**Video Notes- Abstraction**

Physical abstraction- toaster- just how to heat a bread

Abstraction- how it works

Modeling Abstraction-

Control Abstraction- programming in programming- how higher-level interaction with computer

Our brain abstracts things- details to find first class- but later we stop focusing

Simplifying things to what’s important-Abstraction

Decomposition- breaking down problem-

**Representation of color**

Colors are displayed in combinations of red, green, and blue

Net-logo -> HSB color Hue Saturation Brightness

Saturation- intense color to light

Brightness- Brighter or dimmer using saturation or hue the same

RGB color space has 2^24 colors but may need only 256 of them

Base color is factors of 5 in net logo

**Variables**

A name, data type and physical location in the memory

3 steps

Declare a variable

Initialize- set value of the variable

Call/modify

**Local Variable**

Let newvar 15 ;; net logo

Set color newvar

Sets the color of the turtle to color 15

Set newvar 25;; modifies the value of newvar to 25

**Complex Systems**

A collection of simple units or agents interacting in a system. They may change, evolve and adapt

Leaderless (Decentralized)- Flocking bird

Emergent patterns- patterns develop from simple interaction of itself

Non-linear- f(a+b) not equal to f(a) + f(b)

Example- Exponential function

Self-Organization- the system organization

Internet is complex system

Transportation

Crowd dynamics