

IMPLEMENTATION OF PAYROLL SYSTEM IN LARAVEL FRAMEWORK

BY

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of
Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled “**Implementation of Payroll System in Laravel Framework,**” submitted by NAYEEM AZAD, ID No: 142-15-4037, to the Department of Computer Science and Engineering, Daffodil International 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 (BSc) and approved as to its style and contents. The presentation has been held on 6th May, 2018.

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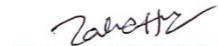
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DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Ms. Subhenur Latif, Department of CSE** Daffodil International 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.

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Finally, I must acknowledge with due respect the constant support and patients of my parents.

ABSTRACT

The need for dynamic solution for payroll system is a serious demand. I therefore intend to build a system that meets the requirements and ensure strong security, give user friendly experience. Using this system any company can easily manage everything they need to pay employees. Its dashboard for admin operations based on five major modules as Configuration Module, Employee Module, Payroll Module, Reports Module. Employees also can use this system for some features. Employee dashboard includes Employee Module and Report Module.

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CHAPTER 1

Introduction

1.1 Introduction

Payroll Management System is a dynamic solution for managing of Payroll records for any company. This system manages all branches of a company along with the employee details and their basic salary, allowances, deductions, printable records for company.

1.2 Motivation

Typical pen and paper based system for payroll management is complex, time and money consuming process. To ensure a fast, secure and dynamic solution I have planned to develop this web based customized management system using latest technology.

1.3 Objective

To ensure a secure system and serve companies/ organizations manage their payroll records for employees easily saving time.

1.4 Expected Outcome

This system has two type of users (**Admin** and **Employees**).

It has the following features for **admin dashboard**.

1) Configuration Module

- Manage Branches ,Departments, Allowances , Deductions, Tax Codes (add, delete, edit, update, Search)

2) Employee Module

- Manages Employees (searching, add, delete, edit, update)
- Manages General and Payroll employee Information
- Manage Leave Requests
- Manage attendance

3) Payroll Module

- Pays Employees

- Payment requests

4) Reports Module

- Generate Reports
- Searching Records

It has the following features for **Employee dashboard**

1. Employee Module

- Request for payment
- Request for advanced payments
- Request for leave

2. Reports Module

- Download Pay Slip Report

1.5 Report Layout

Chapter 2: This chapter describes about related works, comparative studies, scope of the problems.

Chapter 3: This chapter describes about Requirement Specification. It explains Business Process Modeling, Requirement Collect and Analysis, Use Case Modeling and Description, Logical Data Model, Design Requirements

Chapter 4: This chapter describes about design specification.

Chapter 5: This chapter describes about Implementation and testing. It visualize the implementation of Database, Front-end Design, Interactions, Testing Implementation, Test Results and Reports

Chapter 6: This chapter describes about future plans and goals on this project for improvement.

CHAPTER 2

Background

2.1 Introduction

This chapter explains about ongoing related works and comparative studies of payroll systems in different platforms.

2.2 Related works

There are existing and ongoing works about payroll systems. Few research works about payroll system entitles as System for web-based payroll and benefits administration[1] , Method for providing a web-based payroll and payroll related software as a service[2] and A web based Hr and Payroll software easymanage[3] .

2.3 Scope of the Problem

Security is one of the major issues for any kind of web based systems. To ensure a strong secure web based system I have worked with the latest technologies. Also concerned on how user interfaces for best user experience.

2.4 Challenges

Challenge is to ensure a dynamic transparent system for any country according to their payroll policies. I have designed the system such way so that it user can customize it as they require according to their respective country.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling

Business Process Model and Notation (BPMN) is a graphical representation for specifying business processes in a business process model[4]. The following figure represents the BPMN of regular payment process.

