist making the music sound different using code.

```
from gpiozero import *
import time
buzzer = Buzzer( 2 )
def dot ( ):
    buzzer . on ( )
    time.sleep( 0.1 )
    buzzer . off ( )
    time.sleep( 0.1 )
def dash ( ):
    buzzer . on ( )
    time.sleep( 0.3 )
    buzzer . off ( )
    time.sleep( 0.1 )
def s ( ):
    dot ( )
    dot ( )
    dot ( )
def S ( ):
    dash ( )
    dash ( )
    dash ( )
s ( )
o ( )
s ( )
```

Challenge

Use the diagram below to create your own Morse code message.



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