PSAM 5600 Section E CRN 4598
Spring Semester 2017
Wednesdays 7:00PM – 9:40PM

Currents: Coding with Cinder

Week 4: Memory Management / Particle System Revisited

Instructors
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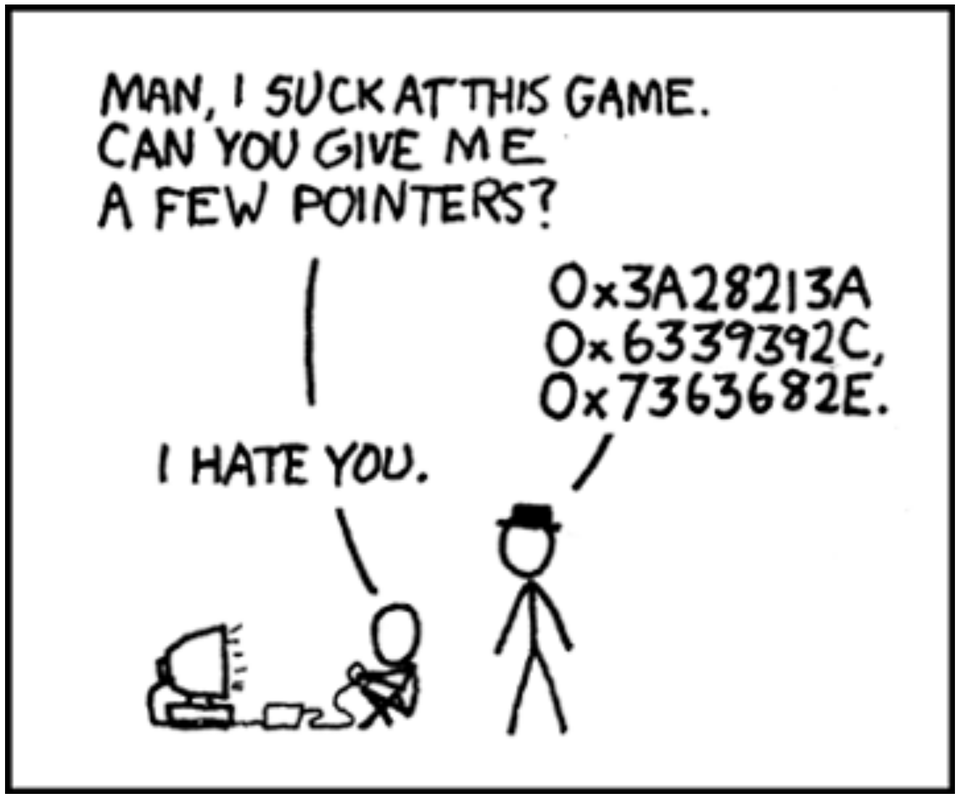
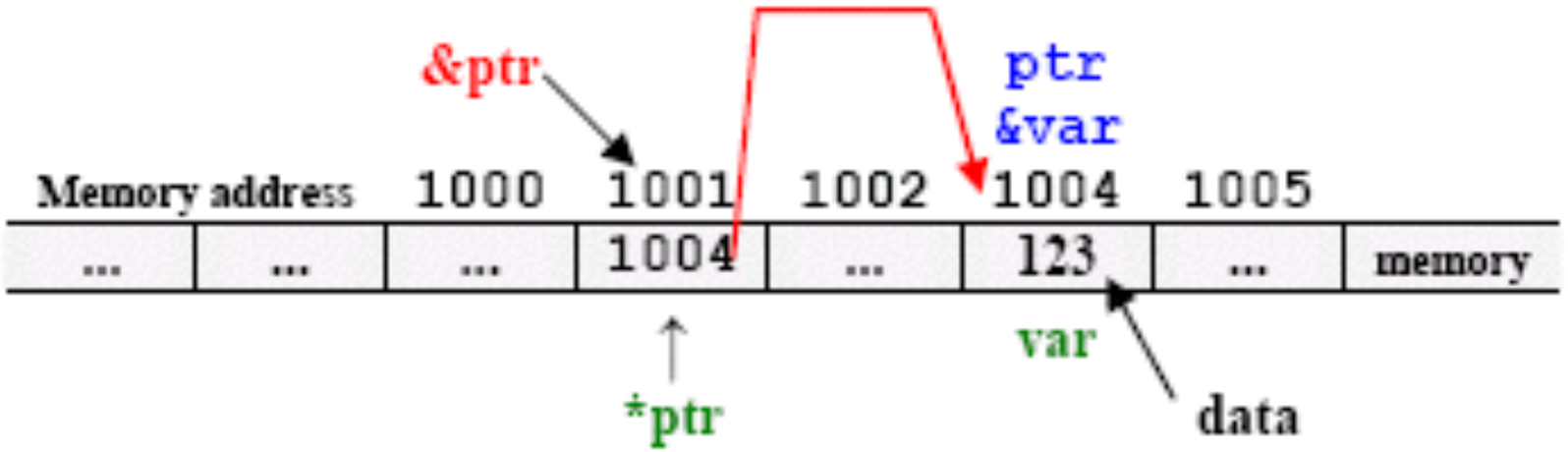


Memory Management

The glory of being a C++ programmer. And the price you pay to one.

