

Prefab Placement Tool

* Tool Concept

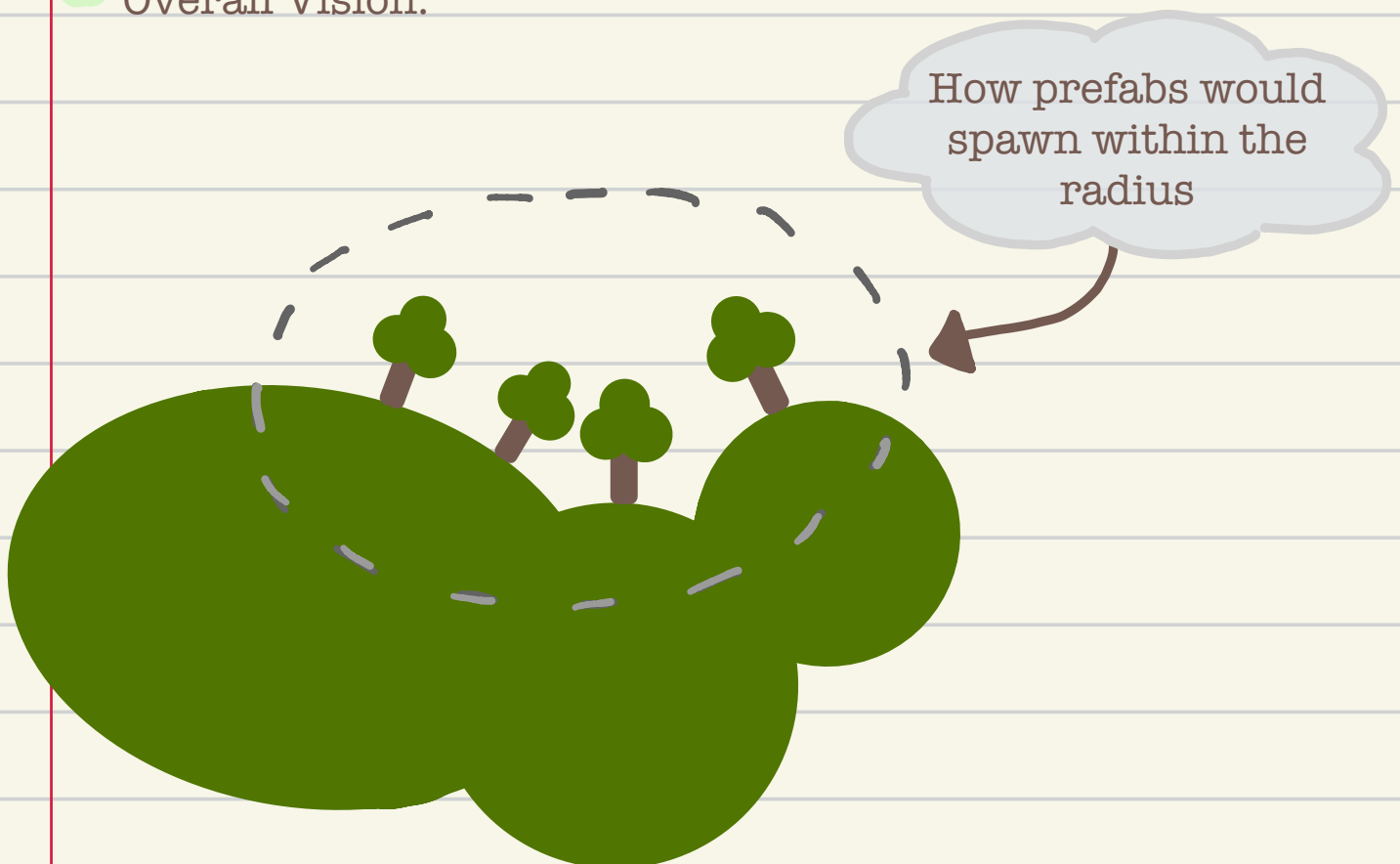
- Purpose:

The purpose of this tool is to aid with the creation of terrain and levels. Specifically, this tool will aid with placing prefabs on your terrain such as trees, bushes, rocks, etc! The player will have the choice of the radius they want to place prefabs within and how many prefabs they want to spawn. This will improve workflow because rather than placing one by one, the player can place multiple at once and those prefabs will adjust based off of the terrain!

