CSC 240 Computer Graphics
Day 14: Animation & 3D Transformations

Nick Howe
Smith College
Homework Update

For planning purposes:
• HW6 now due April 10
• HW7 will be released April 8, due April 15.

Meredith
Q. I'm confused about the parameter "now". Where is it defined and where does it get passed?

A. When requestAnimationFrame calls its callback function, it will provide a timing argument if the function takes one.
Your Questions

Q. Can you explain more on Azimuth + Elevation and LookAt + up?
A. **Azimuth = rotation of observatory**, **Elevation = angle of telescope**
   Here is a demo of lookAt: [https://repl.it/@nhowe/lookAt-Demo](https://repl.it/@nhowe/lookAt-Demo)

Q. Does order of scaling and translation matter for matrix c? Can I apply Q.position.set(1,0,0) and then Q.scale.y=5 to generate matrix c for object Q?
A. Scaling and translation do not commute in general, but they do in this special case because the two changes affect different axes.

Q.scale.y = 5; Q.position.x = 5;  
Q.position.x = 5; Q.scale.y = 5;
Q. Does the number in position.set() mean the amount of change in position? Is there a code that sets the coordinates directly?

A. Thank you for bringing up the idea of **relative** change vs. **absolute** change.

- Relative change is an addition/subtraction to the current value.
  
  Examples: `Q.position.x += 10; Q.translateX(10);`

- Absolute change replaces the current value. Result does not depend on previous.
  
  Examples: `Q.position.x = 10; Q.set(10,0,0);`

Q. If there is no scale x and y, does that mean that the scale transformation gets overall bigger by that number provided?

A. You can do relative change using `+` or `-` but often scale changes are **absolute**.
Your Questions