# Writing 2D Games in C using SDL

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# SDL - The Simple DirectMedia Layer

- Windows, Mac OS X, Linux, iOS, Android

- Audio, keyboard, mouse, joystick, graphics

- Used in many games and engines, include Valve's Source engine

# Seminar Goals

In the next hour we will:

- Install the SDL libraries

- Create a game window

- Create sprites

- Animate the sprites

- Use keyboard and mouse input

We will not:

- Display 3D graphics

- Play audio

- Build for anything but Linux

- But we will focus on learning to use documentation!

# Setup

- Can't use IDE for graphics, so we will use a VM

- Install CS50 Appliance 2015 or plain Ubuntu VM
    https://manual.cs50.net/appliance/2015/

- In the VM run
  `sudo apt-get update`

- Then install the SDL and SDL Image libraries
  `sudo apt-get install libsdl2-2.0-0 libsdl2-dbg libsdl2-dev libsdl2-image-2.0-0 libsdl2-image-dbg libsdl2-image-dev`
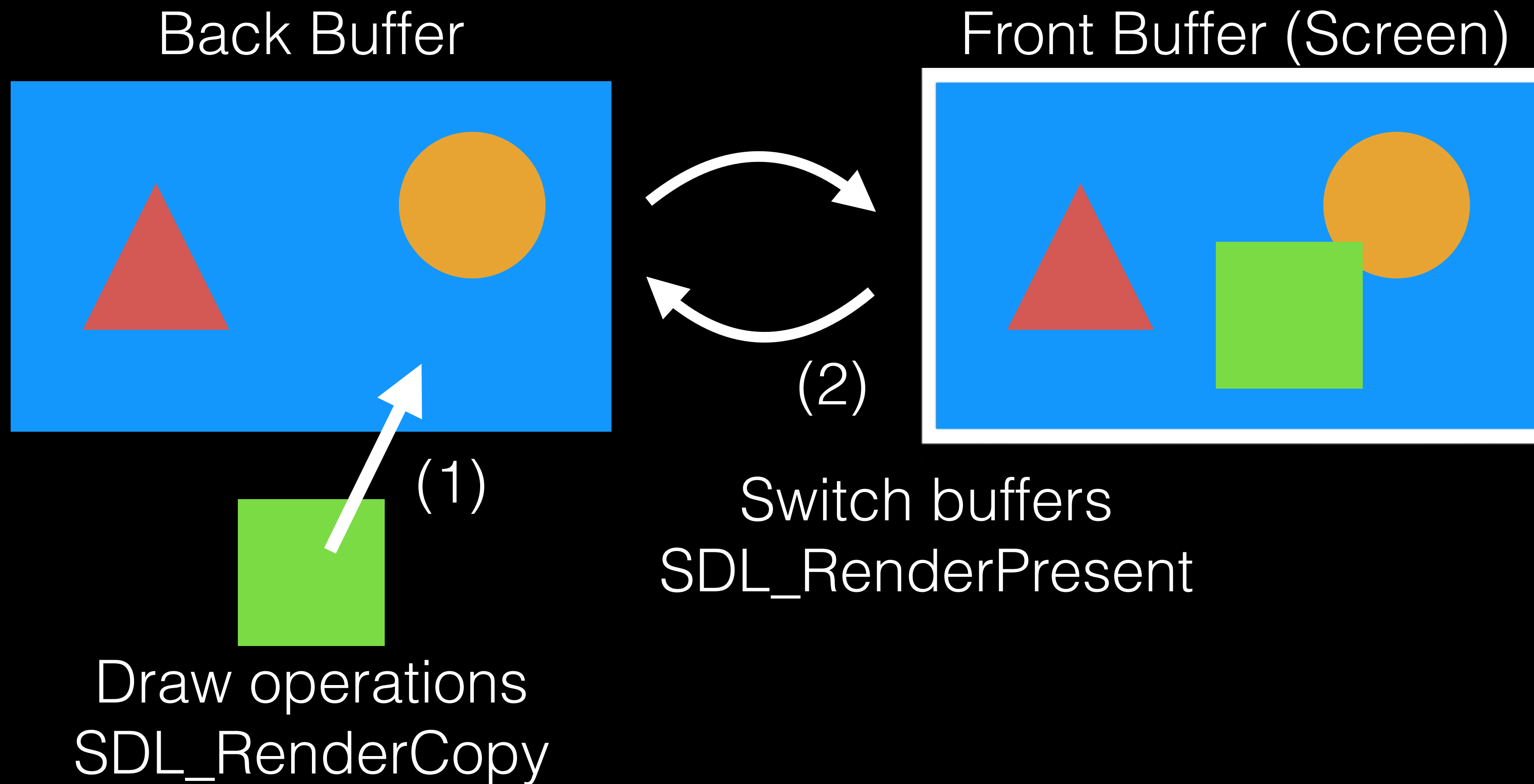
# Get the code