- Game Engine: Unity

- Target Audience: Level Designers

- Overall Vision:



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* How to Use the Tool

- Find it under: Tools/Prefab Placement Tool
- Assign a prefab then edit the values (Radius and Spawn Count)
- Hot Keys:

- ATL + Scrollwheel
 - Change the radius in the scene view
- SPACE
 - Change the radius in the scene view
- CTRL + Z
 - Change the radius in the scene view

* Key Features

- Must-Have:

- functional UI and is easy to read and understand
- Gizmos showing radius
- Spawn-able prefabs

- Nice-to-Have:

- Preview of what is going to be spawned beforehand
- Prefabs that can spawn at the same time (Ex. Tree and bush prefabs)

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* Timeline

Week 1	Week 2	Week 3
<ul style="list-style-type: none">• Tool planning• documentation	<ul style="list-style-type: none">• UI implementation in ImGui• Research!!• Try to get in all the must-haves	<ul style="list-style-type: none">• finish must-haves• Get in a nice-to-have idea if extra time is available
Week 4	Week 5	
<ul style="list-style-type: none">• Playtesting• debugging• Make iterations	<ul style="list-style-type: none">• Playtesting• debugging• Make iterations	

* Risks

This is something I've never done before and requires a lot of math!

— Addressing the Risks: Lots of research!!

— Feasibility:

Starting with the bare minimum of implementation, just getting it to work is the goal. If I have the leftover time then I can further polish and add things to it. I believe that this will help me stay on track for this project!

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* Change log

- 10/22: Created the tool concept document
- 10/29: Made a simple UI tool window that can be pulled up
- 10/29: Has editable values; radius, spawn count, and prefabs
- 10/29: Made a raycast function that displays in the scene view and creates the points
- 10/29: Created helper functions; DrawSphere, GeneratePoints
- 10/29: Made a function (DuringSceneGUI) that checks events based off of key inputs
- 10/29: Made SpawnPrefab function that instantiates prefabs in the scene, ctrl-Z can undo them
- 10/30: Made a folder system for when prefabs are placed they get put into assigned folders.
- 11/17: Set up layout in the documentation to prepare for play tests.
- 11/20: Clamped max count in range and spawnCount values.
- 11/20: After you spawn prefabs the points regenerate to be more random.
- 11/20: Fixed how I was instantiating the organization folders. Now, no more errors appear when I try to spawn prefabs.

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* Change log

- 11/26: Adjusted the UI to add a how to use the tool section
- 11/26: Made the spheres bigger so users can easily see where prefabs will be spawned
- 11/26: Tried to get prefab colliders to detect each other while spawning
 - This won't be complete for when the tool gets turned is as it would take a lot longer than I thought.
- 11/27: Added previews for where prefabs will be spawned using their mesh
 - Resource: <https://docs.unity3d.com/ScriptReference/Graphics.DrawMesh.html>

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* Playtest Information

– Methodology

The play tests will be conducted with other students DigiPen. I am conducting this test to gather data on the tool I created to further improve it. I will have participants use the tool within the Unity editor by having them fill a terrain with tree, rock, and foliage prefabs. This is to see how the users interact with the tool and see if they understand it and have any feedback for it.

– Goals/Questions I want to answer

- What works and what doesn't
- How does placing prefabs feel
- How long does it take users to figure out the tool

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* Playtest Findings

- Users were able to understand how the tool works very quickly!
- Placing certain prefabs cause errors.
- There is no max limit for how many prefabs someone can spawn, so it can possibly freeze your computer and make Unity crash.
- Suggestions:
 - Clamp max prefabs!
 - Spawn count location is always randomized.
 - Have the prefabs detect each other so the don't spawn on each other.
 - Give the user more control over the prefabs.