

VISUALIZATION MC

NEAR FIELD



CE SYSTEM WITH

INOLOGY

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ABSTRACT

The manual punch card device makes administrator faces difficulties in generating attendance reports and verify the correct attendance date and time whenever there is a misaligned or loss of timecard. This report will introduce a system that will overcome the mentioned problems. The employee attendance management system will be developed in java for mobile application (android) and PHP plus JavaScript for web management system. This attendance system will use android based smartphone/tablet to track/record the attendance via NFC tag and update instantly to online database server. The attendance summary will be display in graph and chart to display the attendances in visual form for better view. Besides that, object oriented design pattern and normalized database design will be used to improve maintainability, testability and reusability of the system. NFC technology is used as it provides simple, faster, better security features at very low cost. The attendance system combines the mobile application and web system to provide real time solution and assessable in anytime and anywhere as long as internet access is available. An improvised of employee attendance system is definitely the answer to the client's problems.

ABSTRAK

Sistem kad perakam waktu secara manual menyebabkan pentadbir menghadapi kesukaran dalam menjana laporan kehadiran dan mengesahkan tarikh kehadiran yang betul apabila terdapat timecard tidak sejajar atau hilang. Laporan ini akan memperkenalkan sistem yang akan mengatasi masalah yang dinyatakan. Pekerja sistem pengurusan kehadiran akan dibangunkan dalam java untuk aplikasi smartphome (Android) dan PHP dengan JavaScript untuk sistem web. Sistem kehadiran akan menggunakan android smartphome / tablet untuk mengesan / merekodkan kehadiran melalui tag NFC dan mengemaskini serta-merta ke pelayan pangkalan data dalam talian. Ringkasan kehadiran akan menjadi paparan dalam graf dan carta untuk memaparkan kehadiran dalam bentuk visual. Di samping itu, berorientasikan objek corak reka bentuk dan normalisasi pangkalan data akan digunakan untuk meningkatkan penyelenggaraan, kebolehujuan dan kebolehgunaan sistem. Teknologi NFC digunakan kerana ia menyediakan mudah cepat, ciri-ciri keselamatan dan kos yang sangat rendah. Sistem kehadiran menggabungkan aplikasi dan web sistem mudah alih untuk menyediakan penyelesaian masa nyata dan ditaksir dalam bila-bila masa dan di mana sahaja asalkan akses internet disediakan. Satu improvisasi sistem kehadiran pekerja pasti penyelesaian kepada masalah pelanggan.

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	DECLARATION	ii
	SUPERVISOR DECLARATION	iii
	ACKNOWLEDGEMENTS	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENTS	vii
	LIST OF TABLES	x
	LIST OF FIGURES	xi
	LIST OF ABBREVIATIONS	xii
PART 1	INTRODUCTION	
1.1	Introduction	1
	1.1.1 Problem Statement	2
	1.1.2 Objective	3
	1.1.3 Scope of Study	3
1.2	Review of Current Existing System	4
1.3	Limitation of Current Existing System	20
1.4	Terminology	22
1.5	Method of Approach	23
	1.5.1 Development Tools	23
	1.5.2 Programming Languages	25

1.6	Thesis Organization	26
PART 2 REPORT BODY		
2.1	Requirement Specification	27
	2.1.1 Flow Chart of System	27
	2.1.2 Product Perspective	29
	2.1.3 User Classes and Characteristic	30
	2.1.4 Operating Environment	31
	2.1.5 Constraints	31
	2.1.6 Assumption and Dependencies	32
	2.1.7 External Interface Requirements	32
	2.1.7.1 Software Interfaces	32
	2.1.7.2 Hardware Interfaces	33
	2.1.7.3 User Interfaces	33
	2.1.7.4 Communication Interfaces	33
	2.1.8 Product Function	34
	2.1.9 Performance Requirement	35
	2.1.10 Software Quality Attributes	35
	2.1.11 Security Requirement	35
	2.1.12 Software Product Features	36
2.2	Software Design Description	43
	2.2.1 System Architecture	43
	2.2.2 Screen Dialogue	44
	2.2.3 Wire Frame	47
	2.2.4 Static Organization	53
	2.2.5 Subsystem Interface	57
	2.2.6 Detailed Design Description	58
	2.2.7 Database Design	64
	2.2.8 Data Dictionary	65
	2.2.9 Interface Chart	68

	2.2.10 Detailed Modules Description	69
2.3	Software Development Plan	71
	2.3.1 Comparison of Methodologies	72
	2.3.2 Mapping of Waterfall Model	74
	2.3.3 SQL Statement	76
	2.3.4 PHP Command Development	77
2.4	Test Plan	81
	2.4.1 Specification Based Testing	86
	2.4.2 Decision Table	87
	2.4.3 Integration Testing	87
	2.4.4 System Testing	88
	2.4.5 User Acceptance Test	89
PART 3 CONCLUSIONS		
3.1	Conclusion	91
3.2	Limitation and Constraints	91
3.3	Benefits	92
3.4	Suggestion for Future Work	92
REFERENCES		93
APPENDIXES		
Appendix A	Sequence Diagram & Activity Diagram	95
Appendix B	Gantt Charts	114
Appendix C	Software Development Agreement	116
Appendix D	User Acceptance Testing Form	118

LIST OF TABLES

TABLE	TITLE	PAGE
1.1	Comparison of Features of Three Current System	15
1.2	Comparison of Three Identification Types	18
1.3	Terminology	22
2.1	Hardware Interfaces	33
2.2	Use Case Record Attendance	36
2.3	Use Case View Attendance Records	37
2.4	Use Case Login	38
2.5	Use Case Manage Employee	39
2.6	Use Case Manage Attendance	40
2.7	Use Case Manage Holiday	41
2.8	Use Case Manage Report	42
2.9	Administrator Data Dictionary	65
2.10	Employee Data Dictionary	65
2.11	Holiday Data Dictionary	66
2.12	Attendance Data Dictionary	66
2.13	Config Data Dictionary	67
2.14	Interface Chart of Employee Attendance System	68
2.15	Comparison of Software Development Methodologies	72
2.16	Testing Script with Module Table	82
2.17	Specification Based Testing Table for Attendance System	86
2.18	Decision Table for Attendance System	87
2.19	Integration Test Table for Attendance System	88
2.20	System Testing Result	88
2.21	Unit Testing Result	89

LIST OF FIGURES

FIGURE NO	TITLE	PAGE
1.1	Attend HRM Employee Programs Dashboard	5
1.2	Attend HRM Attendance Schedule Dashboard	5
1.3	Attend HRM Attendance Availability Dashboard	6
1.4	Attend HRM User Rights Dashboard	6
1.5	WebPunchClock Home Page	8
1.6	WebPunchClock Timecard Dashboard	9
1.7	WebPunchClock Attendance Availability Dashboard	9
1.8	WebPunchClock User Summary Report	10
1.9	NFC Inventory Management System	12
1.10	NFC Inventory Management Scanning Item Interface	12
1.11	NFC Inventory Management Admin Dashboard	13
1.12	Biometric Fingerprint	16
1.13	QR Code	17
1.14	NFC Card and Device	17
2.1	Flow Chart of Web Management System	28
2.2	Flow Chart of Mobile System	29
2.3	Context Diagram of Employee Attendance System	30
2.4	Use Case Diagram of Employee Attendance System	34
2.5	System Architecture Diagram	43
2.6	Screen Dialogue (Mobile Application)	44
2.7	Screen Dialogue (Web Management System)	45
2.8	Mobile System Record Attendance Page	47
2.9	Mobile System Clock in Successful Page	48
2.10	Mobile System Attendance Status Page	48

2.11	Mobile System Attendance Setting Page	49
2.12	Administrator Dashboard Page	49
2.13	Manage Attendance Page	50
2.14	Add New Attendance Page	50
2.15	Daily Report Page	51
2.16	Monthly Report Page	51
2.17	Annual Report Page	52
2.18	Employee Home Page	52
2.19	Static Organization of Employee Attendance System	53
2.20	Interfaces between Each Subsystem	57
2.21	UML Diagram of Authentication Package	58
2.22	UML Diagram of ManageAttendane Package	59
2.23	UML Diagram of ManageEmployee Status Package	59
2.24	UML Diagram of ManageHoliday Package	60
2.25	UML Diagram of ManageReport Package	60
2.26	UML Diagram of ManageProfile Package	61
2.27	UML Diagram of Configuration Package	61
2.28	UML Diagram of Attendance Package	62
2.29	UML Diagram of ListView Package	63
2.30	UML Diagram of Database Package	64
2.31	Database Entity-Relationship Diagram	64
2.32	Waterfall Model	74
2.33	Insert Into Database Function	76
2.34	Select Data from Database Function	76
2.35	Update Data from Database Function	76
2.36	Delete Data from Database Function	77
2.37	Database Class	77
2.38	Insert New Attendance to Database	78
2.39	Update Existing Attendance in Database	79
2.40	Delete Existing Attendance in Database	80
2.41	Styling System Interface	80

LIST OF ABBREVIATION

NO	ACRONYMS	DEFINITION
1.	NFC	Near Field Communication
2.	HDD	Hard Disk Drive
3.	HTTP	Hypertext Transfer Protocol
4.	PHP	Hypertext Preprocessor
5.	SQL	Structured Query Language

Part 1

Chapter 1 Introduction

1.1 Introduction

The aim of this project is to develop a user friendly web based employee attendance management system that integrated with android based Near Field Communication (NFC) enabled smartphone/tablet to record employee attendance. The system will cover web interface and also mobile interface for Renaissance Pewter Sdn Bhd, a small pewter manufacturing company which has around 40 employees. Since it is a small company, optimistic cost to implement this system is preferable. In this project, NFC technology is used for identification, NFC tag will used as identifier to track the employee identity. Each employee will have one NFC identity card and this identity card is required for them to take the attendance either punch in or punch out.

