Circuit Simulation Project

https://esim.fossee.in/circuit-simulation-project

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Design Of Inverting Amplifier Using Lm741IC –NANDHA KUMAR S

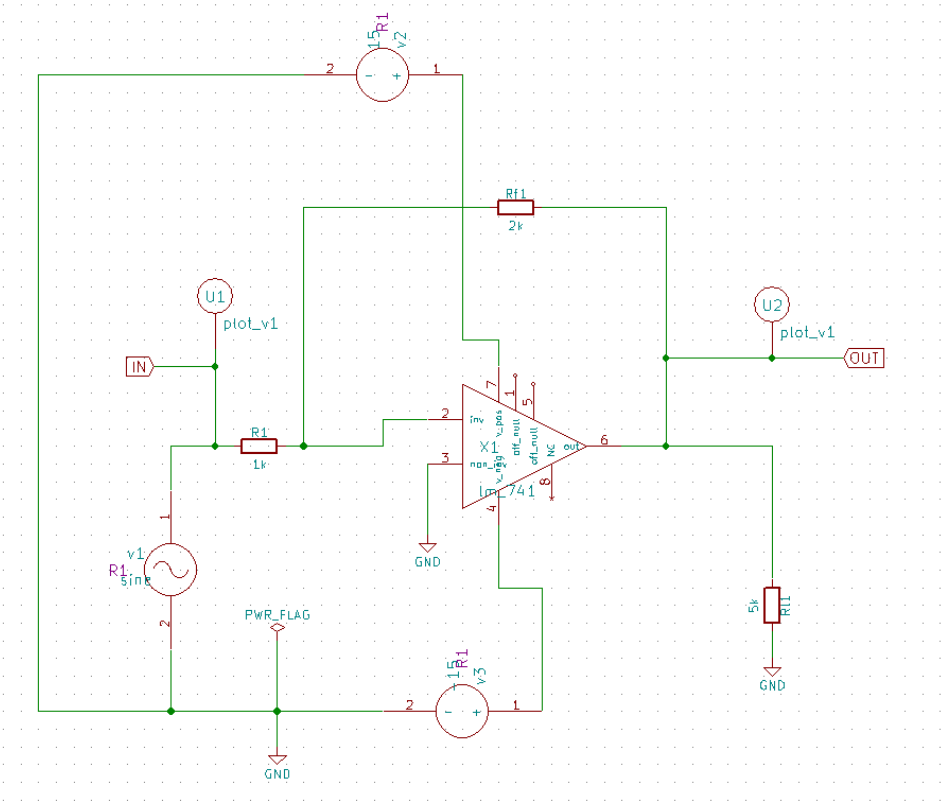
Theory:

An inverting amplifier (also known as an inverting operational amplifier or an inverting op-amp) is a type of operational amplifier circuit which produces an output which is out of phase with respect to its input by 180◦.

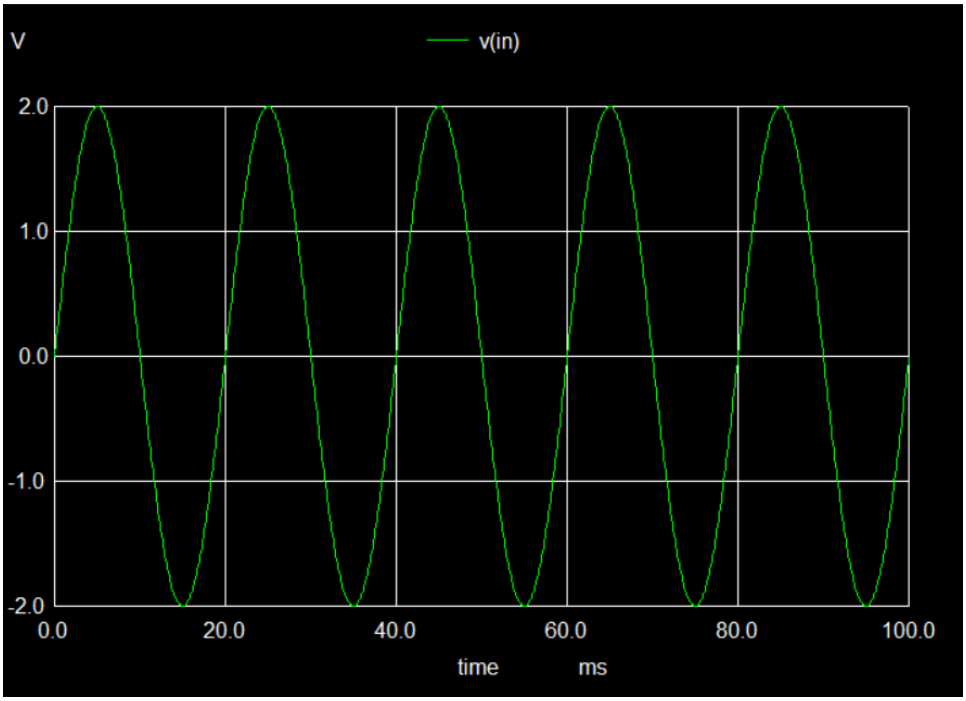
This means that if the input pulse is positive, then the output pulse will be negative and vice versa. The figure below shows an **inverting operational amplifier** built by using an op-amp and two resistors.

