ENR 325 lab 1

The goal of lab 1 is to play with function generator (FG) and oscilloscope (scope) and do a demo of the **digital abstraction**.

Goal #1:

- A simple 2 source, 2 resistor network.
- One sine wave (sinusoid) and one square wave.
- Showing the resulting “noisy” output on scope.

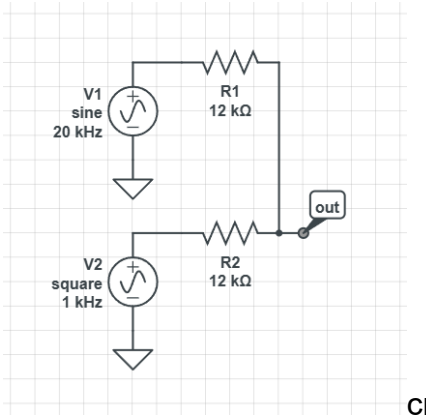
Source spec:

Unit	Wave	AMP	OFFSET	FREQ
FG1	Sine	2V	0	20 kHz at 50 Ω
FG2	Square	2V	0	1 kHz at 50 Ω

Resistor spec:

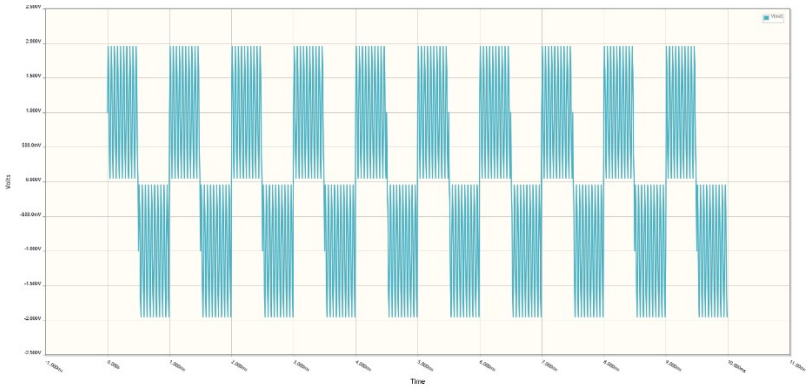
Unit	Resistance
R1	12 kΩ
R2	12 kΩ

Here’s the general “idea” of the circuit:



created with https://www.circuitlab.com/

Here’s the simulated result:



Simulated with created with https://www.circuitlab.com/

Bonus goal: Is there a way to filter out the “noise” with some internal function of the scope?

Goal #2:

One tiny modification, now two FG are feed into an AND gate (like a 74LS08) and we are going to test the noise tolerance of the digital output.

Source spec:

Unit	Wave	AMP	OFFSET	FREQ
FG1	Square	5V	2.5	1 kHz (HIGH Z)
FG2	Square	5V	2.5	2 kHz (HIGH Z)

Here's the general "idea" of the circuit: