NFC—Based Attendance Management System

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ABSTRACT: With the developing multifaceted nature of the present software applications order with the expanding aggressive pressure has pushed quality confirmation of created software towards new statures. Software testing is the procedure, to assess the usefulness of the software application with a plan to discover whether developed software met predetermined prerequisites or not and also to distinguish the imperfections to guarantee that the item is without deformity so as to deliver the quality product. It is a procedure of analysing the software product to identify the contrasts among existing and needed conditions and to assess the highlights of software product. It is an unavoidable piece of SDLC i.e. software development lifecycle, also keeping in accordance with criticality in pre and post advancement procedure makes it something which ought to be catered with efficient and improved techniques and methodologies. This paper objectives to talk about the current just as improved testing methods for better quality confirmation purposes.

KEYWORDS: Worker attendance, Time presence management system, Near Field Communication (NFC), Cloud computing.

I.INTRODUCTION

Many businesses or associations currently need the program to monitor the participation of workers. For the management of workplace oversight and training, precise attendance records are very important [1]. The paper-based registration sheet utilizes workplace attendance usually manually. The business manager does not handle additional information for the workers in this manual method, measuring their working time and efficiency [2]. Generally, by using the customer time card, the operator adds hours and fills in a timesheet showing how many opening hours are indicated for every week or duration. The time required to calculate attendance records, manage worker time shifts, track all-time in / out and costly paper sheets are inefficiently consumed.

"There are several attendance management systems that use current technologies to determine individuals to enhance worker participation tracking [3]. RFID and biometric technology, including fingerprint recognition. The biometric network is used to reinforce the authority of the individual." Furthermore, the biometric program has certain limitations. There is a physical contact issue with the fingerprints attendance program. The fingerprint sensor normally affected by many can cause infections with certain conditions.

Dry or dirty of the skin of the thumb certainly does not produce the results to match. The image taken by the finger requires large storage space so that the system is running slowly when the customer data volume increases greatly [4]. The store of employee records at many different locations complicates the human resources of data. The fingerprint system's expense is also fairly high. Most tracking attendance schemes use technological innovation fingerprints [5].

II.RELATED WORK

Flexible information integration (FDI) and cost-effectiveness in residential and commercial use are provided by Near Field Communication (NFC) technology. NFC is an older and cheaper RFID version that is built in two directions between NFC tags and commenters with phones and tablets today [6]. The RFID is primarily used for ID and Monitoring purposes, such as distribution, shipment tracking, transportation toll gates and luggage load management, while NFC is being used for more complex transactions with protect info, such as aadhaar, cryptocurrency or any other

chip and pin entry monitoring system. NFC's smartphones also encourage new life patterns such as purchasing tickets, room latch connect directly, car parks, airfield check-in services, and exchanging notepads. Some other enrollment technologies have been suggested using types of technology [7].

This paper compared the dimensions with particular regard to the participant control environments. The following were discussed three-time attendance systems. Furthermore, the fingerprint reader is used by the cloud-data time & attendance program, which can collect employee information and send them to a client through the use of online communication [8]. The unit, however, has certain detection speed constraints. To verify the signature, it has to compare one with the all other models placed on the moment-consuming repository server. Furthermore, the control of first-time attendance was built for a small business.

"This program framework LAN and USB storage to move attendance details from the capacitive touch screen to the central server. The code utilizes also helps the business management to produce and update records of performance and monitor employee details, but it cannot be viewed electronically [9]. Thirdly, it also uses a fingerprint contrasting biometric technology for the attendance system, but this does not offer online service". Since the documentation for the executive and the participation will be better if managers and employees can maintain and make an excellent judgment in real-time from anywhere [10–13].

In turn, both businesses will benefit from greater business and network technology versatility with the participation program and low costs. Therefore, we are mindful of the cloud-based time tracking program. The software platform has been increasingly combined with the simulation systems' workplace attendance system in order to improve the productivity of data management.

A web interface is applicable to the web-based system and all files with securer links and daily backups can be saved on servers. It also permits accessing, adjusting, recording and analysis of data. The research proposes a cloud basic time and attendance system, allowing workers to log in online and online, monitoring time and conformance by employees and managers, programming employees and reporting. The attendance system with multiple technologies i.e. a proposal was made for Bluetooth, RFID and NFC.

As mentioned above, we build club-based applications utilizing NFC technologies in the area of time attendance monitoring (TAMS). Our application offers various stakeholder accounts, unlike other above systems. This paper has started using an NFC card to indicate each of them for all staff levels. The new program requires key features to satisfy the user's legal requirements: internet connectivity to workers and supervisors, freedom to use the current NFC cards and scanners, no personnel limitations, no data-storage constraints, and report production. As can be seen in Table I, the main processes of system have been contrasted with the other time participation systems.

