

## **Fractal Generator**

### **Team**

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### **Our Project**

Originally, we wanted to make both a 3D and 2D fractal generator for the Mandelbrot fractal. However, after researching and working on this problem for some time, this goal seemed out of scope for a two-week project. The 3D mesh creation within unity was much more difficult than originally anticipated. Instead, we decided to primarily focus on the 2-dimensional portion of our project. We added many optimizations for rendering as well as the addition of two more fractals. Our project allows you to select three different fractals, the Mandelbrot fractal, the Julia set fractal, and the burning ship fractal. We also added better and finer control for movement around and zooming into each fractal. We calculated the rendering and fractal math inside of a compute shader for Unity.

### **Work Split**

Erin Eccleston primarily worked on the math and algorithm behind the fractals.  
Derek Paniagua primarily worked on main menu and fractal switching logic.  
Andrew Thompson primarily worked on camera zoom and movement controls.

### **References:**

Game Engine - Unity

[https://en.wikipedia.org/wiki/Mandelbrot\\_set](https://en.wikipedia.org/wiki/Mandelbrot_set)

[https://en.wikipedia.org/wiki/Julia\\_set](https://en.wikipedia.org/wiki/Julia_set)

[https://en.wikipedia.org/wiki/Burning\\_Ship\\_fractal](https://en.wikipedia.org/wiki/Burning_Ship_fractal)

<https://docs.unity3d.com/Manual/class-ComputeShader.html>