IOT Based Organizational Human Resource Monitoring System

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A Project Submitted in Partial Fulfilment of the Requirements for the Degree of
Bachelor of Science in Computer Science and Engineering

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
EAST WEST UNIVERSITY

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Abstract

In recent years, the world has entered a stage of rapid development to digitalization. More different type of works has appeared on a variety of new platforms which is increasing day by day. Earlier people used to keep track of all the records of their organizations by writing on papers which was more insecure and time consuming. The project we have developed is a computerized monitoring system for an organization. The name of this project is "**IOT Based Organizational Human Resource Monitoring System**". In this project we have used a fingerprint scanner to keep daily attendance of the employees of the organization. The system has many options to monitor an organization by a computerized way which helps to store and find organizational database easily.

Nowadays, there are many platforms that allow people to create their own system in an easier and more convenient way. Microsoft Visual Studio is one of the most suitable platforms for creating the system. It supports a variety of programming languages which enables the programmers to program with their familiar language. We have developed the project in Microsoft Visual Studio 2013 by using C# programming language.

DECLARATION

I hereby declare that, this project has been done by us under the supervision of **Md. Shamsujjoha, Senior Lecturer, Department of Computer Science and Engineering, East West University**. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma. Any material reproduced in this project has been properly acknowledged.

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Letter of Acceptance

This Project entitled **"IOT Based Organizational Human Resource Monitoring System"** submitted by Muhammad Al Sahrier Parvez (2013-3-60-025) and Syed Ahmed Hredoy (2013-3-60-042) to the Department of Computer Science and Engineering, East West University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 07th December, 2017.

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_____

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ACKNOWLEDGEMENT

We would like to express our gratitude to our parents. Their diligent support and perpetual inspiration towards study since the early stage of our education, has placed us at the edge of our graduation degree. I believe that whatever we have achieved and whatever we are going to gain are owing to our parents.

We would like to pay homage to our supervisor Md. Shamsujjoha, His cordial directions have kept us on the right track from the very first day of supervision. Whenever, we came up with complicated issues, he guided us the simple way to resolve the issues. Besides, we are grateful to all our course directors for providing us with contemporary insights from the field of system development and implementation.

Our special thanks to all our friends, colleagues for their continuous inspiration and guidelines throughout my study period in East West University.

Moreover, we heartily thank to my family members for their financial supports for our study. Without their support, our study in this university could have been a dream, nothing more. We are profoundly grateful to our Creator that we have been in touch with and guided by such great individuals in the world.

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Chapter 1

Introduction

1.1 Overview

IOT Based Organizational Human Resource Monitoring System is a system the first step towards the computerizing of daily office related works. Nowadays most of the institutions are being digitalized to keep track of all official activities easily. If most of the works are done manually there has more possibility to do mistakes compared to computerized official system. A computerized system reduces the processing time of official activities. Our Finger print security based online organization monitoring system can help an organization to keep the attendance record via biometric device which can save record of 100 fingerprints. When an employee wants to enter in the office he have to put his finger on the biometric device and after successful scanning the device count his attendance on that day and the door is immediately opened if the fingerprint is authenticate. After 5 seconds the door is closed automatically. A super admin is authorized to control the system. By logging in the system the admin add, update, delete information like salary package, holiday package, leave management, attendance records, working schedule, payroll, history etc of any employee. The system helps the employees too because they can use it from anywhere through online. The employees are allowed to make changes of some of their own information by logging in to their own account. They can see their Information. Apply for leave, know the holiday, know the working schedule, check his attendance, know the salary package, know the payroll etc. After using the system the user have to logout from his account for his own security purpose. The system is based on daily office related works.

1.2 Motivation:

For our project we consider the **IOT Based Organizational Human Resource Monitoring System** as our target object. In our country there are few organization system but they having some limitations such as:

- The web applications are not utilized properly by reducing the field level work
- The employee can’t get all Facility which we have given through this software.
- The combination of hardware and software is not there

1.2.1 Purpose of the Project

The system tends to replace the existing system for the organization which is not efficient, organize and not security based. This system is more user friendly than existing system that is why an employee can easily access the system and collect as well as show their required information. Not only the employee but also the administrators can easily access their information. The main purpose of the system will be security based organization system.

1.3 Objective

IOT Based Organizational Human Resource Monitoring System is web based application where the employee login with the website and know his working schedule, can apply for leave, can know the holiday can check his attendance, also can see his salary package. For Admin purpose admin can modify all of that thing and he can select all of package .for hardware admin or employee who r registered in that module can enter that organization and their attendance can also count by that fingerprint hardware system.

1.4 Scope

This system provides easily monitoring a organization .this software is a perfect for a organization with a safe security system. Besides admin and employee can't enter this organization ehich we modify by finger print hardware system. Admin have all the power to see

all the history he can modify all information and all activities. An employee can see all activities of his from anywhere through online. Following are the scopes of the developed system that are elaborately discussed:

- **For Admin:**
    - **Manage employee info:** This module captures all the personal information of an employee. Admin can also edit, active inactive and delete all the users for necessity purpose.
- **Manage full system:** Using module admin can create employee, can set salary for individual or package, can set an employee's working schedule, can maintain attendance manually can give leave an employee can be holiday.

- **For employee:**

    - **Insert Information:** By this system employee can register through admin but after register he can log into the system.

    - **Use system:** The system allow the registered employee to show his attendance, working schedule, holiday, salary . He can edit his personal information which can be changed. He can apply for leave.

- **For Hardware:**

    - **Admin:** Admin can manage 3 button of the hardware enroll a fingerprint he can delete a fingerprint also can monitor the hardware.

    - **Employee:** Employee has 1 button to control for hardware he can only enter the organization through fingerprint .By this hardware system through desktop app attendance can be counted when a employee is entered in that **Chat System:** Doctor can chat with patient and see photo of symptom. Then can provide a prescription.

1.5 Outline

- Introduction
- Existing System
- Requirement Analysis
- Design Specification
- Conclusion and Future wor

Chapter 2

Background Study

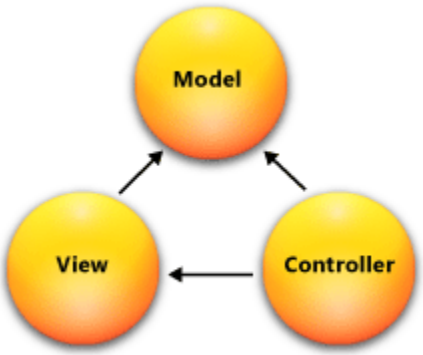
2.1 What is ASP?

ASP.NET is an open source server. ASP stands for Active Server Page. It is designed for web development. Microsoft developed it to help programmers to build dynamic web site. It was developed by Microsoft to allow programmers to build also web service. It was first released in January 2002 with version 1.0 of the .Net framework.ASP.NET is built on the common language. The ASP.NET allowing programmers to write ASP.NET code using any supported .NET language.

2.2 What is MVC frame work in ASP.NET?

The Model-View-Controller (MVC) architectural pattern separates an application into three main components: the model, the view, and the controller. The ASP.NET MVC framework provides an alternative to the ASP.NET Web Forms pattern for creating Web applications. The ASP.NET MVC framework is a lightweight, highly testable presentation framework that (as with Web Forms-based applications) is integrated with existing ASP.NET features, such as master pages and membership-based authentication. The MVC framework is defined in the System Web, MVC assembly.

MVC design pattern



MVC is a standard design pattern that many developers are familiar with. Some types of Web applications will benefit from the MVC framework. Others will continue to use the traditional

ASP.NET application pattern that is based on Web Forms and post backs. Other types of Web applications will combine the two approaches; neither approach excludes the other.
The MVC framework includes the following components:

- Models. Model objects are the parts of the application that implement the logic for the application's data domain. Often, model objects retrieve and store model state in a database. For example, a Product object might retrieve information from a database, operate on it, and then write updated information back to a Products table in a SQL Server database.

  In small applications, the model is often a conceptual separation instead of a physical one. For example, if the application only reads a dataset and sends it to the view, the application does not have a physical model layer and associated classes. In that case, the dataset takes on the role of a model object.
- Views. Views are the components that display the application's user interface (UI). Typically, this UI is created from the model data. An example would be an edit view of a Products table that displays text boxes, drop-down lists, and check boxes based on the current state of a Product object.
- Controllers. Controllers are the components that handle user interaction, work with the model, and ultimately select a view to render that displays UI. In an MVC application, the view only displays information; the controller handles and responds to user input and interaction. For example, the controller handles query-string values, and passes these values to the model, which in turn might use these values to query the database.

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The MVC pattern helps you create applications that separate the different aspects of the application (input logic, business logic, and UI logic), while providing a loose coupling between these elements. The pattern specifies where each kind of logic should be located in the application. The UI logic belongs in the view. Input logic belongs in the controller. Business logic belongs in the model. This separation helps you manage complexity when you build an application, because it enables you to focus on one aspect of the implementation at a time. For example, you can focus on the view without depending on the business logic.
The loose coupling between the three main components of an MVC application also promotes parallel development. For example, one developer can work on the view, a second developer can work on the controller logic, and a third developer can focus on the business logic in the model.

2.3 What is C#?

C# syntax is highly expressive, yet it is also simple and easy to learn. The curly-brace syntax of C# will be instantly recognizable to anyone familiar with C, C++ or Java. Developers who know any of these languages are typically able to begin to work productively in C# within a very short time. C# syntax simplifies many of the complexities of C++ and provides powerful features such as null value types, enumerations, delegates, lambda expressions and direct memory access, which are not found in Java. C# supports generic methods and types, which provide increased type safety and performance, and iterators, which enable implementers of collection classes to define custom iteration behaviours that are simple to use by client code. Language-Integrated Query (LINQ) expressions make the strongly-typed query a first-class language construct.2

As an object-oriented language, C# supports the concepts of encapsulation, inheritance, and polymorphism. All variables and methods, including the `Main` method, the application's entry point, are encapsulated within class definitions. A class may inherit directly from one parent class, but it may implement any number of interfaces. Methods that override virtual methods in a parent class require the override keyword as a way to avoid accidental redefinition. In C#, a struct is like a lightweight class; it is a stack-allocated type that can implement interfaces but does not support inheritance.

In addition to these basic object-oriented principles, C# makes it easy to develop software components through several innovative language constructs, including the following:

- Encapsulated method signatures called *delegates*, which enable type-safe event notifications.
- Properties, which serve as accessories for private member variables.
- Attributes, which provide declarative metadata about types at run time.
- Inline XML documentation comments.
- Language-Integrated Query (LINQ) which provides built-in query capabilities across a variety of data sources.

If you have to interact with other Windows software such as COM objects or native Win32 DLLs, you can do this in C# through a process called "Interop." Interop enables C# programs to do almost anything that a native C++ application can do. C# even supports pointers and the concept of "unsafe" code for those cases in which direct memory access is absolutely critical.

The C# build process is simple compared to C and C++ and more flexible than in Java. There are no separate header files, and no requirement that methods and types be declared in a particular order. A C# source file may define any number of classes, structs, interfaces, and events.

2.4 How to Build Websites in ASP.NET?

ASP.NET offers three frameworks for creating web applications: Web forms, ASP.NET MVC, ASP>NET Web Pages. All three frameworks are stable and mature, and you can create great web applications with any of them. No matter what framework you choose, you will get all the benefits and features of ASP.NET everywhere.

Each framework targets a different development style. The one you choose depends on a combination of your programming assets (knowledge, skills, and development experience), the type of application you're creating and the development approach you're comfortable with. All three frameworks will be supported, updated, and improved in future releases of ASP.NET.

2.4.1 ASP.NET Web Pages

ASP.NET Web Pages and the Razor syntax provide a fast, approachable, and lightweight way to combine server code with HTML to create dynamic web content. Connect to databases, add video, link to social networking sites, and include many more features that help you create beautiful sites that conform to the latest web standards.

2.4.2 Web Forms

With ASP.NET Web Forms, you can build dynamic websites using a familiar drag-and-drop, event-driven model. A design surface and hundreds of controls and components let you rapidly build sophisticated, powerful UI-driven sites with data access

2.4.3 MVC

ASP.NET MVC gives you a powerful, patterns-based way to build dynamic websites that enables a clean separation of concerns and that gives you full control over mark up for enjoyable, agile development. ASP.NET MVC includes many features that enable fast, TDD-friendly development for creating sophisticated applications that use the latest web standards.

2.5 What is JavaScript?

JavaScript and java are two different computer languages, both developed in 1995.Java is an object-oriented programming language, which means it can run independently in a machine environment. It is a reliable, versatile language used for apps for Android devices, enterprise systems that move large amounts of data (especially in the finance industry), and embedded functions for Internet of Things technologies (such as a web-enabled thermostat).JavaScript, on the other hand, is a text-based programming language meant to run as part of a web-based application. When first developed, it was intended to be a compliment to Java. But JavaScript took on a life of its own as one of the three pillars of web development—the other two being HTML and CSS. Unlike Java applications, which need to be compiled before they can run in a web-based environment, JavaScript was purposely designed to integrate into HTML. All major web browsers support JavaScript, though most give users the option of disabling support for it.

2.6 What is Bootstrap?

Bootstrap is an open source toolkit for developing with HTML, CSS, and JS. Quickly prototype your ideas or build your entire app with our Sass variables and mixins, responsive grid system, extensive prebuilt components, and powerful plugins built on jQuery.

2.7 What is CSS?

Cascading Style Sheets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.

CSS handles the look and feel part of a web page. Using CSS, you can control the colour of the text, the style of fonts, the spacing between paragraphs, how columns are sized and laid out, what background images or colours are used, layout designs, variations in display for different devices and screen sizes as well as a variety of other effects.

CSS is easy to learn and understand but it provides powerful control over the presentation of an HTML document. Most commonly, CSS is combined with the mark up languages HTML or XHTML.

2.8 What is HTML?

HTML (Hypertext Markup Language) is the set of markup symbols or codes inserted in a file intended for display on a World Wide Web Browser page. The markup tells the Web browser how to display a Web page's words and images for the user. Each individual markup code is

referred to as an element (but many people also refer to it as a tag). Some elements come in pairs that indicate when some display effect is to begin and when it is to end.

2.9 What is SQL?

Microsoft SQL Server is a relational database management system, or RDBMS, that supports a wide variety of transaction processing, business intelligence and analytics applications in corporate IT environments. It's one of the three market-leading database technologies, along with Oracle Database and IBM's DB2.

Chapter 3

Existing System

3.1 Existing Feature:

The features of the existing systems are listed below:

For Admin he can

- Login and logout for his security purpose
- Add Employee
- Add individual salary package or A group of salary package
- Set individual holiday or a group of holiday package
- Maintain leave management system
- Maintain attendance system
- Set individual working schedule or a group of working schedule
- Set payroll
- See all history of all employee from now to last one year
- Add Update View Delete for all of the above section

In this System there are many employee whom are benefited by this software because they can use it from anywhere through online. They can know all of information from any place.

Employee also can

- Login and logout for their security purpose
- See their Information
- Apply for leave
- Know the holiday
- Know the working schedule
- Check his attendance
- Know the salary package
- Know the payroll

There has also designed a hardware which is for security purpose and attendance record purpose.

Hardware system can

- Record 100 Fingerprint
- Open gate if the finger print is authenticate
- Close the door or gate after a certain period
- Show hard ware based information by using LCD display
- Show LED light for both cases if finger print wrong or right
- Control by admin using 3 button for different purposes
- Enter a employee by pressing the employee purpose button
- Also attach to the web through desktop app for attendance purpose in the organization system

3.2 Challenges of existing system:

There are some challenges of the existing system. Some are mentioned below:

- Read hardware data to desktop
- Record all information From today to whenever you want.
- Salary Package Setting.
- Attendance with fingerprint

3.3 Proposed System:

The proposed system will provide the following activates of the users:

Administrator Activities:

- Login and logout for their security purpose
- See their Information
- Apply for leave
- Know the holiday
- Know the working schedule
- Check his attendance
- Know the salary package
- Know the payroll
- Show the company graph

Employee Activities:

- Login and logout for their security purpose
- See their Information
- Apply for leave
- Know the holiday
- Know the working schedule
- Check his attendance
- Know the salary package
- Know the payroll
- Know his performance by graph

Hardware:

- Record 100 Fingerprint
- Open gate if the finger print is authenticate
- Close the door or gate after a certain period
- Show hard ware based information by using LCD display
- Show LED light for both cases if finger print wrong or right
- Control by admin using 3 button for different purposes
- Enter a employee by pressing the employee purpose button
- Also attach to the web through desktop app for attendance purpose in the organization system
- Login by fingerprint

Chapter 4

Requirement Analysis

4.1Requirement Analysis:

This web based office system is used by the admin and the employees. So there are two types of actor: admin & employee. The admin is allowed to make changes all of the accounts' informations whereas the employees are allowed only to make changes to some of his personal informations in the system.

4.1.2 Data Requirement

During requirement analysis the following data have been identified which is gathered by a consequent process in the system:

- Firstly a super admin has access to the system. To be registered as an employee of the organization each and every employee has to come to the admin providing his/her required informations.
- Each employee as well as admin has a unique user id and password. They can login to the system using their personal user id and password from anywhere having an internet connection.
- Admin add a new employee with the required informations along with that employee's salary package. After successful registration employee will get a new user id and password so that he can manage his own account.
- For any kind of leave application user have to login to his own account to apply for leave. The admin will be notified about the application when admin is logged in to his account. The admin only has the authority to grant or reject the application. The employee who has applied for leave will be notified when his application is granted or rejected.
- After the promotion of an employee the salary package and designation will be changed by the admin. No employee has access to the salary package and designation.
- According to the designation only admin can attach the holiday package for individual employees.
- Attendance system is maintained by admin.
- Working schedules are set by the employee and the employees can check his own schedule by accessing their account.
- Payroll
- History as like attendance, working schedule etc of any can be viewed by admin and employees can only check his own.
- Add, update, delete of all the sections of informations of any employee can be done by admin.

4.1.3 Process Requirement

The following process requirements are identified for job system:

- A valid login is required for all process to be performed. A valid login is required for every registered users and admin. All of them have a valid user id and password. System will authenticate their valid login.

- After valid login admin and employees will have access to the system.

- If a user forgot his user id or password he has to contact with the admin.

- Users have to logout from his account at the end of visiting the system for their security purpose of their informations.

4.2 Physical Design

The physical design relates to the actual input and output processes of the system. This is laid down in terms of how data is input into a system, how it is verified or authenticated, how it is processed, and how it is displayed as In Physical design; the following requirements about the system are decided.

- Input requirements
- Output requirements
- Storage requirements
- Processing Requirements

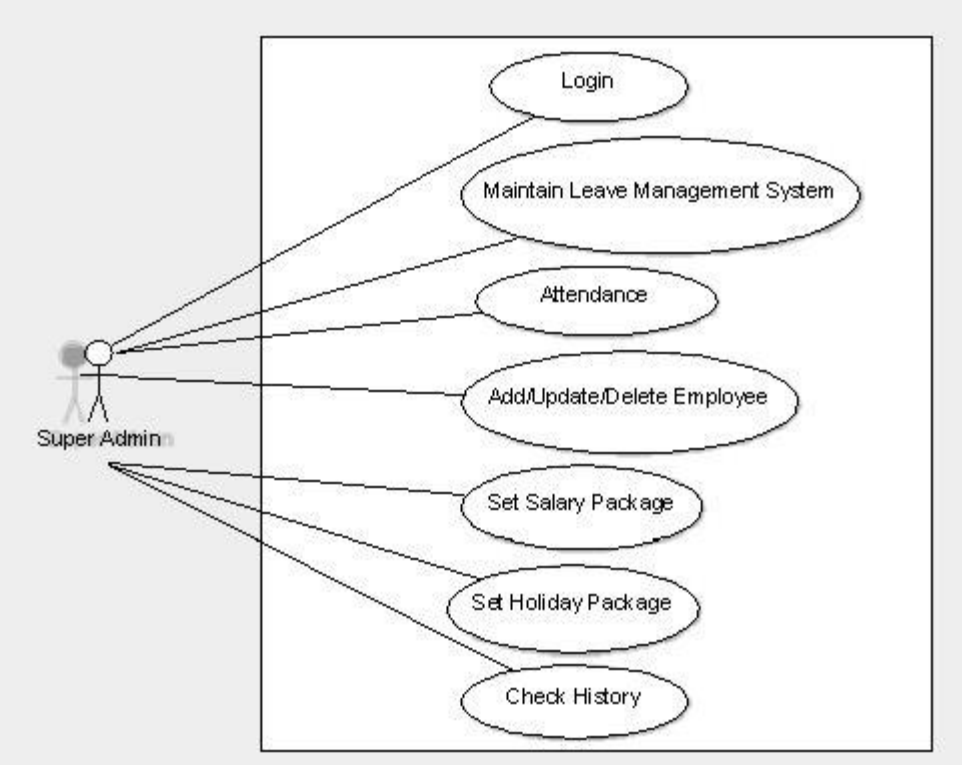
Put another way, the physical portion of systems design can generally be broken down into three subtasks-

- User Interface Design
- Data Design
- Process Desig

4.3 Use Case Diagram

4.3.1 Use Case Diagram for Super Admin

The use case diagram for administrative management is shown in figure 3.1

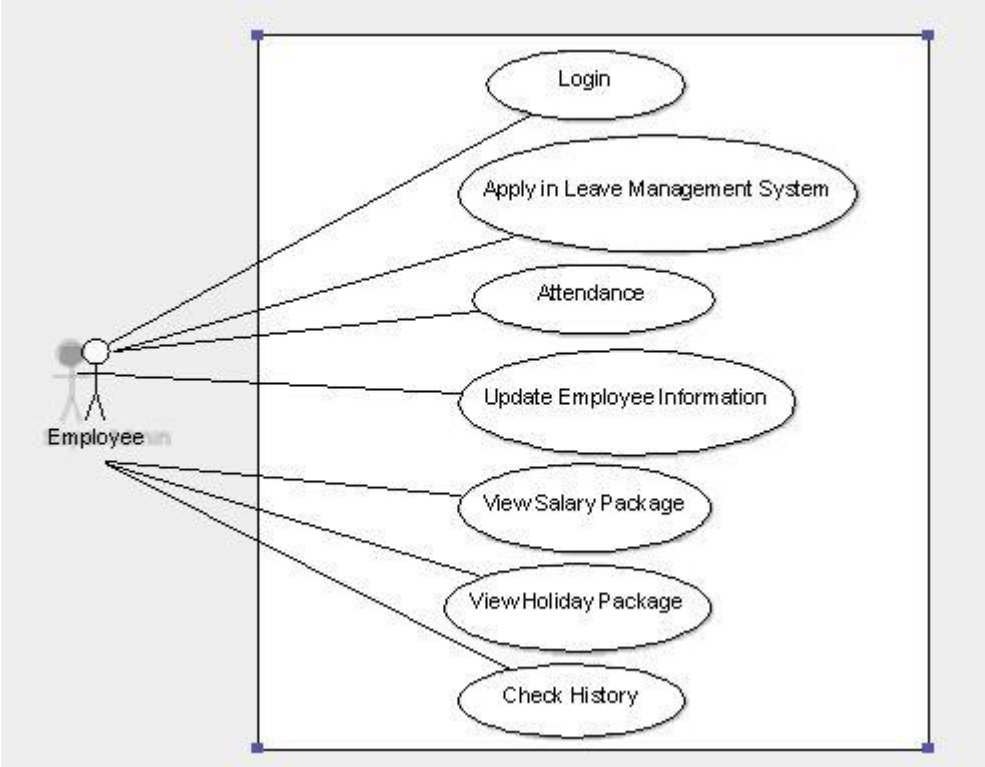


Description: This is the use case diagram of an admin. This diagram shows which works are done by the admin.

- **Login:** The Super Admin Has to login to do the administrative work.
- **Add Employee:** Admin can add an employee with all of his necessary infomations.
- **Update or Delete Employee:** Admin has access to update or delete any informations of any employee.
- **Attendance:** Admin is authorized to maintain attendance system.
- **Leave Management:** The leave applications which are applied by employees may be accepted/rejected by the admin.
- **Holiday Package:** Which holiday package is appropriate for an employee is set by an admin.
- **Salary Package:** Admin can add/update a salary package to an employee.
- **Check History:** Recent office activities of any employee can be checked by admin.

4.3.2 Use Case Diagram for Employee

Case Diagram for Employee

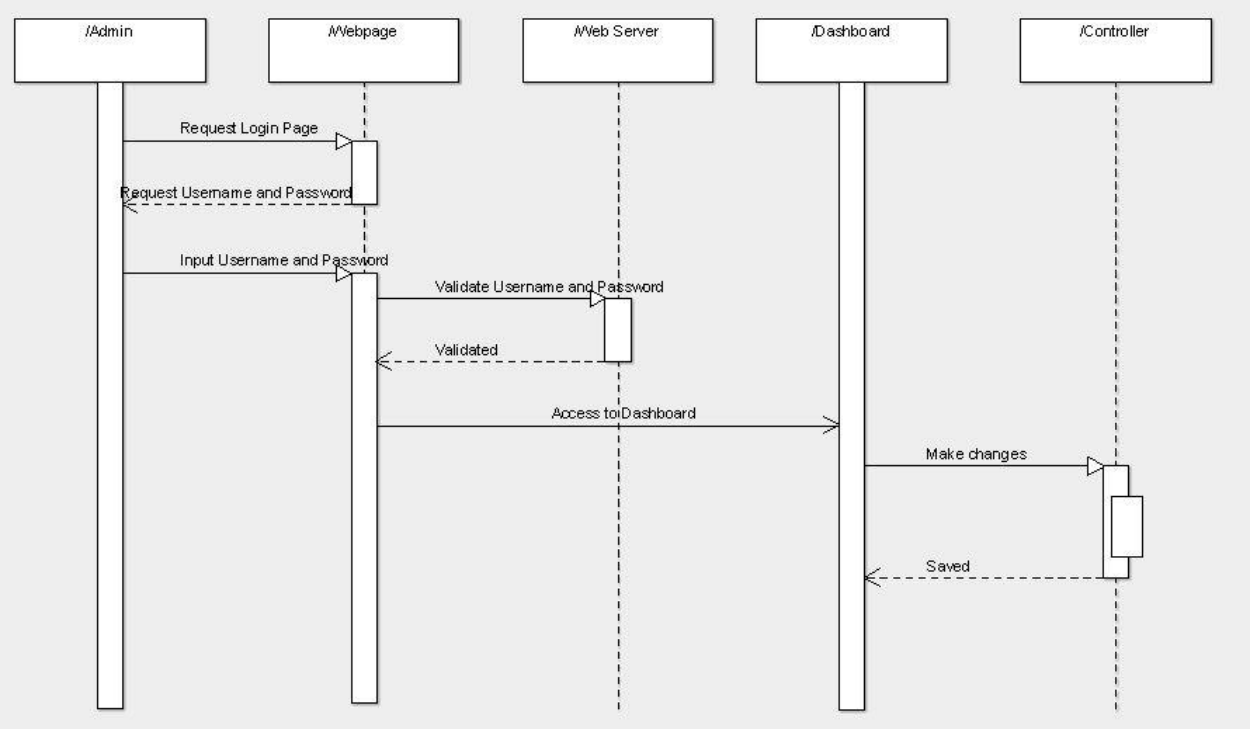


The use case diagram for Employer management is shown below

Figure: Use Case diagram for employee

- **Login:** An employee has to login into the system to view or update his own informations.
- **Update Information:** Employee can make changes to some of his own informations.
- **Attendance:** Employee can check his attendance record.
- **Leave Management:** Here employee can apply for a leave mentioning the period and cause of leave.
- **Salary Package:** Employee can check details of his salary package as well as earned bonuses.
- **Holiday Package:** Here he can check his holiday package.
- **Check History:** An employee's recent history is shown here.

4.4Sequence Diagram:



4.5 Software requirements

To run the system, we need to have following requirements on the hosting system.

Web Server

- SQL Server

Database Language:

- SQL

Server Side Language

- C#

Visual Design

- Microsoft Visual Studio 2013

4.6 Software Implementation

To implement this software the tools are used fully open sources. So that there are no costing involves developing this software. For designing this project HTML, CSS, JAVASCRIPT, AJAX are used which is open source. SQL Server is used as web server. C# is used for system coding. SQL is used as database server.

4.7 Database Implementation

After getting the requirement of a logical design and physical design of our database, we can move to the implementation stage. In general, implementing our physical design involves defining the various objects and enforcing the constraints on the data relationships

Chapter 5

Design Specification

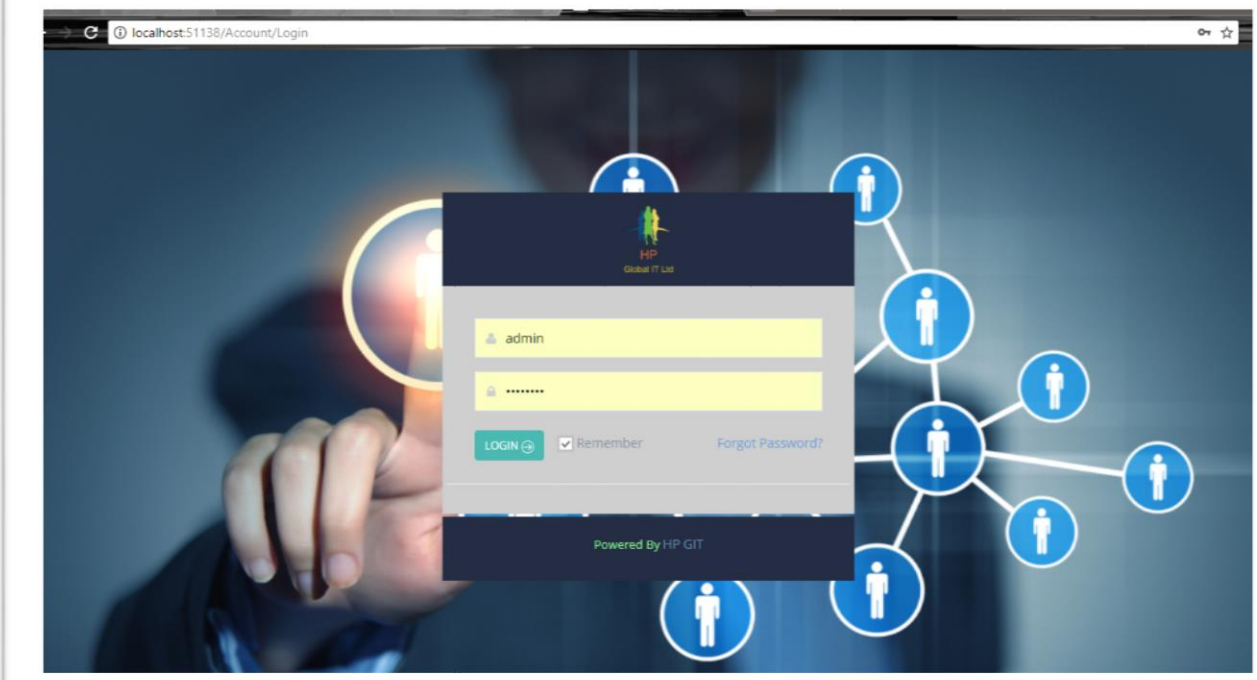
5.1 Interface

A critical aspect of systems design is to create the user interface to the new system. Input and output design focuses on the content of that interface – the specific fields that should be included in screens and reports that are viewed by the users. Once the content is determined, the format for human-computer interaction (HCI) is determined. The user interface (UI) is the way the system talks to the users, using screens/forms, reports, and error messages. During interface design developers identify procedures for each system activity and the required inputs for those activities. These required inputs become screens or forms. User involvement is critical during these design activities.

5.2 User Interface of Admin

5.2.1 Login Page

The login page of the E-Health Care system and Online Pharmacy is shown in figure 4.1

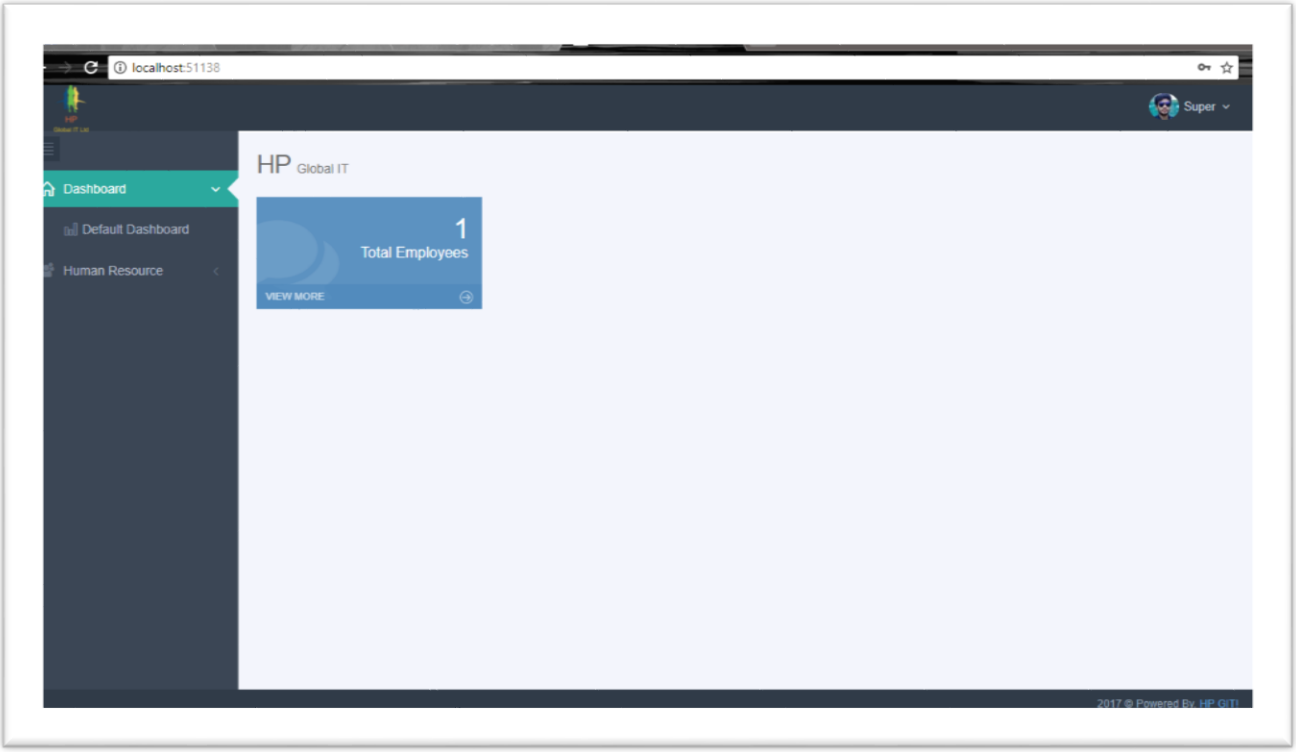

localhost:51138/Account/Login
HP
Global IT Ltd
admin
LOGIN
Remember
Forgot Password?
Powered By HP GIT

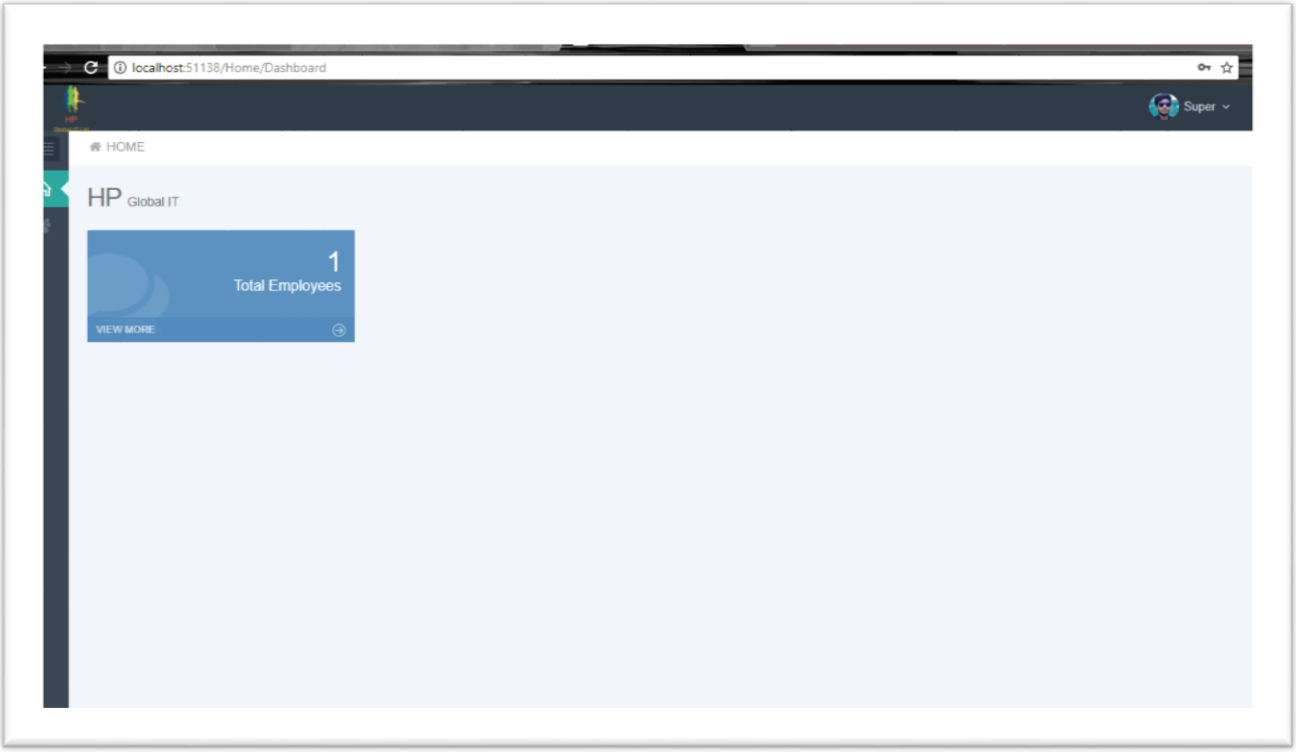

Secure | https://www.facebook.com/globalitltd/
HP Global It Ltd
Sahrier
Home
HP Global It Ltd
@globalitltd
Home
Posts
Reviews
Photos
About
Community
Create a Page
7 10 2017
Like
Follow
Share
Send Message
Sayed Ahmed invited you to like this Page
Show that you're interested in this Page by liking it.
Like Page
Status
Photo/Video
Write something on this Page...
Posts
Software
Community
See All
Invite your friends to like this Page
About
See All
Send Message
Software
YOUR GAMES
RECOMMENDED GAMES
YOUR PAGES
Parvez
CONTACTS
Turn on chat to see who's available.

