Sp18 CS 61B Discussion 9

Welcome!

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Announcements

- MT2 approaching
- HW2 released

Quiz Instructions

- If you haven't yet, please also **neatly** put your email address **outside the name box** if you want to be emailed!
- Bubble number **41**.

Aside

Procedural Generation: A History

- **Rogue (1980)** and **Elite (1984)**
  - Pioneers of 2D PCG
- **Dwarf Fortress (2006)** and **Spore (2008)**
  - Considered cutting edge 2D PCG
- **Minecraft (2011)**: First 3D PCG (but in block-form)

No Man's Sky (2016)

- A beautiful game (realistic texture) all in PCG
  - 256 procedurally generated universes, each with ~17 quintillion distinct planets
  - Each planet's landscape automatically generated
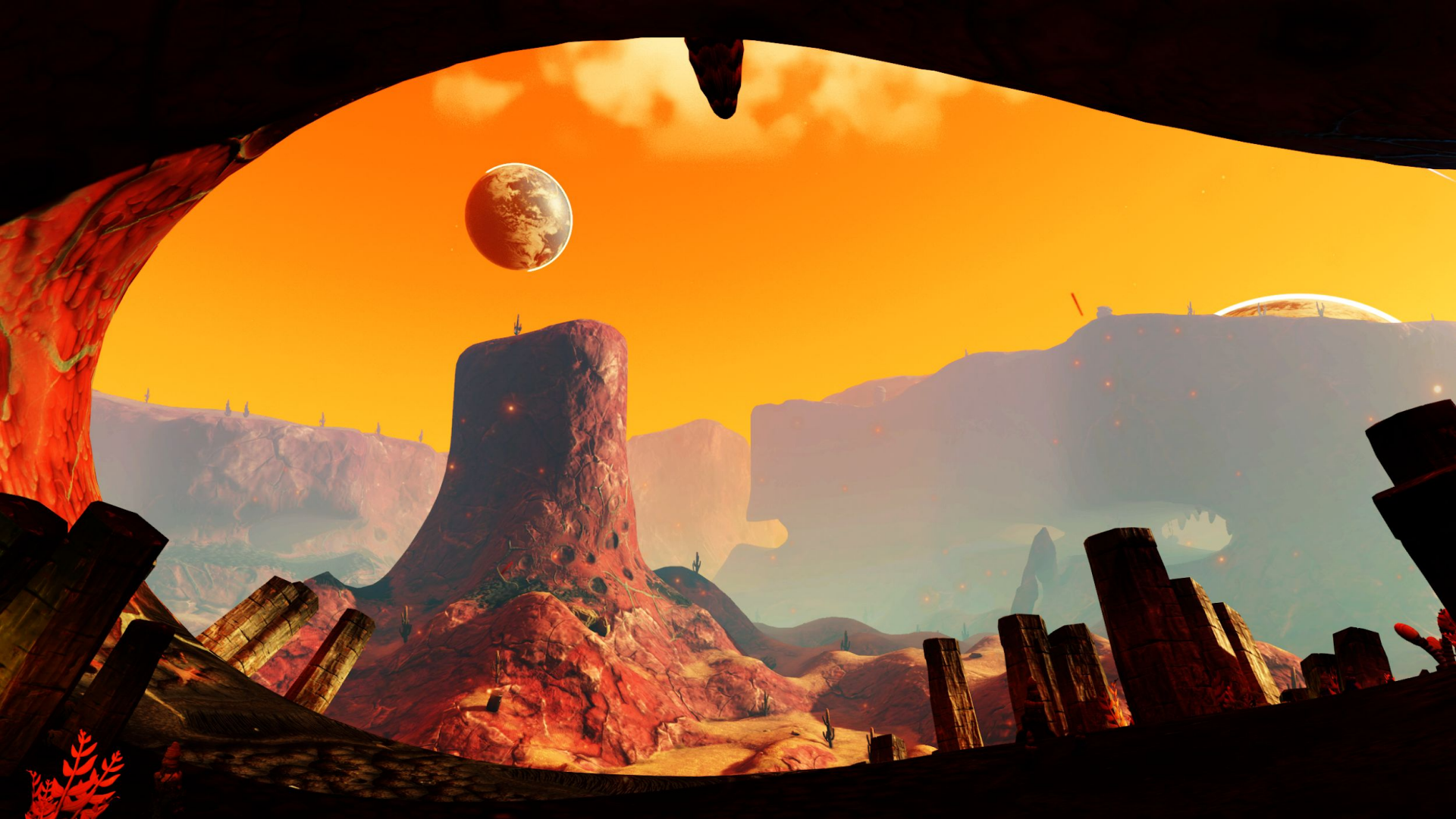 - Flora and fauna completely generated

Simple Terrain Generation Algorithm

- Called the **diamond-square algorithm**.
- Recursively divides a square into smaller squares with new vertices offset by a random height.
- At each recursion level, maximum offset shrinks.
- https://www.youtube.com/watch?v=9HJKrctqIJI

More Topics

- Perlin noise algorithm (realistic landscapes)
  - https://en.wikipedia.org/wiki/Perlin_noise
- Voronoi diagrams
- Take lots of stats classes! (Distributions are important)

Moral of the Story

- **There's more to CS than we can ever teach you!**

References

- A PCG community:
  - http://pcg.wikidot.com/
  - https://www.reddit.com/r/proceduralgeneration/

Onto Discussion