USEFUL CIRCUITS

Two input alarm circuit with time delay

With the previous circuits once for example the foot came off the pressure mat the buzzer would stop. An effective burglar alarm would have the output device on for a period of time once the sensor has detected an intruder. The circuit below uses a monostable timer to achieve this

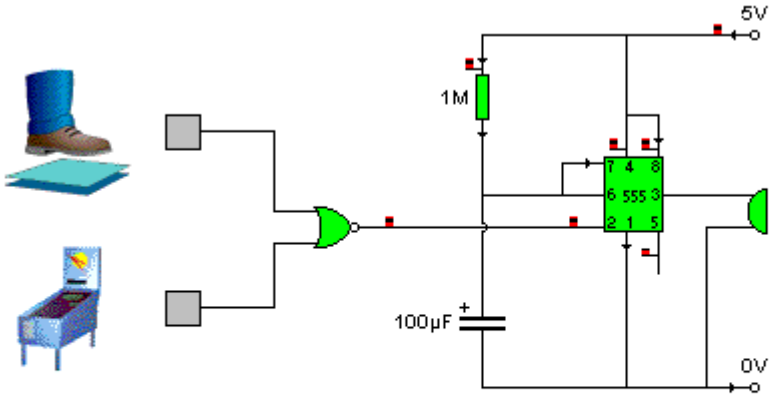

Fig 1.5

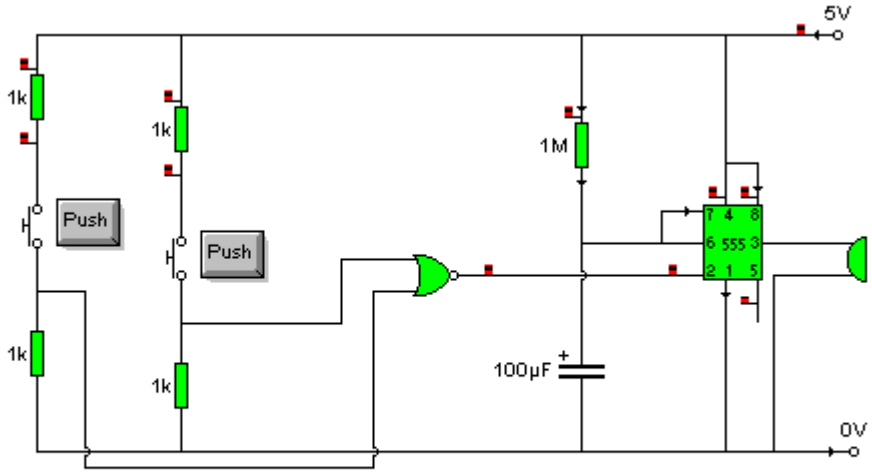

Fig 1.6

The timer is activated when pin 2 is at 0V. Using an OR gate the timer would be switch on before any of the sensors were activated. To over come this, a NOR gate has been used. When either of the sensors is activated it takes the input of the NOR gate high. The output of the NOR gate is then taken low and the timer starts.

The timing period is determined by the value of the capacitor (100µF) and Resistor (1M). Under law an alarm system cannot ring for hours on end. There has to be a cut off time. This circuit demonstrates this. If you find that the resistor value needs to be

greater than 1M, all you need to do is to connect another resistor in series with the 1M.

Notice that the power supply has been changed from 9V to 5V. This change has been made due to the operation of the timer and the logic gate. The timing period stops when the voltage across the capacitor reaches 2/3 of the supply voltage. The voltage at pin 2 must be at the supply voltage. If this does not happen the timer restarts.

The maximum output voltage from the logic gate is 5V regardless of the supply voltage to the gate. As this would not stop the timer the solution is to reduce the supply voltage to the timer to 5V. The simplest way to achieve this is to use a 5v regulator.

You may find that if you model this circuit on a computer that it will work without changing the battery voltage from 9V to 5V, however in practice using components it may not work.