

It is a IoT project in a project design course.

Goals of the Project:

**RFID-based Authentication for Classrooms:** By introducing an RFID card system, only authorized individuals like students, teacher, or staff can enter classrooms. This system will:

- Ensure that only authorized individuals have access to rooms.
- Keep a digital record of all entries and exits, aiding in accountability and traceability.
- Provide instant visual feedback via LED lights, reassuring users and deterring potential intruders.

**Motion Detection for After-Hours Security:** Using motion sensors, the system will detect unauthorized movement in classrooms during off-hours. The benefits include:

- Early detection and warning of potential threats.
- Reduced dependence on manual security monitoring.
- Data analytics from recorded movement patterns can help optimize security deployment

**Door Lock Sensor:** To ensure that every classroom door is adequately secured after school hours, door lock sensors will be used. They offer:

- Peace of mind for school administrators, knowing that all rooms are secured.
- Alerts to the maintenance or security team if a door is detected as not being properly shut.

1. It stores all the data in SQL server and system can access the SQL server to verify RFID card ID.

CardID	Name
156715324	Terry
987715324	Ken
913715324	dummy

2. It also allow security administrator can modify the database through SQL

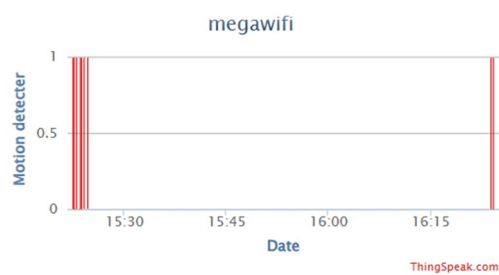
```
+-----+
| cardID |
+-----+
| 156715324 |
| 987715324 |
| 913715324 |
+-----+
3 rows in set (0.001 sec)

MariaDB [db_3070]> |
```

3. It can keep tracking all record in real-time.

No	Time	CardID	Authorized
27	15:15:06	156715324	Yes
28	15:17:21	144116927	No
29	15:25:10	144116927	No
30	15:25:17	144116927	No
31	14:39:19	144116927	No
32	14:39:26	156715324	Yes
33	10:02:47	156715324	Yes
34	10:03:03	144116927	No
35	10:03:09	144116927	No
36	10:03:29	144116927	No
37	10:03:56	144116927	No
38	10:06:34	12394124	No
39	10:06:53	156715324	Yes
40	10:07:05	156715324	Yes
41	14:28:51	156715324	Yes
42	14:29:03	156715324	Yes
43	14:29:12	144116927	No

4. The data collected by sensors will be integrated into the ThinkSpeak through a Wi-Fi Module (ESP8266), providing real-time analysis and detection of any unusual activities.



Division of Labor:

I mainly focus on RFID Card Authentication module and wifi, ThingSpeak and PHP part.