

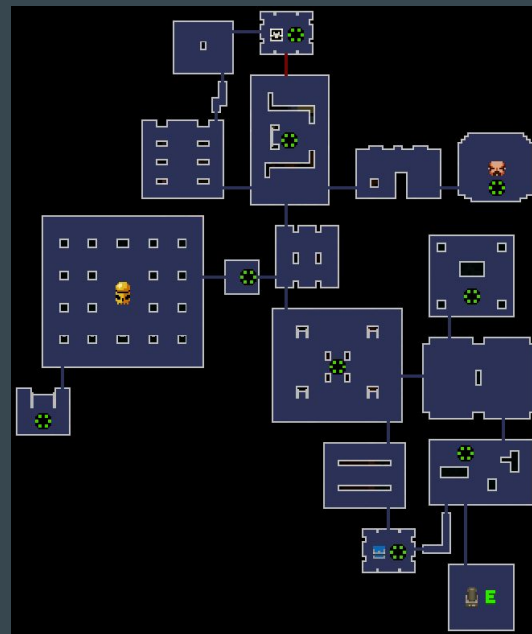
Project Presentation



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Topic: 3D World Game

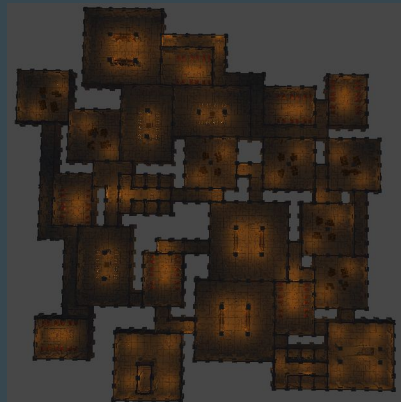
- Procedurally Generated Dungeon
- First-Person Perspective
- Rogue-like Gameplay
- Basic features include:
 - Procedurally Generated Dungeon
 - Enemies
 - Boss Enemy
 - Reward System



