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Timer Callbacks

Wait for 3
seconds and
check the
console

Last Updated 2/8/15

We've covered [timers with SDL before](#), but there are also timer callback which execute a function after a given amount of time. In this tutorial we'll make a simple program that prints to the console after a set time.

```
//Our test callback function
Uint32 callback( Uint32 interval, void* param );
```

When creating a call back function, know that they have to be declared a certain way. You can't just create any type of function and use it as a callback.

The call back function needs to have a 32 bit integer as its first argument, a void pointer as its second argument, and it has to return a 32 bit integer.

```
Uint32 callback( Uint32 interval, void* param )
{
    //Print callback message
    printf( "Callback called back with message: %s\n", (char*)param );
```

```
    return 0;
}
```

Here is our simple call back function which prints a message to the console after a given amount of time. The interval argument isn't used here but is typically used for timer callbacks that need to repeat themselves.

Since void pointers can point to anything, this function is going to take in a string and print it to the console.

```
//Initialize SDL
if (SDL_Init( SDL_INIT_VIDEO | SDL_INIT_TIMER ) < 0 )
{
    printf( "SDL could not initialize! SDL Error: %s\n", SDL_GetError() );
    success = false;
}
```

Do make sure to initialize with `SDL_INIT_TIMER` to use timer callbacks.

```
//Set callback
SDL_TimerID timerID = SDL_AddTimer( 3 * 1000, callback, "3 seconds waited!" );

//While application is running
while( !quit )
{
    //Handle events on queue
    while( SDL_PollEvent( &e ) != 0 )
    {
        //User requests quit
        if( e.type == SDL_QUIT )
        {
            quit = true;
        }
    }

    //Clear screen
    SDL_SetRenderDrawColor( gRenderer, 0xFF, 0xFF, 0xFF, 0xFF );
    SDL_RenderClear( gRenderer );

    //Render splash
    gSplashTexture.render( 0, 0 );

    //Update screen
    SDL_RenderPresent( gRenderer );
}

//Remove timer in case the call back was not called
SDL_RemoveTimer( timerID );
```

We kick off our timer callback using [SDL AddTimer](#). The first argument is how long the callback will take which in this case is set to 3000 milliseconds or 3 seconds. The second argument is the callback function and the last argument is the void data pointer we're sending it.

This application will kick off the call back and then run the main loop. While the main loop

is running the callback may spit out the message to the console. In case the callback doesn't happen before the main loop ends, we remove the callback timer using [SDL_RemoveTimer](#). Careful, the timer call back is asynchronous which means it can happen while we're doing something else. Don't have your call back mess with data while your main thread is messing with that same piece of data.

Download the media and source code for this tutorial [here](#).

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