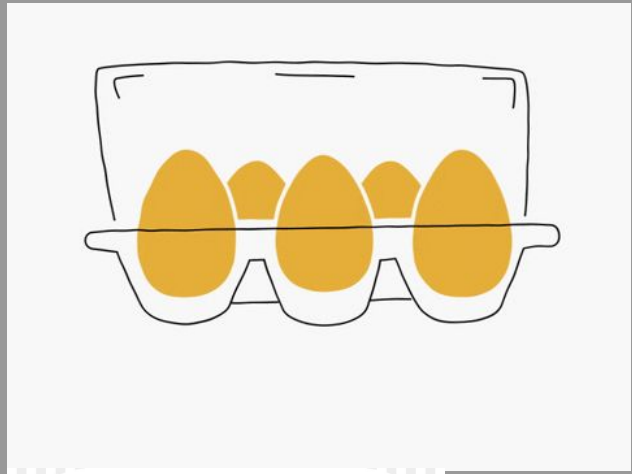
with the **Ursina 3D Engine**

What is python?

1) Who invented it?
2) Is it popular?
3) Any examples of where it has been used?



What is python?

1) Guido van Rossum
2) Yes, very!
3) Google, Instagram, Netflix,
   Data Science, Machine Learning...

Python uses modules

```
================================
>>> import random
>>>
>>> print(random.randint(1,10))
2
```

```
from ursina import *

app = Ursina()

app.run()
```

You can import modules at the top of your python code.

Different modules allow you to use different functions.

The time module (time.py) allows you to find the date, time events to the millisecond, and, of course, to get the time of day.

The random module (random.py) allows you to get random numbers.

The ursina module (ursina.py) allows you to…?

ursina engine

open source game engine

hello world!

Suggested steps:

1) Set up a window and get Ursina running
2) Create a 3D sphere
3) Put a texture on the sphere
4) Keep updating the sphere's rotation
5) Make a dark background, like space?

Let's make a **3D, rotating world :)**

So, what will we **basically** need to do to make our 3D (hello!) world?

Discuss ideas with a partner, then let's see how well you've **decomposed** the steps in this programming goal.

project setup and assets

1 Create a new folder on your H: drive called ‘ursina projects’

2 Open IDLE

3 Create a new file called hello.py and save it in your new folder

4 Find a planet texture; also save it into your new ursina folder

Hello World!

```python
from ursina import *

app = Ursina()

planet = Entity(model='sphere', texture='earth')
planet.scale = 4

def update():
    planet.rotation_y += 0.4

app.run()
```

Here is our first **python** code. Just 7 lines **:)**

You must **save your .py file** before you can run it.

Make sure your **planet texture**, in your folder, is named **‘earth’**.

Code Challenges!

1 Can you change the rotation speed of your planet?

2 Can you make your planet change scale (get bigger or smaller) as it updates?

3 Can you add a small moon -- with its own texture?

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```

Changing the window's background colour

window.color = color.black

or

window.color = color.rgb(0,0,0)

or

window.color = rgb(255,0,255)

(shhh because pink)

```
message = Text('<bold>hello world!',background=True)
message.scale=2
message.background.color=color.lime
message.appear(speed=0.1)
```

We can **print text to the screen** :)

First, print ‘**hello world!**’ to the screen.

Next, print whatever message you like.

Can you change the appearance of your text and its background? Can you make a transparent background?