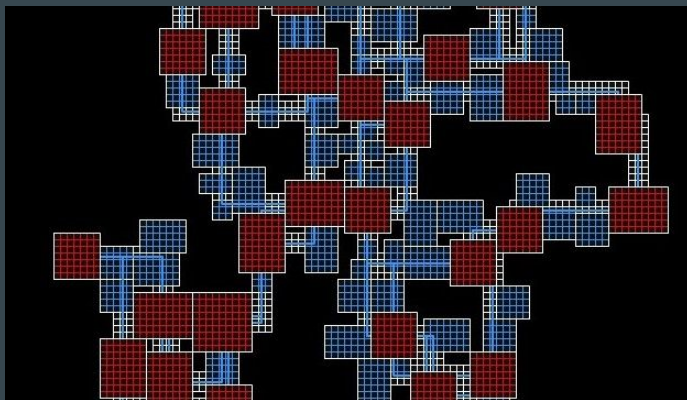
Algorithm

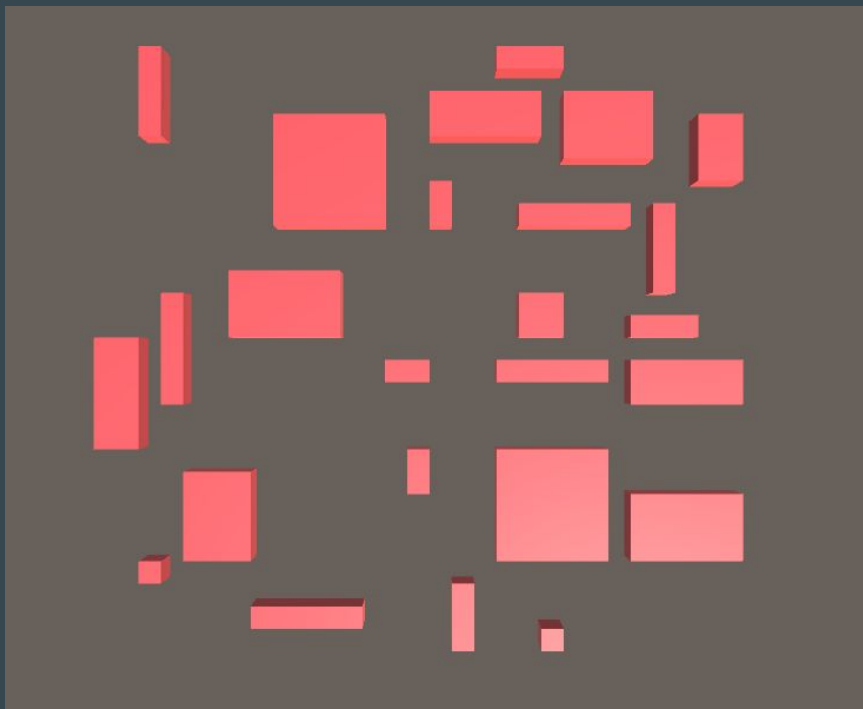
- Based on Vazgriz's Algorithm
 - Modified Version of TinyKeep's Algorithm
- Includes 4 Major Steps:
 - Generating Rooms
 - Locating Hallways
 - Generating Hallways
 - Populating Rooms

Portion of Vazgriz Map



Portion of TinyKeep's Map



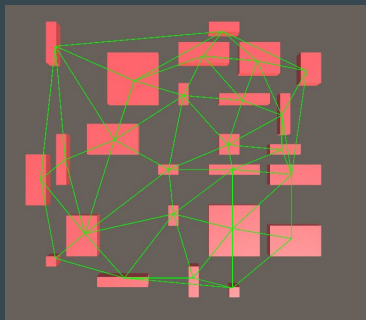


Generating Rooms

- Find Position
- Find Size
- Create Room Object
- Check if Valid
- Store Room Object in List
- Create Room

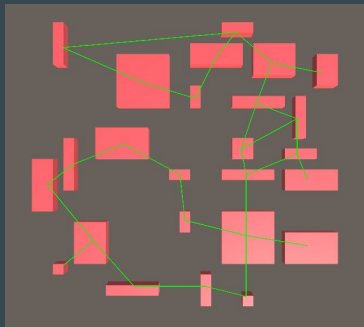
Locating Hallways

- Create Graph of Rooms
- Trim the Graph:
 - Find MST of Graph
 - Insert Additional Edges



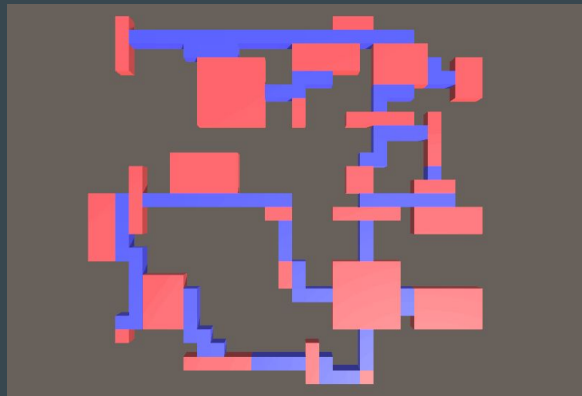
Graph of Rooms

After Trimming



Generating Hallways

- Use Pathfinding AI on Graph
- Reward for:
 - Straight Lines
 - Merging Hallways
 - Distance to Room



Populating Rooms

- Select a Spawn Room
- Select a Boss Room
- Select a Reward Room
- Select n Number of Enemy Rooms
- Instantiate GameObjects for Each One
- Move Objects to Their Corresponding Rooms

References

1. Website by Vazgriz that describes his Algorithm
 - a. <https://vazgriz.com/119/procedurally-generated-dungeons/>
2. Blog by A. Andonaac that describes TinyKeep's Algorithm
 - a. <https://www.gamedeveloper.com/programming/procedural-dungeon-generation-algorithm>