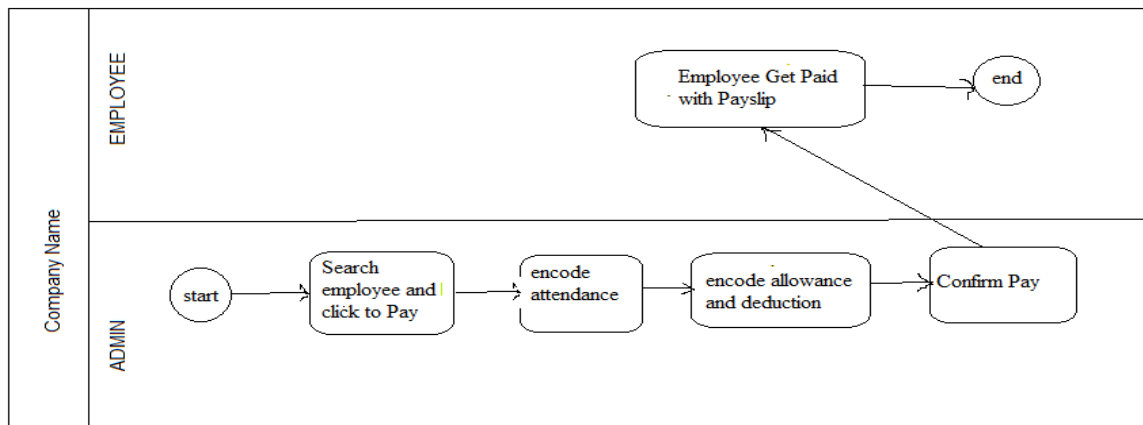


Fig. 3.1.1: BPM Process of Regular Payment

The following figure represents the BPMN of request payment process. Employees can ask for advanced payments, admin process the application.

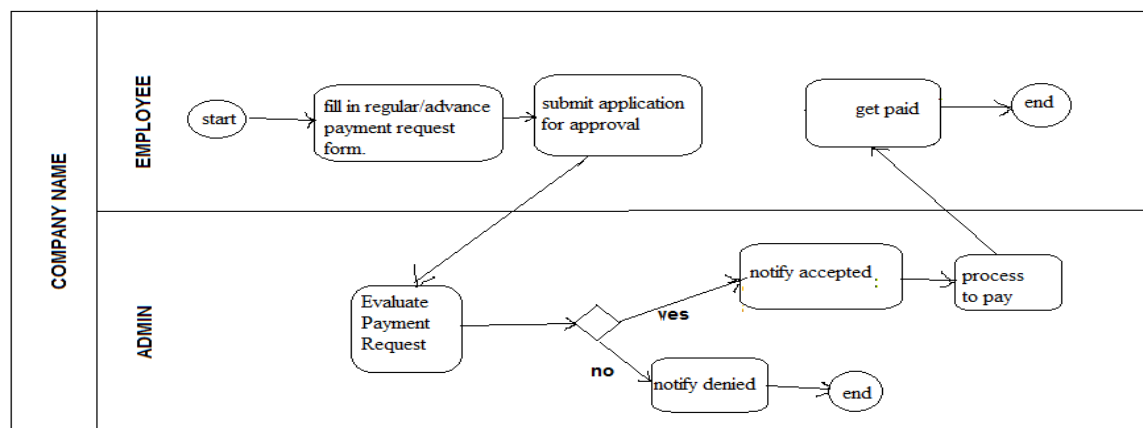


Fig. 3.1.2: BPM Process of Request Payment

The following figure represents the BPMN of leave application process. Employees can ask for leave selecting type, admin process the application.

