Week seven

Help

Acceleration control — Acceleration and friction

- Basic physics relates the position of a point `p`, its velocity vector `v` and its acceleration vector `a` via the update equations
  ```
  p += v
  v += a
  ```
- In the absence of friction, the acceleration vector for the Asteroids ship is a scaled version of the forward vector `f` where `f = [cos(θ), sin(θ)]`. Here, `θ` is the angle with the horizontal axis.
- Application of acceleration using the forward thrust vector is controlled using keyboard input.
- To add friction to this model, the velocity of the ship is continually decelerated via the update `v = e * v` where `e` is a constant slightly smaller than 1.
- Lecture examples - None
- More examples - Curling (friction), Balancing Stick (acceleration), Angle Vectors

Sprites — Sprite class

- Most object-oriented game environments provide a class structure for 2D graphical/image objects called sprites.
- The Sprite class typically includes fields for quantities such as position, velocity, size and age.
- This class typically includes an initializer, an update method, a draw method and a collision method.
- For the Spaceship and Asteroids mini-projects, sprites have an associated `ImageInfo` class with fields that contain the center, size, radius, lifespan and animated flag for an image.
- Lecture examples - Sprite Example, Spaceship, Project Template
- More examples - Curling

RGB colors and HTML color strings

- In the RGB color model, colors are represented as a triple of integers in the range of 0 to 255.
- Each component corresponds to red, green and blue, respectively. The value of the component corresponds to the intensity of the corresponding color, with 0 being no intensity and 255 being full intensity.
- HTML color strings encode RGB colors as a string `"rgb(r,g,b)"` where the three values lie in the range 0 to 255.
- An extra alpha channel may be added to control transparency. The HTML color string has the form `"rgba(r,g,b,a)"` where a is in the the range 0 (transparent) to 1 (opaque).
- Lecture examples - None
- More examples - Fading Dots

Sound — Sound

- The SimpleGui function `load_sound()` loads a sound file, specified as a URL, into CodeSkulptor and returns a sound object.
- Th method `set_volume()` controls the playback volume of the sound.
- The methods `play(),pause(),rewind()` control the playback of the sound object.
- Attempting to play several versions of the same sound object at the same time in not possible. However, different sounds objects can play on different channels simultaneously.
- Different browser support different sound formats. Short sounds are laggy in Firefox.
- Lecture examples - Sound
- More examples - Bouncing Ball

Programming Tips — Week 7

Created Wed 5 Sep 2012 10:52 PM CEST

Last Modified Fri 30 Nov 2012 3:37 PM CET