Tutorial: Simple Directmedia Layer Programming with the SDL2 library

XJCO1921 Programming project

Today

SDL libraries and headers

SDL data structures

Simple game logic

Example

Further resources

SDL libraries and headers

- Headers in `/usr/include/SDL2/` folder
  - `SDL.h`
  - `SDL_image.h`
- Library code in `/usr/lib64/`
  - `libSDL2.so`
  - `libSDL2_image.so`

Basic SDL data structures

- `SDL_Window`
  - Top-level container for your graphics
- `SDL_Renderer`
  - The graphics you create
- `SDL_Texture`
  - Pixel data for drawing
- `SDL_Surface`
  - A set of pixels loaded from image data

Rendering to screen

- Pixels are defined by (x, y) coordinates relative to top-left $(0, 0)$
- We create the first scene at initialisation
  - For efficiency we then update the active parts of the scene rather than redrawing the whole scene
- We create the new scene in a (non-visible) buffer
  - `SDL_RenderPresent()` makes the new scene visible

Simple game logic

1. Initialise the game and render the scene
2. Game loop
   - 2.1 Poll (check) for user input
   - 2.2 Update the game state (win/lose/continue)
   - 2.3 Render (draw) the new scene

A small coded game

`eatSquares` code on Minerva

- Inspect the code and identify:
  - SDL components: Window, Renderer, Texture, Surface
  - Game components
  - Rendering stages
  - The game logic and component functions
  - Win/lose/continue conditions
- Full code and Makefile is on Minerva

Further resources

- SDL Wiki
  - `https://wiki.libsdl.org/`
- SDL tutorials (mostly C++)
  - `http://www.sdltutorials.com/`
- Lazy Foo' Game Programming tutorials
  (In C++ but similar)
  - `http://lazyfoo.net/tutorials/SDL/`