SMART ATTENDANCE SYSTEM FOR MIZORAM PWD OFFICES

TERMS OF REFERENCE

1.1 Overview

Maintaining good attendance is crucial to help you do well as an employee as well as allows you to be in good standing with your employer. Being present and on time helps you strengthen your work credibility and work history. Tracking employee attendance is something that is recognized by every department, although not always fully understood. Paramount to time and attendance tracking is ensuring accurate and reliable information collection for decisions. Likewise, the same information helps to strengthen a workforce, which is a major asset to every department.

Most departments use a manual paper sheet for controlling attendance, and there is a need to develop system that reduces burden in analysing the attendance and enhance smooth functioning of the administration of the department.

The propose system would enable to collect employee attendance in the department using passive RFID technology. It would record the time of arrival and departure of the office. RFID stands for Radio Frequency Identification and Detection. In this we will be using RFID reader and contactless smart card. Reader is located on fixed location sends signal to passive RFID chip (embedded within the smart card) detected in range of reader. Chip re-transmits the acknowledgement signal with its unique identifier code, hence chip is identified. This single reader can identify many number of smart card in very short period of time making it a suitable system for attendance system even in a big Department.
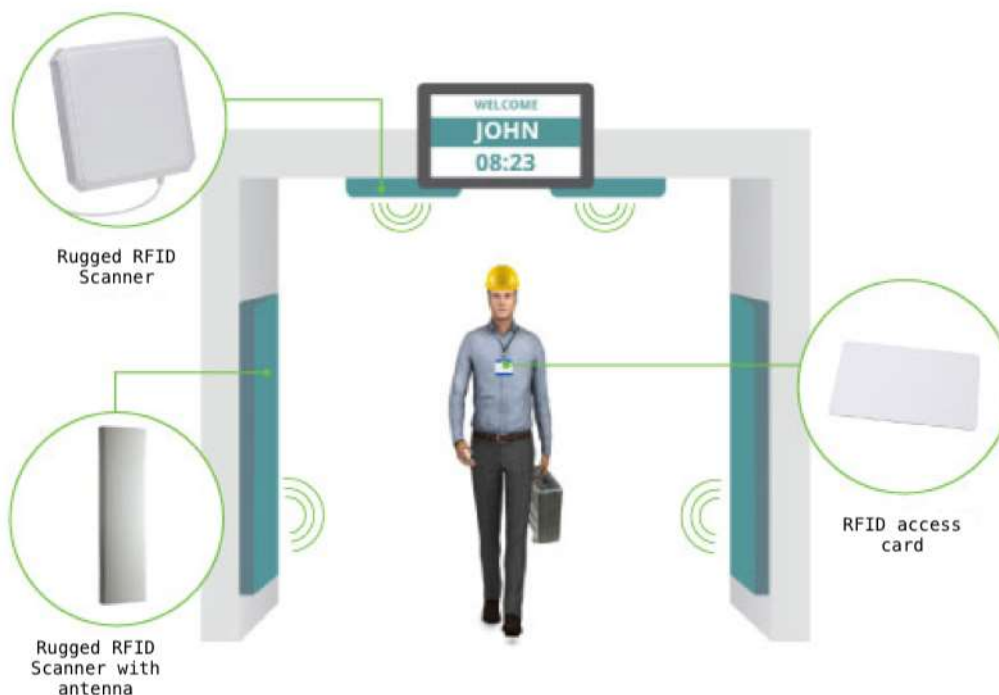
1.2 Goals

The main goal of the project is to implement smart attendance system to strengthen departments work credibility and efficiency by ensuring employee accountability and sincerity on their duty. It aims to reduce human efforts in monitoring the attendance of the employee by employing a user friendly and automated way of attendance entry that can be recorded using an electronic register.

1.3 Objectives

The following points are the objectives of this project:

1. Fully automated system
2. Attain accurate system and avoid proxy or false attendance
3. Improve efficiency of office administration and governance of the department
4. Access to near real-time and better-quality attendance information for decision support
5. Managing working time more effectively
6. Increase employee attendance
7. To be able to calculate the total working days of the employees, total number of the employees who work under time and total number of the employees who are coming late in an error free fashion
8. To develop a system that minimizes the use of the paper in checking the attendance.

