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Vulkan.

GLFW

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http://www.glfw.org/

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Setting Up GLFW

```
void
InitGLFW( )
{
	glfwInit( );
	glfwWindowHint( GLFW_CLIENT_API, GLFW_NO_API );
	glfwWindowHint( GLFW_RESIZABLE, GLFW_FALSE );
	MainWindow   = glfwCreateWindow( Width, Height, "Vulkan Sample", NULL, NULL );
	VkResult result = glfwCreateWindowSurface( Instance, MainWindow, NULL, &Surface );

	glfwSetErrorCallback( GLFWErrorCallback );
	glfwSetKeyCallback( MainWindow, GLFWKeyboard );
	glfwSetCursorPosCallback( MainWindow, GLFWMouseMotion );
	glfwSetMouseButtonCallback( MainWindow, GLFWMouseButton );
}
```

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GLFW Keyboard Callback

```
void
GLFWKeyboard( GLFWwindow * window, int key, int scancode, int action, int mods )
{
	if( action == GLFW_PRESS )
	{
		switch( key )
		{
			//case GLFW_KEY_M:
			case 'm':
			case 'M':
				Mode++;
				if( Mode >= 2 )
					Mode = 0;
				break;

			default:
				fprintf( FpDebug, "Unknow key hit: 0x%04x = '%c'\n", key, key );
				fflush(FpDebug);
		}
	}
}
```

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GLFW Mouse Button Callback

```
void
GLFWMouseButton( GLFWwindow *window, int button, int action, int mods )
{
	int b = 0;		// LEFT, MIDDLE, or RIGHT

	// get the proper button bit mask:
	switch( button )
	{
		case GLFW_MOUSE_BUTTON_LEFT:
			b = LEFT;		break;

		case GLFW_MOUSE_BUTTON_MIDDLE:
			b = MIDDLE;		break;

		case GLFW_MOUSE_BUTTON_RIGHT:
			b = RIGHT;		break;

		default:
			b = 0;
			fprintf( FpDebug, "Unknown mouse button: %d\n", button );
	}

	// button down sets the bit, up clears the bit:
	if( action == GLFW_PRESS )
	{
		double xpos, ypos;
		glfwGetCursorPos( window, &xpos, &ypos);
		Xmouse = (int)xpos;
		Ymouse = (int)ypos;
		ActiveButton |= b;		// set the proper bit
	}
	else
	{
		ActiveButton &= ~b;		// clear the proper bit
	}
}
```

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GLFW Mouse Motion Callback

```
void
GLFWMouseMotion( GLFWwindow *window, double xpos, double ypos )
{
	int dx = (int)xpos - Xmouse;		// change in mouse coords
	int dy = (int)ypos - Ymouse;

	if( ActiveButton & LEFT ) != 0 )
	{
		Xrot += ( ANGFACT*dy );
		Yrot += ( ANGFACT*dx );
	}

	if( ActiveButton & MIDDLE ) != 0 )
	{
		Scale += SCLFACT * (float) ( dx - dy );

		// keep object from turning inside-out or disappearing:

		if( Scale < MINSCALE )
			Scale = MINSCALE;
	}

	Xmouse = (int)xpos;		// new current position
	Ymouse = (int)ypos;
}
```

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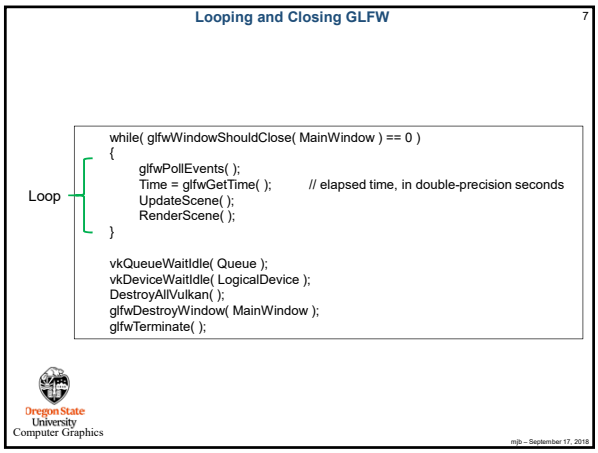
Looping and Closing GLFW
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Loop
while(glfwWindowShouldClose(MainWindow) == 0)
{
glfwPollEvents( );
Time = glfwGetTime( );
// elapsed time, in double-precision seconds
UpdateScene( );
RenderScene( );
}
vkQueueWaitIdle(Queue);
vkDeviceWaitIdle(LogicalDevice);
DestroyAllVulkan( );
glfwDestroyWindow(MainWindow);
glfwTerminate( );
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