A: For circuits in DC that loads are to be controlled, the PWM of a Microcontroller is generally used to drive of a current or voltage control driver (transistors, mosfets), as it manages to have a very precise control of this power ( 0% to 100%). For inductive loads, it is necessary to take some care regarding current peaks, requiring the use of photocouplers between the Microcontroller and the control circuit and even components such as protection diodes in parallel with the load.

For circuits in which it is desired to control loads in AC, it is very common to use phase angle control routines, where it is necessary to build a circuit and an interruption routine that reads the zero crossing of the waveform voltage. The microcontroller waits for a while to establish a pulse on the Triac gate that will go into conduction and let current flow through the load. The pulse at the gate will be removed and when the voltage wave crosses zero again, the Triac stops conducting and the current flow stops. It is possible to determine the exact moment when you want to drive the Triac, making it possible to have a precise control of the power in the load (0% to 100%). For inductive loads, in this type of control, some observations are necessary, as there is a phase shift where the current is delayed in relation to the voltage. The Triac's minimum trigger angle depends exclusively on the characteristic inductance of the load. If the Triac is triggered before the current runs out, distorted waveforms with high harmonics will appear over the load and, depending on the type of equipment, could damage it from over-temperature and other factors.