

Assignment 1, Minecraft

Ananta Anil Shahane, S2900718

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Abstract

In this assignment we discuss different algorithms for building home in Minecraft.

1 Introduction

In this assignment, I figured out two different algorithm for building home in Minecraft. The first method is to build a central corridor and then build the rooms around it in procedural way. The other method is an inspired from the mid point method taught in the lecture. I ended up implementing the first method, due to time constraints.

2 Building the home

Now we discuss the possible approaches for building the home. Starting with the Corridor method.

2.1 Corridor Method

First we begin with a centre point, and randomly choose the length and the breadth of the corridor, which connects to all the room. Then using the four corner of the corridor, we build rooms around it with size constraints. Once that is done, we build hall in front side of the corridor, with random height and width, followed by building kitchen to the east, the bedroom to the west and bathroom in the south. Each having minimum and maximum size constraints. As we change the length of the central corridor, we can add more and more room pertaining to the constraints.

2.2 Centre Point Method

In this method we can begin with building a cuboid, then we decide the room configuration like 3 in north and 1 in south - (3,1), and similarly (2,2), (3,2), etc. Once that is decided, lets say that the point at south-west corner of cuboid as (x_1, y_1) and the north-east (x_2, y_2) . Then we make a cuboid from (x_1, y_1) to $(x_2, \frac{y_1+y_2}{2} + \text{some noise})$, similarly we keep making smaller and smaller cuboid according to decided configuration.

2.3 Difference between the two

The first method yields mostly cuboid sections for each room, while the second is capable of yielding more intricate architectures which can be a super set of the previous method. But on the other hand the first method guarantees each room is reachable directly from the hall through the corridor.

3 Results

I ended up using the first method for the project, which yielded the layout shown in figure 1, (when using `random.seed(42)`), and the figure 2 is the final result. This home is a a result of simulating my home's architecture with randomized but practical dimensions of length and breath of each room.



Figure 1: Layout



Figure 2: Result