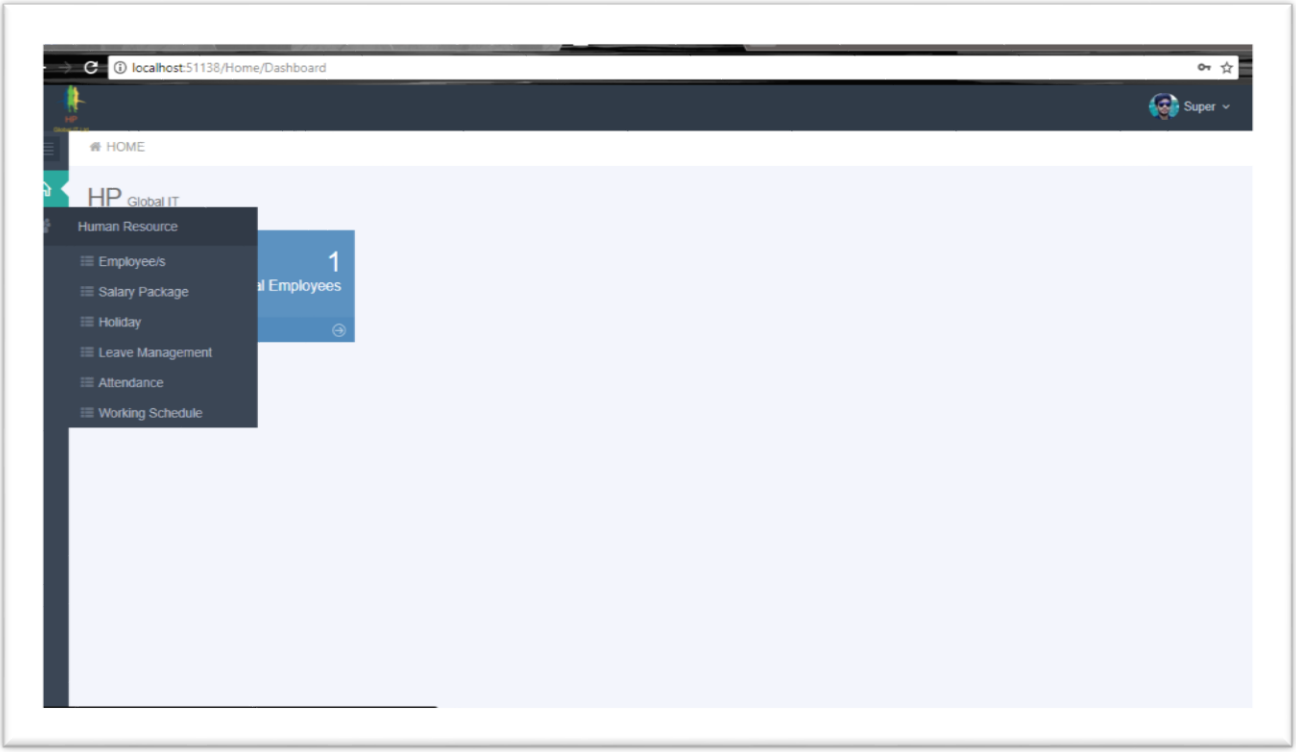
Description: This is the first page to enter into the system. An admin or an employee can enter into the system using his personal username and password. Each and every employee has a unique username. There is an option to recover user's password if he is out of mind. The user should uncheck the box if he enter into the system by using a public pc. There is a hidden option of audit logs and log out.

5.2.2Admin Home Page

This is the home page of admin.



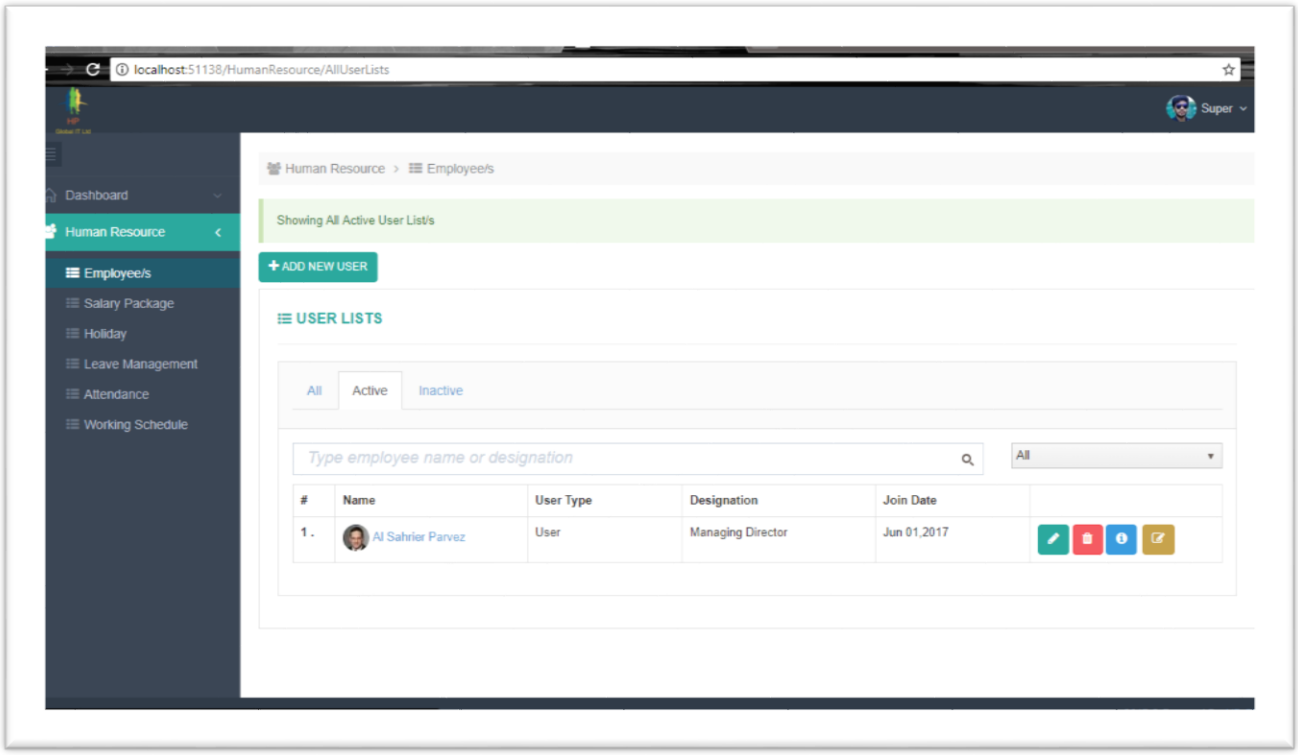


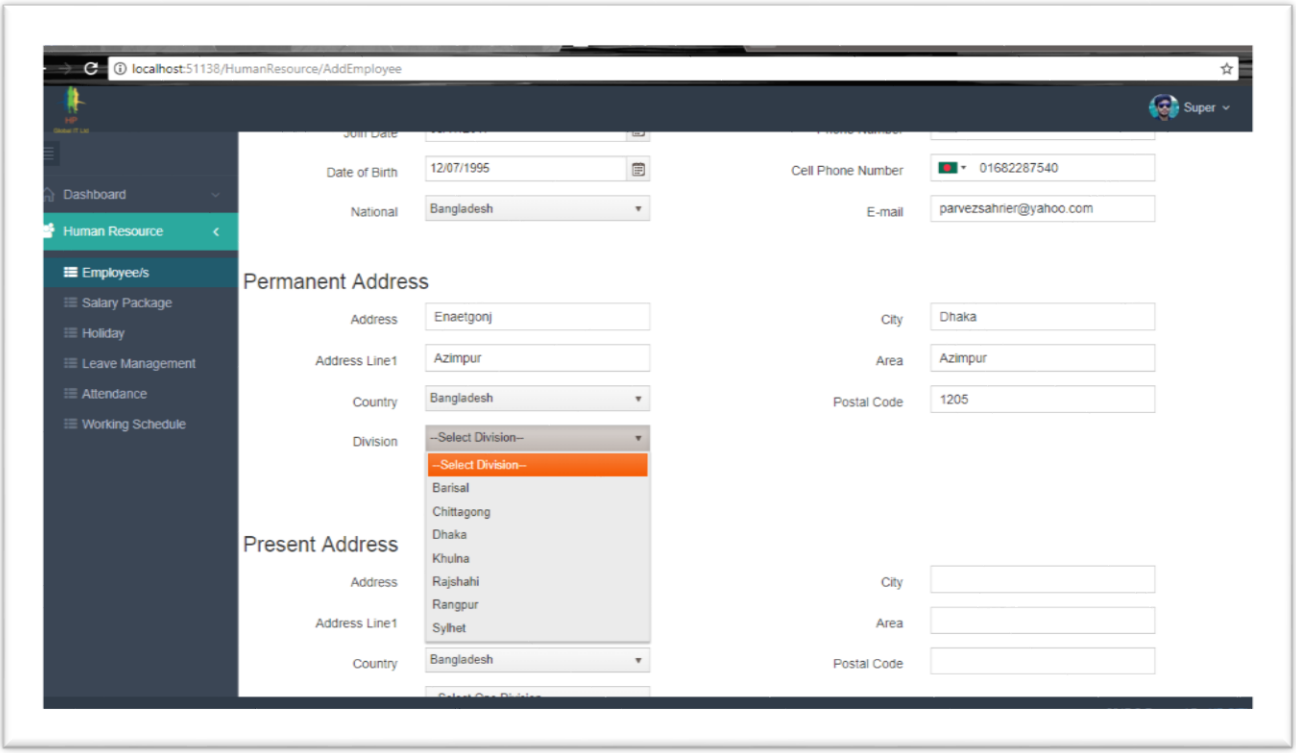


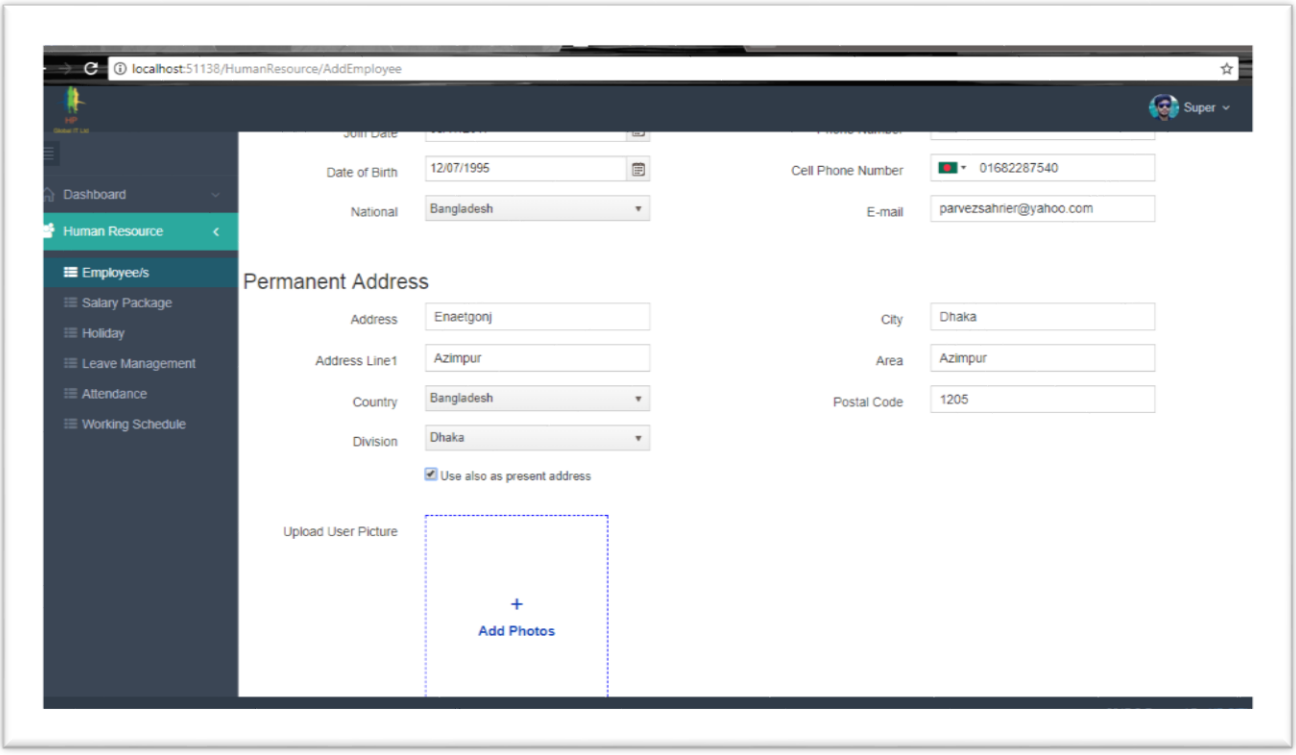
Description: In the left side the dashboard is given. Here admin can go to the pages written in the left side and is authorized to make any changes.

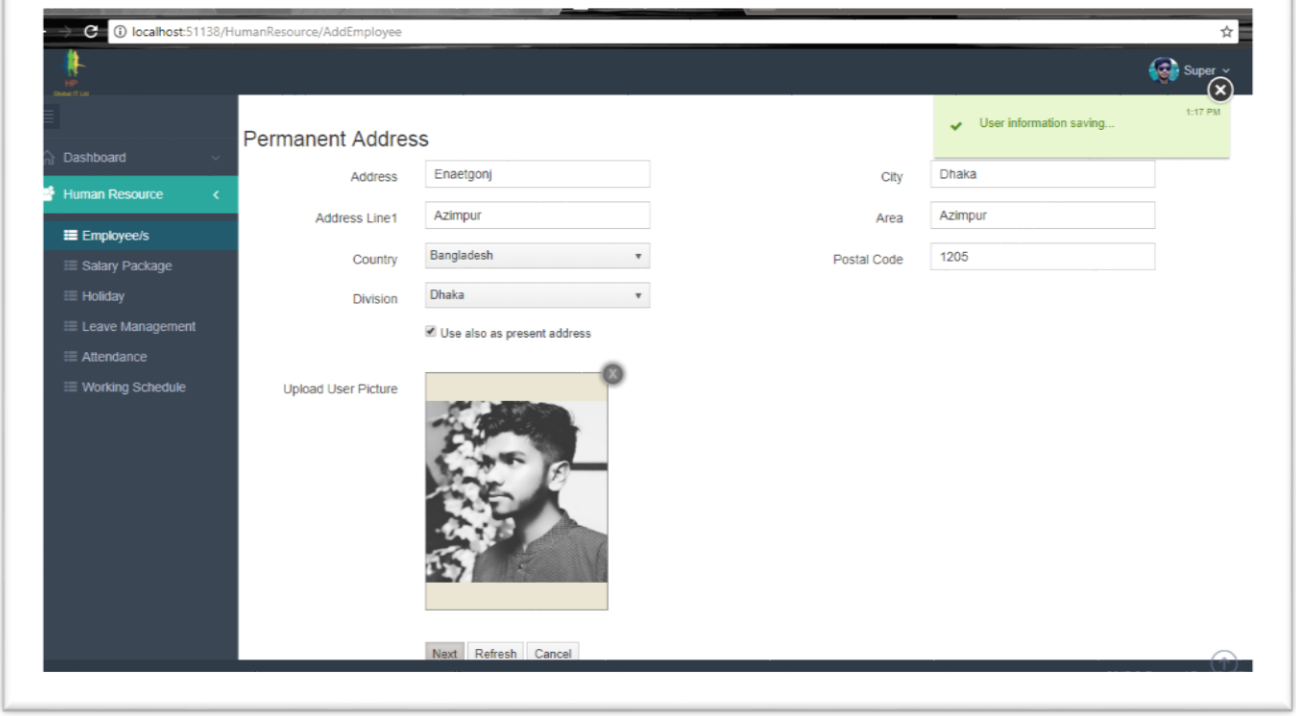
5.2.3 Employee/s

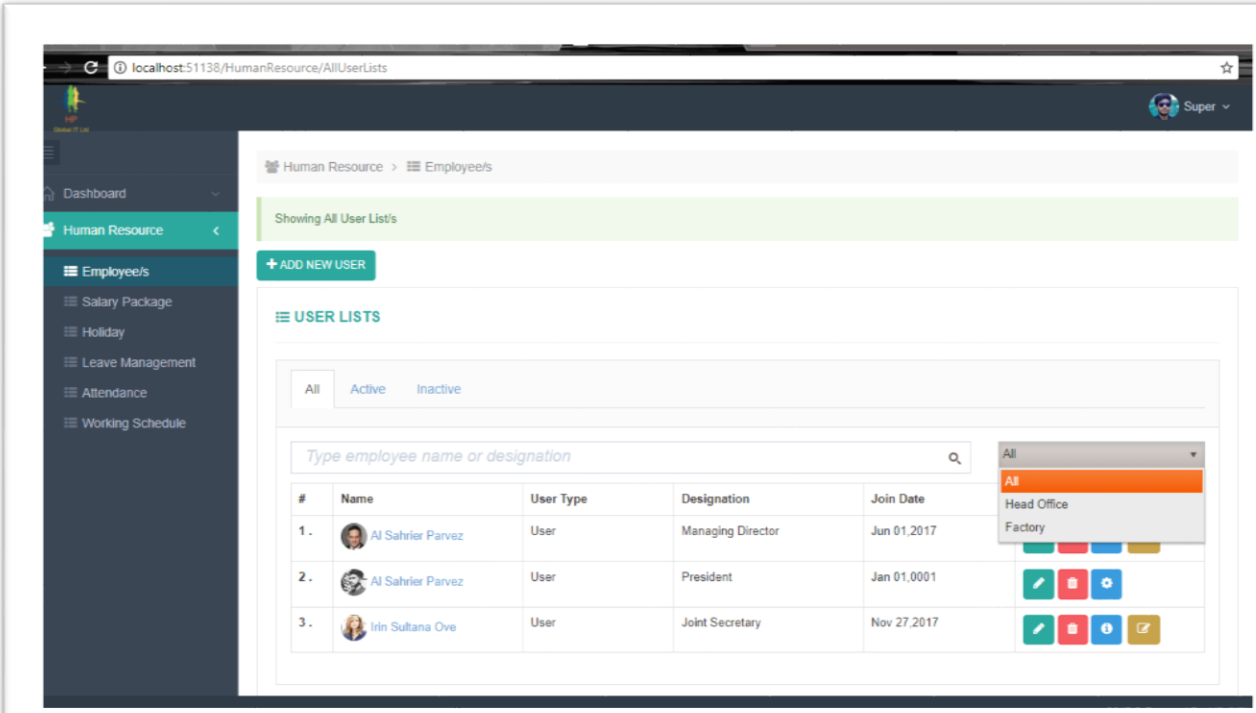
Admin can add, delete employee to the system. He can update informations of any employee also. All active and inactive user lists are shown in here. In the add new user button an admin can add an employee in the system by filling the boxes with appropriate informations. After adding admin will be notified by a pop up message. Here admin can check details of any employee.

