Conductor Hero

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Project Checkoff Checklist

Score Management - Ned

PC
- Write software to transfer bitstream to labkit
- (if time permits) Write software to convert MIDI files into bitstream

USB Input Module
- Accumulate 8-bit values from USB into 36-bit chunks
- Write these chunks to ZBT SRAM / Flash (undecided)

Score Data Module
- Read NoteData from memory
- When a beat_number is specified, output all NoteData with that beat, as fast as memory allows

Tick Counter Module
- Given a tempo and clk, increment a counter once every 128th of a beat

Score Manager
- Given a beat step function and tempo input, output the appropriate enable and pitch signals based on score data

Conductor Module - Natalie

Video Decoder Module
- Find the thresholds to output the LED light
- Output the position of the LED light
- Find the thresholds of two LED lights (if time permits)
- Output the position of two LED lights (if time permits)

ZBT Module
- use two ZBTs so that one reads the video decoder data and the other is used by the conductor module
- compress it into one ZBT

Conductor Module
- Output the beat and tempo based on the LED's velocity and position
- Figure out the articulation and dynamics based on the beat
- Output an image of where the LED is
- Output the beat and tempo based on two LED's (if time permits)
- Refine the articulation (if time permits)
- Add in sections (if time permits)

Sound Synthesis - Yuta

Instrument Manager Module
- Output audio signals from the sample look-up table when enable is high
- Output audio signals at the specified pitch
- Output a stereo signal that is representative of the instrument's location (if time permits)
- Output audio signals with given dynamics and articulation (if time permits)

Mixer Module
- Add the input 16-bit stereo signals and output a single 24-bit stereo signal

Compressor Module
- Balance the output signal by varying gain (if time permits)