

Implementing Smart Attendance System using IoT

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Abstract: In schools and colleges, lot of time is wasted for manual attendance procedures, in such cases our system provides an automated attendance marking system. Every student will be provided with a RFID tag/card with his/her details fed in it and everyone's tag is unique to others. This data is stored in the tag by modulating and demodulating transmitted radio frequency signals with the help of a built in integrated circuit. As soon as a student places his/her card in front of the RFID reader, the data in it is read and attendance for that student will be registered. This is done with the help of a raspberry pi interfaced with the reader. We can view the attendance status for every student obtained from the excel sheet that is generated. Thus lot of time is saved in providing attendance.

Keywords: RFID, Raspberry Pi

I. INTRODUCTION

Effective schools try to reduce the amount of manual work in each and every aspect. One of which is attendance procedure which requires lot of time and manual work for recording students attendance. At present attendance is recorder manually where a faculty calls the number of a particular student and if the student is present, the faculty marks as present in the sheet. This process is time consuming and requires manual work. This problem is avoided by providing automatic attendance recording where each student is given a unique RFID tag. When the student comes and scans his/her tag, the system identifies the student and records as present in the sheet. The student needs to scan whenever attendance is to be provided. If the students tag is not registered with the system, attendance will not be provided.

II. PROPOSED SYSTEM:

2.1 Existing System

At present situation the faculty provide attendance by marking in a sheet which is a time taking process and wastes a lot of time for updating each and every students attendance. It is difficult and time taking to mark each and every student's attendance for each class. Faculty have to update every student's attendance in the sheet.

2.2 Working

The proposed Attendance system provides attendance to each student just by reading the tags when the student scans his/her respective tag near the antenna. The attendance will

2.3 Proposed System

be automatically be updated in the Excel sheet. If the student doesn't scans the tag, attendance will not be provided to that particular student. The attendance will be recorded in a excel sheet and can be viewed at any time. The proposed Attendance system provides attendance to each student just by reading the tags when the student scans his/her respective tag near the antenna. The attendance will be automatically be updated in the Excel sheet. If the student doesn't scans the tag, attendance will not be provided to that particular student. The attendance will be recorded in a excel sheet and can be viewed at any time.

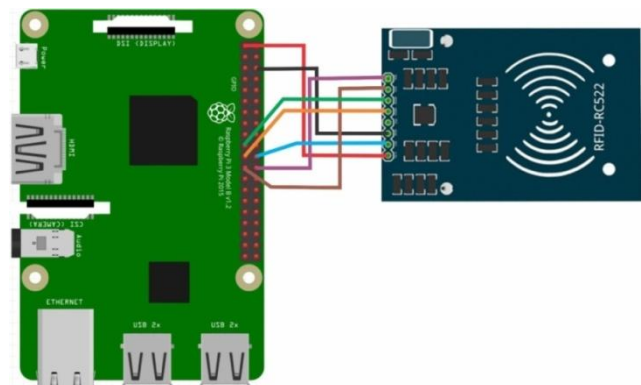


Fig 1: RFID tag connections

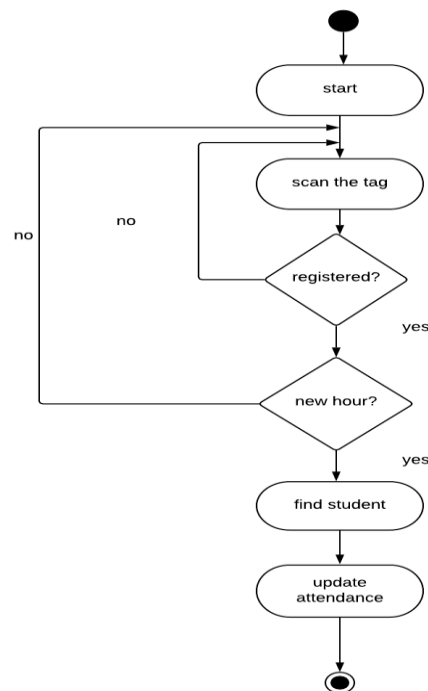


Fig 2: Activity Diagram

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III. TECHNOLOGY USED

3.1 Python:

Python is a language which is developer-friendly in such a way that person with zero

programming language can develop a code and it is mark for the high-potential performance, readability. The only language that is eligible to perform any emerging technologies like internet of things, machine learning, image processing and many more advanced fields.

3.2 Raspberry Pi:

Raspberry pi is compressed form of control processing unit that connected to a display device like television, monitor. Main aim of developing this is portability, it consists of all components of computer like RAM, Ethernet port, graphics chip, Xbee socket, GPIO pins and a socket for memory card. Connecting to internet, playing games, HD video playing, word processing operations can carry out by Raspberry pi.