The Renaissance Pewter Sdn Bhd currently is still using a traditional way which is manual punch card device to record the time attendance for each employee. The administrator who is in chargers the attendance and reports claimed that she always spent a lot of time on generates reports. Besides that, errors and mistakes are often made by administrator due to excessive of data. Misaligned of timecard during punching also caused administrator having difficulties in verifying the correct attendance time and date. On the other hand, the administrator is often going outstation and the monthly attendance reports are often late generated due to huge amount of times are required to generate the reports.

The system that I will develop will definitely overcome the main problems that Renaissance Pewter Sdn Bhd had facing. With the features of this system, attendance reports can be generated easily and precise attendance date and time can be recorded without ambiguous. Administrator can accesses the system even though she's not in the company by just login to the web management system in anytime and anywhere as long as internet access is available. This system will make use the advantages of NFC technology on android based NFC enabled smartphone/tablet to track the employee attendance with the location and hence update the status instantly to online database which can access in real time by administrator via web management system. The current attendance status can be also view from both smartphone/tablet and web system. There will be an attendance summary on the web system which is display in graph and chart to display the attendance in visual form for better view. NFC interaction is very simple with just only a touch and frictionless experience which is very fast and easy to access. Besides that, a warning email will be send to the employee if he/she is late clock in/ early clock out more than three times.

1.1.1 Problem statement

This subsection will discuss about the problems that facing by Renaissance Pewter Sdn Bhd.

- i. Administrator is still using a manual punch card device to record the time attendance for each employee which is quite time consuming to manage the attendances and reports. Errors or mistakes are often made by administrator during managing the attendance reports due to excessive data and all calculations are done manually.
- ii. Misaligned of timecard during punching is frequently happen caused the administrator having difficulties to verify the correct attendance date and time. Besides that, all timecards of employee are placed at the place which is accessible to every staff in the company caused the timecard lost is often happen.

- iii. Administrator is often going outstation and hence having difficulty to manage the employee time attendance and view the current attendance status so she wants to view/manage the employee's attendance in real time, anytime and anywhere.

1.1.2 Objective

In order to overcome the problems that faced by Renaissance Pewter Sdn Bhd, the system going to implement will possess some objectives as listed below:

- i. To eliminate errors and time wasted in managing the attendance and generate reports.
- ii. To replace the used of paper timecard with NFC tag to record a precise and accurate attendance date, time and location.
- iii. To access the system in anytime and anywhere via laptop, smartphone or tablet as long as there is an internet connection.

1.1.3 Scope of study

The system is design in the combination of web based and android based interfaces which implements NFC technology. The scope that will cover in this project will be:

- i. Administrator can view employee attendance status in real time, manage employee information, view/generate daily, monthly and annual attendance reports, manage holidays, view attendance summary in visual form and manage attendance records.
- ii. Administrator can also set the working hour time and this will determine the late in and early out time.
- iii. Employee can login to the web system to view their personal attendance records, holiday records, submit absent or unpunctual reason and update their personal information.
- iv. Employee attendance is taken by using android based NFC enabled smartphone/tablet to scan the employee's NFC ID tag and hence the record will instantly updates to the database with the location information as well.

- v. Administrator can view the employee attendance status on the smartphone/tablet that installed the system or on the web system in real time. A warning letter will be send through email to the employee who late in/early out for more than three times a month.
- vi. The software that required in this development will be Eclipse, Android Developer Tools, Zend Studio, Sublime Text, Xampp and Microsoft Office.
- vii. The hardware that required will be a Laptop, Android based smarphone/tablet with NFC enabled and NFC tag and wireless router.

1.2 Current existing system

This section will discuss about current existing systems available in the market.

a) Attend HRM Time Attendance System [1]

Attend HRM is a Windows based attendance management system which can integrate with biometric fingerprint scanner device to track the attendance and generate attendance information automatically. Besides that, this system provides the best solution for monitoring attendance efficiently, manage critical employee information easily, monitor absence, overtime, late clock-in, early clock-out and leaves and easy payroll processing.

