F. PROJECT: “Smart Lecture Halls”

You need to implement a smart lecture hall that counts the number of students attending the lecture through a motion sensor and you must ensure that each student entering the hall gets his hands sanitized.

Tasks:

1) Using 2 different motion sensors one to detect students entering the hall and the other one to detect students exiting the hall:
    a) Whenever a student enters the hall the current number of students must increase by one and the number should be displayed on SEVEN SEGMENT.
    b) Whenever a student exits the hall the current number of students must decrease by one and the number should be displayed on SEVEN SEGMENT.
2) After the student enters the hall, his/her hands must be sanitized and this is done using a motion sensor or equivalent from your choice to detect the hands of the student, whenever it is detected a moving device from your choice will dispense the sanitizer.

“BONUS”

- If you added an extra feature using an ANALOG SENSOR which requires an extra microcontroller (for example: Arduino Board) connection it will be counted as a bonus to any of the ideas listed above.
- You must use the microcontroller for ONLY reading the sensor values; however, any output must be controlled through the FPGA.