- In the VM run
  `wget https://github.com/tlively/sdl_seminar/archive/master.zip`

- Then run
  `unzip master.zip`

- Code will also be hosted at <u>https://manual.cs50.net/seminars/</u> in a few days

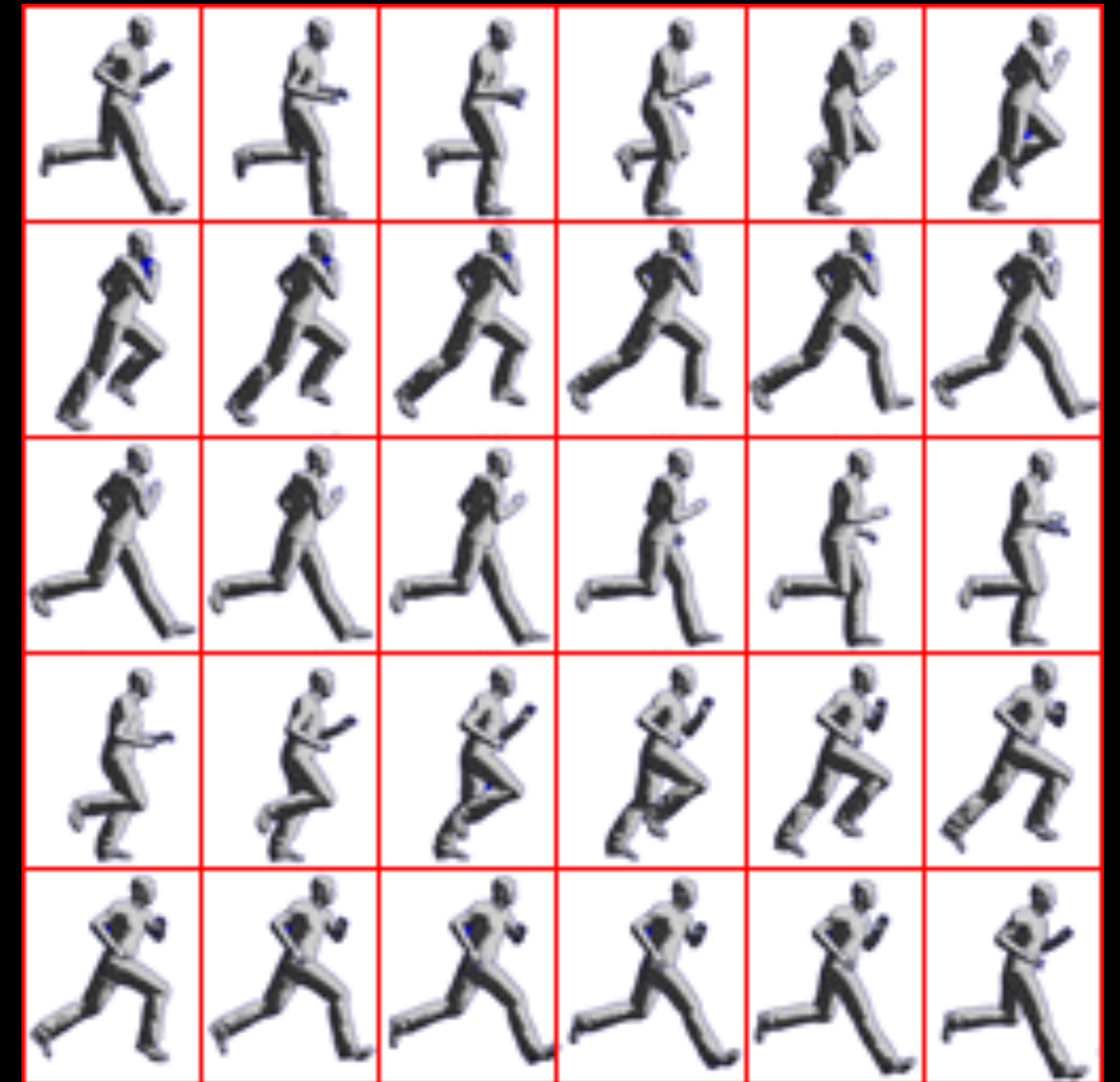# SDL Documentation

- https://wiki.libsdl.org/APIByCategory

- SDLimage:  https://www.libsdl.org/projects/SDL_image/docs/index.html

- One section for each header file in each category

- Let's take a closer look at Initialization and Shutdown

# Double Buffering

Back Buffer

Front Buffer (Screen)

(2)

(1)

Switch buffers
SDL_RenderPresent

Draw operations
SDL_RenderCopy

# Animation



- Human eye: 12 distinct images per second

- Movies and TV: 24 frames per second (fps)

- Computer screens: Often 60 fps

# Unions

- Exactly like structs, except only one member can have a value at a time

- The same memory space is used for all members

```
typedef union name
{
    type name;
    type name;
    ...
} name;
```