Deliverables

Front-end

Requirements:

- We will be able to parse the information from the Vorbis ID packet and compare it to a software reference decoder.
- Given a mono audio signal, we will be able to extract the floor, residue, Huffman/VQ codings, modes and mappings from the Vorbis setup packet, in accordance with the Vorbis specifications. These will be demonstrated by comparing the outputs to those of a software reference decoder.

Extensions:

- We may provide a processor which extracts Vorbis packets from Ogg encapsulation, otherwise we will extract them manually in software.
- If we have time, we may also parse the information held in the comments packet.

Back-end

Requirements

- We will be able to demonstrate that the Huffman/VQ decoder module is able to restore encoded data, through comparison of its output with the output of the Huffman/VQ decoding mechanism used by a reference encoder.
- We will be able to recreate the Vorbis floors and residues from the floor and residue decoder modules in accordance with the Vorbis specification. This can also be demonstrated by comparison of recreated data from a reference decoder.
- We will be able to approximately reproduce the original time-domain data using the inverse modified discrete cosine transform and necessary overlap. Since the result of the IMDCT is finished audio data, sending this data (either from memory or in real-time) to the AC97 interface and comparing to the original audio piece should be sufficient for verification.
- We will provide a controller module that allows each of the above computations to be performed in sequence for each audio packet; using this module will produce finished data as though each of the above computations' outputs were passed as inputs to the next module by hand.
- The back-end itself will be able to produce a decoded audio stream for a single-channel Vorbis file. The module should be able to at least store as much data as it can (the exact amount ultimately depends on the input file and RAM size) into memory and play it through the AC97 interface after decoding is complete.

Extensions

- Instead of decoding into memory and playing it back afterwards, the back-end module may be able to produce data fast enough for playback in real-time.
- We may be able to demonstrate real-time playback of two-channel Vorbis files.