3.3 RFID:

RFID system consists of two components: a tag and a reader. RFID tags perform two operations: a microchip for storing and processing of information and an antenna for transmitting and receiving signals. Each tag consists of unique identification number. Data can be written in the tag which can be read using two-way radio transmitter-receiver when it sends a signal to the tag which further responds with the data written in its memory. RFID tagging is similar to bar code. Tags can be used for read only or for read/write purposes. RFID reader converts electrical signals into electromagnetic waves which can receive signals from the tags and converts them into electric current.

IV. IMPLEMENTATION

1. First we need a system and Raspberry Pi connected to same network.
2. At first scan the RFID and find it's unique numbers and assign it to a student.
3. Next we run the program so that it will read the RFID tag.
4. After reading it checks whether it is a valid card and updates attendance to the particular student in the sheet.
5. For every hour student needs to scan the RFID tag.
6. At the end of the day the faculty stops the program and can view the sheet with the attendance.
7. The faculty can also view previous day's attendance if required.
8. Finally, attendance sheets are available in the form of excel sheets stored in a file.

V. RESULTS

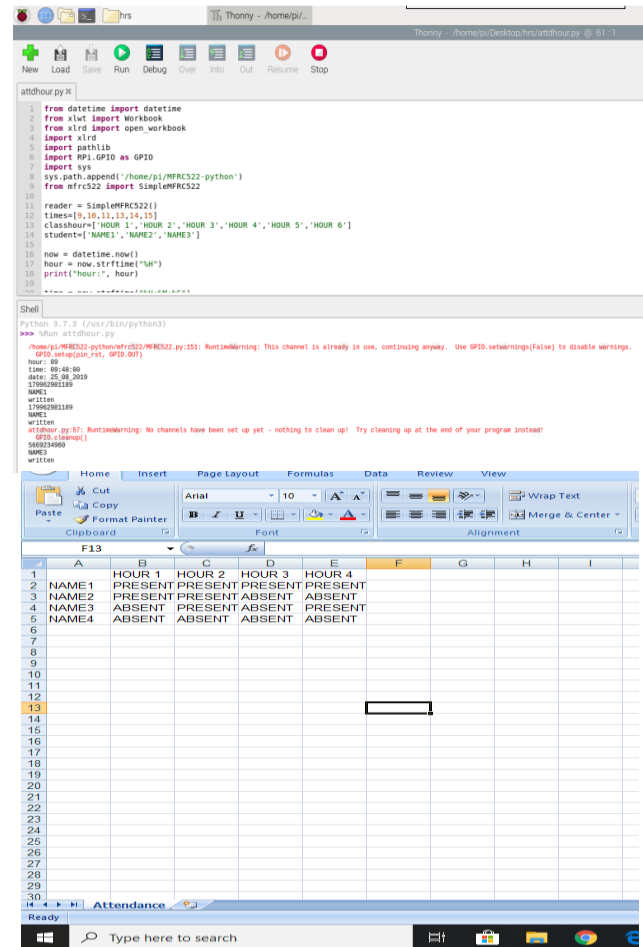
Results will be stored in excel sheet. If the student is present for an hour by scanning his/her tag, PRESENT will be recorded at that particular hour for the student else ABSENT will be recorded.

Sample Output:

STUDENT NAME	HOUR 1	HOUR 2	HOUR 3	HOUR 4
STUDENT1	PRESENT	PRESENT	PRESENT	PRESENT
STUDENT2	PRESENT	PRESENT	ABSENT	ABSENT
STUDENT3	ABSENT	PRESENT	ABSENT	PRESENT
STUDENT4	ABSENT	ABSENT	ABSENT	ABSENT

The output matches exactly with the present students and it's an efficient method for providing attendance.

VI. SCREENS



VII. SCOPE FOR FURTHER DEVELOPMENT

Further we can also design a database to store vast attendance data so that required information can be retrieved effectively. This project is useful in colleges, schools, offices and can provide daily or hourly attendance based on requirements. User Interface can also be created to provide logins for faculty members or officials to view daily, monthly, etc. results. Server can also be created so that attendance can be viewed from anywhere and required results can be obtained from the database and continuous maintenance and monitoring is required. Server and Database facilitates faculty to access attendance details by providing logins to the faculty.

VI. CONCLUSION

The Attendance system is designed especially for reducing the task by faculties in taking attendance manually by noting down in a book. Here attendance is provided just by scanning the tags by students and the faculty just guides and checks whether each students scans his tag only. This system is designed for the particular need of the institutes to carryout operations in a smooth and effective manner. This is used mainly for hourly attendance and can modify for daily attendance. Faculty can easily go through attendance recorded in the sheets.

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