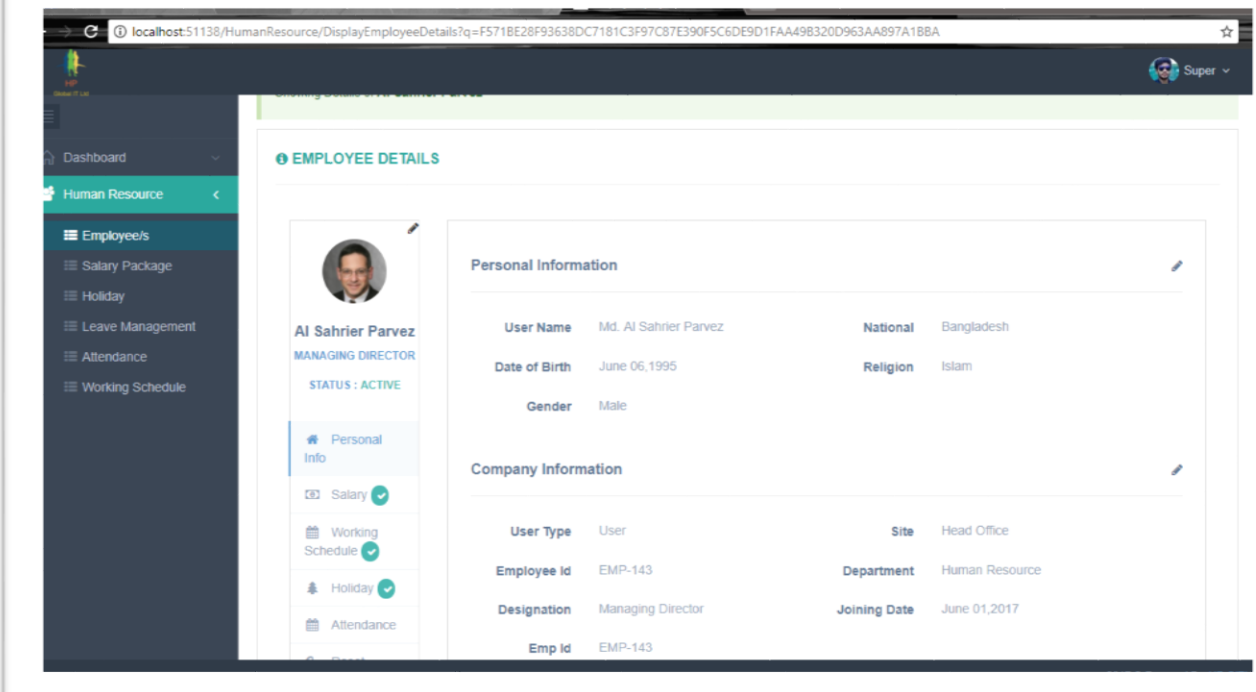



localhost:51138/HumanResource/AddEmployee
Super
Dashboard
Human Resource
Employee/s
Salary Package
Holiday
Leave Management
Attendance
Working Schedule
Date of Birth
12/07/1995
National
Bangladesh
Cell Phone Number
01682287540
E-mail
parvezsahrier@yahoo.com
Permanent Address
Address
Enaetgonj
Address Line1
Azimpur
Country
Bangladesh
Division
--Select Division--
City
Dhaka
Area
Azimpur
Postal Code
1205
--Select Division--
Barisal
Chittagong
Dhaka
Khulna
Rajshahi
Rangpur
Sylhet
Present Address
Address
Address Line1
Country
Bangladesh
City
Area
Postal Code


localhost:51138/HumanResource/AddEmployee
Super
Dashboard
Human Resource
Employee/s
Salary Package
Holiday
Leave Management
Attendance
Working Schedule
Date of Birth
12/07/1995
Cell Phone Number
01682287540
National
Bangladesh
E-mail
parvezsahrier@yahoo.com
Permanent Address
Address
Enaetgonj
City
Dhaka
Address Line1
Azimpur
Area
Azimpur
Country
Bangladesh
Postal Code
1205
Division
Dhaka
Use also as present address
Upload User Picture
Add Photos

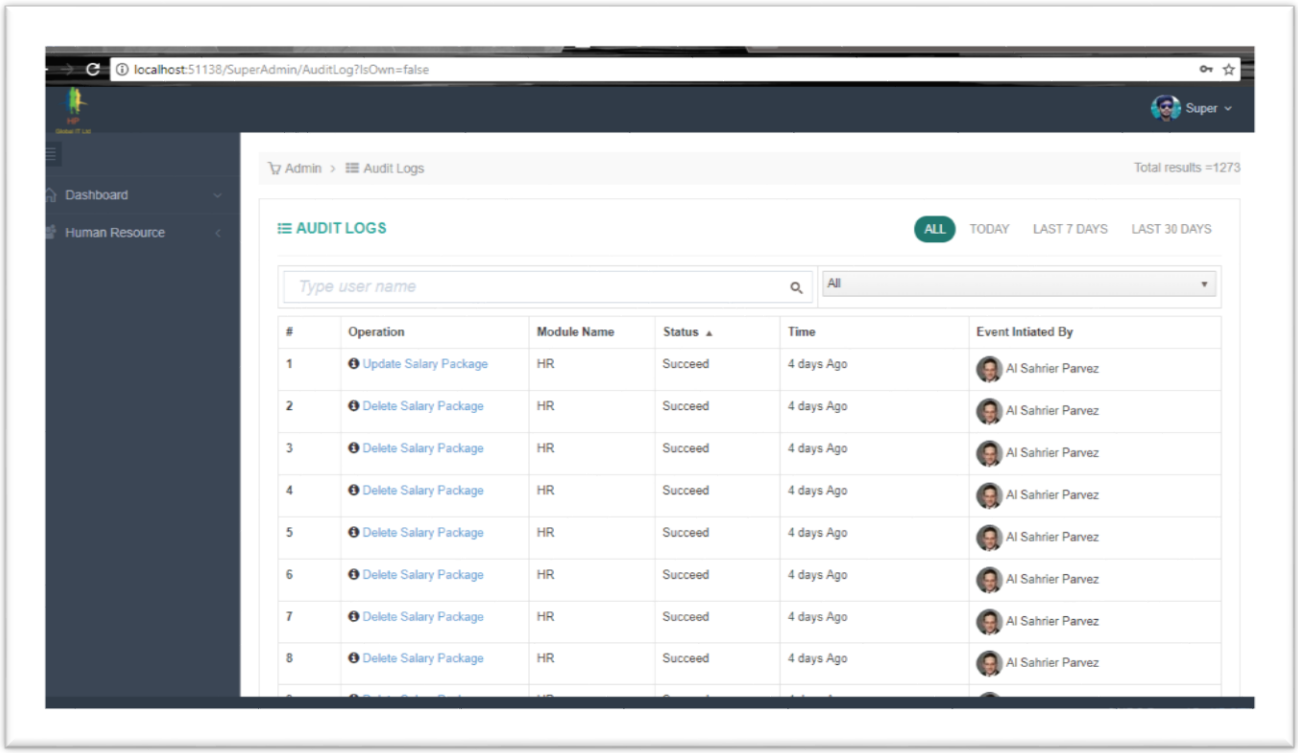

localhost:51138/HumanResource/AddEmployee
Super
User information saving...
1:17 PM
Dashboard
Human Resource
Employee/s
Salary Package
Holiday
Leave Management
Attendance
Working Schedule
Permanent Address
Address
Enaetgonj
City
Dhaka
Address Line1
Azimpur
Area
Azimpur
Country
Bangladesh
Postal Code
1205
Division
Dhaka
Use also as present address
Upload User Picture
Next
Refresh
Cancel


localhost:51138/HumanResource/AllUserLists
Super
Dashboard
Human Resource
Employee/s
Salary Package
Holiday
Leave Management
Attendance
Working Schedule
Human Resource > Employee/s
Showing All User List/s
+ ADD NEW USER
USER LISTS
All
Active
Inactive
Type employee name or designation
All
Head Office
Factory
Name User Type Designation Join Date
1. Al Sahrier Parvez User Managing Director Jun 01,2017
2. Al Sahrier Parvez User President Jan 01,0001
3. Irin Sultana Ove User Joint Secretary Nov 27,2017


localhost:51138/HumanResource/DisplayEmployeeDetails?q=F571BE28F93638DC7181C3F97C87E390F5C6DE9D1FAA49B320D963AA897A1BBA
Super
Dashboard
Human Resource
Employee/s
Salary Package
Holiday
Leave Management
Attendance
Working Schedule
EMPLOYEE DETAILS
Al Sahrier Parvez
MANAGING DIRECTOR
STATUS : ACTIVE
Personal Info
Salary
Working Schedule
Holiday
Attendance
Personal Information
User Name Md. Al Sahrier Parvez
National Bangladesh
Date of Birth June 06,1995
Religion Islam
Gender Male
Company Information
User Type User
Site Head Office
Employee Id EMP-143
Department Human Resource
Designation Managing Director
Joining Date June 01,2017
Emp Id EMP-143

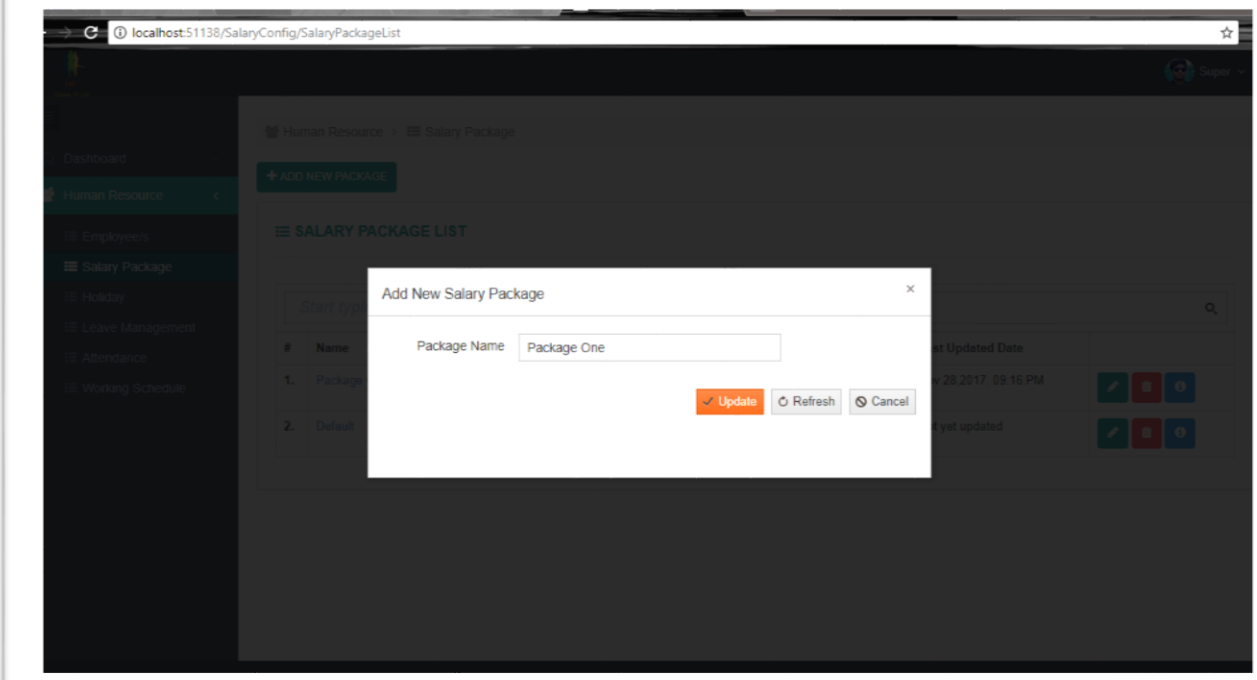
5.2.4 Audit logs:

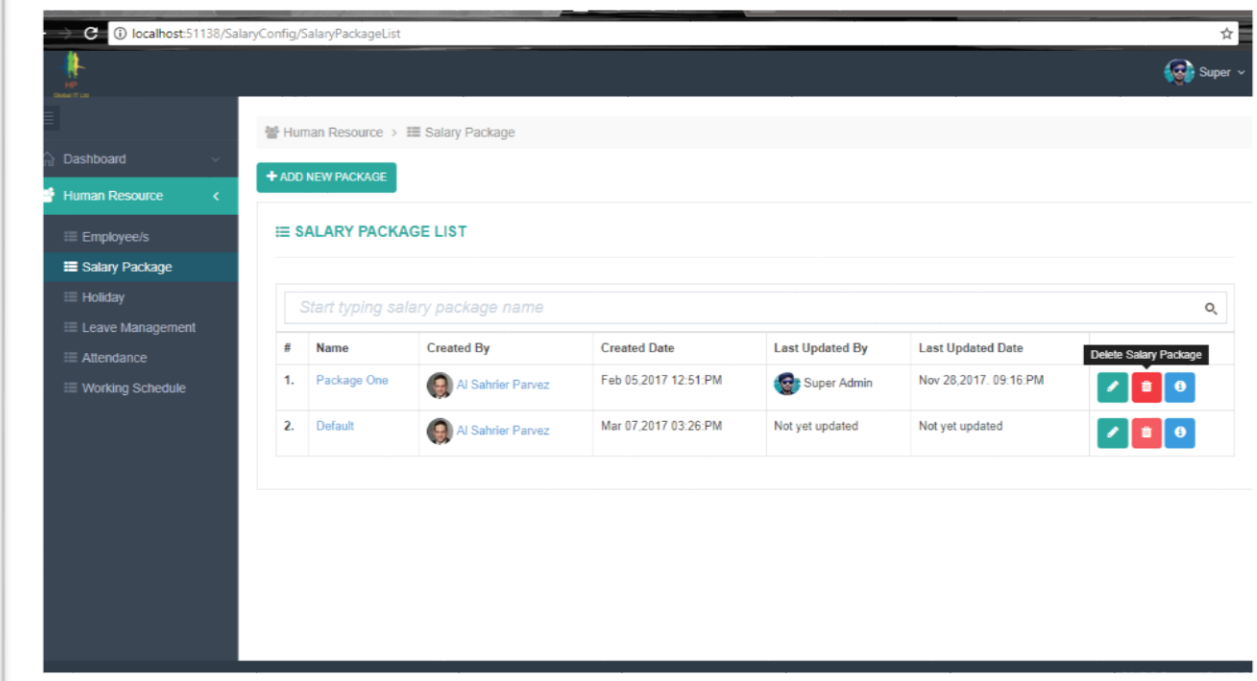
This option is hidden in the top right corner of the admin homepage. The history of changes of any portion of the system is shown in here. It keeps records of past 30 days. Which operation is made by which user is shown here with other details.

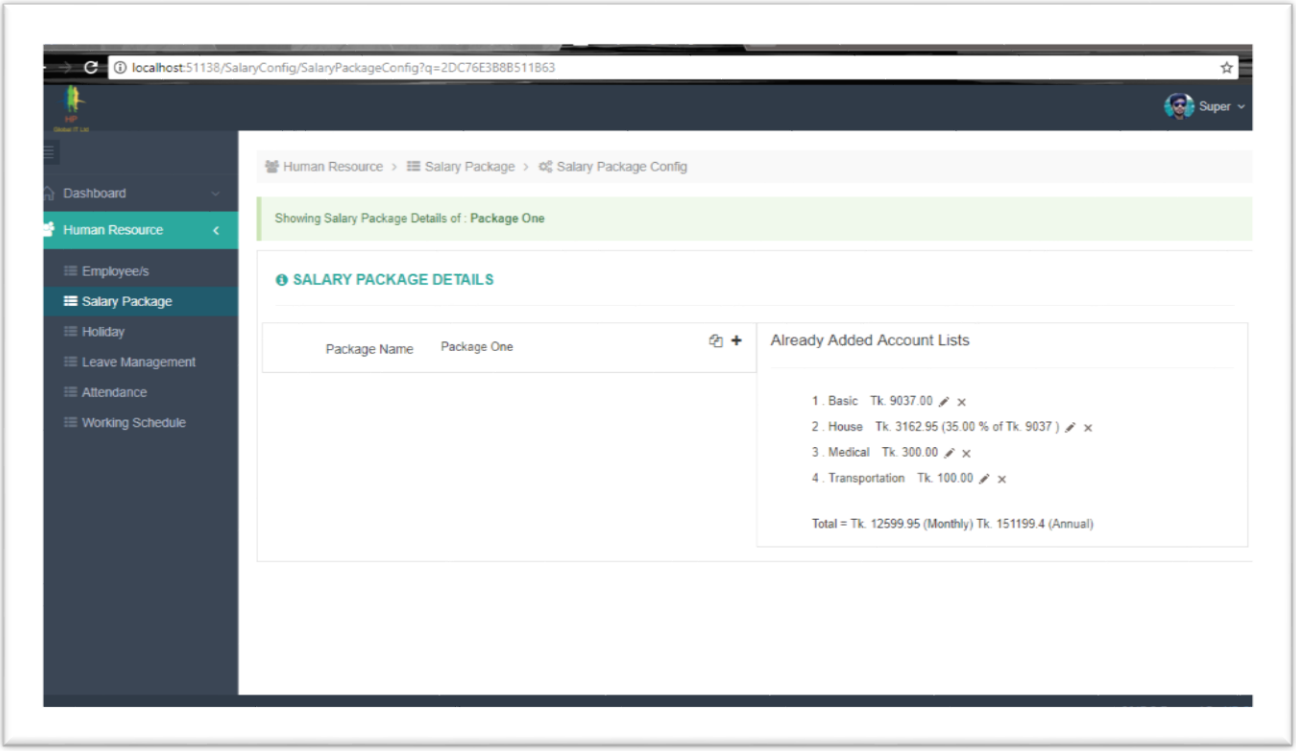


5.2.5 Salary Package

The details of the salary package of all employees are shown in here. Admin can check, delete and update of all salary packages. He can configure any salary package.

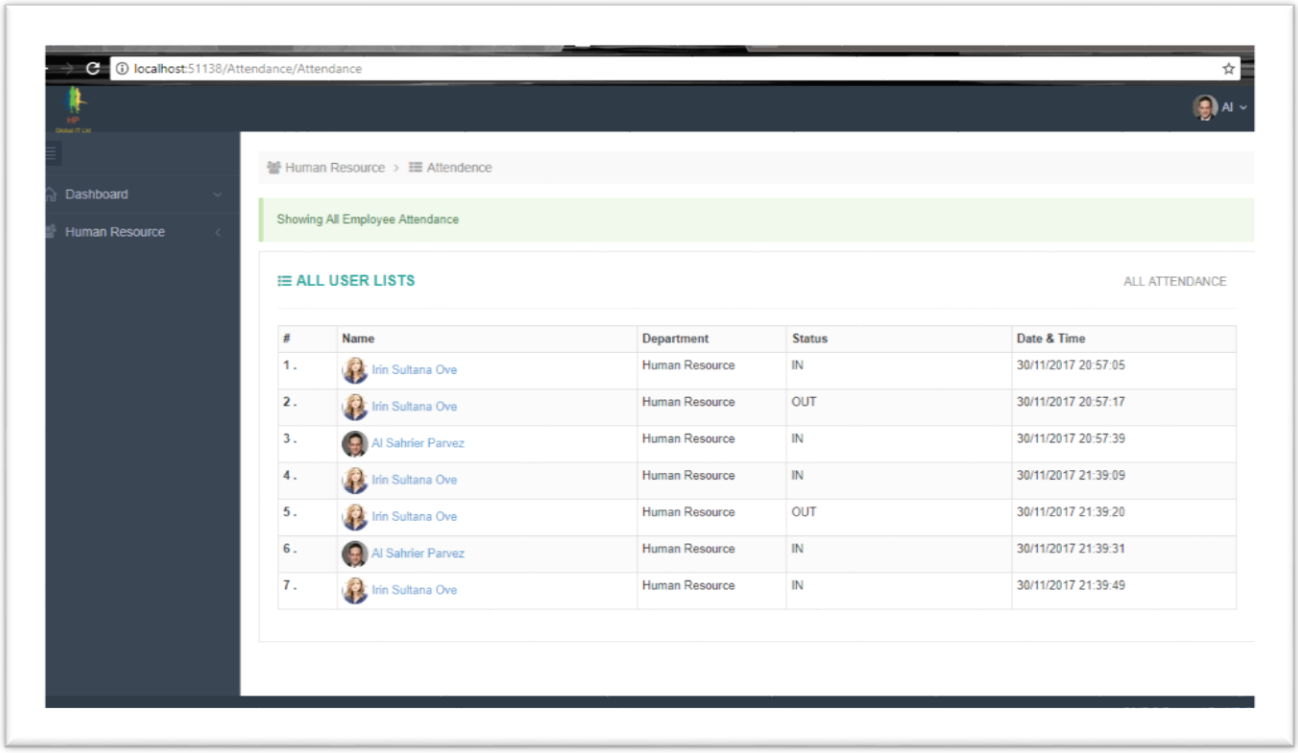

localhost:51138/SalaryConfig/SalaryPackageList
Add New Salary Package
Package Name
Package One
Update
Refresh
Cancel


localhost:51138/SalaryConfig/SalaryPackageList
Super
Human Resource
Salary Package
Dashboard
Human Resource
Employee/s
Salary Package
Holiday
Leave Management
Attendance
Working Schedule
+ ADD NEW PACKAGE
SALARY PACKAGE LIST
Start typing salary package name
Name Created By Created Date Last Updated By Last Updated Date
1. Package One Al Sahrier Parvez Feb 05,2017 12:51:PM Super Admin Nov 28,2017. 09:16:PM
2. Default Al Sahrier Parvez Mar 07,2017 03:26:PM Not yet updated Not yet updated
Delete Salary Package


localhost:51138/SalaryConfig/SalaryPackageConfig?q=2DC76E3B8B511863
Super
Dashboard
Human Resource
Employee/s
Salary Package
Holiday
Leave Management
Attendance
Working Schedule
Human Resource > Salary Package > Salary Package Config
Showing Salary Package Details of : Package One
SALARY PACKAGE DETAILS
Package Name
Package One
Already Added Account Lists
1 . Basic Tk. 9037.00
2 . House Tk. 3162.95 (35.00 % of Tk. 9037)
3 . Medical Tk. 300.00
4 . Transportation Tk. 100.00
Total = Tk. 12599.95 (Monthly) Tk. 151199.4 (Annual)