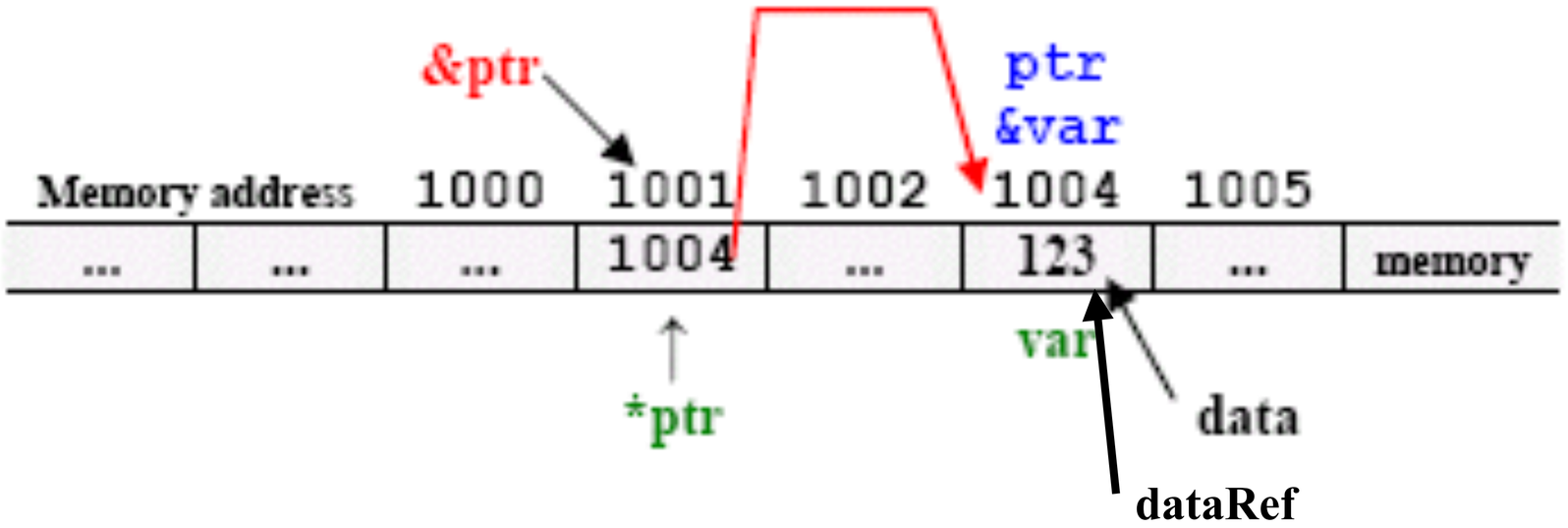
http://stackoverflow.com/questions/84556/whats-your-favorite-programmer-cartoon



Pointer

A pointer stores the memory address of the object it points to.

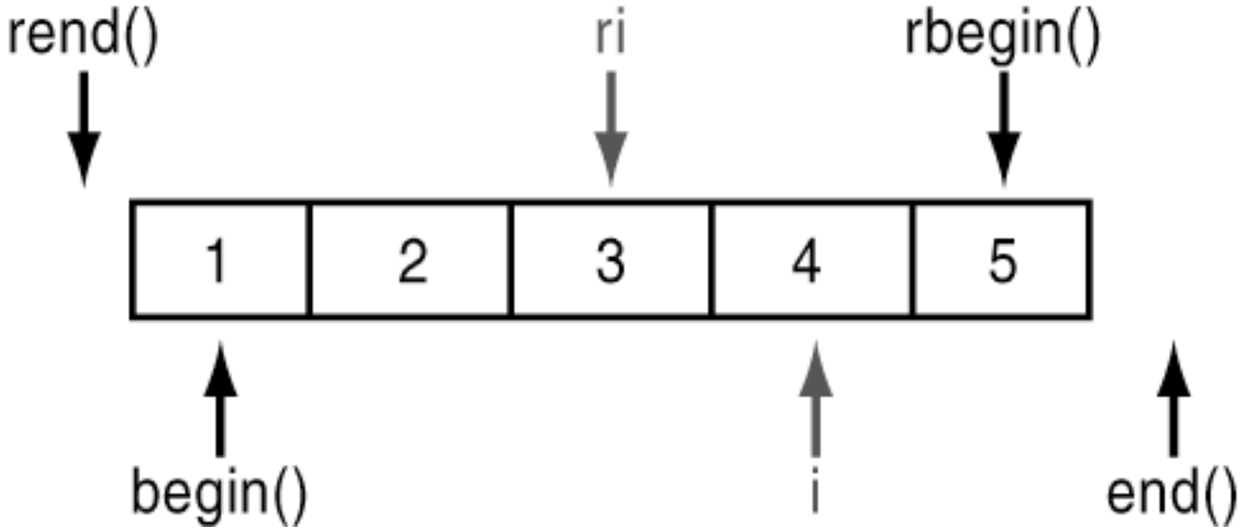
http://www.tenouk.com/Module8_files/cpluspointer032.png



Reference

A reference is an alias of the object it refers to.

