Map Generation Using QuadTree

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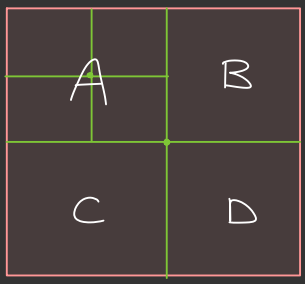
Core Algorithm :

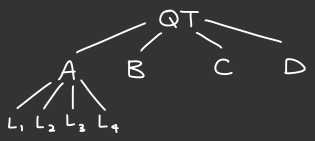
1) Divide the current 2D space into four sections

2) If a section contains one or more points, then create a child object that stores a 2D space of a section

3) If a box does not contain a point, then do not create a child

4) Recurse for each child





Modified Algorithm :

1) Pick a random point in the 2D space, dividing the space into four sections

   Note : Sections must be large enough to fit a room

2) Add the four sections into a queue

3) Take a section out of the queue

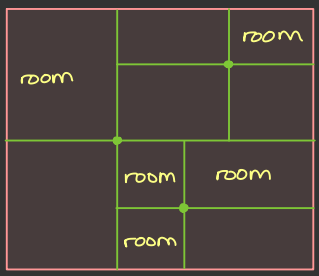
4) Calculate the area to see if the section has more than enough space to fit four rooms If not, then continue

5) Pick a random point in the 2D space, dividing it into four sections. Make sure each section can fit a room

   Add the four sections into the queue

6) Repeat Steps 3-5 until the queue is empty, or we have n sections

7) Randomly choose x leaf nodes that will contain a room



Pros :

- Obtains a list of sections that we can choose from, ensuring it can contain a room.
- Rooms will be evenly spaced out. Meaning they won't be too close nor too far.
- No overlapping rooms

Cons :

- A complex algorithm to implement
- Cannot manage the number of sections as easily as BSP.

  Each division creates 3 more sections