You are tasked with solving the following procedural generation problem in Unity3D:

Given a graph of Nodes and Edges like the one pictured below, find and create the resulting 3D meshes that will fill all empty areas within the following criteria:

* Nodes touch only the corners of each mesh
* No two meshes overlap
* No edges overlap the center of a mesh
* The meshes' boundary edges always overlap with a graph edge
* Each mesh will render in a way that can be seen from a consistent view angle (Y-up)
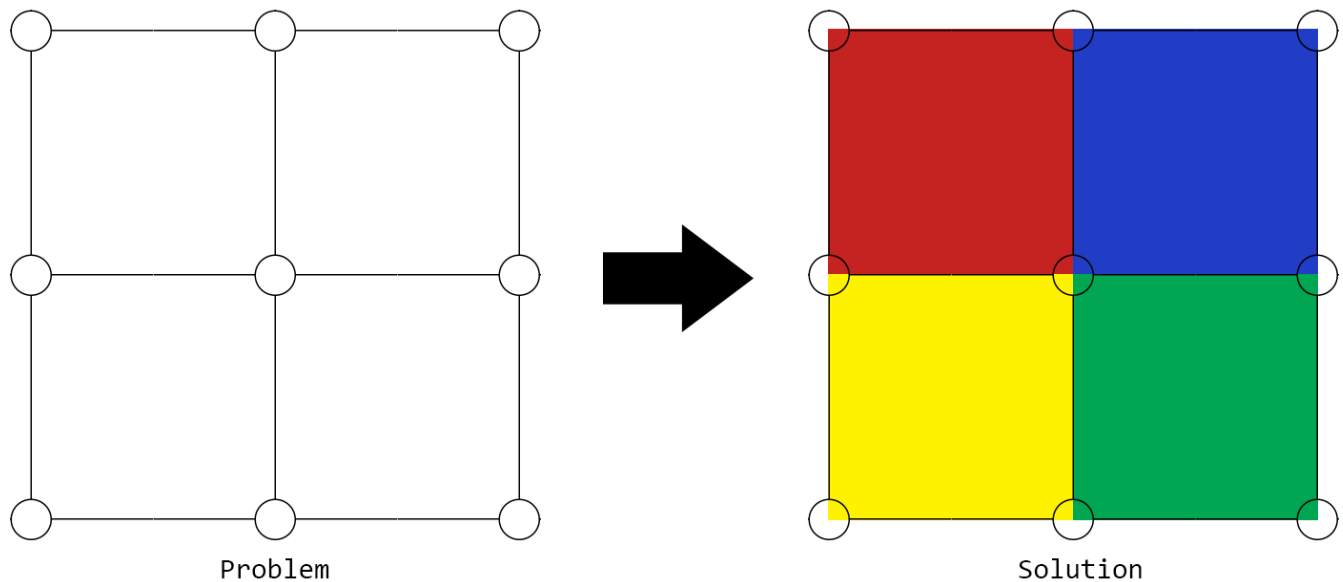
Problem

Solution

The only solution to the problem on the left is four square meshes that each fill a quarter of the graph.

Included in this package is a video of the result we're looking for and a test project containing three problems. Even if you can't pass all three tests within your time limit, we want to see your result.

What we are looking for:

* A result that matches the video provided
* An optimized solution that achieves as many frames per second as you can achieve
* A flexible solution that works for all three tests. No hard references
* A full 3D solution. No 2D screenspace trickery
* No two-sided materials
* Proper use of data structures and algorithms

Note that the "TestSource" directory will be completely overwritten when we assess the end result of your test. Any changes made to the scenes or source code within will be deleted.

We used Unity 2017.2.2f1 to produce this test, but the code and assets should work in late 5.x builds.