

FPGA Synthesizer

6.111 Final Project Abstract

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For my final project, I plan to implement a digital synthesizer on the lab FPGA to create an electric musical instrument. This project will primarily focus on signal processing and memory interfacing with FPGAs. Most basically, this will require generating the correct notes based on “key” inputs (either a keyboard if a reasonable one can be found, or just buttons) and playing the tones through speakers. I would like to be able to record the music that is played and replay it, and this will probably require interfacing with external storage since the onboard FPGA memory is limited. From this, a variety of interesting add-ons can be created, including different kinds of sounds for the keyboard (drums, different instruments, etc), different audio effects (reverb, echo, etc.), or creating more complex songs by replaying/looping stored tracks and overlaying new music.