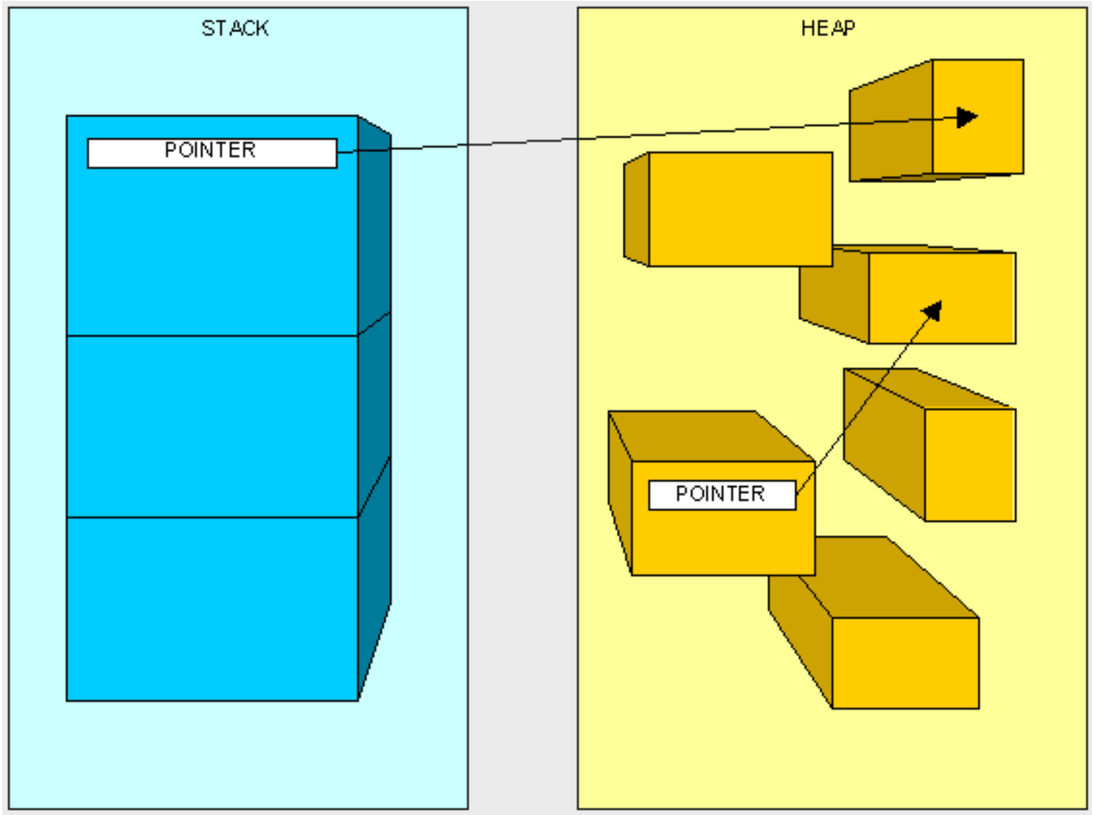
http://www.tenouk.com/Module8_files/cpluspointer032.png



Iterator

Iterators behave like pointers, indicating addresses within a container.

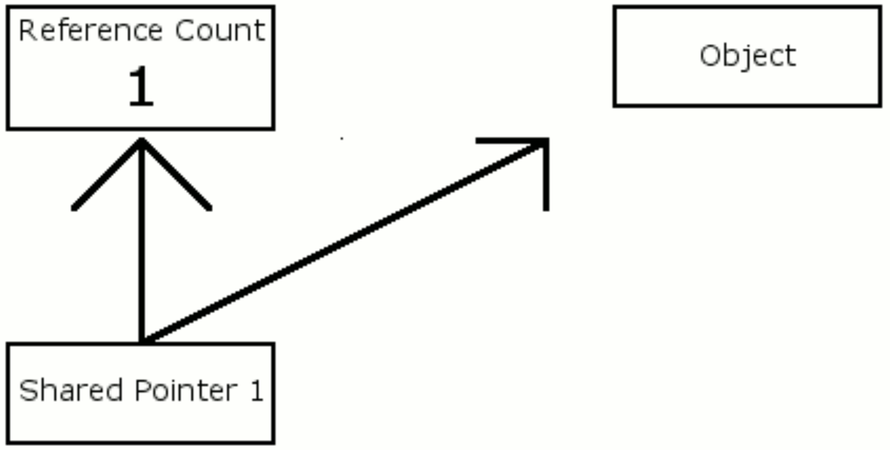
http://stackoverflow.com/questions/1830158/how-to-call-erase-with-a-reverse-iterator



Dynamic Memory

Memory in your C++ program is divided into two parts: the **stack** for local variables and the **heap** for dynamically created objects.

http://www.c-sharpcorner.com/article/C-Sharp-heaping-vs-stacking-in-net-part-i/



Object is allocated along with the reference count, which is initialised with a value of 1.

