Team No. : 44
Team Members: 5

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Section 2
Our project deals mainly with smart attendance, where the attendance of the students in class is calculated through the processes of ID scanning.

2.1 When student enters
That is when the student enters the room he scans his ID and the time of that scan is saved. We now have two possibilities, either the student entered before the TA or the student entered after the TA. In case student came in before the TA, the start time of the attendance of the student is taken as that of the TA, otherwise, it is taken as the time that the ID was scanned at.

2.2 When student leaves
If the student leaves before the TA the time of his attendance ends with the scan of his/her ID. In the other case, if the student leaves after the TA, the end time of his attendance will be that of when the TA scanned the ID to leave.

2.3 Session duration
The duration session is calculated as follows, when the TA enters the room through scanning the ID the time of this scan is saved as the time of the start session, and when s/he scans the ID to leave that is recorded as the time of the end session.

2.4 Attendance calculation
If the duration that was calculated through the subtraction of sections 2.2 above from 2.1 and then comparing if that is equal to or greater than 75% of the answer recieved in section 2.3 then we will increment that students attendance.

2.5 Fire
If a fire is detected during a session the buzzer starts working and the doors open

Section 3
We have used several components to create this project

1- NFC module PN532 & programmable card
With the NFC module comes programmable cards these were programmed in our code so that one of the cards was set to be the TA's and the other 2 were set for student 1 and student 2.

2- An LCD 2x16 blue screen
This is used to display the number of people in the room during a session

3- *One yellow and one red LED*
The red LED indicates that the door is closed, while the yellow LED indicates that the door is

open.

4- Smoke Sensor (carbon monoxide detector)
This is used to detect if there's a fire in the surrounding

5- Buzzer
This is used to produce a sound if the smoke sensor detects fire.

Section 4

- We have used the NFC library to set the NFC to read inputs from programmable cards using mode I2C.
- We have also used an external software called Tera Term which reads the values on the serial port and outputs them in a csv file.

Section 5
For the smoke sensor, we connected the VCC to 5v and the GND to the common ground and the AD connected to pin A3 in the arduino.

For the NFC, we connected GND to the common ground, and the VCC to the 5v, the SS is connected to pin 10 of the arduino, the MOSI is connected to pin 7 of the arduino, the MISO is connected to pin 13 of the arduino, the SCK connected to pin 8 of the arduino.s

Section 6
For the buzzer, the positive leg of the buzzer was is connected to 5v, and the other leg connected to a side of the resistor and the other side of the resistor connected to the A2 pin in the arduino then in the code we changed it from analog to digital to be able to use it as a normal I/O pin.

For the (2 LED<RED , and YELLOW>), the positive leg connected to 5v and the other leg connected to on side of the resistor and the other leg of the resistor connected to pin(A0, A1) in the arduino, those two pins are analog so we changed them to digital pins through the code.

For the LCD, we connected the (k,pin 12 and 14 and 16 of LCD) to the ground, and connected the (A pin of LCD) to 3.3v, connected pins form(3rd to 6th pins of LCD) to pins number(2,3,4,5) in the arduino, pin (11 of LCD) to pin number 11 in the arduino, and pin 13 of the LCD connected to pin 12 of the arduino, and pin 15 of the LCD to 5v

Section 7
Welding the pins of the NFC to the NFC caused us to stay a whole day trying to figure out why

was not the NFC functioning correctly. Turns out at the end that it is a matter of not welding it correctly.

Section 8

Team A: Hardware Team (Sara and Esraa)
Both Sara and Esraa worked on connecting the board correctly and making sure all components are functional and detected by the arduino

Team B: Software Team (Marwa, Rana, and Basma)
We worked on the logic of the code and taking the input from the serial monitor and adding it to the csv file.