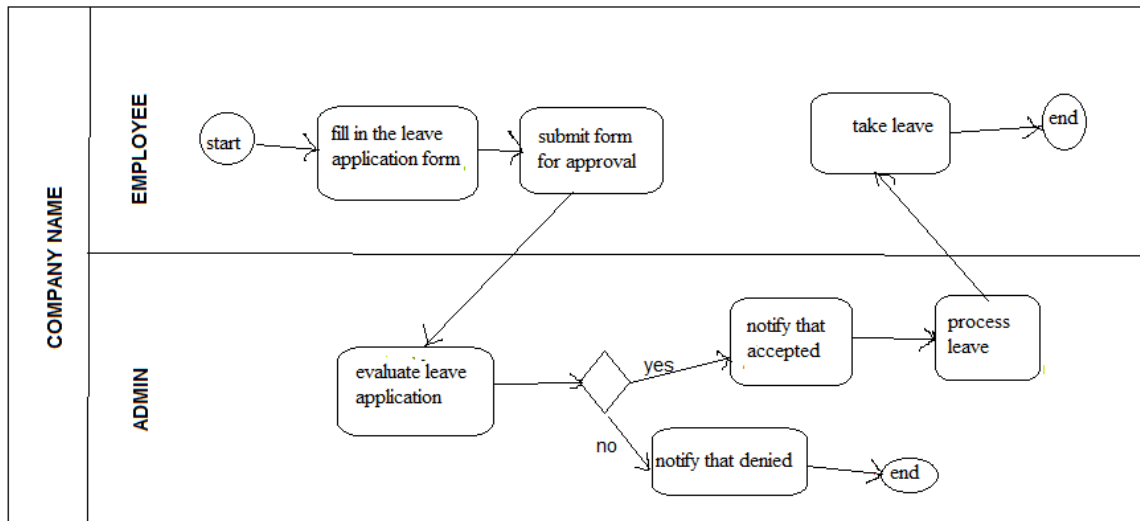


Fig: 3.1.3: BPM Process of Leave Application

3.2 Use Case Modeling and Description

This is the use case for the payroll system. It visualizes the actions of Admin and Employees. There is two type of actors named as Admin and Employee.

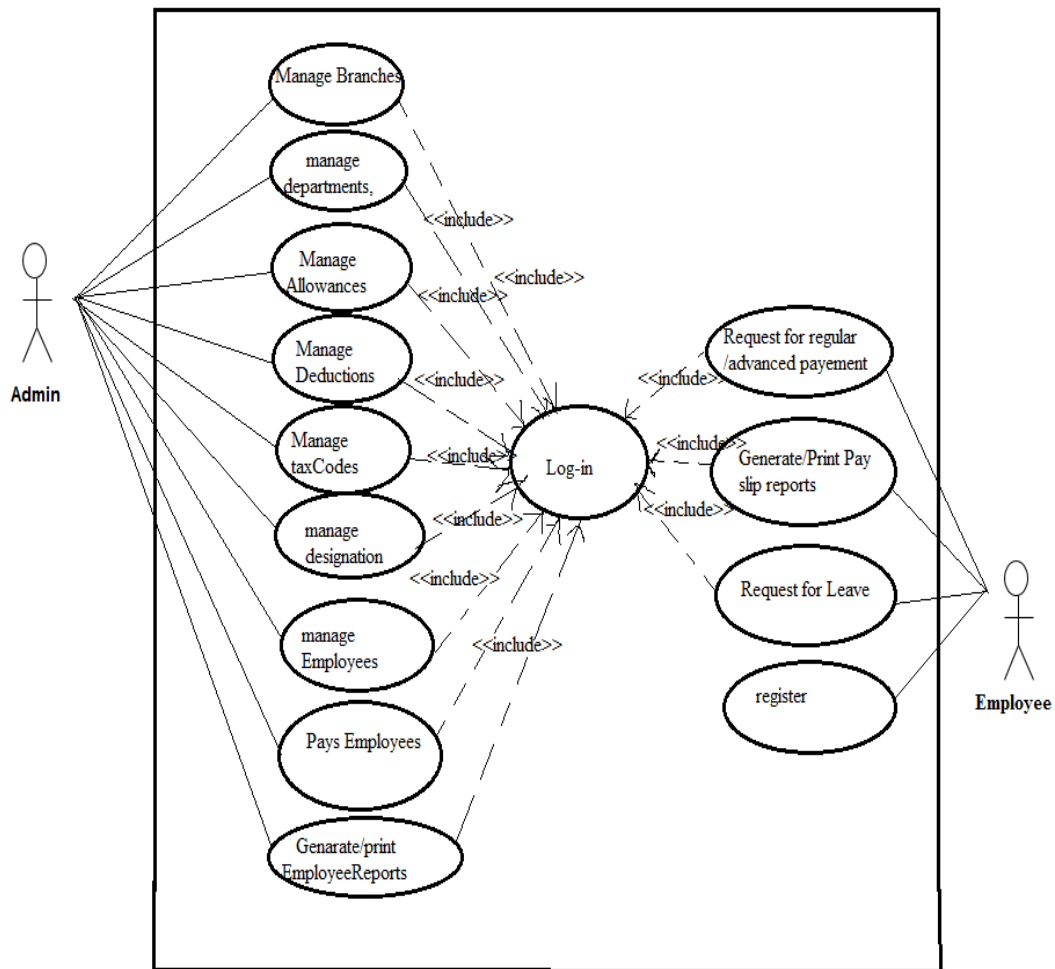


Fig: 3.2.1: Use Case Model of Payroll System

3.3 Logical Data Model

This is the logical data model for payroll system. It explains properties and functions available relationships in different classes.