Shared Pointer

Shared pointer automatically manages dynamic allocated memory using reference counting.

https://www.gogo-robot.com/2012/03/24/memory-management-part-2/

How to use iterators.

https://stackoverflow.com/questions/14373934/iterator-loop-vs-index-loop

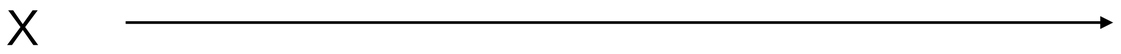
https://www.gogo-robot.com/2012/03/24/memory-management-part-2/

Perlin Noise

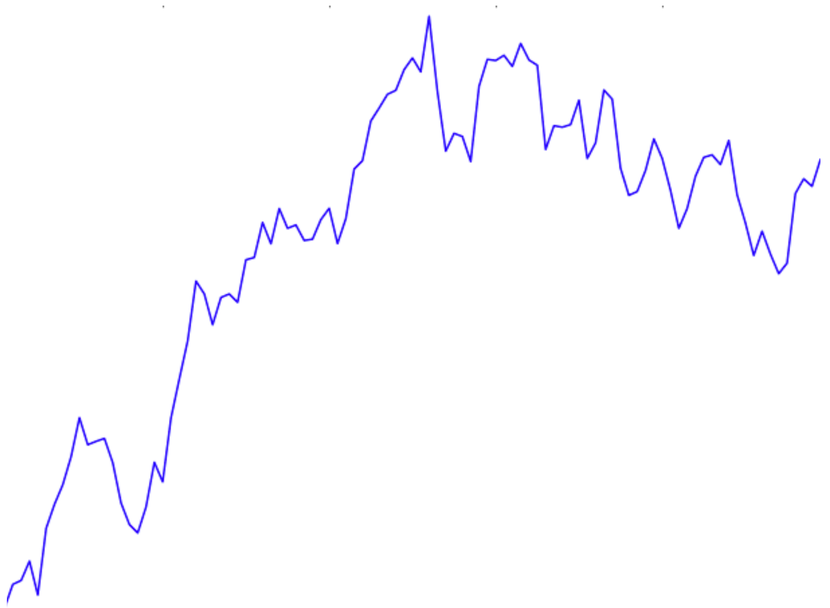
Perlin Noise is an extremely powerful algorithm that is used often in procedural content generation.