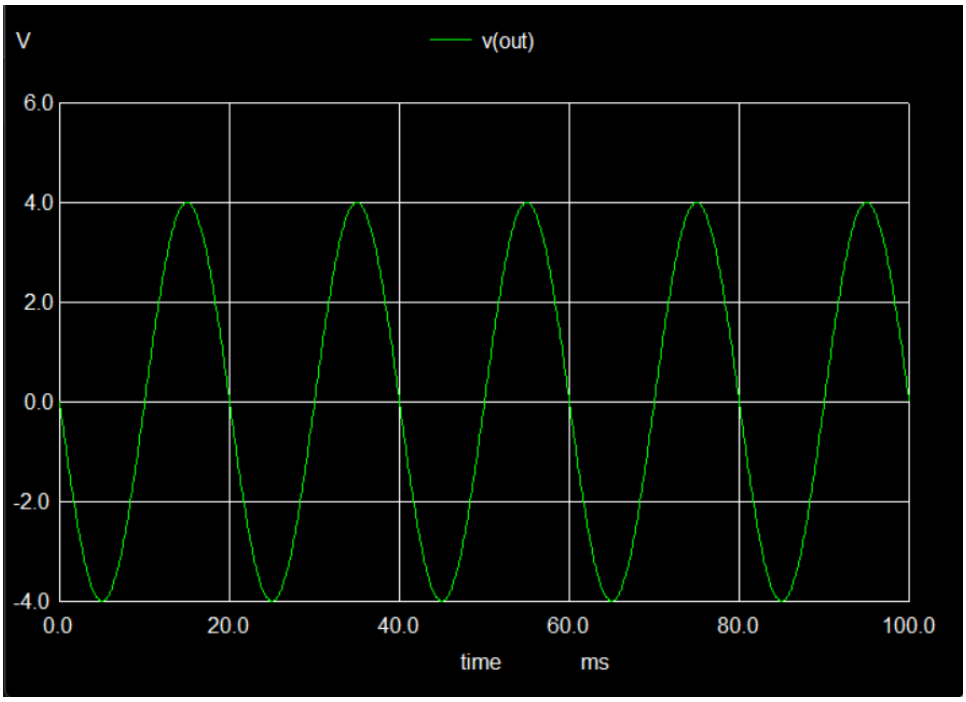
Here we apply the input signal to the inverting terminal of the op-amp via the resistor R_i. We connect the non-inverting terminal to ground. Further, we provide the feedback necessary to stabilize the circuit, and hence to control the output, through a feedback resistor R_f.