TABLE I. COMPARISON BETWEEN THE PROPOSED AND OTHER SYSTEMS

System/Task	Cloud-TA	First time attendance management	UA 300	Our System
Online system	Yes	No	No	Yes
Scan NFC card	No	No	No	Yes
Report	Yes	Yes	Yes	Yes
No limitation Employee number	Yes	No	No	Yes
Available login for employee	Yes	No	No	Yes
No Limitation of data storing	Yes	Yes	No	Yes

III.PROPOSED RESEARCH WORK

This paper has developed a system based on the Software Development Life Cycle (SDLC), the most popular way of developing software. In order to satisfy the customers, the Expectancy Disconfirmation Model evaluated the proposed request. The important key points of the proposed work are illustrated in table 2.

Table 2 key features

Software Development Life Cycle (SDLC)	The SDLC is a process used to produce a high-quality software which meets the customer expectations within times and cost estimation. The development process of the proposed time-attendance management system is described in a series of seven main phases consisting of planning, analysis, design development, testing, implementation and maintenances as follows.
Planning phase:	The development of the proposed application has been performed within 4 months as shown in the timeframe of Figure 1. Since the purpose of our system is to support the time attendance management of any organizations and their employees, we established the survey to collect the user requirements in the form of questionnaire.
User Requirement	The end user's needs and intended uses were gathered from several company managers and staffs. During requirement identification, we had taken into account two main system features consisting of input and output specifications.

The device features are specified during this step. The main features of these are customer identification, user identity verification, in-house perception, client profile monitoring, attendance tracking with NFC scanners, change policy transfer, electronic leave estimation, late, overtime from entries and exits and report production. There are a number of roles. A proper illustration of use instances describes a heavy-level analysis of the user's partnership with the various applications to accomplish the stated processes. The use case flow chart in Figure 2 shows how much the main elements of the structure communicate with the participating people of the corporate manager, staff and program supervisor.
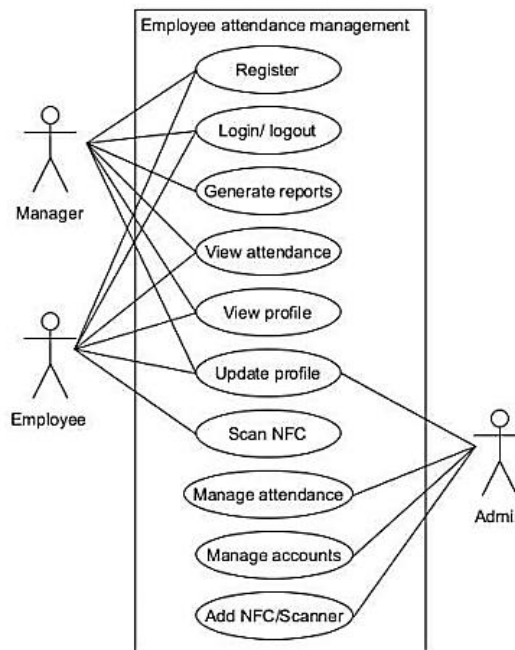
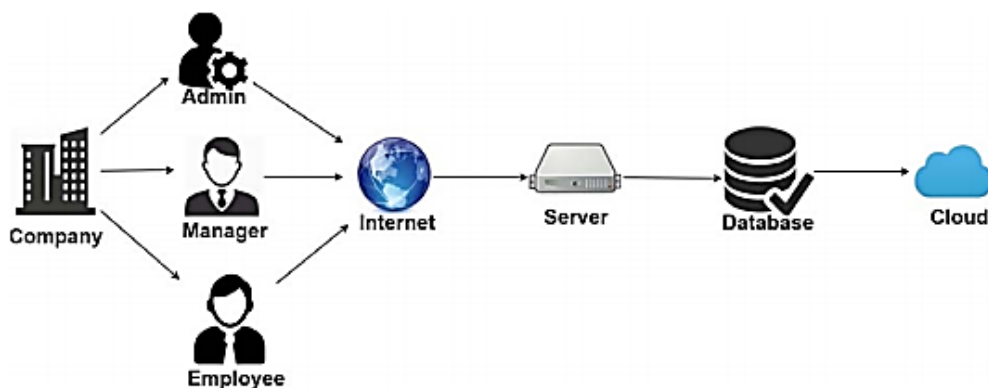Fig. 2.   Use case diagram of the proposed system.

Fig. 3.   Overview of the the proposed TMS architecture

Since the planned time attendance system is cloud-based, all users have access to the app via the Internet. Figure 3 explains the description of the design of the device. The proposed system, as described before, can be used in any company or industry to track the working time of its workers with several useful functions. When the NFC card is checked by the employee, all knowledge of the participation, that is. The NFC communications modes Identification, text, date, time in and time-out are transmitted. The identification of the staff member is searched in the repository. The system then reinforces the personal information as well as marks the present moment and data. For all existing staff, the implementation may reiterate the steps. In algorithm 1, the mechanism is understood temporarily.

