

Burglar Alarm Lab – pre-lab discussion

Write a program that controls a burglar alarm that sets off an alarm if a door is opened while the system is “armed”. The user should be presented a menu of options from which he/she can select operations.

A - Arm the system – the system will set off an alarm if the door is opened. Do not allow the system to be armed if the door is already open (write a message to this effect, like “Hey dummy, close the door first”). When the user selects “Arm”, allow a preset time delay of 10-30 seconds to let the user leave the room before arming the system.

D - Disarm the system – allow for the door to be used without alarms going off. This also turns off the alarm if it is going off. Query the user to enter a “secret key” in order to disarm the system. This would be a preset character that must be entered in order to disarm the system.

T - Test the alarm – allows the user to make sure the bells and lights work properly (It should not wait for a door to be opened). Exit this state either after a short time delay or if the user hits “disarm”.

Q - Quit the program

The screen should display the status of the system, whether it is armed, disarmed, or in an alarm state (e.g. “Intruder alert!”). Be creative by flashing this or writing it in red or both.

The input from the door sensor will be port 302h, the bit depends on your relay box layout (as with the temperature controller – you may wish to use the same code and relay box as before).

The alarm consists of a bell and two lights that flash in an alternating sequence. These will be controlled through port 302h: again, bit assignments depend on your relay box layout.

Note that the front panel on your screen need not change except for the messages that are displayed depending on the state of the system. These messages can appear at the same location on the screen, say, near the bottom following your menu.

Burglar alarm circuit diagram:

