

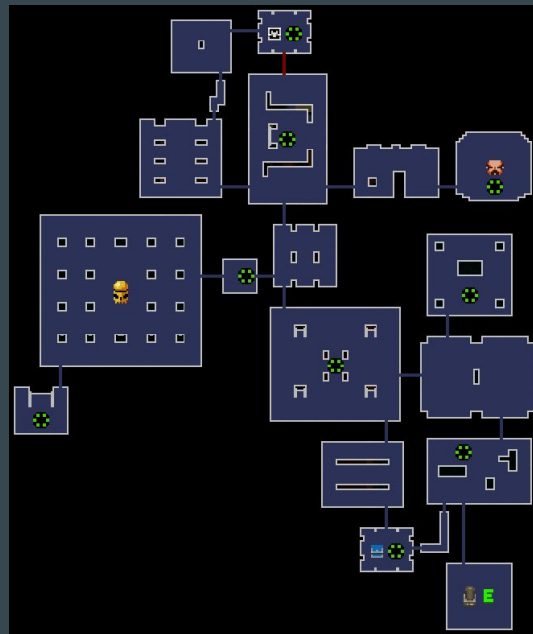
# Project Presentation



Isaac Sexe and Zach Summers

# Topic: 3D World Game

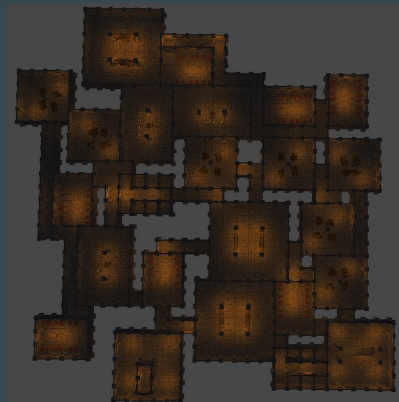
- Procedurally Generated Dungeon
- First-Person Perspective
- Rogue-like Gameplay
- Basic features include:
  - Procedurally Generated Dungeon
  - Enemies
  - Boss Enemy
  - Reward System



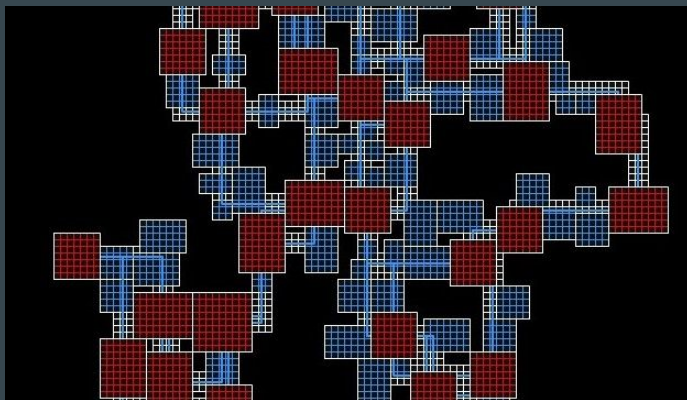
# Algorithm

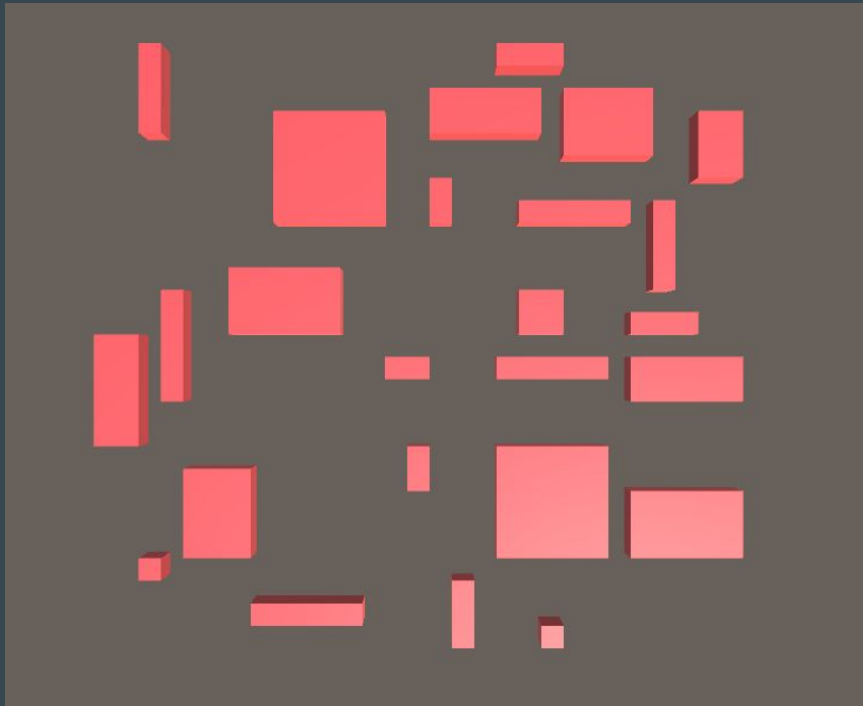
- Based on Vazgriz's Algorithm
  - Modified Version of TinyKeep's Algorithm
- Includes 4 Major Steps:
  - Generating Rooms
  - Locating Hallways
  - Generating Hallways
  - Populating Rooms

Portion of Vazgriz Map



Portion of TinyKeep's Map



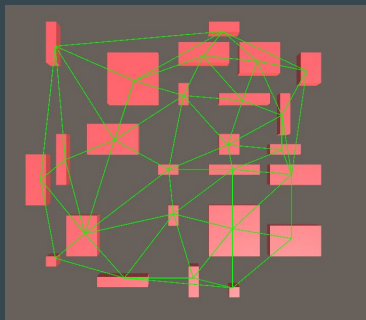


## Generating Rooms

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

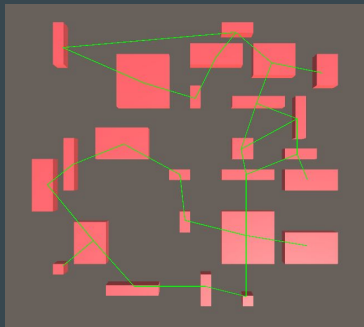
# Locating Hallways

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



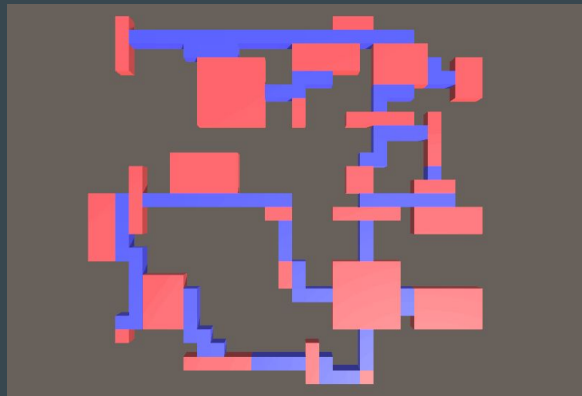
Graph of Rooms

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. Adonaac that describes TinyKeep's Algorithm
  - a. <https://www.gamedeveloper.com/programming/procedural-dungeon-generation-algorithm>