Exp.4

Analog-to-Digital (A/D) Converter

Background:

The objective of this experiment is testing the functionality of the analog-to-digital (ADC) by using ADC0808 chip, which is an eight-bit successive approximation A/D converter using CMOS technology.

Components:

ADC0808 Chip

Resistors: 550 Ω (8 resistors)

8 LEDs, and Wires

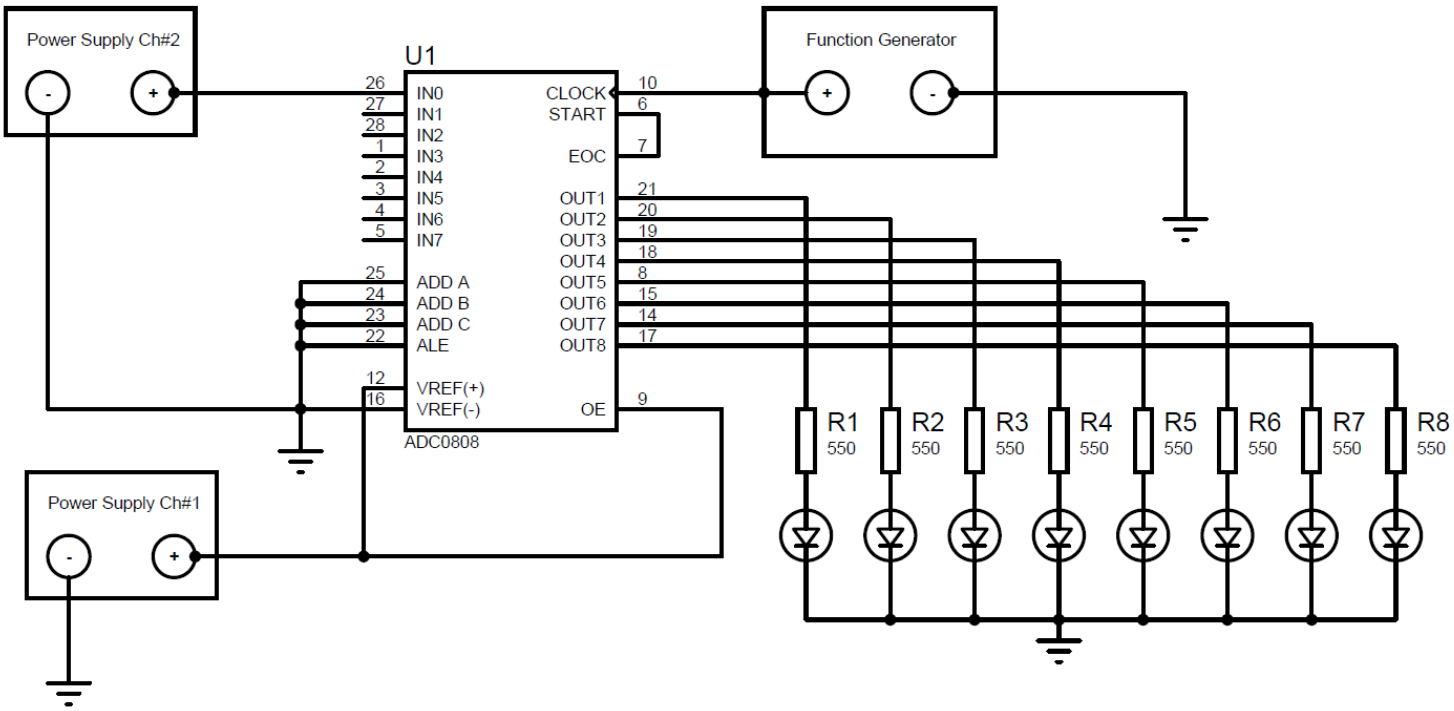

Fig.1 ADC0808 schematic

Steps:

1. Connect your circuit as the given schematic in Fig.1.

2. Set Power Supply channel 1 to be 5 Volts (Power Supply Ch#1).

3. Let Power Supply channel 2 to be Changed as the values in the table given below (Power Supply Ch#2).

4. Set Function generator to give square wave with Vmax= 5 volt, Vmin= 0 volt and frequency=1KHz.

5. To test the circuit's operation, complete the following table. First, use cross multiplication method to predict the 8-bit digital code that should be produced for each of the analog input listed. Then, carefully set your circuit's analog input voltage to each of these values, and record the digital output code that your circuit produces.

Analog input	Digital output code																			
	Measured										Predicted									
	Binary								Hex		Binary								Hex	
0.1 V																				
0.2 V																				
0.5 V																				
0.7 V																				
1.0 V																				
1.5 V																				
2.0 V																				
2.5 V																				
3.0 V																				
4.0 V																				
4.5 V																				
5.0 V																				