Algador, Vigomar Kim
CpE-64 – 05

Part I: Resistance Measurements

Resistor	Theoretical Resistance	Measured Resistance
R_1	100 Ω	97 Ω
R_2	330 Ω	326 Ω
R_3	470 Ω	464 Ω
R_4	1K Ω	985 Ω

Part II: Resistor in series

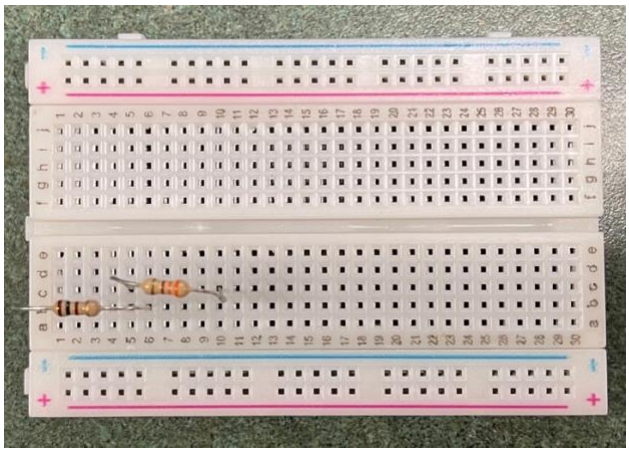

Figure 1. Resistors (R1 and R2) in series in breadboard

Resistor	Theoretical Resistance	Measured Resistance
R_1	100 Ω	97 Ω
R_2	330 Ω	326 Ω
R_T	430 Ω	423 Ω *(Measured from the multimeter)*

Calculation:

$$R_T = R_1 + R_2$$
$$R_T = 100\,\Omega + 330\,\Omega$$
$$R_T = 430\Omega$$

Part III: Resistor in parallel

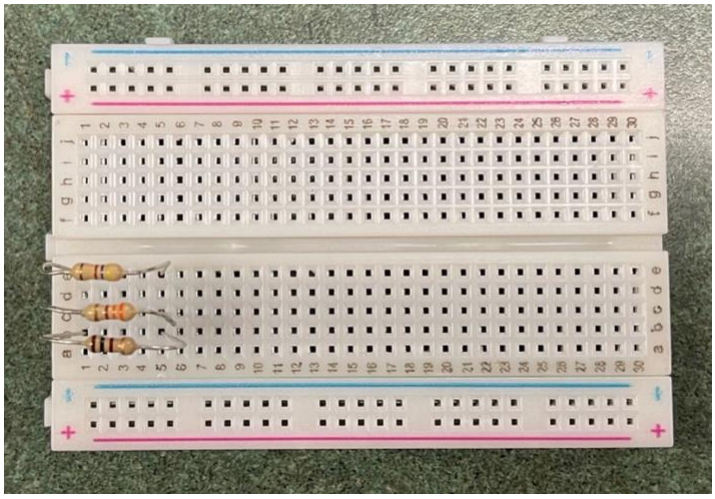

Figure 2. Resistors (R1, R2, and R3) in parallel in breadboard

Resistor	Theoretical Resistance	Measured Resistance
R_1	100 Ω	97 Ω
R_2	330 Ω	326 Ω
R_3	470 Ω	464 Ω
R_T	65.97 Ω	64.8 Ω *(Measured from the multimeter)*

Calculation:

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$\frac{1}{R_T} = \frac{1}{100\Omega} + \frac{1}{330\Omega} + \frac{1}{470\Omega}$$

$$R_T = 65.97\Omega$$

Part IV: Resistor in combination (series and parallel)

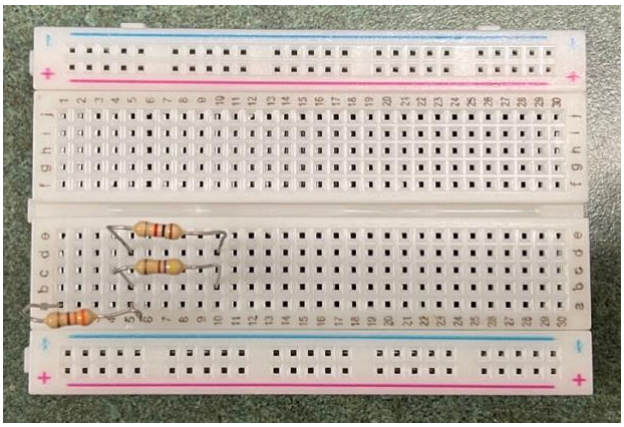

Figure 3. Resistors in combination. Resistors R3 and R4 are in parallel. Resistor R2 in series with the parallel resistors.

Resistor	Theoretical Resistance	Measured Resistance
R_2	330 Ω	326 Ω
R_3	470 Ω	464 Ω
R_4	1K Ω	985 Ω
R_T	649.73 Ω	642 Ω *(Measured from the multimeter)*

Calculation:

$$R_T = R_2 + R_{parallel}$$

$$R_T = R_2 + \frac{1}{\frac{1}{R_3} + \frac{1}{R_4}}$$

$$R_T = 330\ \Omega + \frac{1}{\frac{1}{470\ \Omega} + \frac{1}{1K\ \Omega}}$$

$$R_T = 330\ \Omega + 319.73\ \Omega$$

$$R_T = 649.73\ \Omega$$