

The following questions will require you to download and install Blender, preferably 3.2.

<https://www.blender.org/download/>

To run Python code within Blender, go to the scripting tab and create a new text file. Whatever Python you write in here will be printed to the console. You can enable the console by clicking *Window* along the top menu and selecting *Toggle System Console*. The Blender Python documentation. To ensure you are set up correctly, try printing hello world to the console.

Task A

Begin with an empty Blender scene.

The python snippet below creates one cube, extend this to create a line of 50 cubes along the x axis where the position along the z axis represents a sine wave. Each object should have a randomly generated name consisting of 3 letters, a forward slash and then three numbers (e.g. abc/123)

After instantiating these cubes, print to the console the total number of objects, vertices and materials in the scene.

```
import bpy
bpy.ops.mesh.primitive_cube_add(size=1, enter_editmode=False,
align='WORLD', location=(0, 0, 0), scale=(1, 1, 1))
```

Task B

Delete everything from the default scene.

Write some code to create cubes at the following X, Y, Z positions relative to the origin:

```
positions = [
[4,6,3],
[6,6,3],
[3,3,3],
[3,2,3],
[7,3,3],
[7,2,3],
[4,1,3],
[5,1,3],
[6,1,3]
]
```

Programmatically give each cube a randomised colour and rotation.

Task C

Begin with an empty Blender scene.

Write some Python code that creates a fractal like shape with at least three recursions. You may choose whatever fractal you would like, either 2D or 3D and any level of complexity from the Cantor set to a Mandelbulb.