

Baking a Python Birthday Cake

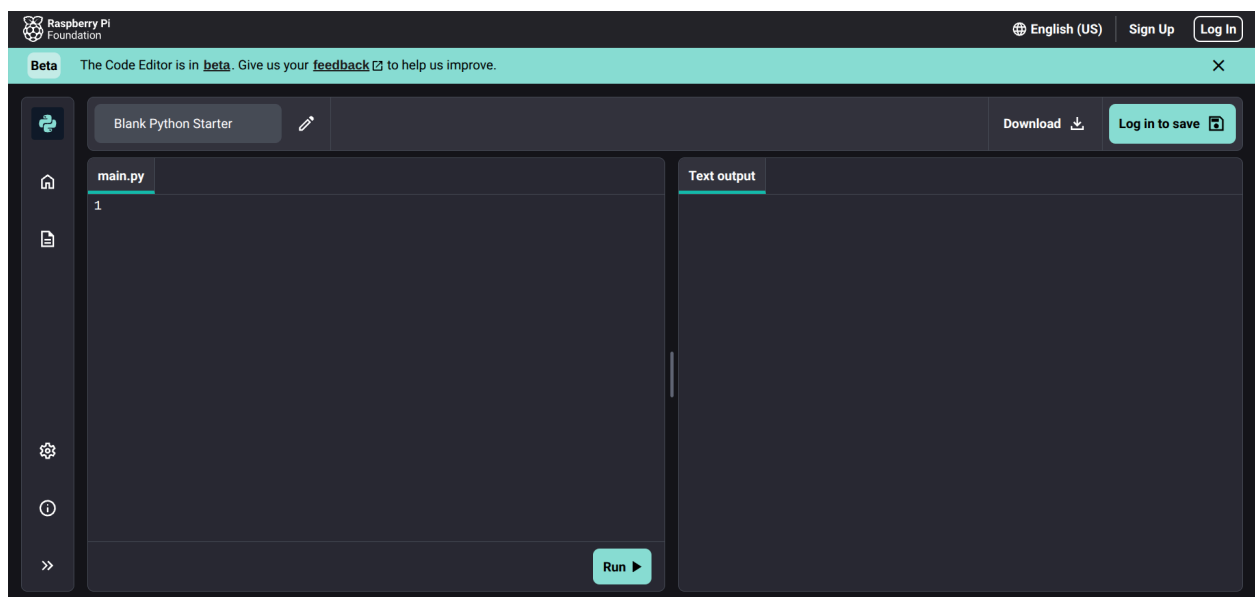
What are you going to make?

It is our 3rd birthday! You can't have a birthday without a cake, so you are going to make a cake for us.



Getting Started

First thing is first, open up a blank python project by clicking on the following link: <https://editor.raspberrypi.org/en-US/projects/blank-python-starter>



Importing a Library

The library that we are going to use is called p5. This is a library that includes drawing tools to make pictures.

Type the following line on line 1

```
from p5 import *
```

Drawing the Cake and Candle

Now that we have the library we need. Now we can set the size and start drawing the cake.

Type the following underneath the import statement

```
def setup():  
    size(500, 500)
```

The code above sets the size of our canvas so that we can draw our picture.
Take note of the indented code.

Type the following underneath your previous code

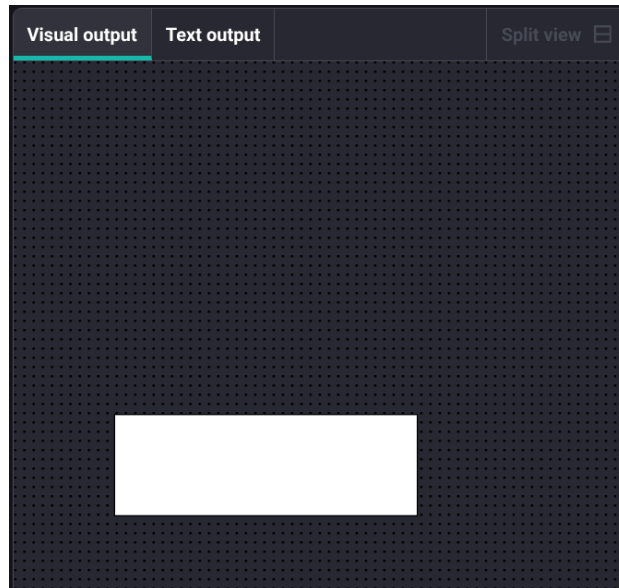
```
def draw():  
    rect_mode(CENTER)  
    rect(250, 400, 300, 100)  
  
run()
```

The above code tells p5 what to draw.

`rect_mode()` tells p5 how to draw a rectangle, we are using `CENTER` which means we draw from the middle of the rectangle.

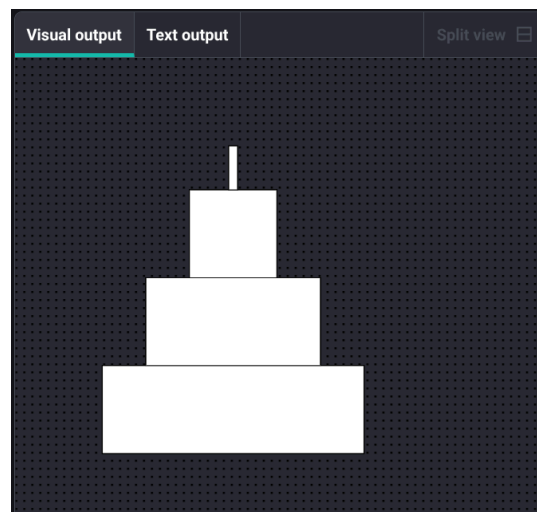
`rect()` is the rectangle itself. The first two numbers are the coordinates of the middle of our rectangle, the second two numbers are how wide and high the rectangle is.