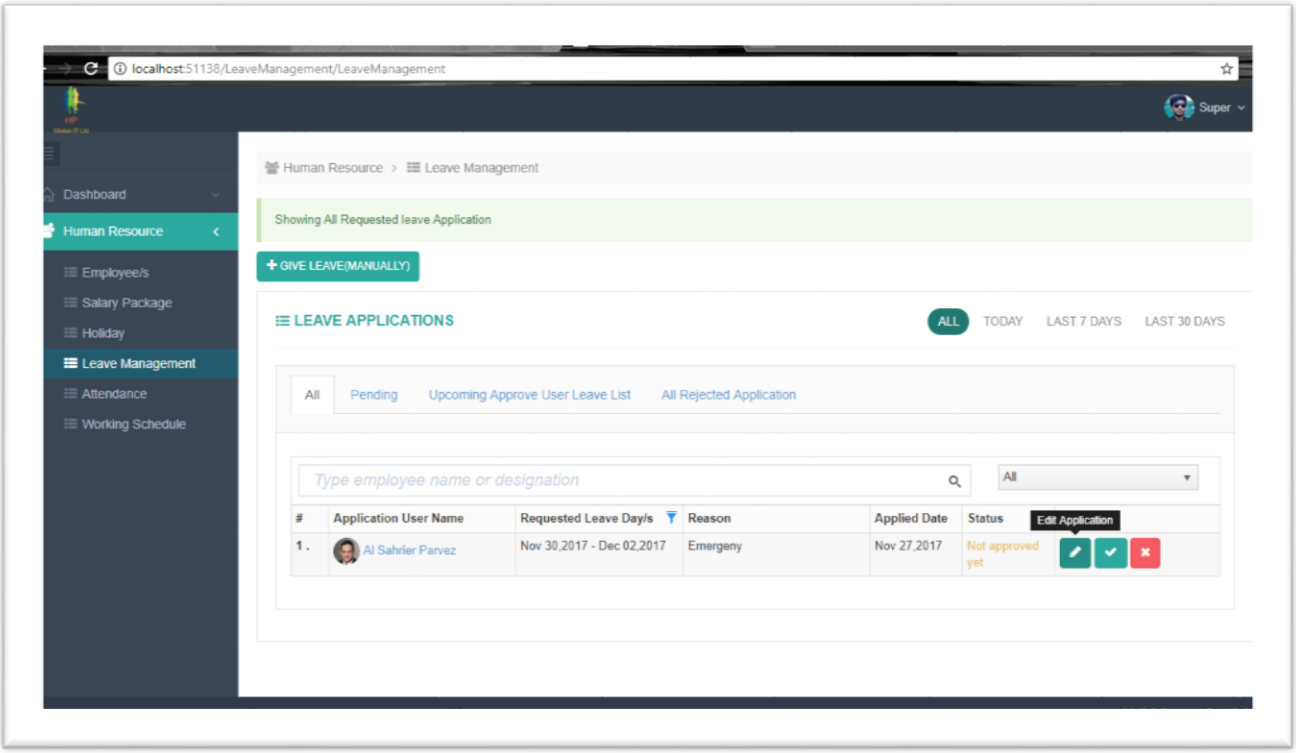
5.2.6 Attendance

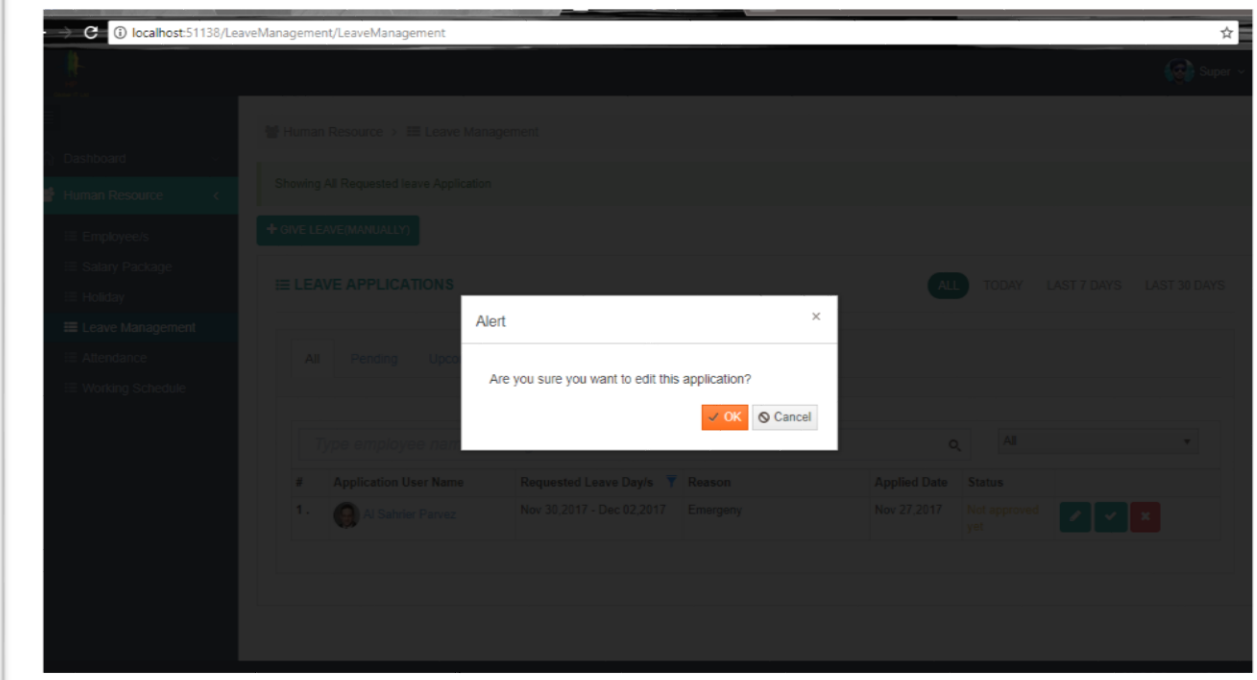
This part shows all users attendance list with date and time along with status of whether he is in or out.

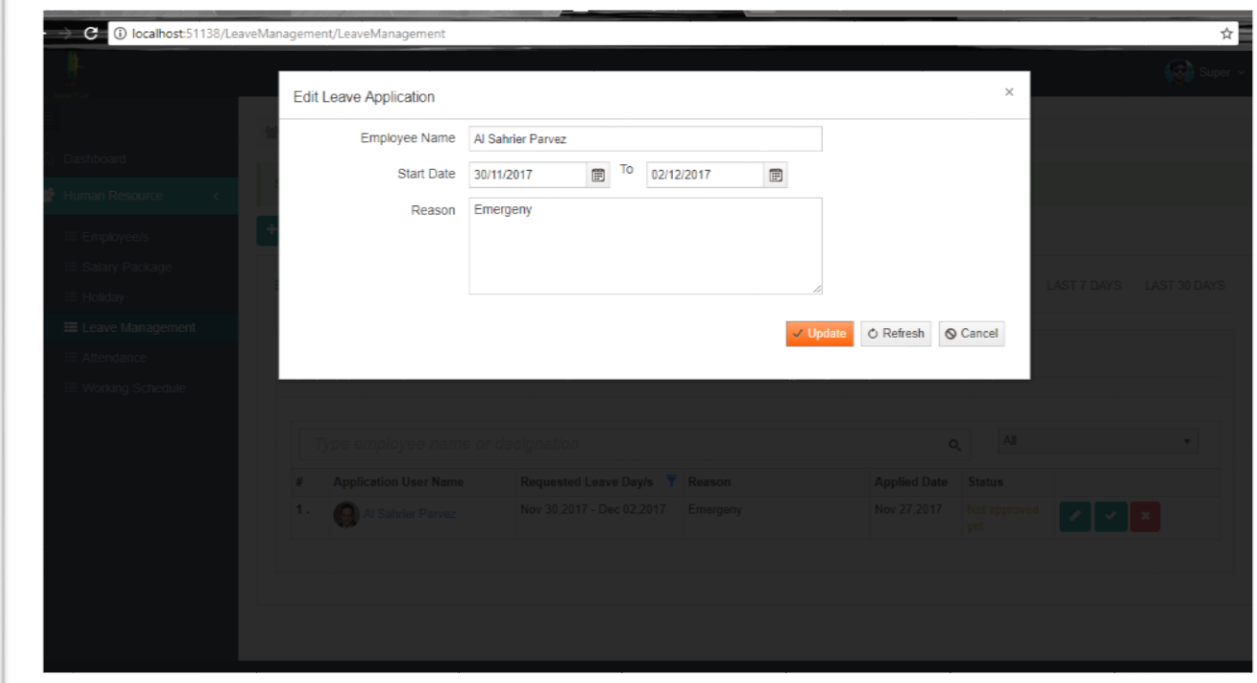


5.2.7 Leave Management

The leave applications which were applied by employees are shown in here. Admin can approve, reject and check the applications. Here is an option to give a leave manually.

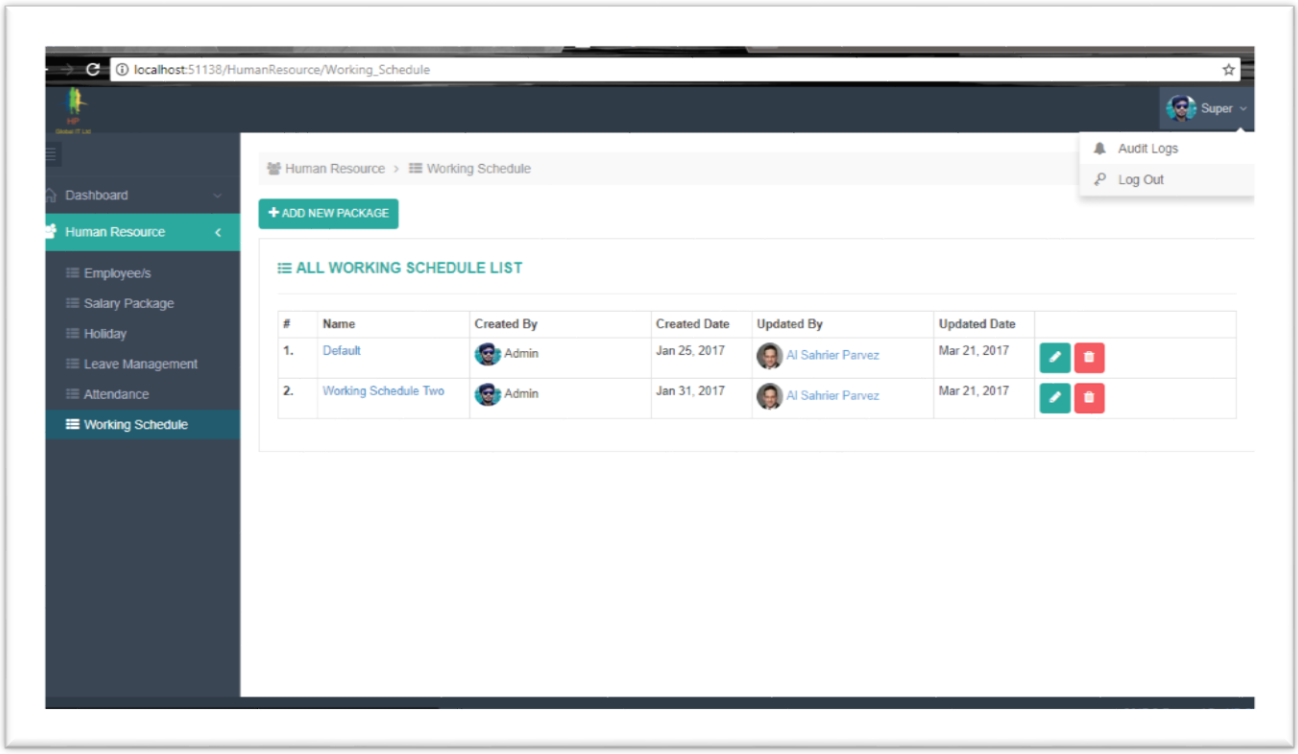

localhost:51138/LeaveManagement/LeaveManagement
Super
Dashboard
Human Resource
Employee/s
Salary Package
Holiday
Leave Management
Attendance
Working Schedule
Human Resource > Leave Management
Showing All Requested leave Application
+ GIVE LEAVE(MANUALLY)
LEAVE APPLICATIONS
ALL
TODAY
LAST 7 DAYS
LAST 30 DAYS
All
Pending
Upcoming Approve User Leave List
All Rejected Application
Type employee name or designation
All
Application User Name Requested Leave Day/s Reason Applied Date Status
Edit Application
1 . Al Sahrier Parvez Nov 30,2017 - Dec 02,2017 Emergeny Nov 27,2017 Not approved yet


localhost:51138/LeaveManagement/LeaveManagement
Alert
Are you sure you want to edit this application?
OK
Cancel


localhost:51138/LeaveManagement/LeaveManagement
Edit Leave Application
Employee Name
Al Sahrier Parvez
Start Date
30/11/2017
To
02/12/2017
Reason
Emergeny
Update
Refresh
Cancel

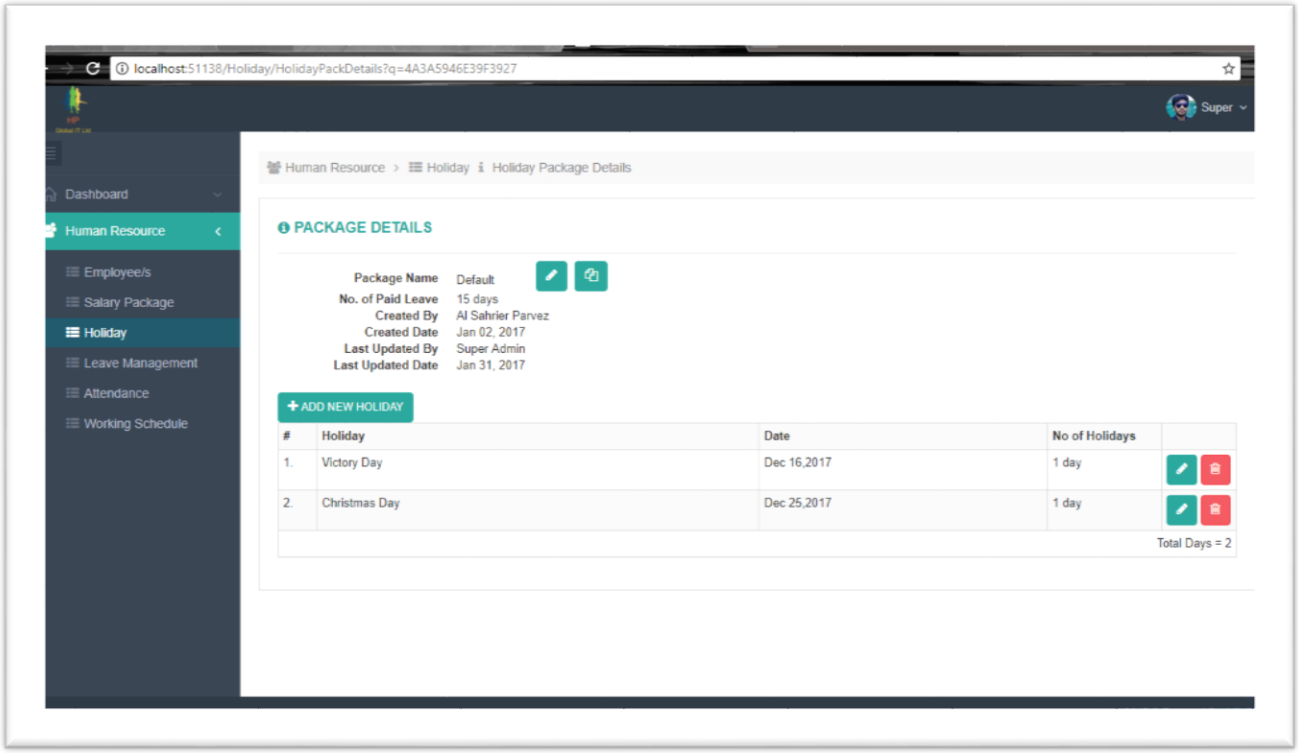
5.2.8 Working Schedule:

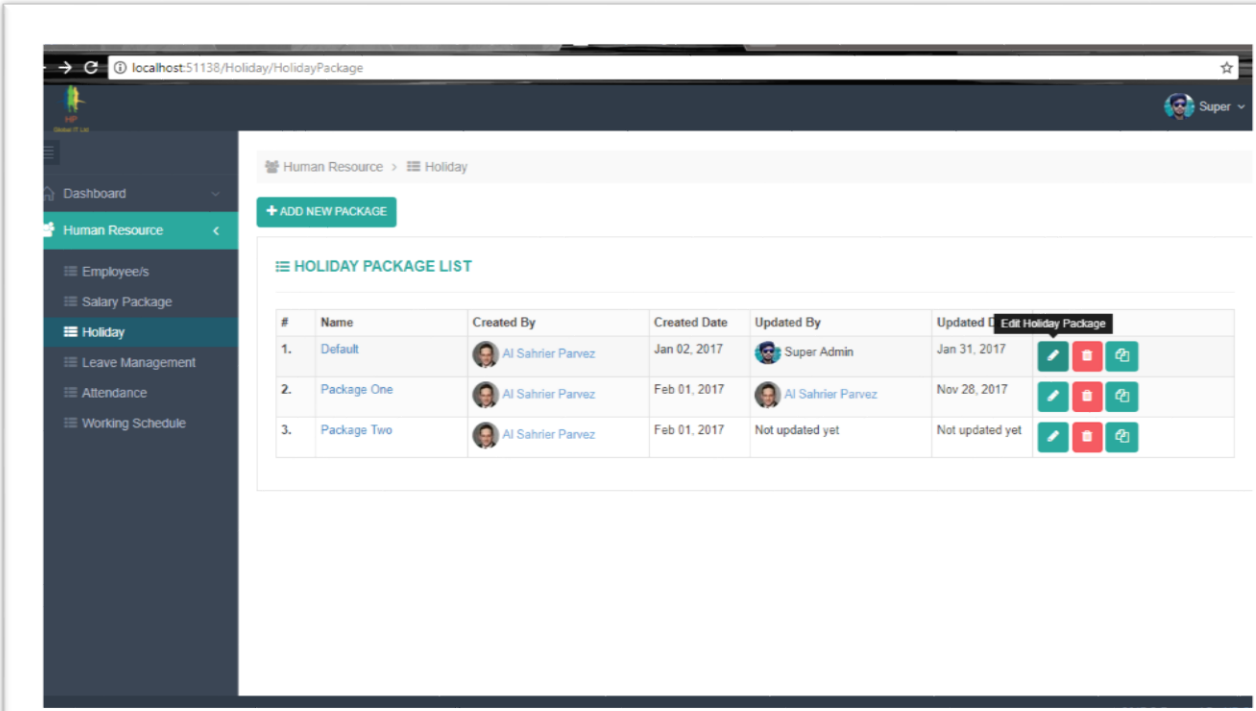
A list of working schedules of the employees are shown here. Admin has the authority to update or delete working schedule of any employee. There is an option to set the days and starting and ending times in the edit portion.

