MIDI MONSTER

EDA385
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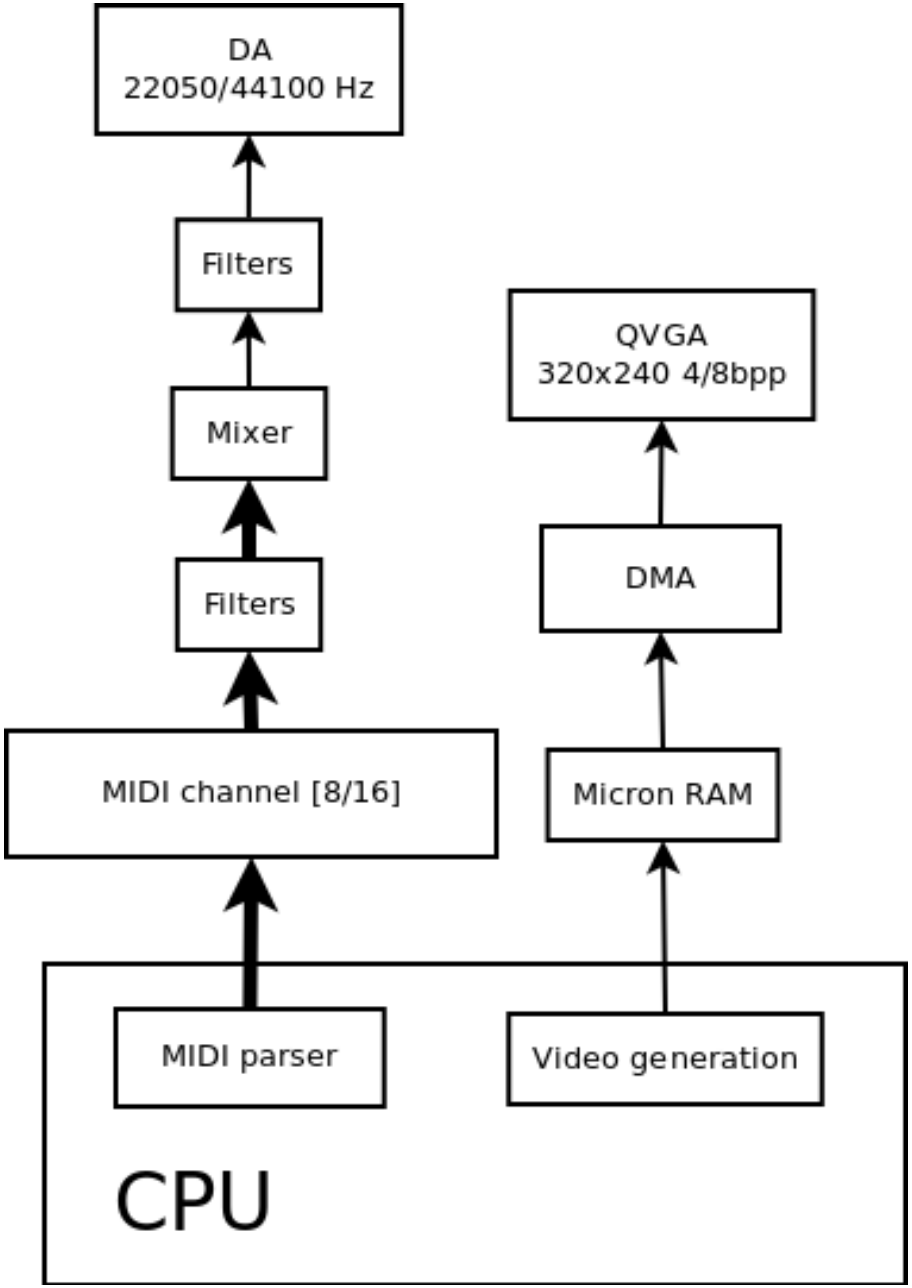
Features

- MIDI player with some sort of game attached (Guitar Hero/Bit Trip Runner-ish?)
- Square/triangle/etc waveform generator (DDS), attached to 8/16 MIDI channels
- Some sort of input (On-board pushbuttons/PS2/USB keyboard)
- VGA output (320x240, 4/8bpp, doublescan)

Initial hw/sw partitioning



DDS

- 44 kHz with waveforms of length 256 results in 10 samples for 4.1kHz (highest piano key frequency).
- If resources turn out to be unused at the end of the project, it will be trivial to increase the DDS frequency and sample length, for increased audio quality

Feasibility

- Problem: Lack of video memory bandwidth
- Solution: Reduce visible resolution/bpp

Feasibility (2)

- Problem (seems unlikely, but should be mentioned): Not enough slices/BRAM
- Solution: Use an area-optimized MicroBlaze, reduce the number of samples used for each waveform (currently 256), reduce number of MIDI channels, etc etc.