Click run and you should see the following:



Challenge

Add to the `draw()` function to add another two tiers to the cake and a candle stick (we will add the flame later) It should look like this:



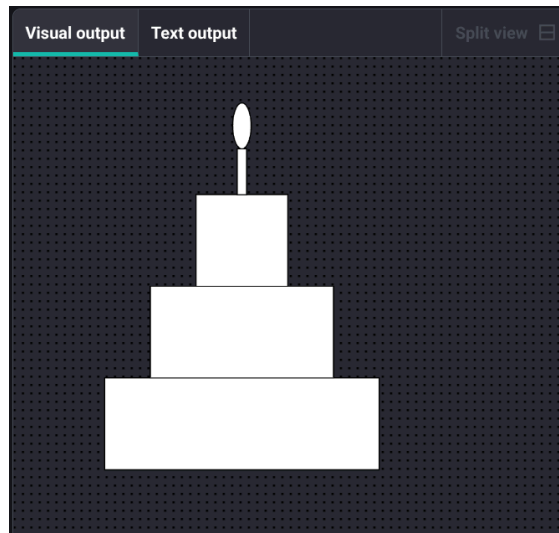
Adding a Flame

To draw the flame we need to use an oval. To do this we are going to set the mode to `CENTER` and then draw the oval.

Modify the draw function so it looks like this

```
def draw():  
    rect_mode(CENTER)  
    ellipse_mode(CENTER)  
    rect(250, 400, 300, 100)  
    rect(250, 300, 200, 100)  
    rect(250, 200, 100, 100)  
    rect(250, 125, 10, 50)  
    ellipse(250, 75, 20, 50)
```

Click run and you should get this:



Adding a Splash of Colour

A black and white birthday cake is nice but not very exciting! So let's add colour.

First a background colour can be added by adding the following line as the first line of your draw function:

```
background(255, 153, 255)
```

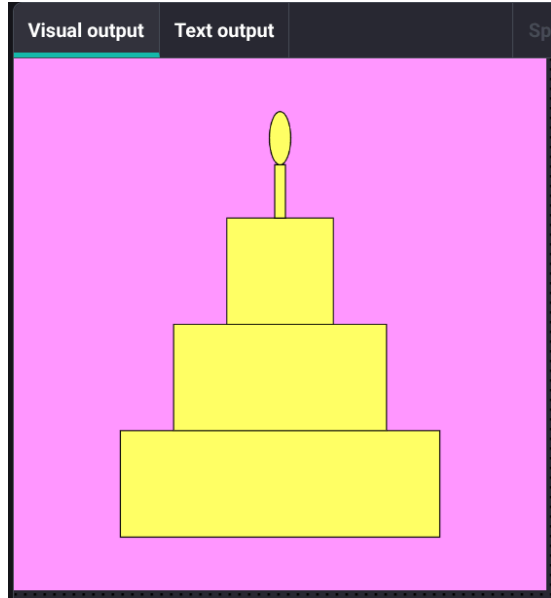
The three numbers show how much red, green, and blue are in the final colour. The above makes a pale pink background. A colour picker is here:

https://www.w3schools.com/colors/colors_picker.asp

To colour in the cake you need to use the fill function. Use the fill function when you want the colour to change for a shape. **Modify the draw function to look like this**

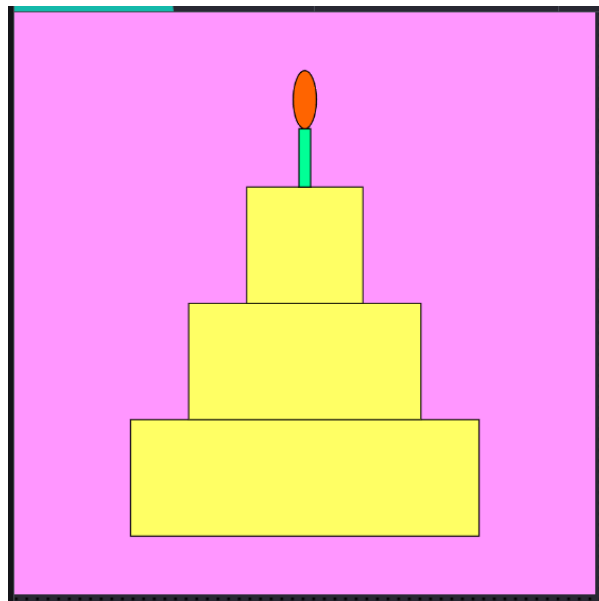
```
def draw():  
    background(255, 153, 255)  
    rect_mode(CENTER)  
    ellipse_mode(CENTER)  
    fill(255, 255, 104)  
    rect(250, 400, 300, 100)  
    rect(250, 300, 200, 100)  
    rect(250, 200, 100, 100)  
    rect(250, 125, 10, 50)  
    ellipse(250, 75, 20, 50)
```

Click run and you will see the following:



Challenge

Try colouring in your picture so that it looks like a cake.



Super Challenge

Try modifying the code so that you can add some icing or some jam between the layers.