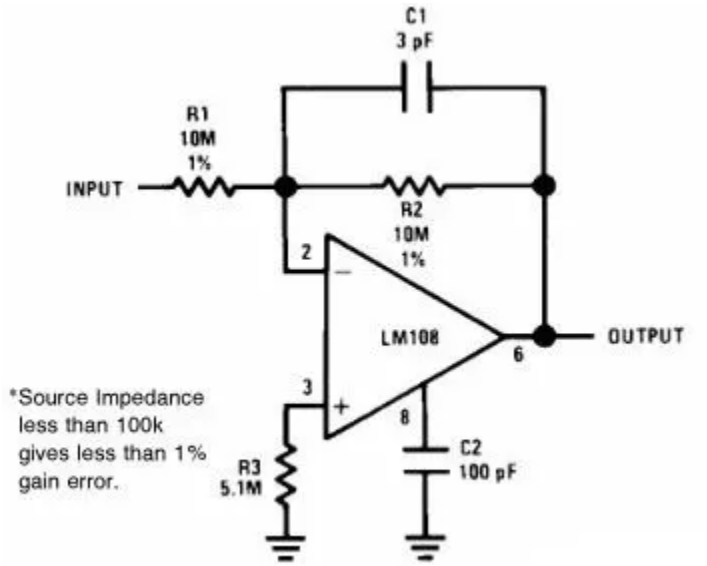
I. The Circuit



II. The Components and Its Functions

- **Resistor (R1, R2, R3)** - The capacity of this component to manage current and voltage is critical to the operation and functionality of electronic devices.
- **Capacitor (C1 & C2)** - The component's function is to store and distribute electrical energy in the form of an electric field.
- **Amplifier (LM108)** - It serves as an amplifier, amplifying incoming signals in an exact and reliable manner. It has low offset voltage, low input bias current, and strong common-mode rejection, making it suited for applications requiring precision and accuracy.
- **GROUND** - functions as a reference point, a steady voltage supply, a current return path, and a safety precaution.

III. YT Link:
https://www.youtube.com/watch?v=YJsKTRayUQ0&ab_channel=ElevatorBoysGROUP1

IV. Analysis.

For all intents and purposes, a voltage-amplifying device called an operational amplifier uses external feedback elements like resistors and capacitors between the output and input terminals. These parts control how the amplifier works and can carry out a variety of tasks using various feedback arrangements. An illustration of a "Inverting Amplifier with High Input Impedance" is this circuit. Because of the operational amplifier and feedback loop, this circuit is not passive. It is a form of low-pass filter with the capacitor to cut or pass particular frequency bands of the electric signal, and it is made up of R1, our high input impedance resistor.

V. Conclusion.

(Considering that the input voltage is 2 volts) the output voltage is slowly increasing for the reason that, the capacitor is connected to the inverting input and output, the voltage across the capacitor is gradually increasing which causes the charging current to decrease as the impedance of the capacitor increases, as a result, the output voltage is increasing until it reaches the full capacity of the capacitor. Additionally, as the videos said (yt link) that our frequency response shows that gain is less than 1 because it is negative. Meaning, the output signal is around 93 dB lower in voltage than the input signal. A point in a circuit with high impedance only permits a modest amount of current to flow through. The input impedance and input resistance are almost equivalent for an inverting amplifier. The input resistor is linked to "virtual ground" in the inverting setup, which is why this is the case.