https://flafla2.github.io/2014/08/09/perlinnoise.html

Noise



Random

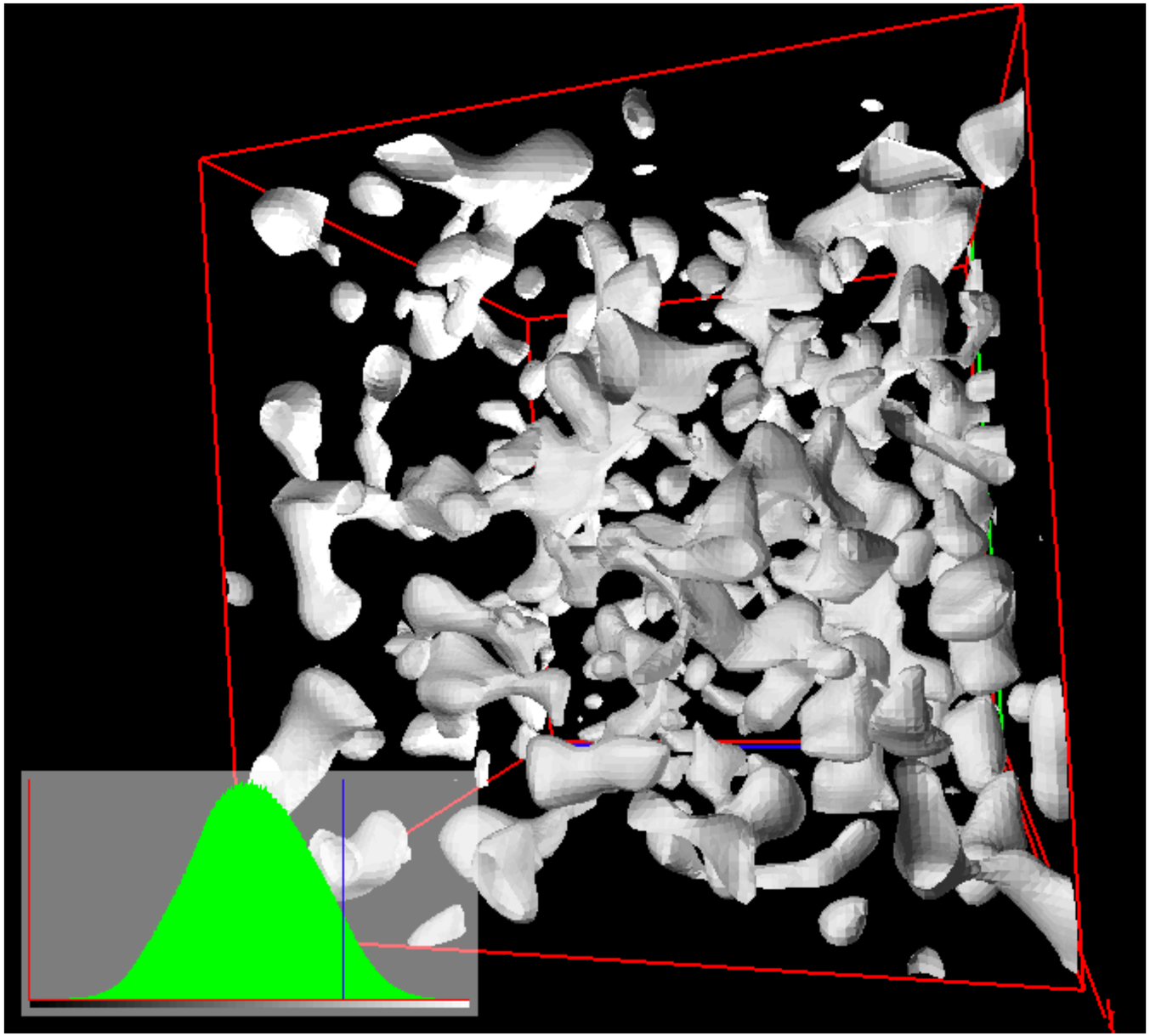


https://flafla2.github.io/2014/08/09/perlinnoise.html

2D Noise

https://flafla2.github.io/2014/08/09/perlinnoise.html

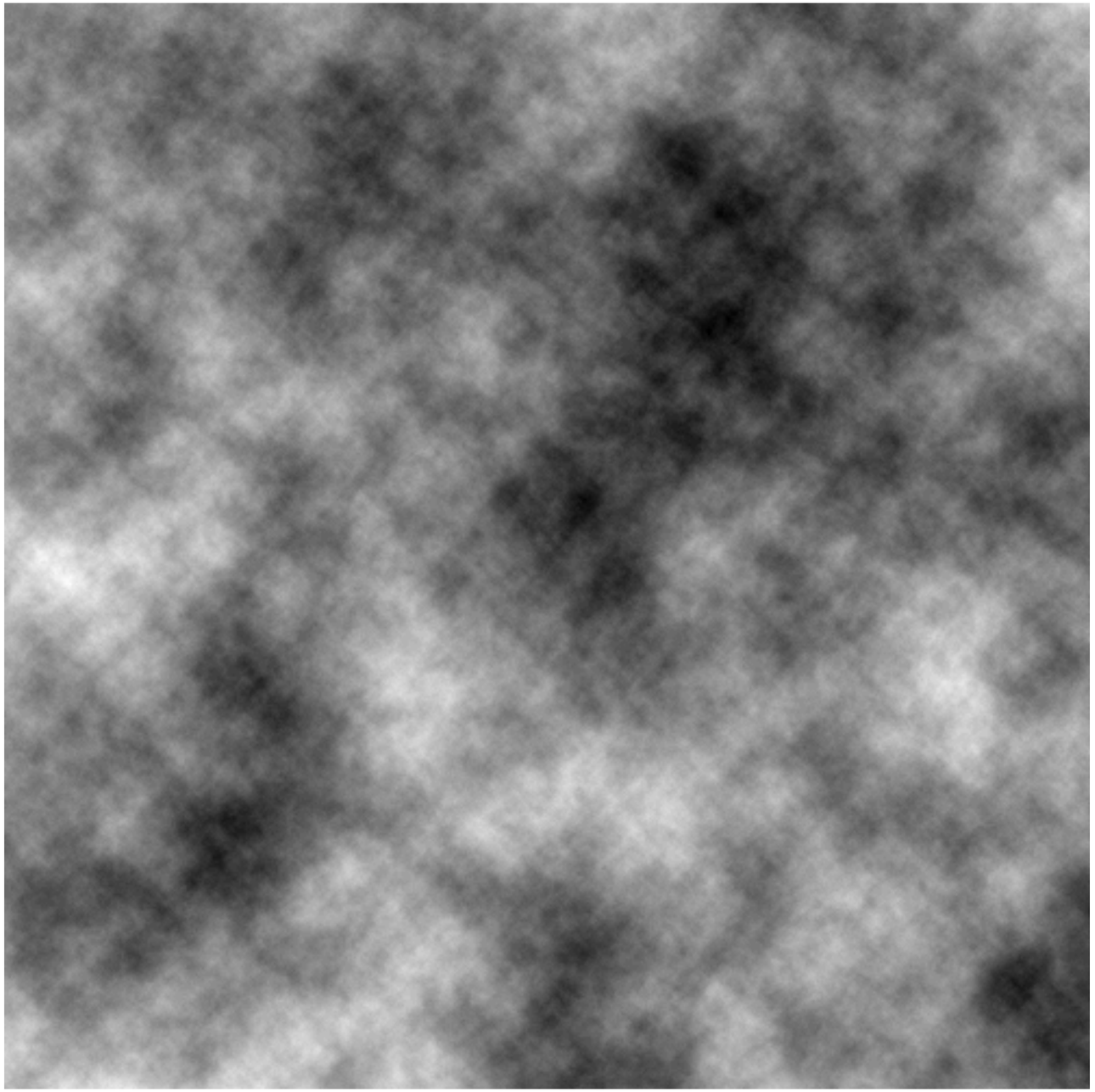
3D Noise



http://paulbourke.net/texture_colour/perlin/

fBm Noise

Fractional Brownian Motion is the summation of successive octaves of noise, each with higher frequency and lower amplitude.