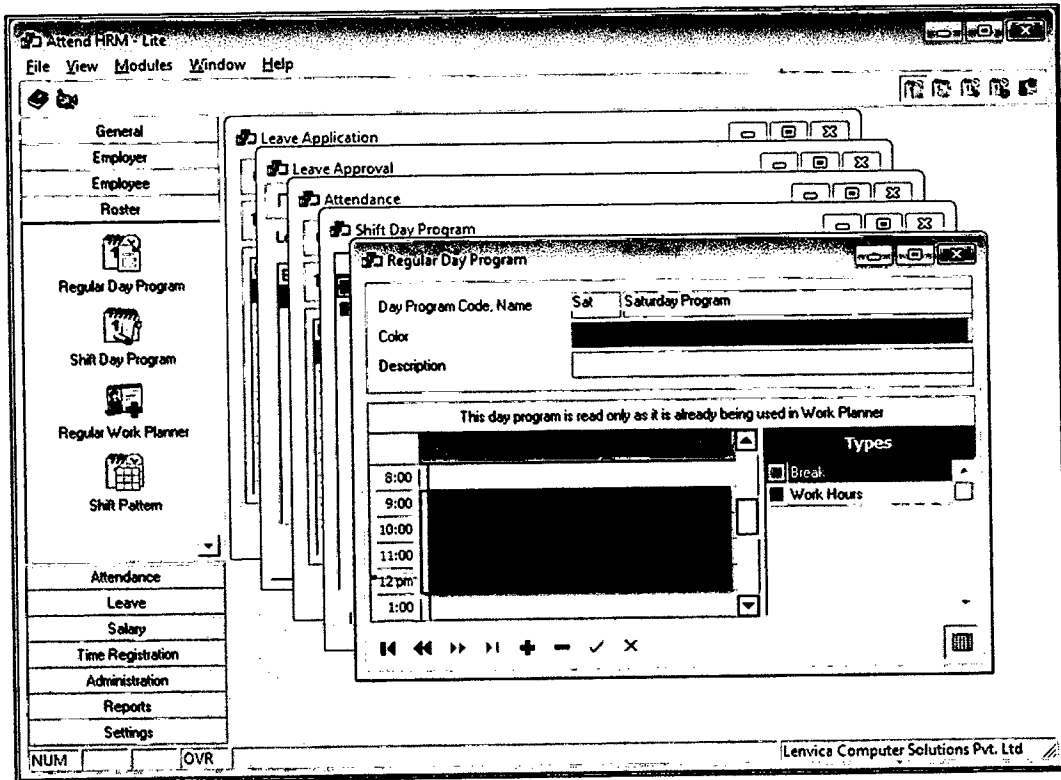


Figure 1.1: Attend HRM Employee Programs Dashboard

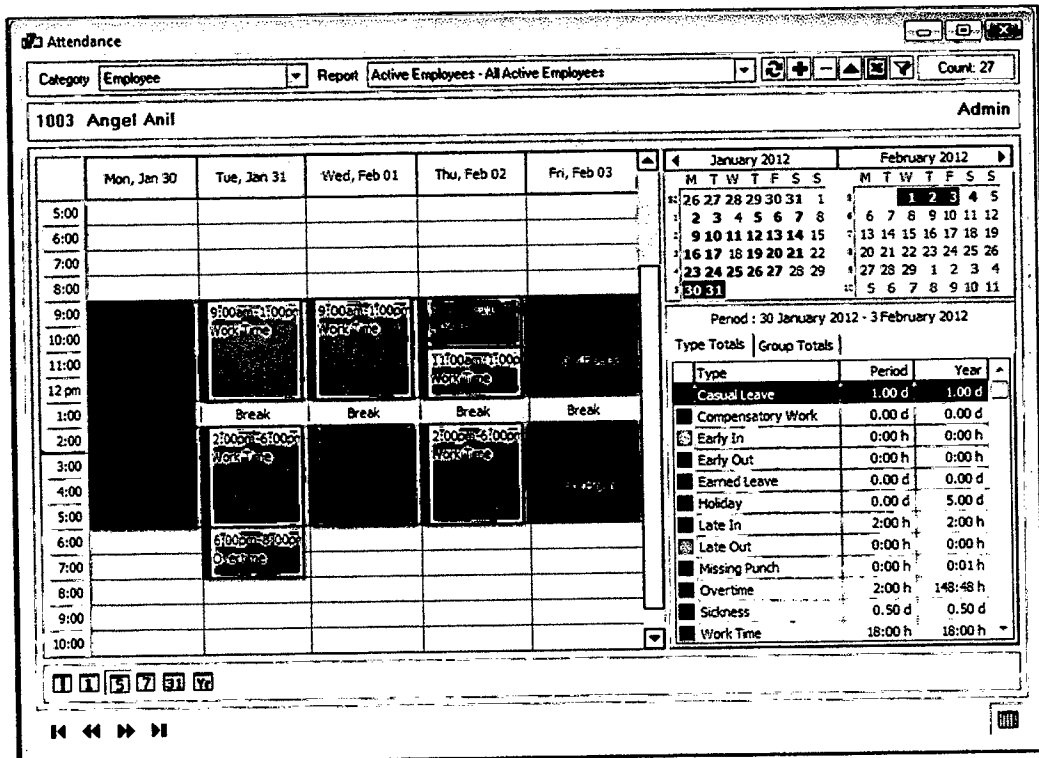


Figure 1.2: Attend HRM Attendance Schedule Dashboard

Status	Employee ID	Name	Location	Department	Last Punch Time
●	1001	Abhinav Nar	Bangalore	Marketing	2/4/2012 8:31 AM
●	1003	Angel Anil	Bangalore	Admin	2/4/2012 7:00 AM
●	02	Babu George	Bangalore	Information Technology	2/4/2012 8:01 AM
●	1002	Biju George	Bangalore	Information Technology	2/4/2012 8:00 AM
●	1009	Brijesh Kumar	Bangalore	Information Technology	2/4/2012 8:02 AM
●	1022	Chandran Vama	Bangalore	Information Technology	2/4/2012 9:00 AM
●	1024	Hakeem Iqbal	Bangalore	Information Technology	2/4/2012 10:00 AM
●	1010	Indu Vijayadharan	Bangalore	Marketing	2/4/2012 8:00 AM
●	1011	Jaison Joseph	Bangalore	Information Technology	2/4/2012 7:00 AM
●	1013	Mahesh Kumar	Bangalore	Information Technology	2/4/2012 8:12 AM
●	1014	Natrajan A	Bangalore	Information Technology	2/4/2012 12:00 PM
●	1025	Neeraj BM	Bangalore	Information Technology	2/4/2012 12:00 PM
●	1015	Priya Raman	Hyderabad	Information Technology	2/4/2012 12:00 PM
●	1026	Rahul K A	Bangalore	Information Technology	2/4/2012 8:30 AM
●	1004	Rijo Pappachan	Bangalore	Information Technology	2/4/2012 6:00 AM
●	1006	Rincy Devassy	Bangalore	Information Technology	2/4/2012 1:00 AM
●	1020	Thiyaga Raju	Bangalore	Admin	2/4/2012 8:00 AM
●	1007	Twinkle Priya Varghese	Bangalore	Information Technology	2/4/2012 8:00 AM
●	1008	Asker Ali	Bangalore	Marketing	2/4/2012 2:40 PM
●	1005	Francis S Victor	Bangalore	Information Technology	2/3/2012 5:00 PM
●	1023	Heera James	Bangalore	Information Technology	2/4/2012 7:09 PM
●	1012	Krupakar S	Bangalore	Marketing	2/4/2012 12:00 PM
●	1016	Ramesh Krishna	Hyderabad	Information Technology	2/4/2012 12:00 PM
