Procedural Generation Assignment #5: Binary Space Partitioning

[Due 04/13/2020 before the start of class]

The goal of this assignment is to give you a chance to implement and experiment with a generator that uses BSP. This assignment is more about reading the code to try to understand how it works rather than implementing anything too complicated (i.e. your individual solutions to the tasks can be quite simple).

For more information on BSP, check out **Section 3.2** from this chapter of Procedural Content Generation in Games: http://pcgbook.com/wp-content/uploads/chapter03.pdf

To start the assignment, download the template project from this address: https://github.com/badtetris/ProcGenAssignment5

1. Open the scene named "Task1". Modify the function "doRandomSplit" in SpaceTree.cs to have the binary tree **split randomly** (the current implementation does not split randomly). You can view the generated trees by running the project from the Task1 scene and hitting the Space Bar to perform a random split.

[1 point]

2. Open the scene named "Task2". This task makes use of your work from Task1, but now, instead of displaying the randomly generated tree, it will use the generated tree to produce a 2D grid. Modify the function "chooseBoundaries" in SpaceTree.cs so the individual nodes will use a **random amount of their allocated space** rather than their entire allocated space.

[1 point]

3. Open the scene named "Task3". For the final two points, expand or mod the existing BSP generator from Task1 and Task2 in some way and save your mod to this scene. How you mod it is up to you, but your goal should be to make something neat. Here are some **suggestions**:

- Create a game out of the BSP levels. For instance, find a place to spawn the player and maybe some enemies or treasure, taking advantage of the BSP generator.
- Use the trees generated by Task1 to generate something other than a top-down level. Try to think of other structures that resemble the binary trees.
- Find a way to combine the levels generated by the BSP generator with a different generator. Perhaps using CA or the digger pattern from last week.

[2 points]
[Total: 4 points]