

Animation

Tom Kelliher, CS 320

Mar. 4, 2013

1 Administrivia

Announcements

Assignment

Read 3.6–3.9.

From Last Time

Discussion of `collision.cpp`'s physics engine.

Outline

1. Animation: `double.c`, `pong.c`

Coming Up

Project 1 day.

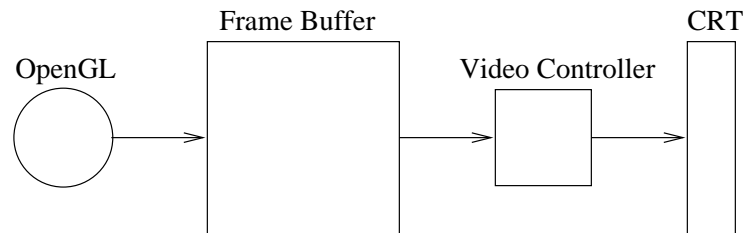
Project 2 discussion.

2 Animation

Two example programs: `double.c` and `pong.c`.

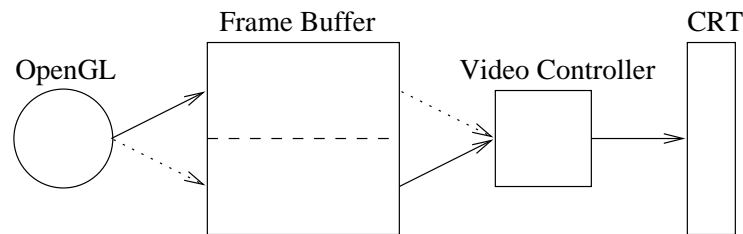
2.1 Double Buffering

1. Why did the time look so bad in `paint.c`?
2. Consider video refresh and OpenGL refresh:



Synchronization?

3. Consider double buffering:



4. Is double buffering a cure-all? No, some jitter is possible if render rate is a near multiple of refresh rate.

2.2 `double.c`

1. A rotating square.
2. Demo with and without double buffering.

3. Key points:

- (a) Use of `GLUT_DOUBLE` in call to `glutInitDisplayMode`.
- (b) The idle function, `spinDisplay` updates spin factor and posts a display callback.
- (c) `display` re-renders.

4. Use of `RotateZ` to define model view matrix.

- (a) First parameter is degrees of rotation.
- (b) Also, `RotateX` and `RotateY`. Why `Z`?

2.3 pong.c

My first video game. Wow.

1. What are the elements in the game?
2. What animations are there? What functions do they map to?
3. What are the boundary conditions?
 - (a) Velocity.
 - (b) Bounces.
 - (c) Acceleration.
 - (d) Randomization.
 - (e) Misses.
 - (f) Points, time?

Details:

1. Creating/rendering the ball.
2. Moving the ball and paddle: `Translate`.

Building the model view matrix from “scratch” each time.

3. Accessing cursor control keys: `glutSpecialFunc`.