●	1017	Revathi Raman	Bangalore	Information Technology	2/4/2012 6:00 PM
●	1018	Shashi Kumar	Hyderabad	Information Technology	2/4/2012 12:00 PM
●	1019	Srinidhi BP	Bangalore	Information Technology	2/4/2012 6:00 PM

Legend

Refresh

Figure 1.3: Attend HRM Attendance Availability Dashboard

Users

Users in selected group

Administrator

- Attend HRM
 - Modules
 - Attendance
 - Employee
 - Employer
 - Default Employer
 - Department
 - Employer Reports
 - Location
 - General
 - Leave
 - Reports
 - Roster
 - Salary
 - Settings
 - Time Registration
 - Reports
 - Attendance
 - Employee
 - Employer
 - Leave
 - Roster
 - Salary
 - Time Registration

Read Only

Read / Write

No Access

Legend

- Attend HRM
- Modules
- Reports
- Module
- Report
- Screen

Figure 1.4: Attend HRM User Rights Dashboard

Features

i. Easy setup and multi languages

Attend HRM provides simple guideline and starting wizard to configure the settings and also six languages (Arabic, English, Hindi, Kannada, Spanish and Tamil).

ii. Real time

Attend HRM can display the availability of the employees in real time and the last punch time of the employees.

iii. Graphical attendance report views

Attendance reports by day, work week, week, month and year can be display in graphical representation for better data interpretation, understanding, more organized and easy comparisons.

Hardware

i. Personal computer – Windows based

Minimum requirements of computer to run the system:

OS : Windows XP / Vista / 7 / 8 / 8.1

CPU : Intel(R) Core 2 duo 2.0GHZ or higher

Memory : 512MB or above

Storage : 250 GB or higher

ii. Biometric fingerprint scanner

Attend HRM can be integrated with fingerprint scanner device to track the employee attendance which can avoid buddy-punching and automatically generate employee information.