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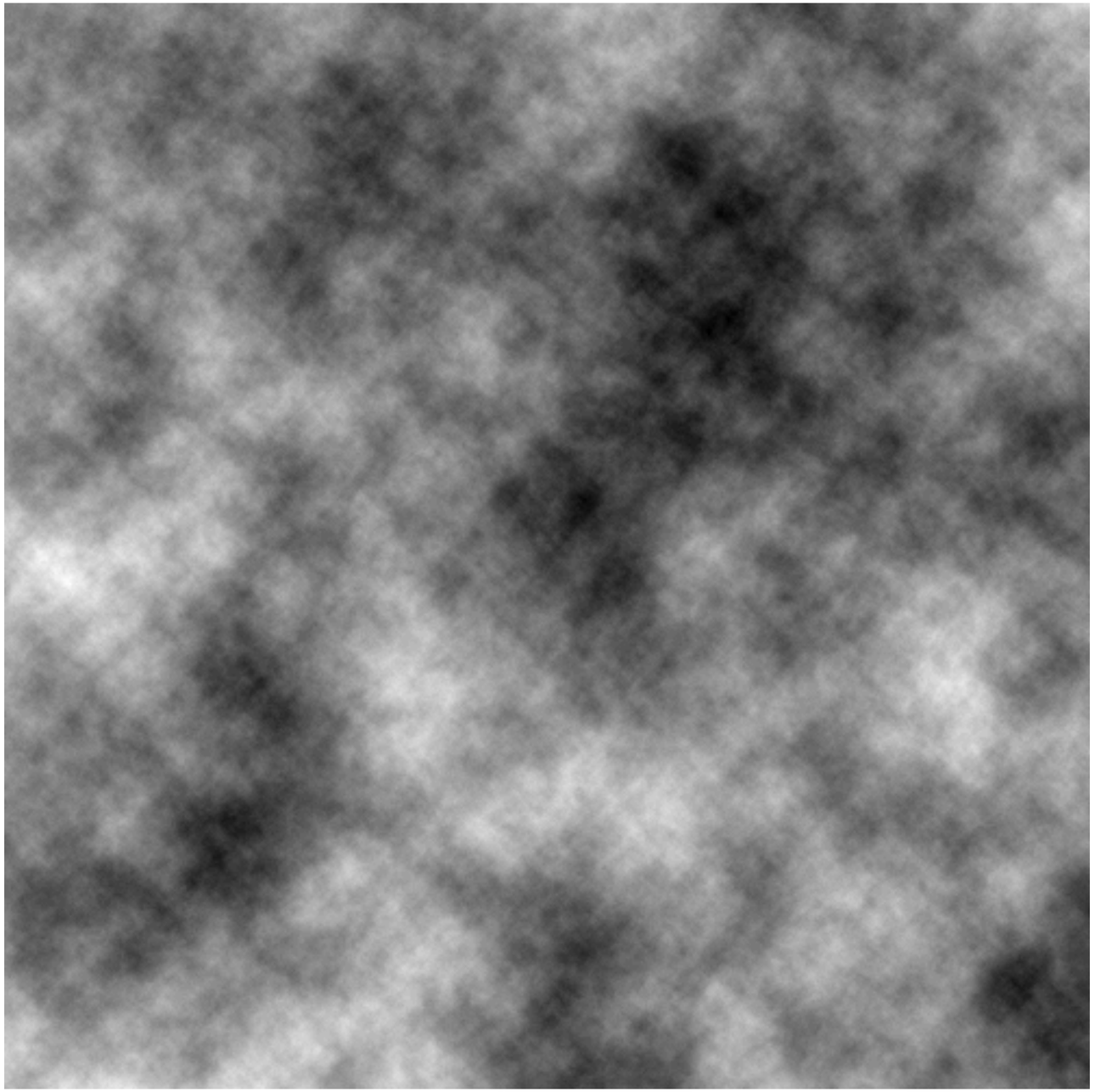
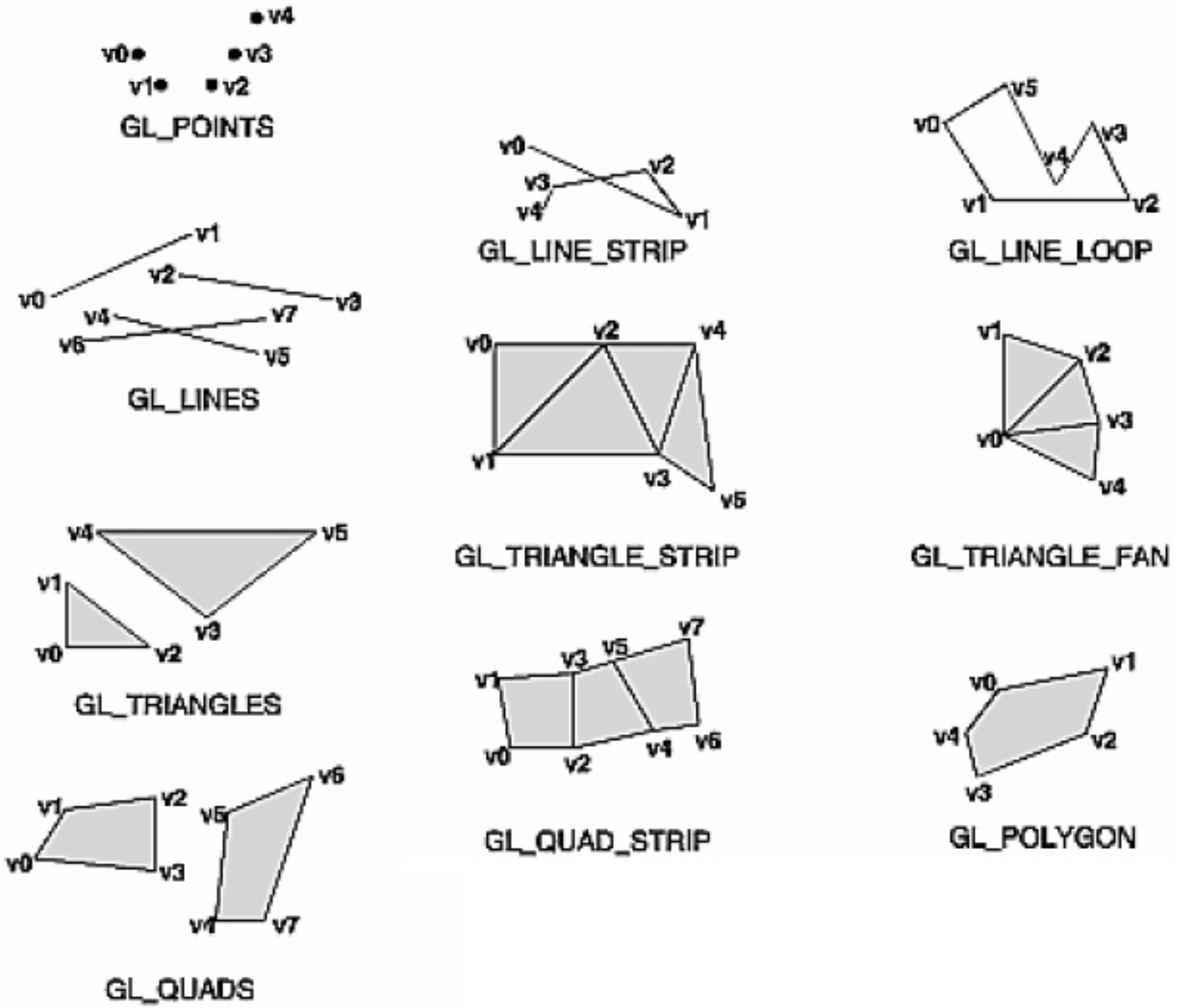


http://paulbourke.net/texture_colour/perlin/

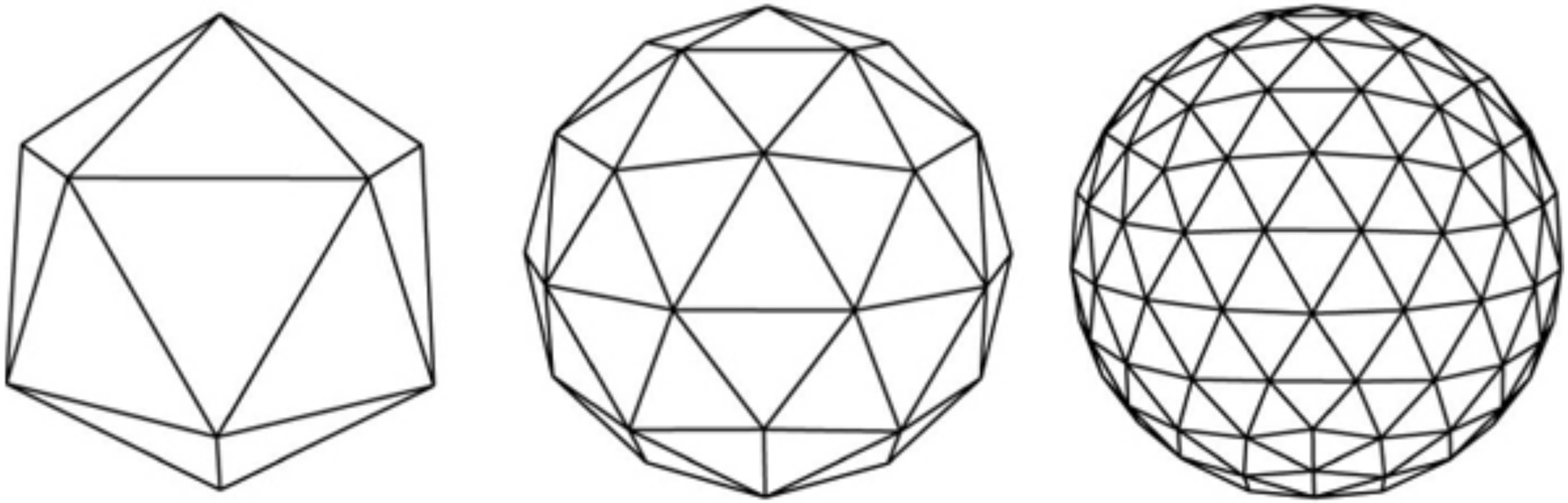
vec3 dfBm (float x, float y, float z)

x and y to get 2d noise. z could be used as time layer.

