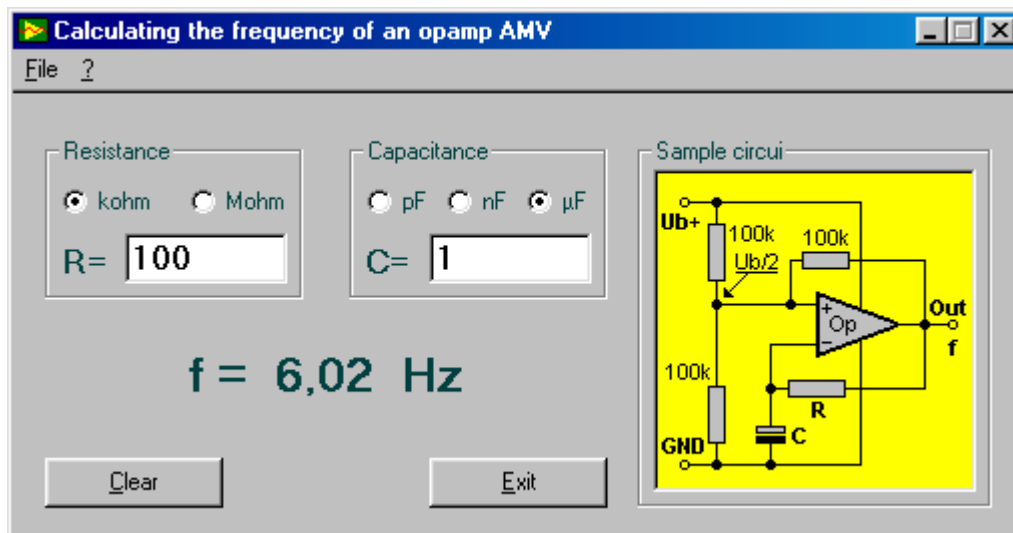


# Opamp AMV

**AMV-Opamp** shows how an astable multivibrator (AMV) can easily be constructed using an operational amplifier (opamp).

There are many different circumstances where an AMV may be needed, depending on the frequency to be generated. They range from clock generators for counter circuits to tone generators.



The opamp is wired as shown in the circuit diagram. This means that half of the supply voltage ( $U_b$ ) should be connected to the non-inverting (+) input, with a negative-feedback resistor connected to the output. Normally, a value of  $100\text{ k}\Omega$  is used for all three of these resistors.

The frequency ( $f$ ) of the output signal generated by the circuit is determined by the values of  $R$  and  $C$ . For example, if you enter ' $100\text{ k}\Omega$ ' and ' $1\text{ }\mu\text{F}$ ' in the text boxes, the program will calculate an output frequency of  $6.02\text{ Hz}$ .

The accuracy of the frequency depends on the tolerances of the components used. Not every resistor with a nominal value of  $100\text{ k}\Omega$  actually has a resistance of exactly  $100\text{ k}\Omega$ , and the deviation of the actual value from the nominal value is usually even greater with capacitors. Consequently, when an exact output frequency is to be obtained, it is a good idea to use a potentiometer (adjustable resistor) in place of the fixed resistor. You can then enter one half of the potentiometer resistance as the value of  $R$  in the text box. This is the resistance of the potentiometer at its mid-range setting. The output frequency can then be adjusted over a wide range once the circuit has been built.