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: 30 points

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

2. Waveform: 30 points

- ✓ Square Wave
- ✓ Triangle Wave
- ✓ Sinusoidal Wave
- ✓ Exponential Wave

3. Operation: 30 points

- 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.

4. Customer Satisfaction: 10 points

Points will be rewarded or deducted based on your customer's satisfaction with the project.

- + Solid presentation – includes explaining your project at both a high and functional level.
- + Understanding of the extensibility of your project.
- - Quirky operation
- - Unfamiliarity with any aspect of your project
- - Messy Wiring