OpenGL Drawing Modes



http://openframeworks.cc/documentation/gl/ofVbo/



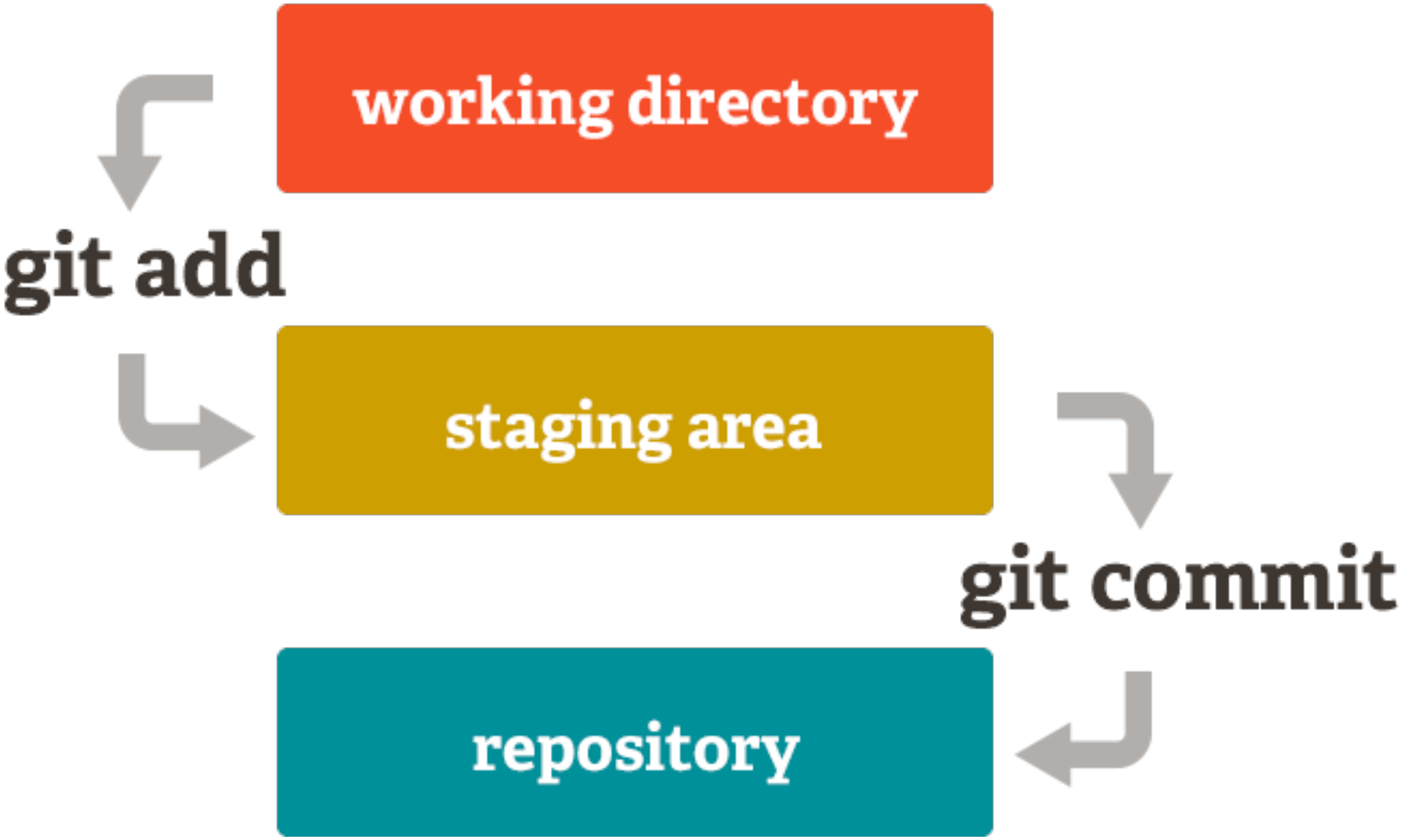
Better visual, poorer performance.

http://hessan.annahid.com/game-development-days/day-6/

Navigating in console

List all files in directory:	ls
Go in to directory:	cd [directory]
Go up:	cd ..
Open this folder:	open .

Git is not GitHub


working directory
git add
staging area
git commit
repository

Basic git commands

Initialize this directory:	git init
add file to HEAD:	git add [file]
commit current changes:	git commit -m “your message”
check your history:	git log
go to a particular history branch:	git checkout [commit id]
remove one file from HEAD	git checkout -- [file]

git reset HEAD -- hard

This will revert all your changes.

go here for a cheat-sheet, it is easy

http://rogerdudler.github.io/git-guide/

git push origin master

Push the master branch on your computer to the master branch on GitHub.

git pull

If you make changes other than your computer, then do this.

Homework

1. A particle system that involves more complicated behavior. Try use 3 or more physics influence (Think about fireworks, or water drops.) You can use several particle system to achieve this.
2. Create a repo on Github, name it FirstName_Cinder_Currents, put all your homework from previous weeks in there. Name them week_1, week_2 etc.
3. (optional) have a particle system that has more than 10,000 particles running at full speed.