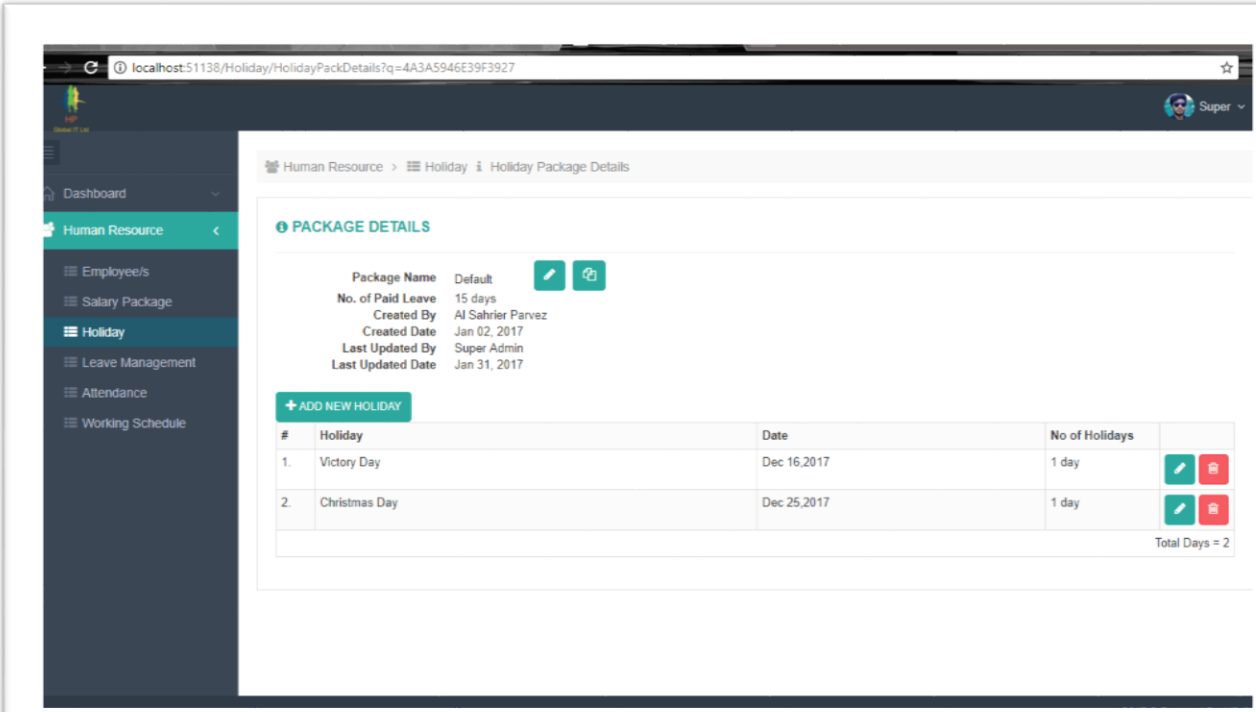


5.2.9 Holiday package

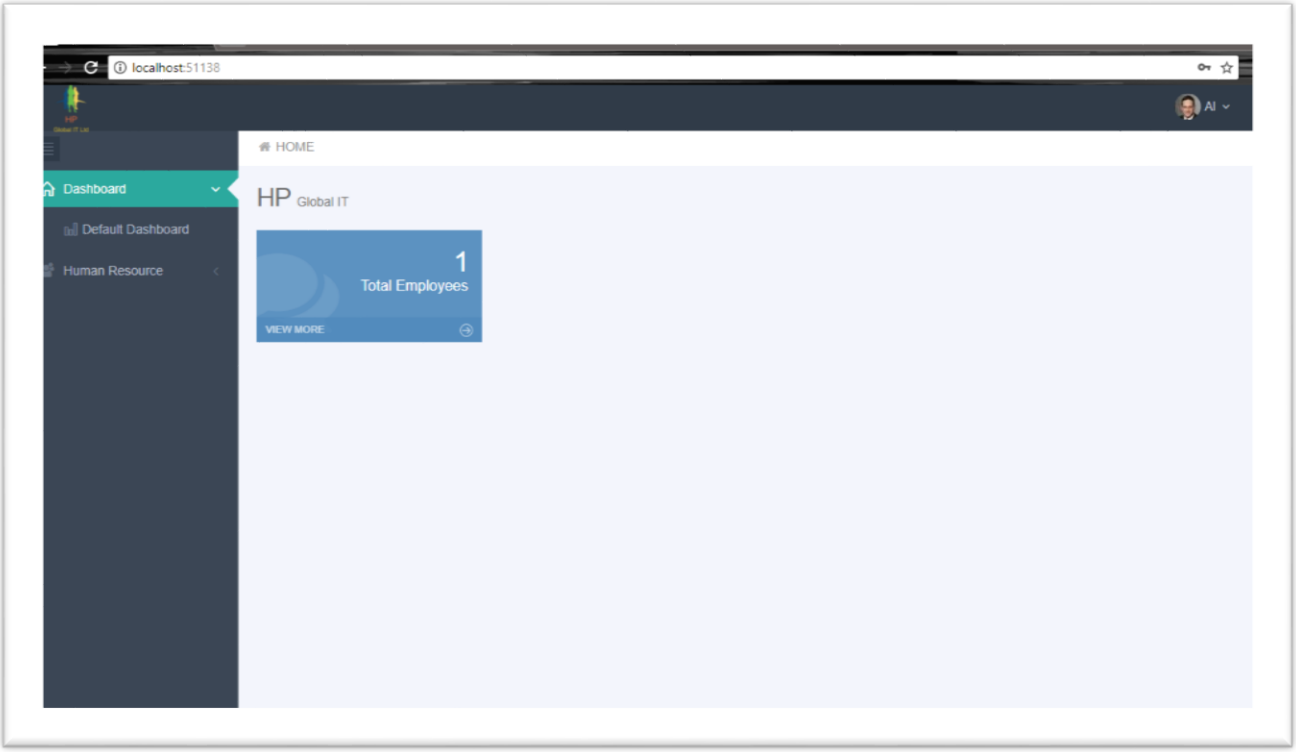
In this part admin can check any employee's holiday package. Admin has authority to edit, delete and check the holiday package details.




localhost:51138/Holiday/HolidayPackage
Super
Dashboard
Human Resource
Employee/s
Salary Package
Holiday
Leave Management
Attendance
Working Schedule
Human Resource > Holiday
+ ADD NEW PACKAGE
HOLIDAY PACKAGE LIST
Name Created By Created Date Updated By Updated D
Edit Holiday Package
1. Default Al Sahrier Parvez Jan 02, 2017 Super Admin Jan 31, 2017
2. Package One Al Sahrier Parvez Feb 01, 2017 Al Sahrier Parvez Nov 28, 2017
3. Package Two Al Sahrier Parvez Feb 01, 2017 Not updated yet Not updated yet


localhost:51138/Holiday/HolidayPackDetails?q=4A3A5946E39F3927
Super
Dashboard
Human Resource
Employee/s
Salary Package
Holiday
Leave Management
Attendance
Working Schedule
Human Resource > Holiday Holiday Package Details
PACKAGE DETAILS
Package Name Default
No. of Paid Leave 15 days
Created By Al Sahrier Parvez
Created Date Jan 02, 2017
Last Updated By Super Admin
Last Updated Date Jan 31, 2017
+ ADD NEW HOLIDAY
# Holiday Date No of Holidays
1. Victory Day Dec 16,2017 1 day
2. Christmas Day Dec 25,2017 1 day
Total Days = 2

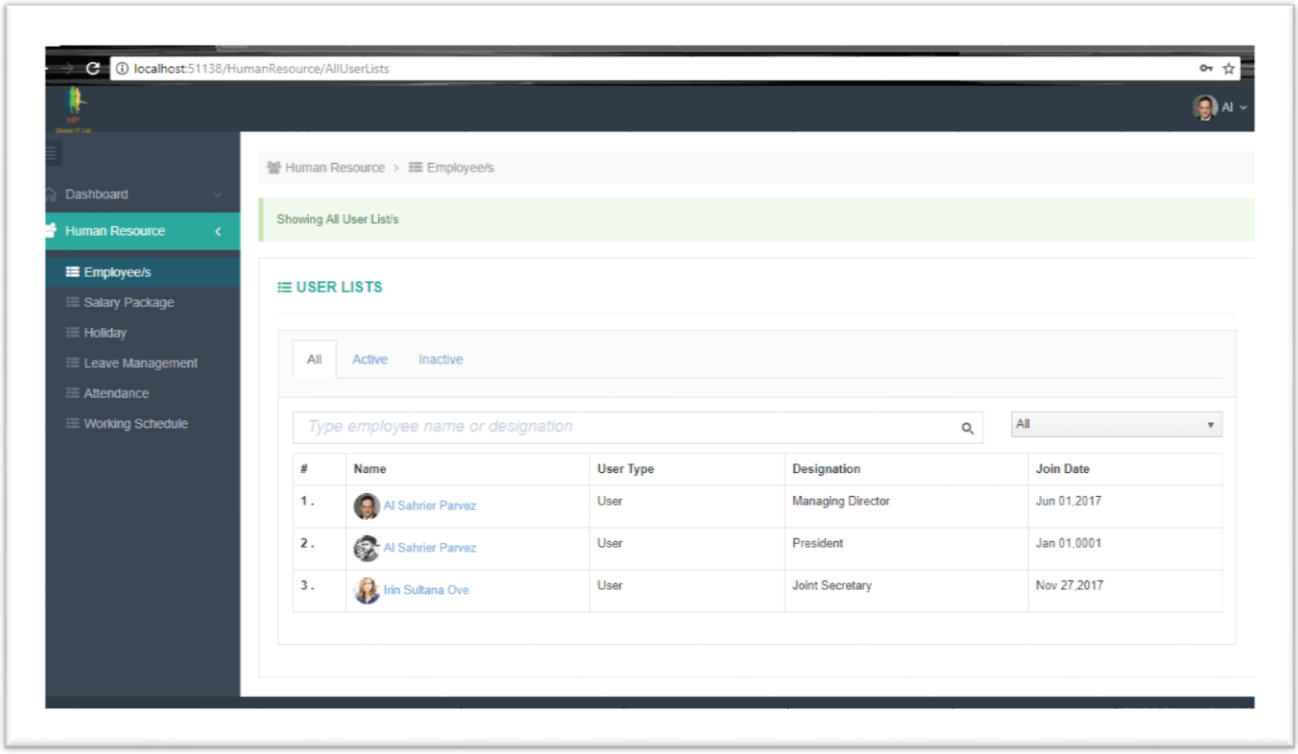
5.3 Employee Home Page



Employee will have access to this page when he press login button providing a unique validated username and password into the login page. In the left side the dashboard is given. Here user can go to the pages written in the left side and is authorized to make some changes. There is a hidden option to apply for leave and log out. In the leave application form there is boxes to set reason, start and end time for request to leave.

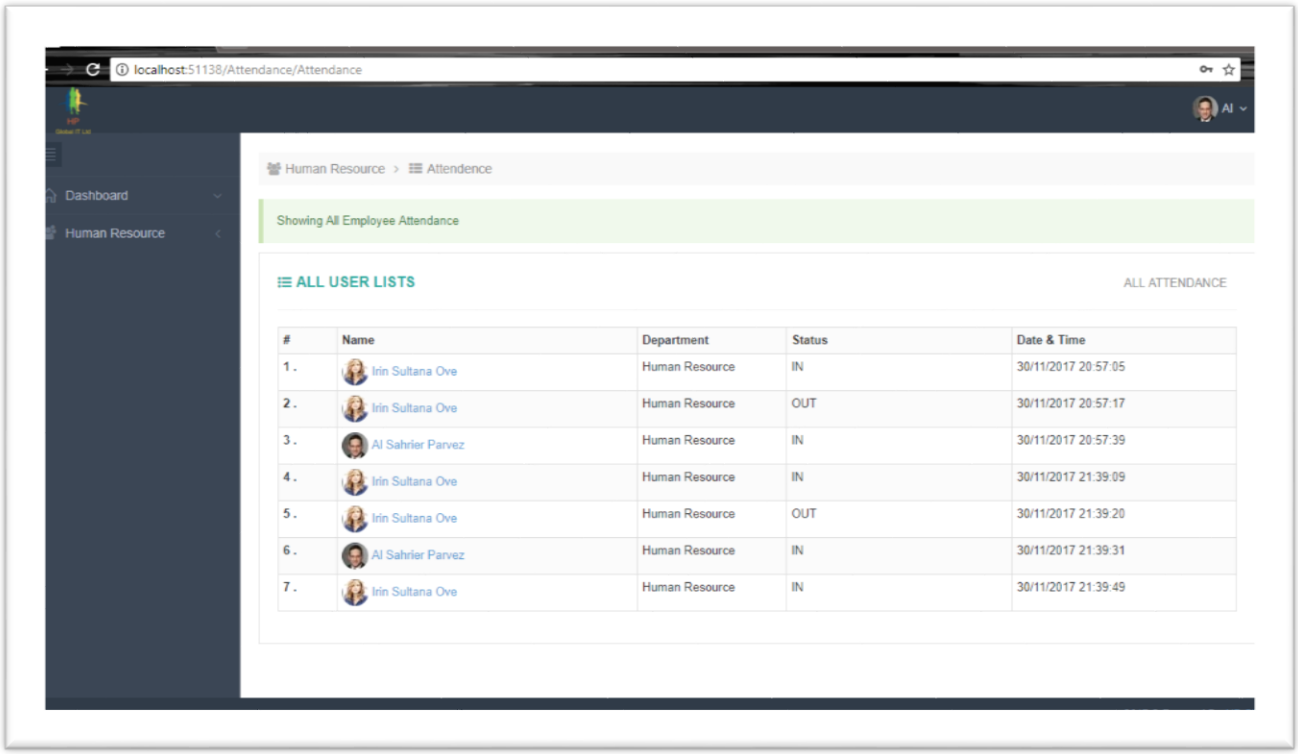
5.3.1 Employees

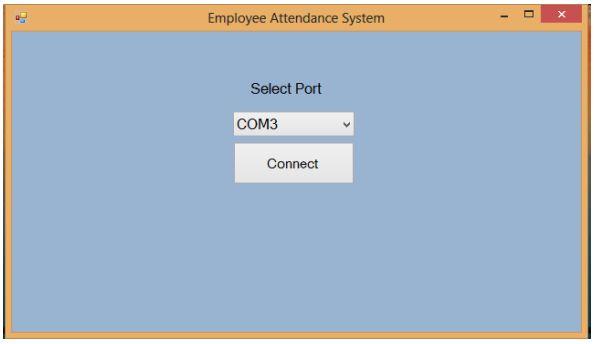
In this part all users list is shown. All active and inactive users list are shown in here.

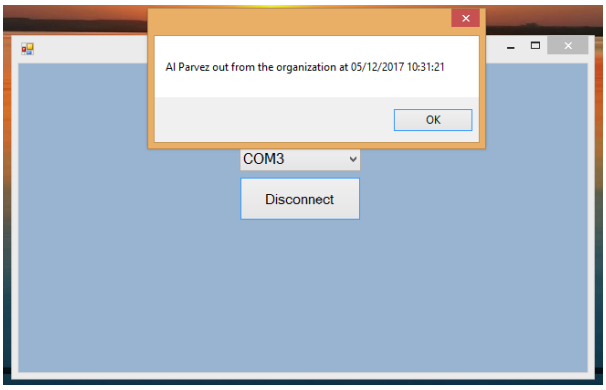


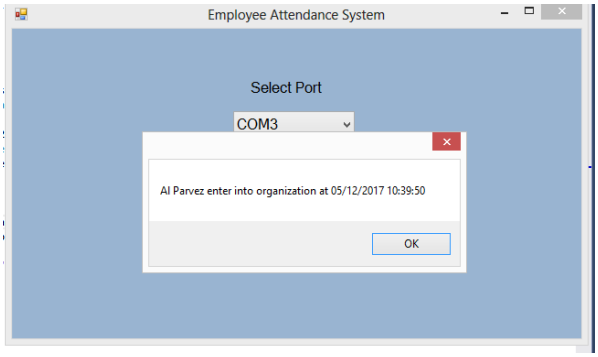
5.3.2 Attendance

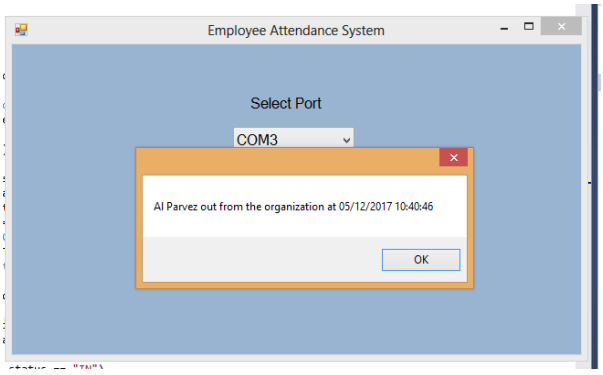
This part shows all users attendance list with date and time along with status of whether he is in or out.

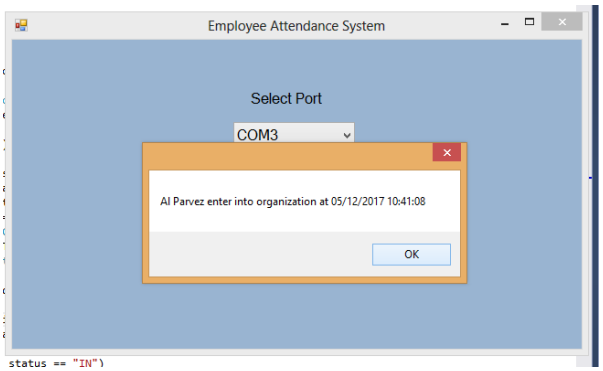





Al Parvez out from the organization at 05/12/2017 10:31:21
OK
COM3
Disconnect

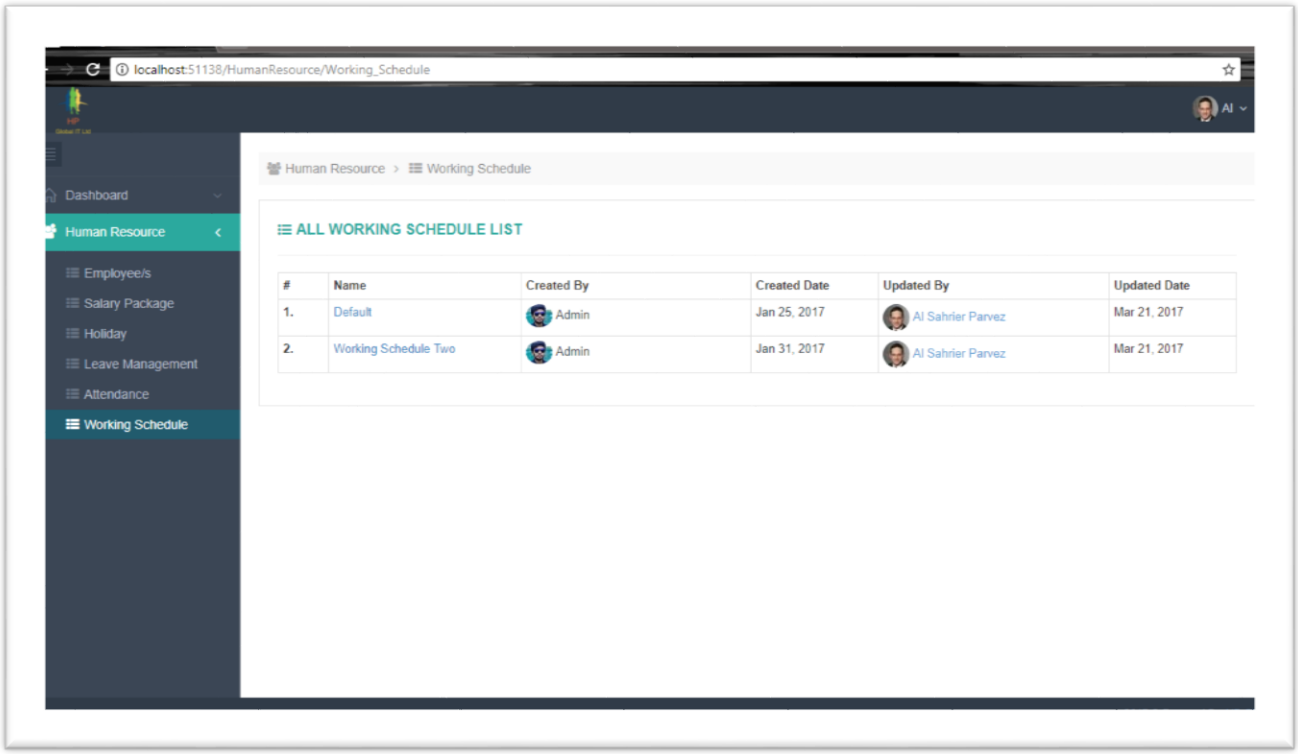

Employee Attendance System
Select Port
COM3
Al Parvez enter into organization at 05/12/2017 10:39:50
OK