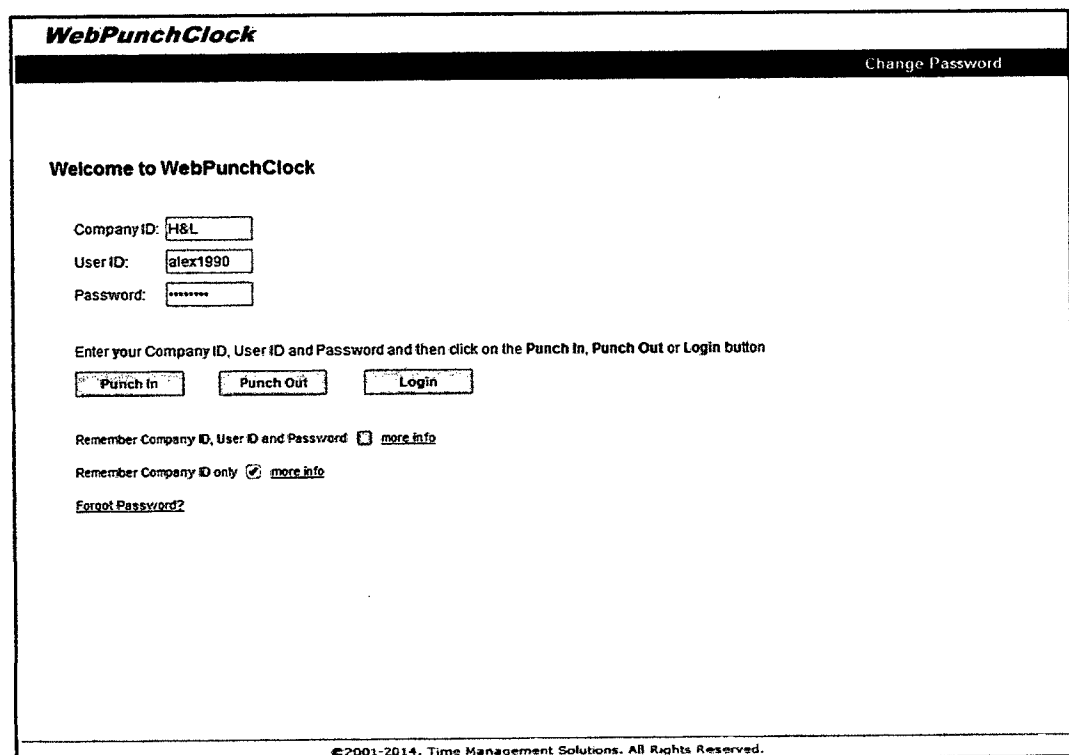
iii. Printer

Either inkjet or laser printer can be integrated with the system to print out the attendance reports.

By the way of conclusion, Attend HRM is a quite complete attendance management solution which can manage attendance efficiently and bring a lot advantages to the company. All the required hardware for the system can easily get in the market or online store.

b) WebPunchClock Management System [2]

WebPunchClock is a web-based management system to track the employee attendance and time work online by using a web browser. It offers a web-based solution with user-friendly and high usability user interface which also can be accessed from anytime and anywhere as long as internet connection is available. The greatest benefits of this system are the costs needed are very low because there is no investment in hardware, software and technical support staff needed.



WebPunchClock Change Password

Welcome to WebPunchClock

Company ID:

User ID:

Password:

Enter your Company ID, User ID and Password and then click on the Punch In, Punch Out or Login button

Remember Company ID, User ID and Password [more info](#)

Remember Company ID only [more info](#)

[Forgot Password?](#)

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Figure 1.5: WebPunchClock Home Page

