CS238 – ASSEMBLY LANGUAGE PROGRAMMING
PROJECT – ELEVATOR CONTROL
(POINTS = 200)
(NUMBER OF PERSONS/ GROUP: ≤ 3)

This semester you will be writing 8086 assembly code for dual elevator assembly (Example: Jabara Hall and Lindquist hall). We assume all the necessary hardware is in place. Here are the key things that need to be considered for elevator project:

1. Number of floors: Minimum 4
2. Standard features
    a. Internal Display Board
        i. Separate buttons for each floor
        ii. Door open
        iii. Door close
        iv. Two 7 segment displays showing the floor and direction (one for each elevator)
    b. External Display board (On each floor)
        i. Two 7 segment displays showing the floor and direction (one for each elevator)
        ii. Up Button
        iii. Down Button
3. Location sensing devices (Infra red probably: you might have to use 4-5/floor). These devices sense the position of the elevator and control the speed of the motor. Similar devices can be used for opening and closing doors.
4. Elevator should move only when doors are closed completely.
5. Preference will be given to the direction in selecting the next destination
6. You will be adding the following safety features into your code.
    i. Safety features:
        a. Alarm (Elevator should come to base floor, open the doors and stop)
        b. Fire (Elevator should come to base floor, open the doors and stop)
        c. By pass Key control on base floor for emergency personnel. (Elevator should suspend its current operation and should return back to base floor)
    ii. Emergency Telephone*.

Bonus Features (Additional Points)

1. Graphics (25 Points)
2. * Enabling voice card (speaker/microphone) of the system (25 Points).

Output: Display boards (external and internal)

Input: User inputs

Executing your assembly code: You can execute code using your favorite assembler (MASM/NASM).

Phase I (Flow Chart Discussion; Week of April 11th; 20%):

Flow Chart should be done using any software (handwritten flowcharts will not be considered). I will discuss your flow chart on a group basis (All group members should be present). Sign-up sheet will be posted in first week of April.

Phase II (Final submission); Due 05/06/2011; 80%):

- Report and the assembly code.
- Appropriate material should be added in Appendices.
- Neatness and presentation will carry **10% (incl in 80%)** of the total grade.

Report Details:

- Font: Times new roman (size:12) OR Arial (size:10)
- Line spacing: 1.5 lines
- Page numbers
- **Contents:** Abstract, Index, List of figures, Introduction, Implementation (flow chart), Assembly code, Output Snap shots, Conclusion, and Appendix.

Both hard copy and soft copy (CD/DVD/USB) will be submitted in the ECE office on or before due date.