Employee Attendance System
Select Port
COM3
Al Parvez out from the organization at 05/12/2017 10:40:46
OK



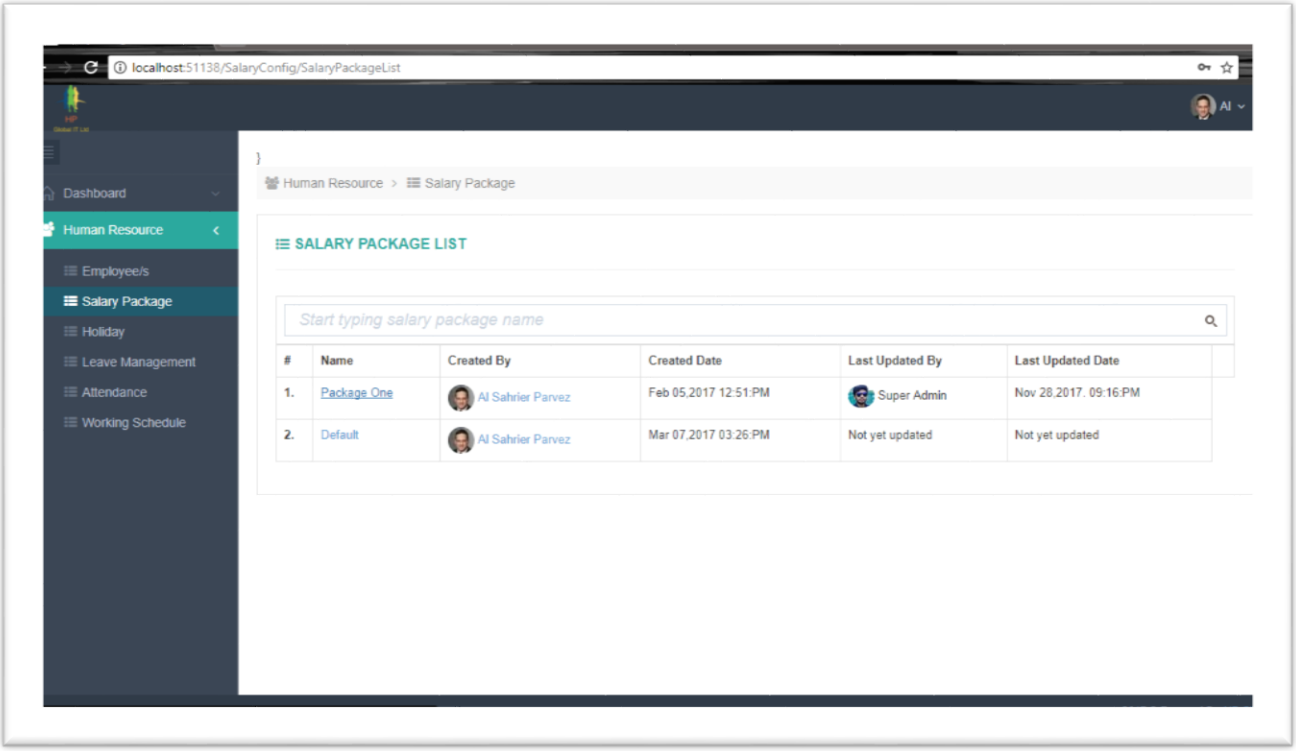
5.3.3 Working Schedule:

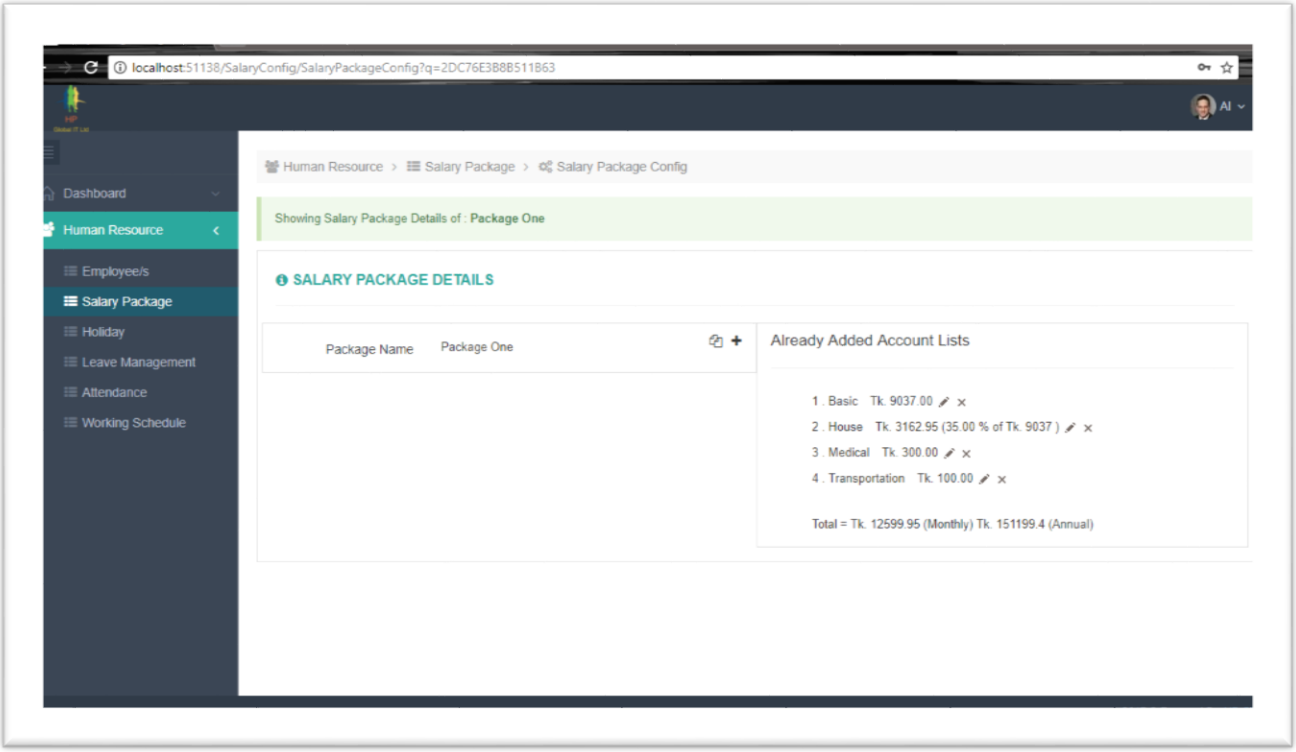
A list of working schedules of the employees are shown here.



5.3.4Salary Package

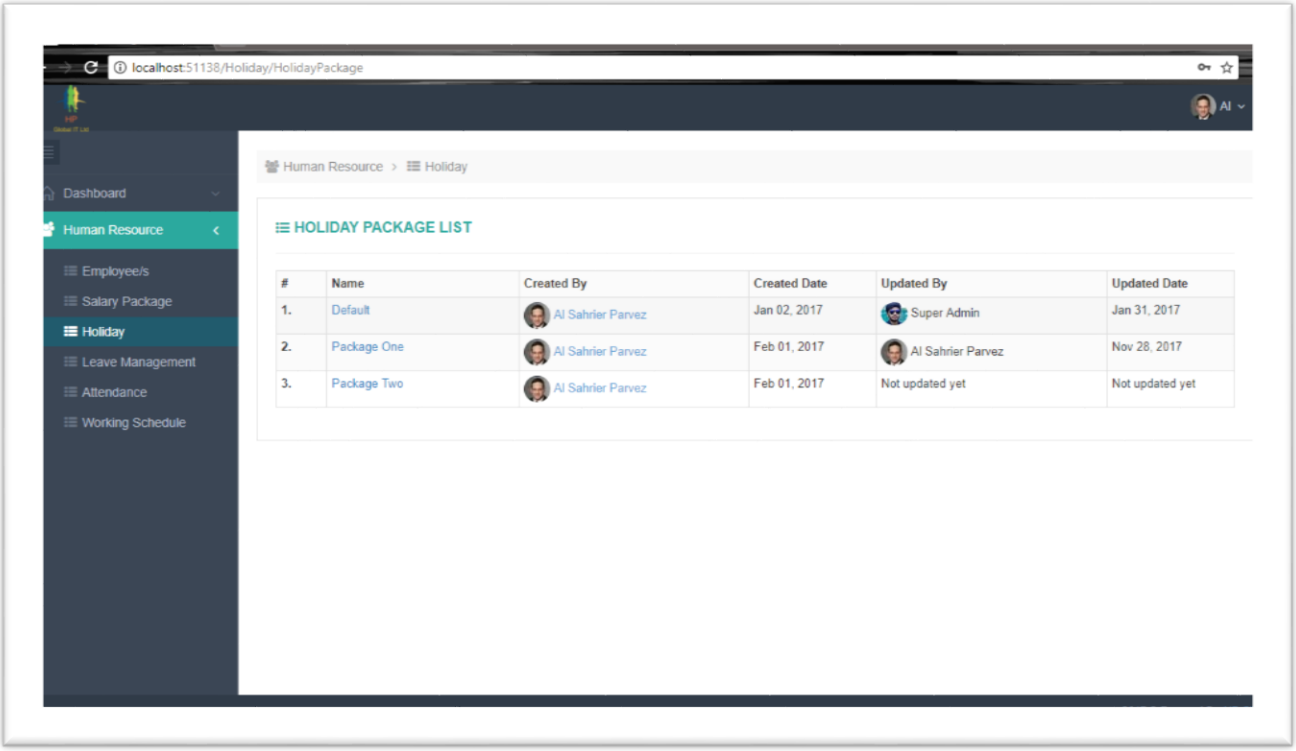
The details of the salary package of all employees are shown in here.

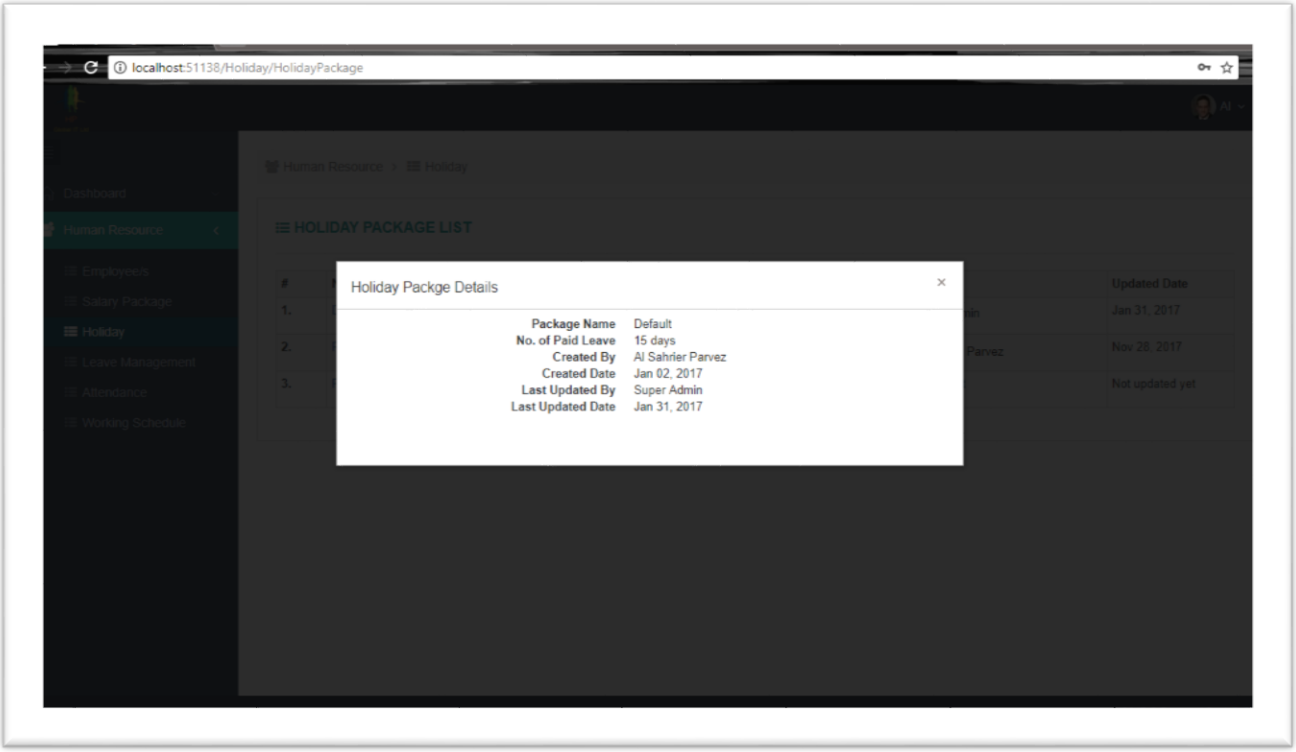




5.3.5 Holiday package

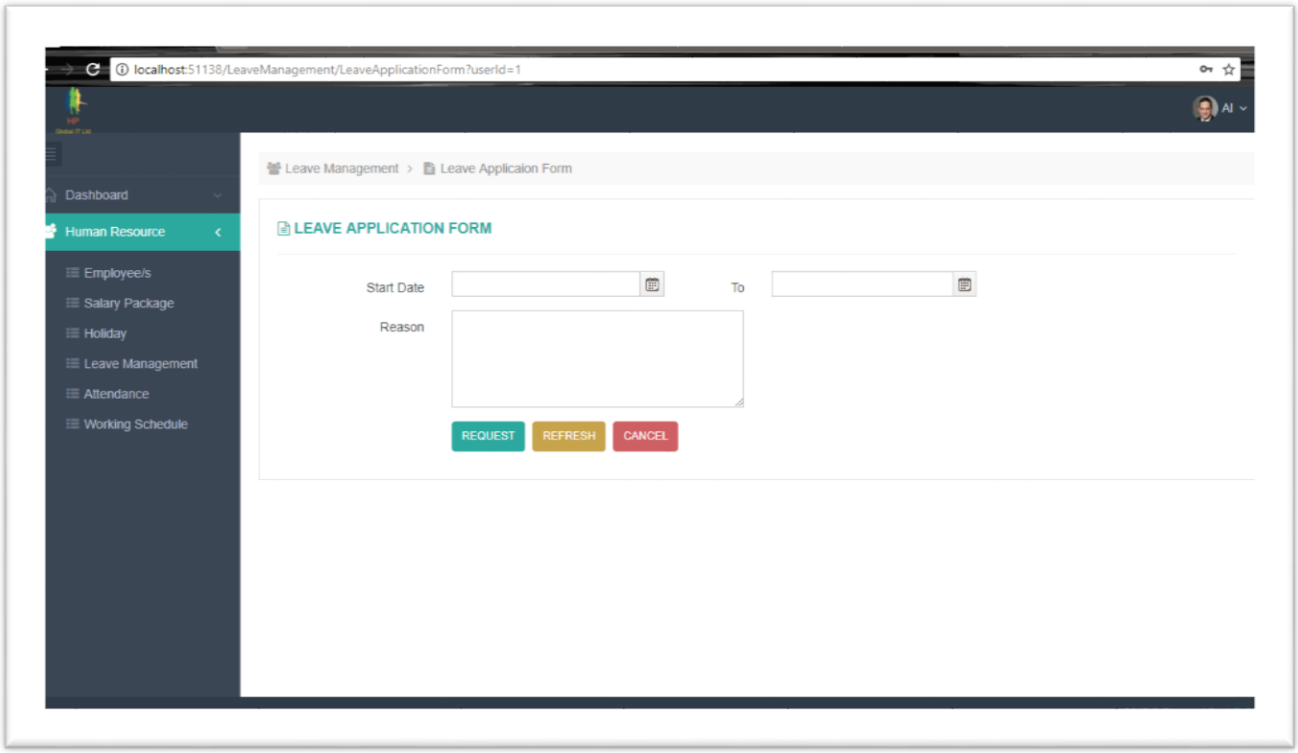
In this part admin can check any employee's holiday package.





5.3.6 Leave Management Package:

Here an employee can apply for leave



5.4 Hardware

Potentiometer:

The potentiometer is the most common variable resistor. It functions as a potential divider and is used to generate a voltage signal depending on the position of the potentiometer. This signal can be used for a very wide variety of applications including: Amplifier gain control(audio volume), measurement of distance or angles, tuning of circuits and much more. When variable resistors are used to tune or calibrate a circuit or application, trimmer potentiometers or trimpots are used, this are mostly small potentiometers mounted on the circuit board, which can be adjusted using a screwdriver. [1]

Servo Motor:

There are some special types of application of electrical motor where rotation of the motor is required for just a certain angle not continuously for long period of time. For these applications, some special types of motor are required with some special arrangement which makes the motor to rotate a certain angle for a given electrical input (signal). For this purpose servo motor comes into picture. This is normally a simple DC motor which is controlled for specific angular rotation with the help of additional servomechanism (a typical closed loop feedback control system). Now day's servo system has huge industrial applications.

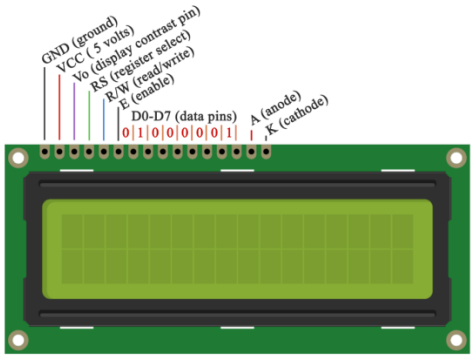
Servo motor applications are also commonly seen in remote controlled toy cars for controlling the direction of motion and it is also very commonly used as the motor which moves the tray of a CD or DVD player. Besides these, there are other hundreds of servo motor applications we see in our daily life. The main reason behind using a servo is that it provides angular precision, i.e. it will only rotate as much we want and then stop and wait for next signal to take further action.