1.4 Expected Outcomes

1. To identify potential attendance issues.
2. Boost employee morale and productivity with prompt time-off requests.
3. Achieve real-time analysis of department to make better productivity and scheduling decisions.
4. Decrease discipline referrals
5. Complete digitalize and secure data
6. Hassle Free Workflow Management

SECTION 2 : PROPOSED SOLUTION
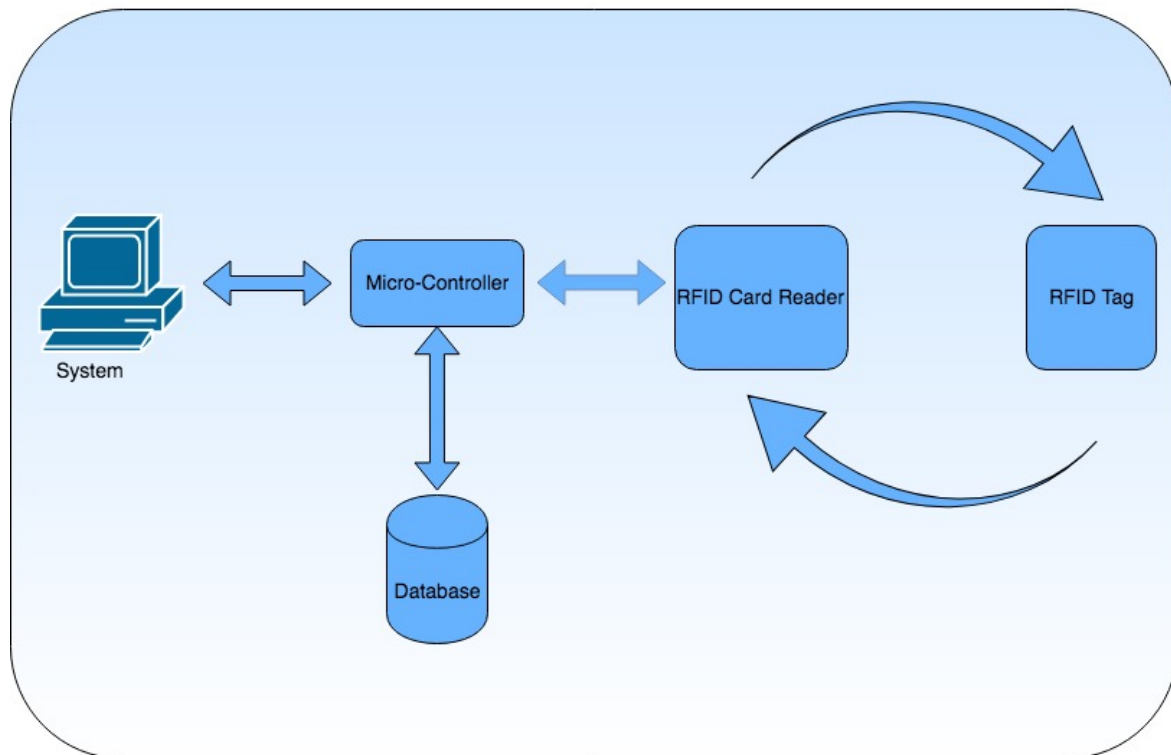
2.1 Solution Architecture

Figure 2: Solution Architecture

The RFID reader is connected to client computer. The reader is usually on and continuously senses its field of operation. Whenever a tag enters its vicinity, it sends an radio frequency signal to the reader. RFID readers are devices which emits radio signals through antennae. They also provide the necessary amount of power to the tags, if passive tags are used. RFID readers get the collect data stream provided by the tags. Antennae present in the reader collects the information. Middleware handles the data flow between the tags and the reader. Large number of tags can be detected simultaneously without any problem

The value detected will be sent to a computer through the Gateway. The Gateway will then transfer the data to the hosting application through WiFi or a LAN cable whichever is applicable. The hosted computer will have the database which consists of all the employee's register number and their respective tag values.

2.2 Main feature of the proposed project

The software will have the following features:

•   RFID integrated ID card -

The employee ID card will be printed on a smart card where an Radio Frequency Identification (RFID) chip will be integrated within this card.

•   Automated Attendance System

The automation of the attendance is achieved through the RFID chip embedded in the ID and active RFID scanners. The system is designed in a way that each employee is given a unique RFID passive tag which is embedded within every ID card. When an employee passes through the entrance of the office, his/her tag value will be identified by the RFID scanner. The value detected will be sent to a computer through the Gateway. The Gateway will then transfer the data to the hosting application through WiFi or a LAN cable whichever is applicable. The hosted computer will have the database which consists of all the employee's code and their respective tag values.

•   Reporting Module

A comprehensive reporting tool is an integral part of a good software. The system will be equipped with an easy to use reporting tool to browse through different region of information. The overall attendance of an employee will get generated based on month/year, whichever is prefer by the administrator. This reporting module will be accompanied by graphical reports, charts and tabular information. To quickly browse and narrow down the search to find the correct information, a powerful filter system will be in place to search the data.

•   Real Time Monitoring of employee

Movement of each employee is capture and log with the system. Employee reporting time and leaving time will be recorded in real-time thereby making it an excellent system for evaluating employee working hours and performance.

2.3 Characteristics of the proposed project

•   User Friendly: The proposed system is user friendly because the retrieval and storing of data is fast and data is maintained efficiently. Moreover the graphical user interface is provided in the proposed system, which provides user to deal with the system very easily.

•   Reports are easily generated: reports can be easily generated in the proposed system so user can generate the report as per the requirement (monthly/yearly) or in the middle. User can give the notice to the employee so he/she kept his office timing.

•   Very less paper work: The proposed system requires very less paper work. All the data is fetched into the computer immediately and reports can be generated through computers. Moreover, work become very easy because there is no need to keep data on papers.

•   Computer operator control: Computer operator control will be there so no chance of errors. Moreover, storing and retrieving of information is easy. So, work can be done speedily and in time.

•   Contactless attendance system: The attendance system employs Ultra High Frequency (UHF) based RFID cards that enable contact-less attendance signing. This feature gives the employee to sign their attendance just by walking through the office entrance/gate. The ease of signing attendance without physical contact makes the system more robust and removes queuing while signing attendance in contrast to the contact based attendance system.

2.4   Scope of Work

The scope of work includes the following:

i)   Supply and Installation of RFID scanners at 6 offices having 13 gate.
ii)   Development and Implementation of Attendance Management & Monitoring System with the following features.

  a)   Communicate with RFID scanners
  b)   Web based application along with cloud hosting solution for 5 years
  c)   User Management
  d)   Staff Information Management
  e)   Entry/Exit timer logger for each staff
  f)   Office Wise Real time attendance Monitoring
  g)   Monthly/Yearly Attendance Report Generation
  h)   Date Range Attendance Report Generation
  i)   Communicate with RFID
  j)   Audit Trail

iii)   Collection of staff details at 6 offices.
iv)   Supply of Identity card with RFID tag and lanyard for staffs at 6 offices as given below:

a) Engineer-In-Chief Office including Mizoram Road Fund Board Seretariat – 177 Staffs

b) Chief Engineer, Highways – 36 Staffs

c) Chief Engineer Roads – 59 Staffs

d) Chief Architect Office – 39 Staffs

e) Chief Engineer, Building – 59 Staffs

f) Project Implementation Unit – 41 Staffs

v) Capacity Building and Training

2.5 Duration of work

A total of 3 (three) months is estimated for complete installation of the smart attendance system. Expected completion phases are as follows:

- Phase I : Collection of data required for generation of ID – 1st month
- Phase II : Issue of ID card and installation of RFI reader – 2nd month
- Phase III : System Integration and full installation of the system – 3rd month.
- Phase IV : Defect liability period – 6th month.

2.6 Reporting Requirements.

- Phase I : Data collected on all the office of PWD at Tuikhuahtlang shall be submitted at the end or before the end of the 1st month, for verification by the client on the correctness of the data collected.

- Phase II : Completion report of the complete installation of the RFI reader along with the proof of ID issued to the staff of PWD is to be submitted on or before the end of the 2nd month.

- Phase III : Demonstration of the readiness of the system installed is to be made on or before the end of 3rd month.

- Phase IV : Issue of the NOC from the offices of the PWD where smart attendance are installed should be submitted after the 6th months before the final payment can be released. A commitment letter in stamp paper for hosting of the application in cloud storage for 5 (five) years will also be a requirement for release of the final payment.