Animation Files

Description

STEEL's Sprite Studio offers the ability to export files with the `.ctsa` extension, which represent animation data files. Users can then load these files into their own applications, either using free and open source libraries or by implementing their own loaders.

These `.ctsa` files contain information corresponding to a Sprite Studio animation. Using the data from the file, playing the animation becomes simple. The characters of the Animation Name entry are big endian, and the size prefix of the Animation Name String type of this format are Big Endian byte order, but *all other entry types are the native byte order*.

Layout

The `.ctsa` file is a binary file laid out in chunks. The first chunk is the header chunk, which contains meta data for the file. The header is laid out as follows:

Entry Name	Entry Type	Entry Size (bytes)
Animation Name	`String`	Varying
Number of Frames	`int`	4
Left U	`float`	4
Bottom V	`float`	4
Top V	`float`	4
Frame Width	`float`	4

After the header is a sequence of frame chunks. A frame chunk contains animation frame-specific information that cannot be stored within the header. The number of chunks to read is Number of Frames, retrieved in the header chunk.

The layout of an animation chunk is:

Entry Name	Entry Type	Entry Size (bytes)
Animation Frame Time	`float`	4
Animation Frame Updates	`int`	4
Swap Type	`byte`	1

How to read Strings

Strings in this file format are sequences of two byte characters. However, the first byte (at least) is a list size prefix. Read the highest two bits of the first byte of a string entry into another number. This number tells how many *additional* bytes to read ahead to compose a total size in characters.

So, if the highest two bits, into their own value (done by shifting the first byte right 6) equals 1, there is one more byte to read to complete the size prefix. Perform a bitwise AND to remove the high two bits from the original byte and read the additional byte, then combine the two into a big endian number. This is the number of remaining elements in the list, in this case, two byte chars. The contents of the list themselves are *native order*.