This is unlike a normal electrical motor which starts rotating as and when power is applied to it and the rotation continues until we switch off the power. We cannot control the rotational progress of electrical motor, but we can only control the speed of rotation and can turn it ON and OFF. Now we come to the specific answer of the question "what is servo motor?" Servo motor is a special type of motor which is automatically operated up to certain limit for a given command with help of error-sensing feedback to correct the performance. [2]

Arduino Uno:

Arduino Uno is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. [3]

LCD Screen

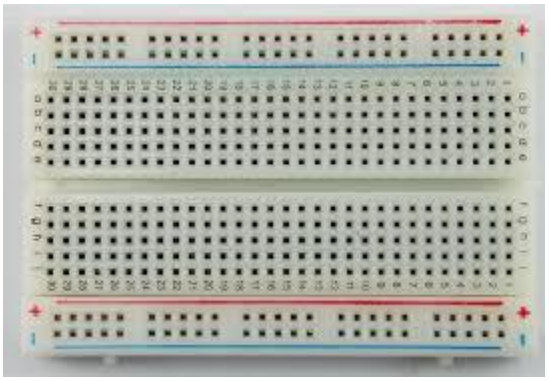


It has 16 pins and the first one from left to right is the Ground pin. The second pin is the VCC which we connect the 5 volts pin on the Arduino Board. Next is the Vo pin on which we can attach a potentiometer for controlling the contrast of the display. [4]

Jumper Wires

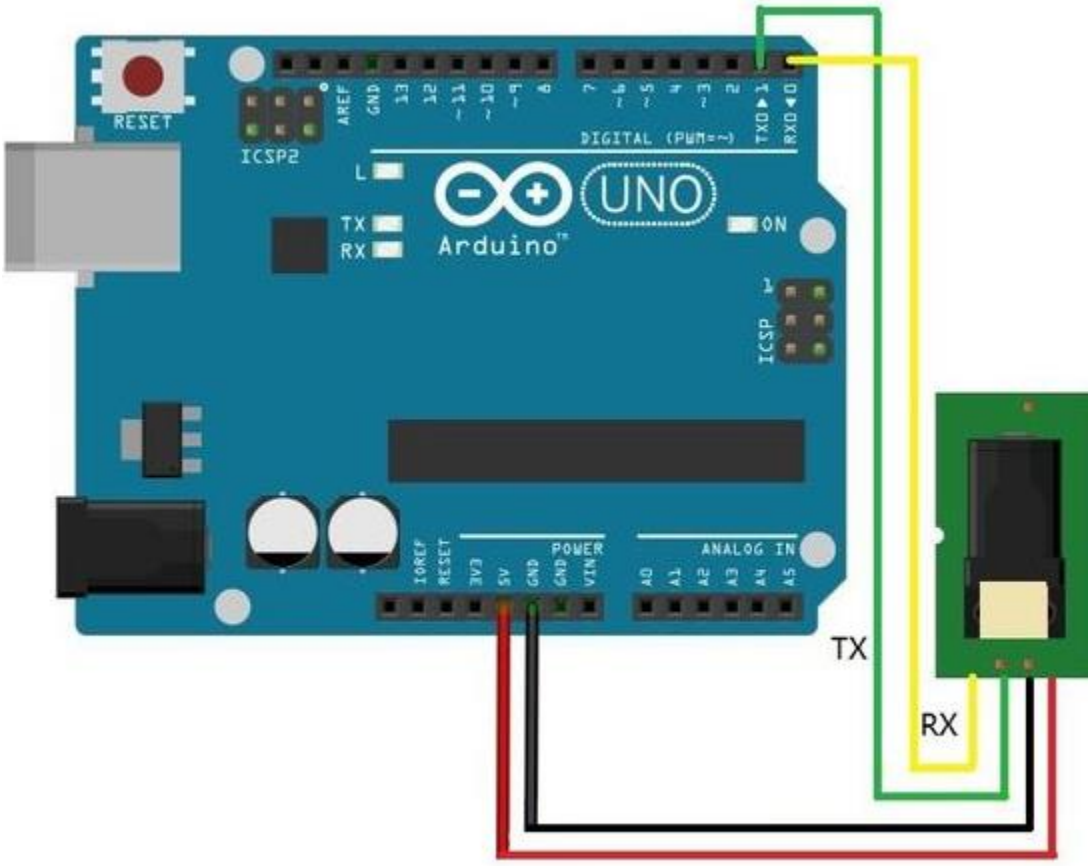
Jumper wires are used for making connections between items on your breadboard and your Arduino's header pins. Use them to wire up all your circuits. [5]

Breadboard



A breadboard is a solderless device for temporary prototype with electronics and test circuit designs. Most electronic components in electronic circuits can be interconnected by inserting their leads or terminals into the holes and then making connections through wires where appropriate. The breadboard has strips of metal underneath the board and connect the holes on the top of the board. The metal strips are laid out as shown below. Note that the top and bottom rows of holes are connected horizontally and split in the middle while the remaining holes are connected vertically. [6]

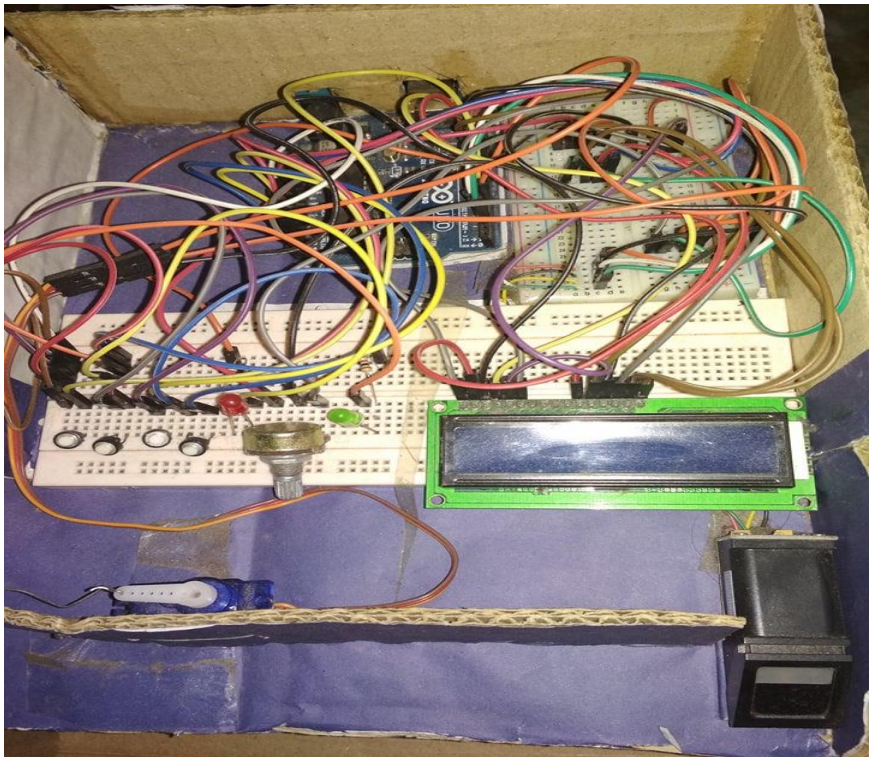
Fingerprint Sensor:



The Finger Print Sensor is one optical fingerprint sensor which will make fingerprint detection and verification adding super simple.There's a high powered DSP chip AS601 that does the image rendering, calculation, feature-finding and searching. You can also enroll new fingers directly - up to 162 finger prints can be stored in the onboard FLASH memory. There's a red LED in the lens which will light up during taking photos so that you know its working condition. It is easy to use and by far the best fingerprint sensor you can get. [7]

5.4.1 Implementation:

This hardware is design for employee attendance system. Through this hardware a registered employee can enter that organization by his finger. This system has a finger print module , through this that employee can enter that organization. Besides this when an employee can in and out the record will be there in software system which designed by desktop app using c# language. So finally we want to emplement a hardware to software through desktop app for storing all record to incoming and outgoing of an employ



Chapter 6

Database Design

6.1 Introduction

Database design is the process of producing a detailed data model of database. This data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a data definition language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity.

It is a collection of information that is organized so that it can be easily accessed, managed and updated.

Data is organized into rows, columns and tables, and it is indexed to make it easier to find relevant information. Data gets updated, expanded and deleted as new information is added. Databases process workloads to create and update themselves, querying the data they contain and running applications against it.

Computer databases typically contain aggregations of data records or files, such as sales transactions, product catalogs and inventories, and customer profiles.

Typically, a database manager provides users with the ability to control read/write access, specify report generation and analyze usage. Some databases offer ACID (atomicity, consistency, isolation and durability) compliance to guarantee that data is consistent and that transactions are complete.

Databases are prevalent in large mainframe systems, but are also present in smaller distributed workstations and midrange systems, such as IBM's AS/400 and personal computers.

6.1.1 Structure of the Database System

The database structure of a database system is its structure described in a formal language supported by the database management system (DBMS). The term "schema" refers to the organization of data as a blueprint of how the database is constructed (divided into database tables in the case of relational databases). The formal definition of a database schema is a set of formulas (sentences) called integrity constraints imposed on a database. These integrity constraints ensure compatibility between parts of the schema. All constraints are expressible in the same language. A database can be considered a structure in realization of the database language.

The states of a created conceptual schema are transformed into an explicit mapping, the database schema. This describes how real-world entities are modeled in the database.

6.1.2 Requirements of Data

Data requirements are prescribed directives or consensual agreements that define the content and/or structure that constitute high quality data instances and values. Data requirements can thereby be stated by several different individuals or groups of individuals.

It is required to maintain system data or files. It provides a brief description of the required data and files that the system must need to run it's functions. It can be separated into two categories: static and dynamic. The first step in gathering system data is to determine what data is required for building the model. This should be dictated primarily by the scope and level of detail required to achieve the model objectives as described earlier. It is best to go from general to specific in gathering system data. The initial focus should be on defining the overall process flow to provide a skeletal framework for attaching more detailed information. Detailed information can then be added gradually as it becomes available (e.g., resource requirements, processing times, etc.). Starting with the overall process flow not only provides an orderly approach to data gathering, but also enables the model building process to get started which reduces the amount of time to build and debug the model later. Often, missing data becomes more apparent as the model is being built.

In defining the basic flow of entities through the system, a flow diagram can be useful as a way of documenting and visualizing the physical flow of entities from location to location. Once a flow diagram is made, a structured walk-through can be conducted with those familiar with the operation to ensure that the flow is correct and that nothing has been overlooked. The next step might be to define the detail of how entities move between locations and what resources are used for performing operations at each location. At this point it is appropriate to identify location capacities, move times, processing times, etc.

6.2 Entity Relationship Diagram

Entity Relationship Diagram shortly known as ERD shows the relationships among entities. ERD graphically illustrates an information system's entities and the relationships between those entities. An ERD is a conceptual and representational model of data used to represent the entity framework infrastructure.

The elements of an ERD are:

 Entities Relationships Attributes

6.2.1 Entities

An entity is any singular, identifiable and separate object. It refers to individuals, organizations, and systems, bits of data or even distinct system components that are considered significant in and of them.

The term is used in a number of programming languages/concepts, database management, systems design and other arenas.

There are 3 types of entities:

 Strong Entities are the entities which can be fully identified by its own attributes and it is independent from other entity types. Weak Entities are the entity which can't be fully identified by its own attributes and takes the foreign key as an attribute (generally it takes the primary key of the entity it is related to) in conjunction. Associative Entities are used in relational and entity–relationship theory. A relational database requires the implementation of a base relation (or base table) to resolve many- to-many relationships. This kind of base relation is called an associative table.

6.2.2 Relationships

A relationship, in the context of databases, is a situation that exists between two relational database tables when one table has a foreign key that references the primary key of the other table. Relationships allow relational databases to split and store data in different tables, while linking disparate data items.

There are three types of relationships:

One-to-one: Both tables can have only one record on either side of the relationship. Each primary key value relates to only one (or no) record in the related table. They're like spouses—you may or may not be married, but if you are, both you and your spouse have only one spouse. Most one-to-one relationships are forced by business rules and don't flow naturally from the data. In the absence of such a rule, you can usually combine both tables into one table without breaking any normalization rules.

Figure 8: One-to-One relationship

One-to-many: The primary key table contains only one record that relates to none, one, or many records in the related table. This relationship is similar to the one between you and a parent. You have only one mother, but your mother may have several children.

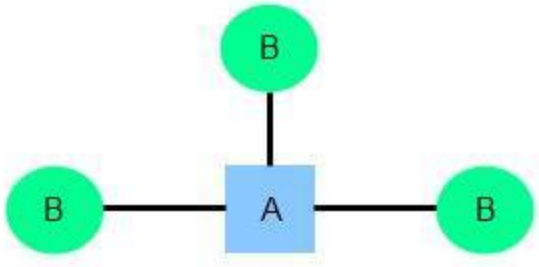


Figure 9: One-to-Many relationship

Many-to-many: Each record in both tables can relate to any number of records (or no records) in the other table for instance, if you have several siblings, so do your siblings (have many siblings). Many-to-many relationships require a third table, known as an associate or linking table, because relational systems can't directly accommodate the relationship.

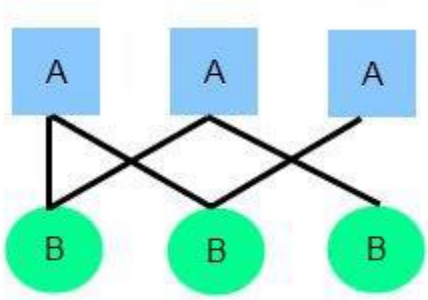


Figure 10: Many-to-Many relationship

6.2.3 Attributes

A database attribute is simply a column name in a table in a database.

A database is comprised of tables. Each table has columns and rows; the columns in a database are called database attributes.

This makes sense when you think of it, given that the non-technical definition of an attribute is that it defines a characteristic or quality of something.

In computing, an attribute is a specification that defines a property of an object, element or file. It may also refer to or set the specific value for a given instance of such. For clarity, attributes should more correctly be considered metadata. An attribute is frequently and generally a property of a property. However, in actual usage, the term attribute can and is often treated as equivalent to a property depending on the technology being discussed. An attribute of an object usually consists of a name and a value; of an element, a type or class name; of a file, a name and extension.

Single valued Attributes: An attribute, that has a single value for a particular entity is known as single valued attributes. For example, age of a employee entity.

Multi valued Attributes: An attributes that may have multiple values for the same entity is known as multi valued attributes. For example colors of a car entity.

Compound Attribute/Composite Attribute: Attribute can be subdivided into two or more other Attribute. For Example, Name can be divided into First name, Middle name and Last name.

Simple Attributes/Atomic Attributes: The attributes which cannot be divided into smaller subparts are called simple or atomic attributes. For example, age of employee entity

Stored Attribute: An attribute, which cannot be derived from other attribute, is known as stored attribute. For example: Birth Date of employee.

Derived Attribute: Attributes derived from other stored attribute. For example age from Date of Birth and Today's date.

6.3 Entity Relationship Diagram (ERD)

An entity relationship model, also called an entity-relationship (ER) diagram, is a graphical representation of entities and their relationships to each other, typically used in computing in regard to the organization of data within databases or information systems. An entity is a piece of data-an object or concept about which data is stored.

Relationships Between Entities

A relationship is how the data is shared between entities. There are three types of relationships between entities:

Chapter 7

Security of the System

7.1Introduction

System Security is responsible for controlling access to system resources, which will include sensitive data. The system must therefore include a certain amount of protection for such data, and must in turn control access to those parts of the system that administer this protection. System security is concerned with all aspects of these arrangements. The purpose of security of the system is to prevent unauthorized access to the system as well as to store the data in such a way that It doesn't get lost. That is why, in this project we have added the different and functionalities for both the Admin and the Employees. The employees can only view the data and make changes of some of his personal data. But only the Admin has the privileges to modify the data of all users' which includes inserting, updating and deleting the data whenever it is necessary.

7.1.1 Security for User:

In this system, the Users have a unique id and password. So no unauthorized persons get the permission to access any other's account. And so it is secured with a id and password and so the personal information of the users are secured and nobody can access that until knowing the id and password.

7.2 Security for Admin

In this system, the Admin have also a unique id and password and it is fully secured. So unauthorized persons don't have the access to the Admin area and without entering into the Admin area, nobody can change or edit and delete the system information.

7.3 Security of Database

Database security refers to the collective measures used to protect and secure a database or database management software from illegal use and malicious threats and attacks.

It is a broad term that includes a multitude of processes, tools and methodologies that ensure security within a database environment. Database security covers and enforces security on all aspects and components of databases. This includes:

- Data stored in database
- Database server
- Database management system (DBMS)
- Other database workflow applications

Database security is generally planned, implemented and maintained by a database administrator

Chapter 8

Testing

Software testing is an activity to check whether the actual results match the expected results and to ensure that the software system is defect free. It involves execution of a software component or system component to evaluate one or more properties of interest.

Software testing also helps to identify errors, gaps or missing requirements in contrary to the actual requirements. It can be either done manually or using automated tools. Some prefer saying Software testing as a white box and black box testing.

It is an investigation conducted to provide stakeholders with information about the quality of the software product or service under test. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation. Test techniques include the process of executing a program or application with the intent of finding software bugs (errors or other defects), and verifying that the software product is fit for use.

Software testing involves the execution of a software component or system component to evaluate one or more properties of interest.

8.1 Importance of Software Testing

Testing is important because software bugs could be expensive or even dangerous. Software bugs can potentially cause monetary and human loss, history is full of such examples.

- In April 2015, Bloomberg terminal in London crashed due to software glitch affected more than 300,000 traders on financial markets. It forced the government to postpone a 3bn pound debt sale.
- Nissan cars have to recall over 1 million cars from the market due to software failure in the airbag sensory detectors. There has been reported two accident due to this software failure.
- Starbucks was forced to close about 60 percent of stores in the U.S and Canada due to software failure in its POS system. At one point store served coffee for free as they unable to process the transaction.
- Some of the Amazon's third party retailers saw their product price is reduced to 1p due to a software glitch. They were left with heavy losses.
- Vulnerability in Window 10. This bug enables users to escape from security sandboxes through a flaw in the win32k system. In 2015 fighter plane F-35 fell victim to a

  software bug, making it unable to detect targets correctly. China Airlines Airbus A300 crashed due to a software bug on April 26, 1994, killing 264 innocent live In 1985,

Canada's Therac-25 radiation therapy machine malfunctioned due to software bug and delivered lethal radiation doses to patients, leaving 3 people dead and critically injuring 3 others.

- In April of 1999, a software bug caused the failure of a $1.2 billion military satellite launch, the costliest accident in history
- In may of 1996, a software bug caused the bank accounts of 823 customers of a major U.S. bank to be credited with 920 million US dollars.

8.2 Types of Software Testing

Software Testing can be divided into the following types:

1. Process. 2. Life Cycle Activities. 3. Static Testing. 4. Dynamic Testing. 5. Planning. 6. Preparation. 7. Evaluation. 8. Software Products and related work products.

8.2.1 Process:

A software development process, also known as a software development lifecycle, is a structure imposed on the development of a software product. A software process is represented as a set of work phases that is applied to design and build a software product. Testing is a process rather than a single activity.

- In our system, we have followed a sequential process by which it has been possible to develop the system gradually.

8.2.2 All Life Cycle Activities:

Testing is a process that's take place throughout the Software Development Life Cycle (SDLC).

- The process of designing tests early in the life cycle can help to prevent defects from being introduced in the code. Sometimes it's referred as "verifying the test basis via the test design".
- The test basis includes documents such as the requirements and design specifications.

8.2.3 Static Testing:

It can test and find defects without executing code. Static Testing is done during verification process. This testing includes reviewing of the documents (including source code) and static analysis. This is useful and cost effective way of testing. For example: reviewing, walkthrough, inspection, etc.

8.2.4 Dynamic Testing:

In dynamic testing the software code is executed to demonstrate the result of running tests. It's done during validation process. For example: unit testing, integration testing, system testing, etc.

8.2.5 Planning:

We need to plan as what we want to do. We control the test activities, we report on testing progress and the status of the software under test.

- Planning has been very important for our project because without proper planning, nothing of this would be possible. To develop the system, we have first planned the development process and then made the plan into reality to complete the development of the system.

8.2.6 Preparation:

We need to choose what testing we will do, by selecting test conditions and designing test cases.

8.2.7 Evaluation:

During evaluation we must check the results and evaluate the software under test and the completion criteria, which helps us to decide whether we have finished testing and whether the software product has passed the tests.

8.2.8 Software products and related work products:

Along with the testing of code the testing of requirement and design specifications and also the related documents like operation, user and training material is equally impor

Chapter 9

Conclusion & Future Scope

9.1 Conclusion

In general, today's organization must always strive to create the next best thing that owner and employee will want because owner continue to desire their system etc. to continuously be better, faster, and cheaper. In this world of new technology, businesses need to accommodate to the new types of consumer needs and trends because it will prove to be vital to their business' success and survival.

9.2 Future Work

In our system we want to develop a complete organizational monitoring system with full security system. Our project has some limitation, and some bug problem is there. We want to add some more feathers like payroll, loan system, transaction system and we also want to implement finger print system for login. We want to develop the following thing

- Loan System
- Payroll system
- Online chat between employees
- Login with finger print scanner
- Transaction

At present all organization want to a complete system that there is no lacking. For better system we want some more information that we have to collect that is-

- We will collect the feedback from the organization and will develop and upgrade the system to make it better and better.
- We will develop different type of system which we discuss in above will be available in our system out country in the near future because of the increasing economy rate.
- We will try to develop it a multipurpose business website which means if an organization wants to maintain different business with the help of just one website, then he will be able to do it with the help of the system.

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