Lazy Foo' Productions

Beginning Game Programming v2.0

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Greetings everyone, welcome the ground up recoding of Beginning Game Programming with SDL. This time we will be coding with SDL 2 which has been released on the SDL website.

These tutorials were designed for C++ programmers who want to move from text based games to real time games with graphics. By the end of these tutorials, you'll know the basics to make your first real video game!

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Lesson 01 Hello SDL	In this tutorial we will be setting up the SDL library and creating our first window.
Lesson 02 Getting an Image on the Screen	Now that we can get a window to appear, lets blit an image onto it.
Lesson 03 Event Driven Programming	Here we'll start handling user input by allow the user to X out the window.
Lesson 04 Key Presses	Here we'll learn to handle keyboard input.
Lesson 05 Optimized Surface Loading and Soft Stretching	Now that we know how to load and blit surfaces, it's time to make our blits faster. We'll also take a smaller image and stretch it to fit the screen.

Lesson 06 Extension Libraries and Loading Other Image Formats	Here we'll be using the SDL_image extension library to load png images.
Lesson 07 Texture Loading and Rendering	A big new feature in SDL 2.0 is hardware accelerated texture based 2D rendering. Here we'll be loading an image to render it using textures.
Lesson 08 Geometry Rendering	Another new feature in SDL 2.0 is hardware accelerated primitive rendering. Here we'll be using it to render some common shapes.
Lesson 09 The Viewport	SDL 2.0 also lets you control where you render on the screen you using the viewport. We'll be using the viewport to create subscreens.
Lesson 10 Color Keying	Here we'll use color keying to give texture transparent backgrounds.
Lesson 11 Clip Rendering and Sprite Sheets	Using clip rendering, you can keep multiple images on one texture and render the part you need. We'll be using this to render individual sprites from a sprite sheet.
Lesson 12 Color Modulation	We'll be altering the color of rendered textures using color modulation.
Lesson 13 Alpha Blending	Here we'll be using SDL 2.0 new hardware accelerated alpha blending.
Lesson 14 Animated Sprites and Vsync	Here we'll be using a sequence of sprites to animate them.
Lesson 15 Rotation and Flipping	Here we'll be using SDL 2.0's new texture rotation and flipping.
Lesson 16 True Type Fonts	Here we'll be rendering text from true type fonts using SDL_ttf.
Lesson 17 Mouse Events	Here we'll learn to read mouse input using mouse events.
Lesson 18 Key States	There's other ways to read the keys besides event polling. Here will get the current states of the keyboard using get states.
Lesson 19 Gamepads and Joysticks	Here we'll learn to read input from a game controller.
Lesson 20 Force Feedback	Another new feature for SDL 2.0 is rumble support using the SDL haptics. We'll make our controller rumble when a button is pressed.
Lesson 21 Sound Effects and Music	Here we'll be using SDL_mixer to add music and sound to our SDL App.
Lesson 22 Timing	Here we'll be using SDL's time capabilites.
Lesson 23 Advanced Timers	Here we'll extend SDL time capabilities to make our own custom timer.

Lesson 24 Calculating Frame Rate	Here we'll use the timers we built to measure frame rate.
Lesson 25 Capping Frame Rate	If you need a constant frame rate when vsync isn't available, frame rate capping can be used as a fall back.
Lesson 26 Motion	Here we'll be taking what we learned about render and handling input to make a dot move around the screen.
Lesson 27 Collision Detection	Here we'll have two objects interact with each other using bounding box collision detection.
Lesson 28 Per-pixel Collision Detection	Here we'll have two object collide using per-pixel collision detection.
Lesson 29 Circular Collision Detection	Here we'll learn to detect collisions with circles and boxes.
Lesson 30 Scrolling	Here we'll be implement a camera to scroll levels larger than the screen.
Lesson 31 Scrolling Backgrounds	Here we'll using a scrolling background to give the illusion of an infinite level.
Lesson 32 Text Input and Clipboard Handling	Here we'll using SDL 2.0's new way of handling text input and its new clip board handling feature.
Lesson 33 File Reading and Writing	Here we'll using SDL's RWOps API to do binary file IO.
Lesson 34 Audio Recording	SDL 2 is planned to have an audio recording feature. As of SDL 2.0.0, it is not yet implemented. This here is just a place holder until it is ready to go. Please do not e-mail me saying this link is broken. You'll just look silly.
Lesson 35 Window Events	Here we'll be handling events from a resizable window.
Lesson 36 Multiple Windows	A new feature in SDL is the ability to support more than one window. Here we'll make an application that has 3 windows.
Lesson 37 Multiple Displays	Another new feature of SDL 2.0 is the ability to handle more than one physical display. Here we'll make our window jump from display to display.
Lesson 38 Particle Engines	Here we'll use a simple particle effect to create a simple trail effect.
Lesson 39 Tiling	Here we'll make a simple level using a tiling engine.
Lesson 40 Texture Manipulation	Here we'll be directly accessing and manipulating a texture's pixels.
Lesson 41 Bitmap Fonts	Here we'll be using a texture as a font using bitmap font techniques.

Lesson 42 Texture Streaming	Here we'll be rendering from a streaming data source using texture streaming.
Lesson 43 Render to Texture	Here we'll be taking a scene and rendering it to a texture.
Lesson 44 Frame Independent Movement	Here we'll be making the dot move independent of the current frame rate.
Lesson 45 Timer Callbacks	SDL has another timing mechanism called timer callbacks. Here we'll be setting a function to be called back after a certain amount of time.
Lesson 46 Multithreading	Multithreading allows your program to do things simultaneously. Here we'll make things print to the console from outside our main thread.
Lesson 47 Semaphores	A major issue in multithreaded applications is that you need to make sure that they don't try to access the same data at the same time. Semaphores are a way to make sure only a certain amount of threads are performing an action at the same time.
Lesson 48 Atomic Operations	Atomic operations are another way to synchronize threads. Here we'll be redoing the previous tutorial with atomic counters.
Lesson 49 Mutexes and Conditions	Mutexes and conditions are yet another way to synchronize threads. Here we'll be using the added benefit that they allow threads to communicate with each other.
Lesson 50 SDL and OpenGL 2	SDL is a powerful tool when combined with OpenGL. If you're just starting out with OpenGL or want to maximize compatibility, you can use SDL with OpenGL 2.1. In this tutorial we will make a minimalist OpenGL 2.1 program.
Lesson 51 SDL and Modern OpenGL	SDL 2.0 now has support for OpenGL 3.0+ with context controls. Here we'll be making a minimalist OpenGL 3+ core program.
Lesson 52 Hello Mobile	Here we'll be loading and displaying an image in our first mobile app!
Lesson 53 Extensions and Changing Orientation	Here we'll be using SDL extension libraries and handling changing orientation.
Lesson 54 Touches	Here we'll be handling single touch input.
Lesson 55 Multitouch	Here we'll be handling multitouch events like pinches and rotation.

If you find any bugs or typos in the tutorials please contact me.