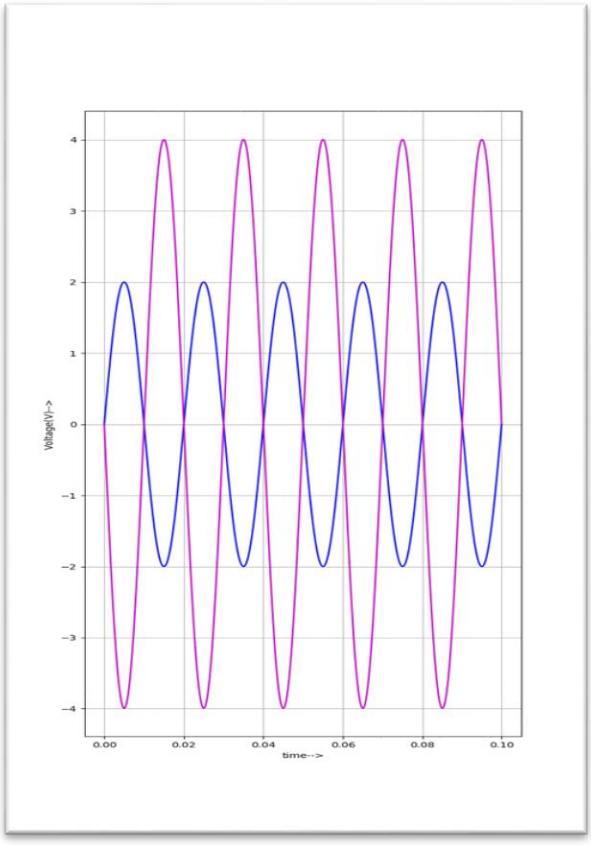
Inverting amplifiers exhibit excellent linear characteristics which make them ideal as DC amplifiers. Moreover, they are often used to convert input current to the output voltage in the form of Trans resistance or Transimpedance Amplifiers. Further, these can also be used in audio mixers when used in the form of Summing Amplifiers.



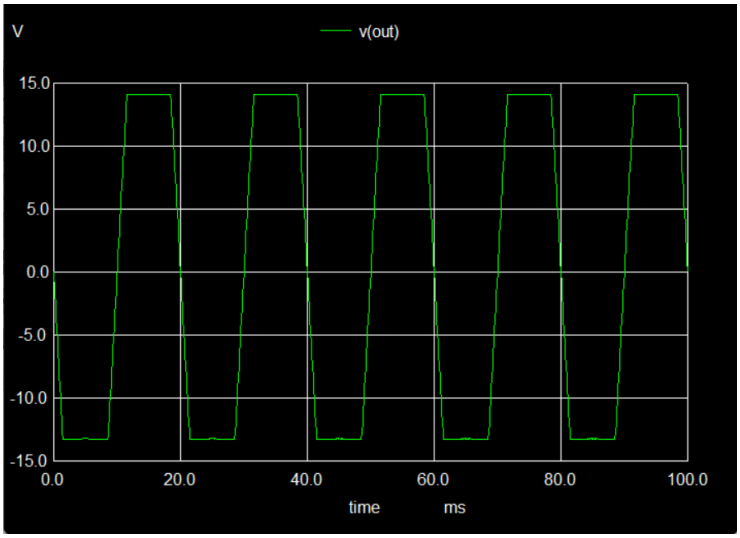
Simulation Results:

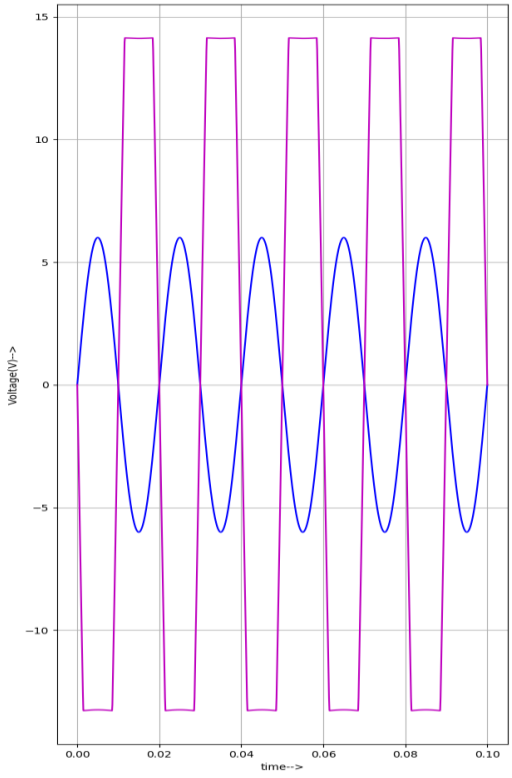






After changing Rf value to 5k





Conclusion : Thus, we have studied the Inverting amplifier using Lm741IC and the simulation plot of ngspice and python plot obtained in eSim

References:

https://www.electrical4u.com/inverting-amplifier/

https://www.engineersgarage.com/inverting-amplifier-using-741/