ABSTRACT. Modern structures are increasingly resistant and complex. In many cases, such systems are modeled by numerical approximations methods, due to its complexities. The study of vibration levels in the response of a system is of great importance to have a reliable and efficient design, since those vibrations are undesirable phenomena that may cause damage, failure, and sometimes destruction of machines and structures. In this paper is investigated the modeling strategy of nonlinear system with damping, subject the time delayed. Focuses on the theoretical study and numerical simulations of a two degree-of-freedom nonlinear damped system, constituted of a primary mass attached to the ground by a spring and damping, with linear or nonlinear characteristics (primary system), and the secondary mass attached to the primary system by a spring and damping with linear or nonlinear characteristics (Secondary system), for the integration of equations of motion will be used Fourth Order Runge-Kutta Method. The behavior of a nonlinear main system with nonlinear secondary system will be investigated to many cases of resonances. In this case, we used are various delay time values for confirming its influence of the attenuation of vibrations, but, unfortunately, also in increasing the nonlinearity (instable responses) of the system in question.