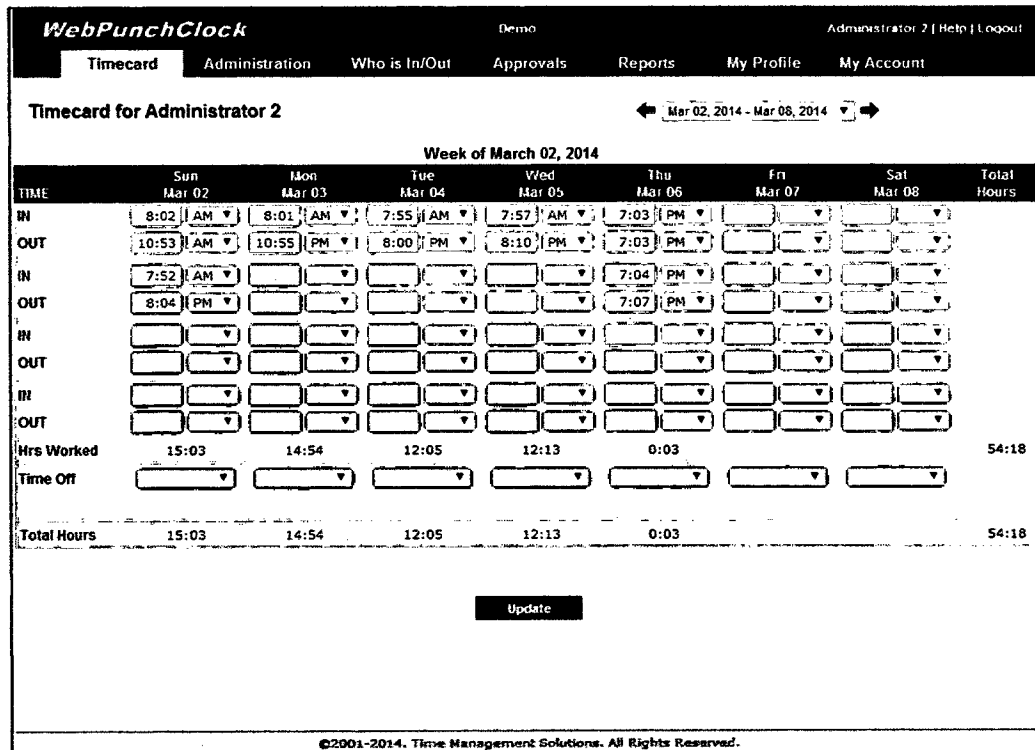


Figure 1.6: WebPunchClock Timecard Dashboard

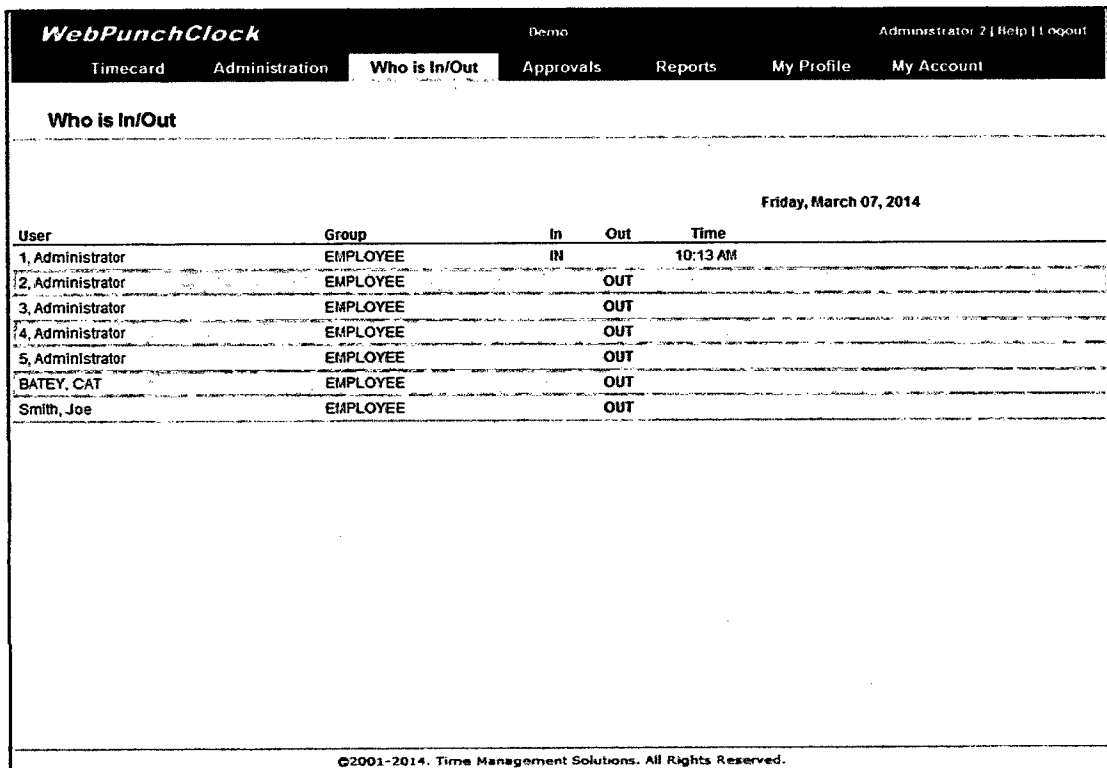


Figure 1.7: WebPunchClock Attendance Availability Dashboard

WebPunchClock Google Chrome
<https://www.timegmtsolutions.com/cgi-bin/webpunchclock.exe?UserReference=DEMO+GUEST2+2014/03/02+DEMO&Co>

User Summary Report for All Groups
 Start Date: Wednesday, January 01, 2014 End Date: Friday, March 07, 2014

User	Holiday	Medical Leave	Paid Leave	Sick Day	Unpaid Leave	Vacation	Non-Workday	Workday
1. Administrator	0	1	0	1	0	1	0	30
2. Administrator	0	0	0	0	0	0	0	15
3. Administrator	0	0	0	0	0	0	0	21
4. Administrator	1	0	0	1	0	1	0	14
5. Administrator	0	0	1	0	0	0	0	15
BATEY, CAT	0	0	0	0	0	0	0	1
Smith, Joe	0	0	0	0	0	2	2	8

Figure 1.8: WebPunchClock User Summary Report

Features

i. Easy to use

User interfaces are designed in simple intuitive which can learn and use without any training.

ii. Better security and protection

All the sensitive data is encrypted and secured with 128-bit encryption to avoid leakage of data to third parties. Besides that, multiple of backup systems on the server side are operates with 24 hours on site monitoring to protect the data from lost.

iii. Real time

Employee's status can be checks in real time and also the attendance reports.

Hardware

i. Personal computer

Any type of computer with any type of Operation system (Windows, Mac OSX, Linux and so on) as long as web browser and internet connection are available.

ii. Smartphone or tablet

Any type of smartphone/tablet with any type of Operating system (Android, IOS, Windows, Blackberry and etc.) as long as web browser and internet connection are available.

