Subjected to Dr. Maher Abdelrasoul

Electronics 2

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| 231903633 | جورج اميل صادق ساويرس |
| 231903753 | زياد عبدالحكيم عبدالمقصود |
| 231903549 | كنزى وليد سرور |

**The components :**

 12V power supply

 1k resistor (labeled R1)

 470uF capacitor (labeled C1)

 1kΩ resistor (labeled R2)

 1uF capacitor (labeled C2)

 220uF capacitor (labeled C3)

 NE555 timer IC

 TIP142 transistor

 50kΩ potentiometer (labeled VR1)

 10kΩ potentiometer (labeled VR1)

 1N4148 diode (labeled D1)

 Motor (M)

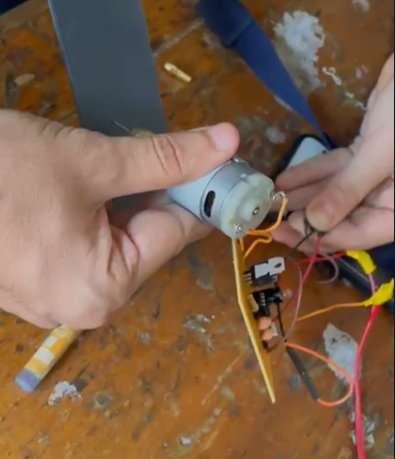
 104 ceramic capacitors (labeled C3 and C4)

# **Circuit schematic :**

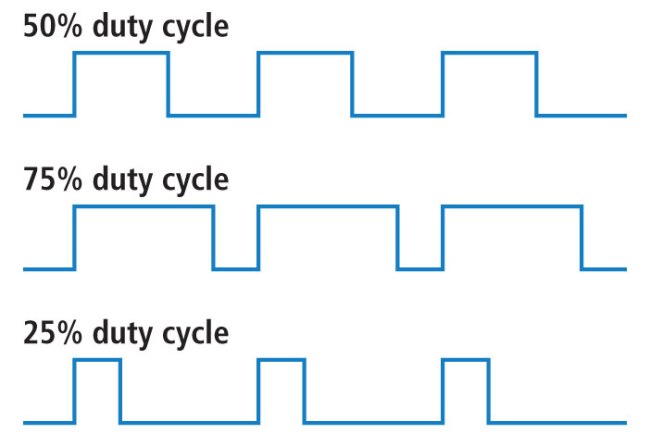
# 3D design:

# **Breadboard:**





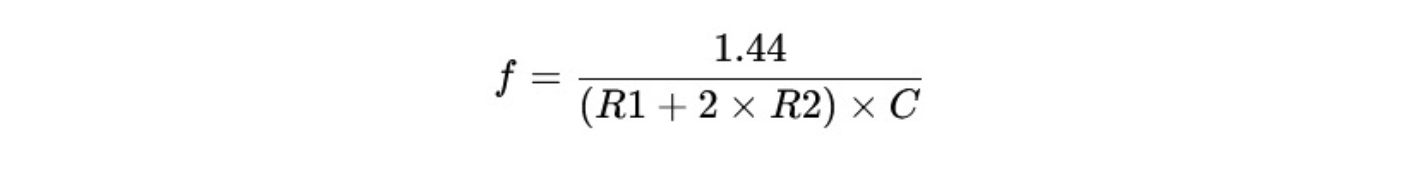
**Duty cycle wave = (R1 + R2) / (R1 + 2 \* R2)**



So the duty cycle of our circuit is :

From the above relation =

**Frequency of the circuit:**

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So the frequency of our circuit is From the above relation: