

City Block Generator

Manual/ How to use

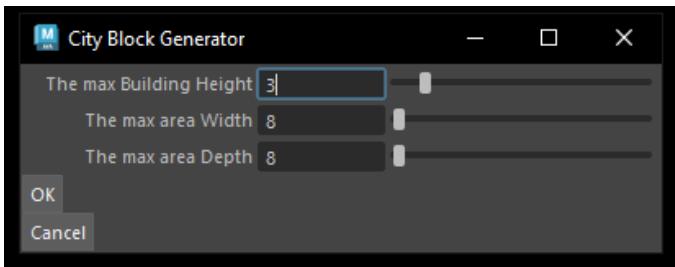
Warning this script should only be run when there are no other meshes/ objects in the scene.

- 1) Before you run the code you must download and change the file paths in the code

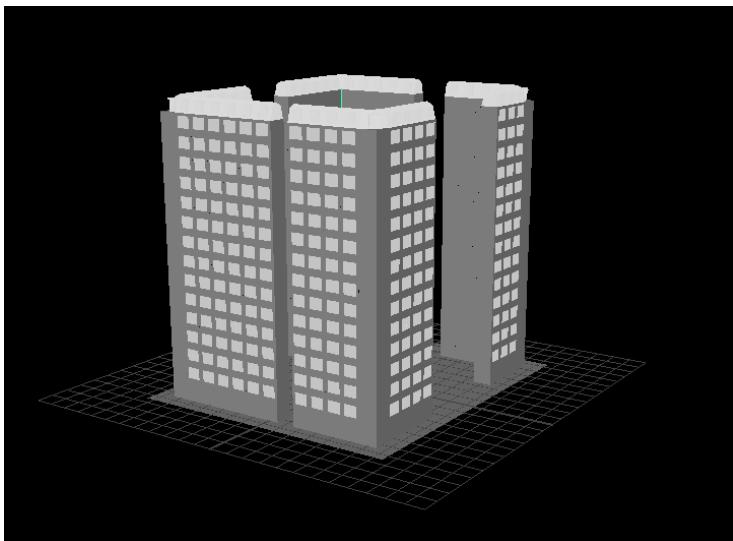
```
24 # File path of the OBJ
25 obj_file1 = 'D:\\Uni\\Work\\Technical Arts Production\\Coding MAYA\\Objects\\Roof.obj'
26 obj_file2 = 'D:\\Uni\\Work\\Technical Arts Production\\Coding MAYA\\Objects\\Roof_Corner.obj'
27 obj_file3 = 'D:\\Uni\\Work\\Technical Arts Production\\Coding MAYA\\Objects\\Window.obj'
28
```

obj_file1 should point to Roof.obj as shown above, the same action is needed for the Roof_corner.obj and the Window.obj

- 2) To run the program select all (Ctrl + A) and pres (Ctrl + Enter).
- 3) You should be met with a small menu, these declare the size of the city block, set the slider to any size then click "Ok".



- 4) Done :)



You should now have a city block of your choice.

Report

This code would create a city block in any shape following a more traditional french communal courtyard area.

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(Palais de la Découverte, 75008 Paris, France) Taken from Google Maps

Generally I looked at french architecture around the Arc de Triomphe as this area of paris was known for its more grand geometric street layout.

One of the main points for my program is to create the buildings surrounding a semi-private courtyard area, one of my favourite parts of the architecture.



I wanted to create a program similar to the relaxing city builder game “Townscaper” by Oskar Stålberg.

<https://oskarstalberg.com/Townscaper/>

In this game the player has limited controls but has a very robust set of pre-conditions on what a tile looks like depending on where it is in relation to the world, other tiles and what colour it is.

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This code is meant to be my own attempt at creating something similar that also allows the user to have control on a single city block which could easily be used to create a simple city.

Hierarchy of Generation

- 1) The blockBase - the area that the buildings take up is decided by the area of the blockBase
- 2) The Buildings/ Courtyard area walls
- 3) The Rooves
- 4) The Windows - Generated based on building height and only being generated with a height over 1 floor or 1 "blockHeight".

Variables

- wBlock - Width of the Building area
- dBlock - Depth of the Building area
- blockHeight - Sets the height of the buildings
- temp - Is used to create every building section
- Rec - Is used to select which side is generated in the for loop
- Loop - Is used to generate the sets of windows up the building

Throughout the code I used functions for the UI, lots of if statements, loop variables, Imported models, utilised "for" loops.

The way the code works is: it first imports the models, defines the main program and buttons for the UI then if the "Ok" button is pushed it runs the buildBuildings function which is the main program that utilises the user input to create the block, first front to back then right to left. This could be condensed into smaller code with only one for loop for all sides but this was the easiest way I found to work with the code.

Because of limitations in the code, only city blocks with a minimum of a 9x9 building area can be generated.

In the future with more time windows could also be added to the corner buildings and generally more ornaments could be added to the building to add detail alongside decorating the actual courtyard area that this code is able to create, maybe a fountain model could be imported.

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I could also make the program more flexible in its shapes and make it able to create areas in the shape of triangles and pentagons, this would give it a more parisian aesthetic.

Possible Future Additions (City Generator)

This would be a continuation of the city block generator but repeating the process to create a large city. For this I would need to run the code in a loop and also create a part to create roads.