By the way of conclusion, WebPunchClock offers a simple, intuitive interface and makes getting started fast and easy time attendance solution to track employee attendance in real time, anytime and anywhere as long as there is an internet connection. Besides that, it also cut down the cost for investment in hardware and technical staff which is very cost effective.

c) NFC Inventory Management by NFC Vision [3]

NFC inventory management is an inventory management system that makes use of the advantages of NFC technology to enhance the controlling process of equipment and technical resources' current status in the field. The information and status of the item in the store can be track by scanning the NFC tag that attached with the item via NFC enable mobile device. Report can be made immediately to the administrator if the description and the verified item do not match and administrator can manage the information via web interface.

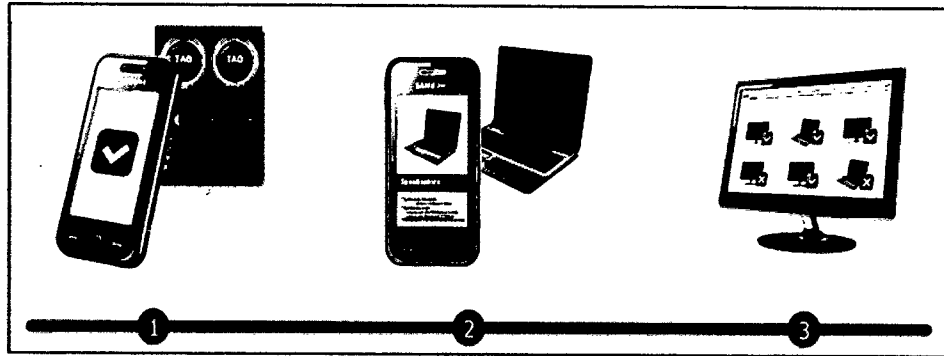


Figure 1.9: NFC Inventory Management System

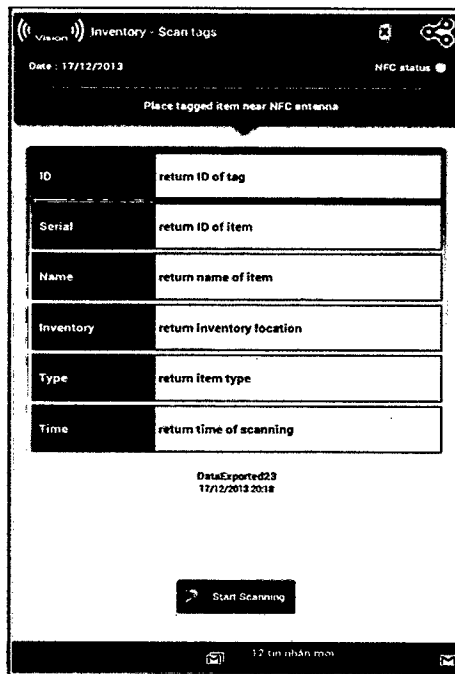


Figure 1.10: NFC Inventory Management Scanning Item Interface (Android)

Recent Screens: User: ad Project: PRJ-CEQ-337 - ADMINISTRATOR

Inventory Status

Order: Receipt # (Descending) v
 Part #: 0 Receipt #: 0 Requisition #: 0
 Status: Select v

Material Name: Search Clear

Order	Part #	Material Name	Quantity	Unit	Quantity	Unit	Status
214	214	Scopolamine Ophthalmic Solution (1%)	30.000	ml	30.000000	ml	Quarantine
213	213	Water for Injection	122.000	L	58.850000	L	Approved
212	212	Water for Injection	24.000	ml	0.000000	L	Rejected
211	211	Water for Injection	1.000	gm	0.000000	L	Conditionally Approved
208	209	Methylparaben Sodium	80.000		0.000000	K	Approved
207	208	Propylparaben Sodium	15.000	ml	0.000000	K	Approved
206	205	Scopolamine Hydrobromide	27.500	ml	0.000000	Each	Conditionally Approved
205	206	Water for Injection	12.000	ml	0.000000	L	Quarantine

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Figure 1.11: NFC Inventory Management Admin Dashboard

Features

i. Real time updates

Item can be tracks and updates in real time to provide more efficient controlling process throughout the day.

ii. Quick and easy access

NFC interaction is very simple with just only a touch and frictionless experience which is very fast and easy to access.

iii. Web interface for administrator

Administrator management dashboard is designed in web based platform which allow administrator to manage the item with any platform of device (Smartphone, Tablet, Desktop, Laptop and etc.) in anytime and anywhere as long as internet connection is available.

Hardware

i. NFC enabled device

Smartphone or tablet with NFC enabled is needed to track the NFC tag which attached to the item to gain the information of the item.

ii. NFC tag

NFC tag is required to store the information for each item in the store to allow tracking process.

iii. Personal computer

Any type of computer with any type of Operation system (Windows, Mac OSX, Linux and so on) as long as web browser and internet connection are available.

By the way of conclusion, NFC Vision offers a good solution for managing inventory in an easy, quick and efficiency way by make use of current high technology, NFC. Besides that, it cut down the cost for custom hard development as the NFC enabled phones can act as both an NFC reader and writer.