Project 3

Waveform Generator

For this project, you will implement a low-distortion multifunction waveform generator. The generator is capable of displaying 4 different waveforms: a square wave, a triangle wave, a sinusoidal wave, and an exponential wave. A user selects the waveform via a keypad interface. A user may specify the period of the waveform via the keypad. A user may also adjust the amplitude of the outputted signal to several fixed levels.

1. Output:

- Continuous through each period (i.e., no glitches)
- Low Noise
- No DC offset
- Smooth Signal (no jagged lines/curves)

2. Waveform:

☐ Square Wave

☐ Triangle Wave

☐ Sinusoidal Wave

☐ Exponential Wave

3. Operation:

- Accurate waveform period - entered via the keypad by the user.
  - MAX: 100ms
  - MIN: 1ms
- Amplitude of waveform is adjustable via the keypad. You must be able to produce the following percentages of the maximum amplitude of your signal:
  - 0%, 10%, 20%, …, 100%

- A user can easily switch between the waveforms via the keypad.

Understand Problem?

Anticipating Hardware Needs