

Homebrew Synthesizer

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Abstract—This homebrew synthesizer combines the worlds of embedded systems and electronics. Using an array of buttons as inputs, a monophonic—one note at a time— output frequency can be selected. All fundamental waveforms, whether that be square, triangle, saw tooth, or sine, are generated simultaneously and at the same frequency by the onboard microcontroller. Fundamental waveforms are outputted on separate channels, so each can be treated as a component of a final mixed waveform. Using a digital to analog converter, each output can be scaled using a rheostat. Using a voltage summer, the fundamental waveforms are combined to create a unique sound which can be output over an onboard headphone jack or a Bluetooth signal.

I. BLOCK DIAGRAMING