Algorithm 1 Time Attendance Checking Process

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 1: Add employee data of a company.
 2: Assign ID NFC tag.
 3: while Departure time is not enabled do
 4:     Read employee arrival time.
 5:     Update database with arrival time.
 6:     Display arrival time.
 7: end while
 8: if Departure time enabled then
 9:     Read employee departure time.
10:     Update database with departure time.
11:     Display departure time.
12: end if
13: Calculate time elapsed.
14: Conduct attendance data analysis.
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Figure 4 result of proposed system

IV.RESULT ANALYSIS

Researchers also gathered participation data from the target customer in organizations to incorporate the suggested program. A work schedule, attendance rules, overtime regulations, supervisory electronic or paper-based demands, global time entry and exit by a client or the head of departments, time capture monitor, scheduling change transfer, staff illness view, quit absences and l the key feature of an employee's attendance scheme is compounded work schedules. The submission is tested as an ExpectabilityDeconfirmation test questionnaire. The response is analyzed. Twenty-two respondents receive the questionnaires as shown in figure 4. The program will maintain customer satisfaction, as

shown. Rating bases dependent on the respondent participants are calculated by the user satisfaction formula. The results are based on the respondent attendees.

V.CONCLUSION

This paper presents the cloud-based employee participation system that integrates with NFC technological advances, TAMS. Several financial statements each with their own users are given in the proposal form. The proposed application enables users can access, adjust, disclose and analyze the internet to handle their attendance data. The cloud infrastructure is combined with our framework for increased flexibility and lower costs of operating systems services. There is thus more authenticate protection and backup systems in the web portal and registry on the multiple servers. System modification has been evaluated by the location customers until capability conditions are met to guarantee that the proposed implementation is in practice. The application's rates are determined according to the customer satisfaction model as well as the findings show that perhaps the user is satisfied.

REFERENCES

[1]S. A. M. Noor, N. Zaini, M. F. A. Latip, and N. Hamzah, "Android-based attendance management system," in Proceedings - 2015 IEEE Conference on System, Process, and Control, ICSPC 2015, 2016.
[2]H. Saeed, A. Shouman, M. Elfar, M. Shabka, S. Majumdar, and C. Horng-Lung, "Near-field communication sensors and cloud-based smart restaurant management system," in 2016 IEEE 3rd World Forum on Internet of Things, WF-IoT 2016, 2017.
[3]S. B. Oo, N. H. M. Oo, S. Chainan, A. Thongniam, and W. Chongdarakul, "Cloud-based web application with NFC for employee attendance management system," in 3rd International Conference on Digital Arts, Media and Technology, ICDAMT 2018, 2018.
[4]Y. Mittal, A. Varshney, P. Aggarwal, K. Matani, and V. K. Mittal, "Fingerprint biometric based Access Control and Classroom Attendance Management System," in 12th IEEE International Conference Electronics, Energy, Environment, Communication, Computer, Control: (E3-C3), INDICON 2015, 2016.
[5]H. D. Rjeib, N. S. Ali, A. Al Farawn, B. Al-Sadawi, and H. Alsharqi, "Attendance and information system using RFID and web-based application for academic sector," Int. J. Adv. Comput. Sci. Appl., 2018.
[6]H. A.Abdullah, I. A. Mohson, and E. S. Mohamad Ali, "Student Attendance Management System," i-manager's J. Inf. Technol., 2015.
[7]N. Arbain, N. F. Nordin, N. M. Isa, and S. Saaidin, "LAS: Web-based laboratory attendance system by integrating RFID-ARDUINO technology," in 2014 2nd International Conference on Electrical, Electronics and System Engineering, ICEESE 2014, 2014.
[8]O. Sigalingging, Sriyadi, and Y. Budiarti, "SistemInformasi E-KepegawaianPadaPT .," Isep, 2016.
[9]I. C. Hsu, "An architecture of mobile Web 2.0 context-aware applications in ubiquitous Web," J. Softw., 2011.
[10]D. R. Wijaya and I. Asror, "Integrated and efficient attendance management system based on radio frequency identification (RFID)," J. Theor. Appl. Inf. Technol., 2015.
[11]F. M. Al-Naimaet. al., "A Proposed RFID Based Student Attendance System," Int. J. Comput. Netw.Technol., 2015.
[12]F. M. Al-Naima and H. A. Ameen, "Design of an RFID based students/employee attendance system," Majlesi J. Electr.Eng., 2016.
[13]A. Parvathy et al., "RFID in cloud environment for attendance monitoring system," Int. J. Eng. Technol., 2013.