ELC 343 - TERM PROJECT #2

In this design project the students are to design and implement on the C Stamp BOL microcontroller evaluation board the following home security system.

Specifications:

1. This system will be designed to secure an average home.

2. There will be a minimum of 5 openings. They are either doors or windows with at least one of each.

3. The system will be enabled and disabled by inputting a 3 digit code sequentially.

4. There will be a 30 sec. delay upon arming the system at the door opening. This will enable the occupant to exit the premise without setting off the alarm.

5. There will be a similar delay upon entering the premise at the door opening allowing the occupant to enter the house without setting off the alarm.

6. There will be two distinct outputs for the system. A signal to turn on a siren or bell attached to the outside of the house. A second signal that is delayed 15 sec. from the first one to enable a signal to a local monitoring station.

7. The signal to the outside siren will also have a silent feature attached to it.

8. The system will also indicate which opening was entered when enabled and will retain that information until the system is reset.

9. The inputs are the sensor outputs (5), the code to enable and disable the system, the silent feature and the reset signal.

10. The outputs are the two system outputs discussed in (6) above. These will be indicated by LEDs.

11. Make sure your board has enough pins for the proper connections.

You are to:

1. Write the program in Assembly language, with appropriate comments.

2. Build the program.

3. Produce a .lst file for review.

4. Download the .HEX file.

5. Debug the program very carefully; include portions of the debug in your report.

6. Demonstrate the operational program to the instructor.

7. Prepare and produce a fully documented technical report.

8. The report is to include, but not limited to the following:

    a. Introduction.

    b. Discussion of results including development of any equations, detailed graphs and schematics, oscilloscope pictures, and any other component that you think helps you to explain what, why and how you did what you did.

    c. The report must be understandable to another engineer or supervisor not working on this project.

    d. A conclusion of your results and discussion of anything you found especially interesting or not expected from you work on this project.

9. This report is a team report and is due to me no later than the period of the scheduled final

10. The team must make a 20 minute technical presentation to the class the period of the scheduled final. You can use any of the presentation technologies you want. Your presentation slides must be part of the final report.

REPORT FORMAT: Free form, but it must comply with the following:

    a. One report per team

    b. Have a cover sheet with identification: Title, Class, Your Names, etc.

    c. Include all the deliverables previously mentioned.

    d. COMPLETELY word-processed

e. Double spaced

f. 12 pt Times New Roman font

g. Fully justified (optional)

GRADING:

1. Your report will be graded as to clarity, spelling, grammar and organization. The basic requirements are the same as for the technical reports already completed.

2. Whether the system works according to the specifications or how well the system works and how well it was designed.

3. Adherence to standard programming techniques such as using subroutines where possible is required.

4. Your presentation will be graded by your peers, possible some invited guests and I.