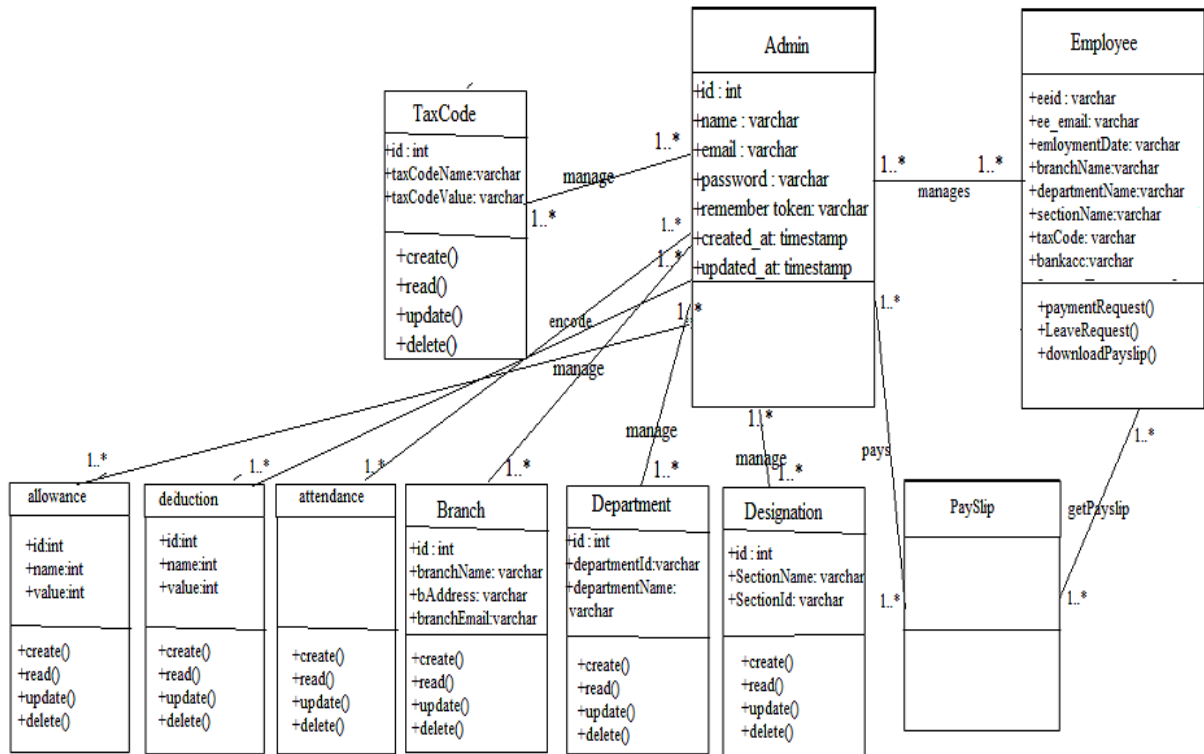


Fig: 3.3.1: Logical Data Model of Payroll System

CHARTER 4

Design Specification

4.1 Front-end Design

- **BOOTSTRAP:** Bootstrap is a framework that helps to responsive design. In this project I have used the bootstrap 3[5].
- **HTML 5:** HTML defines the structure of the webpages.HTML5 is the latest version of HTML[6].
- **CSS3:** CSS3 is the latest version of CSS which is used to design or style the web pages[7].

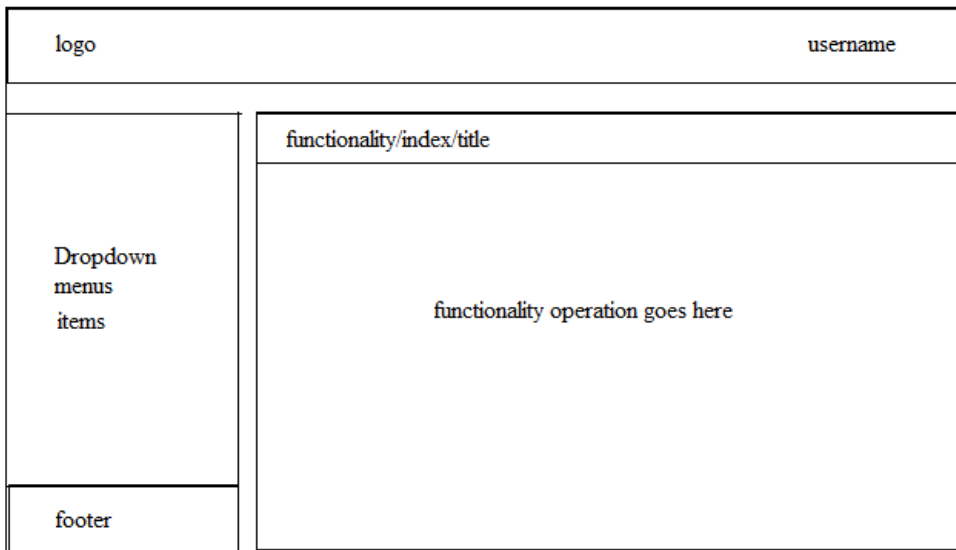


Fig: 4.1: Design Specification of UI

4.2 Back-end Design

- **LARAVEL 5.4:** Laravel is an open source PHP framework created by Taylor Otwell .Laravel follows MVC architectural design pattern. I have built the project on Laravel 5.4 framework[8].
- **PHP 5.6:** PHP is server side scripting language, basically used for making dynamic web applications. Here I used PHP 5.6[9].
- **MySQL:** MySQL is a relational database management system.

4.3 Interaction design and UX

- **JAVASCRIPT:** JavaScript is high level client side scripting language use to design interactive web pages[10].

This system's UX has been made user friendly with responsive design for all devices. To make it more interactive I have focused on JavaScript with JQuery library.

CHARTER 5

Implementation and Testing

5.1 Implementation of Database

A **database-management system (DBMS)** is a computer-software application that interacts with end-users, other applications, and the database itself to capture and analyze data. A general-purpose **DBMS** allows the definition, creation, querying, update, and administration of databases[11]. The following figure represents relationship between two tables named as admins and employees.

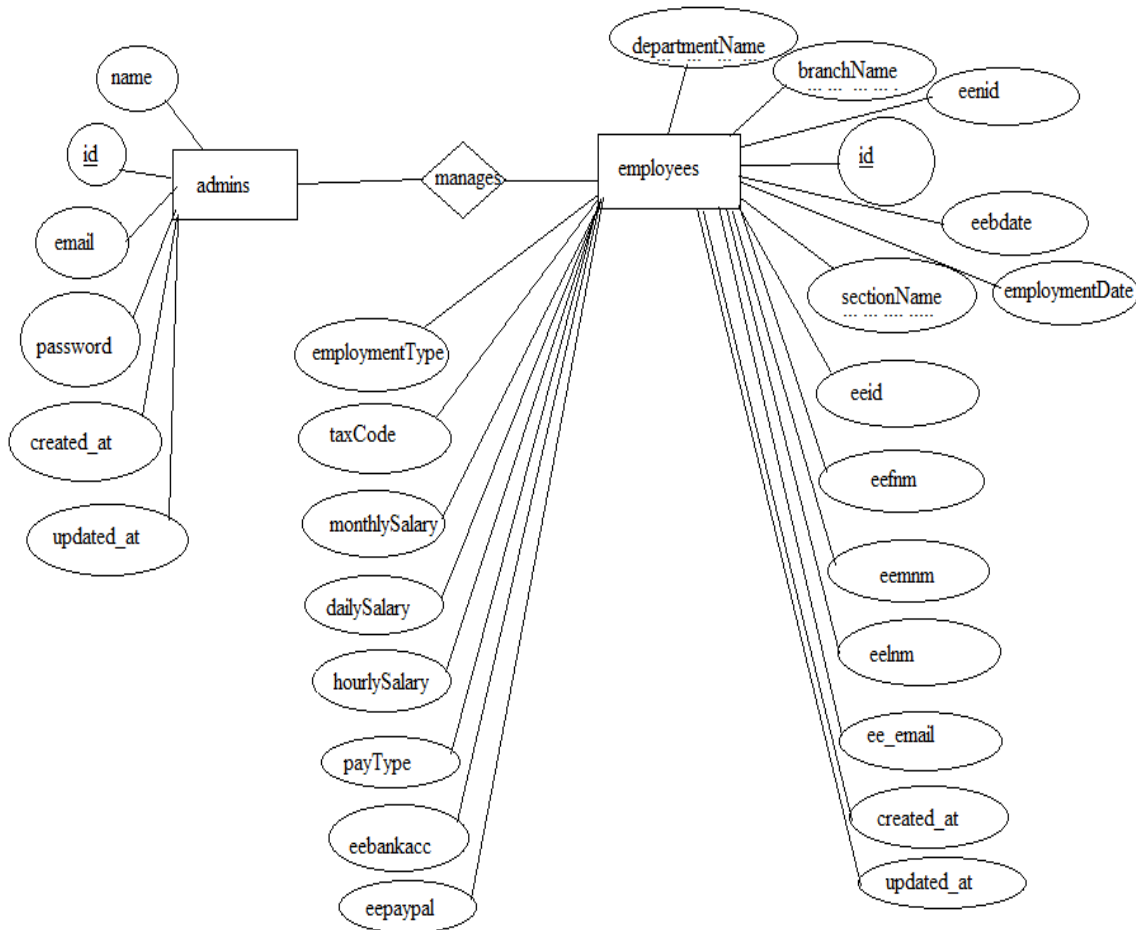


Fig: 5.1.1: ER Diagram of Payroll System, Admin and Employee Tables

The following figure represents relationship among tables named as admins, sections, depts.

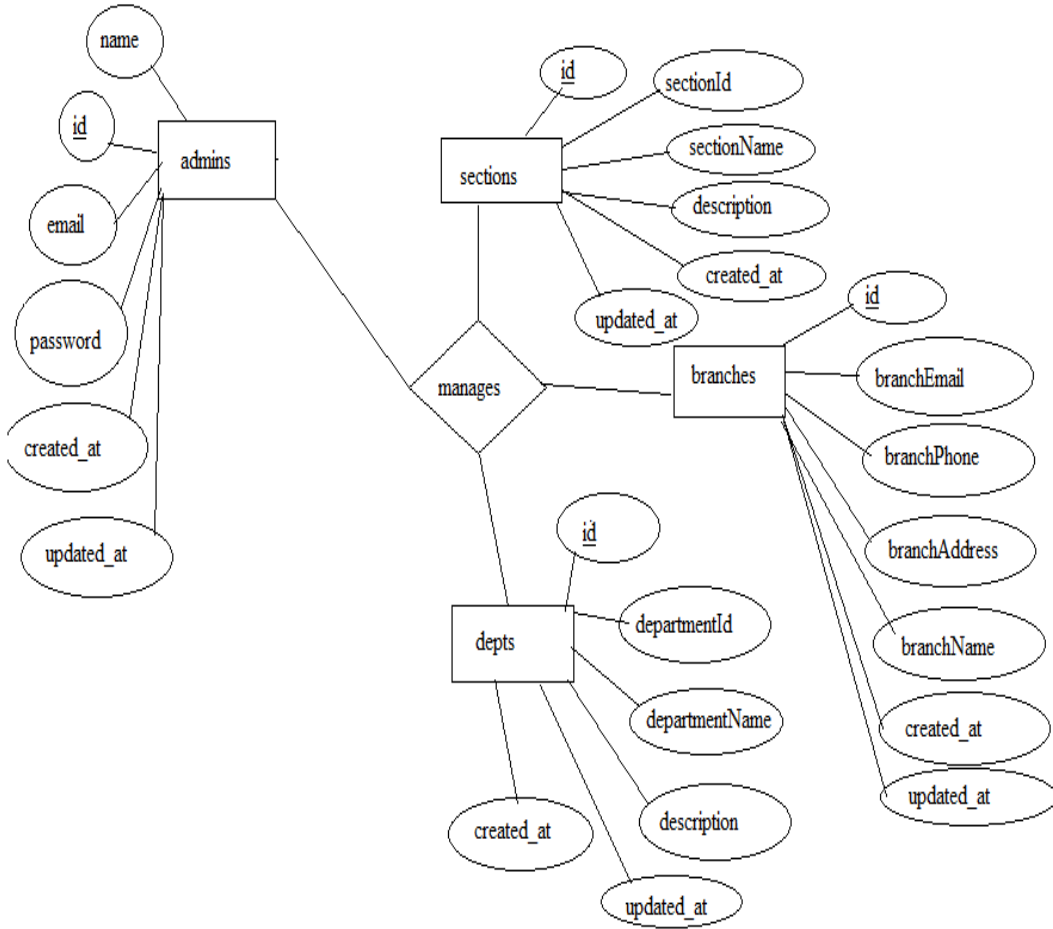


Fig: 5.1.2: ER Diagram of Payroll System for Admins, Sections, Depts, Tables

The following figure represents relationship among tables named as admins, allowances, deductions, allowances, tax codes.

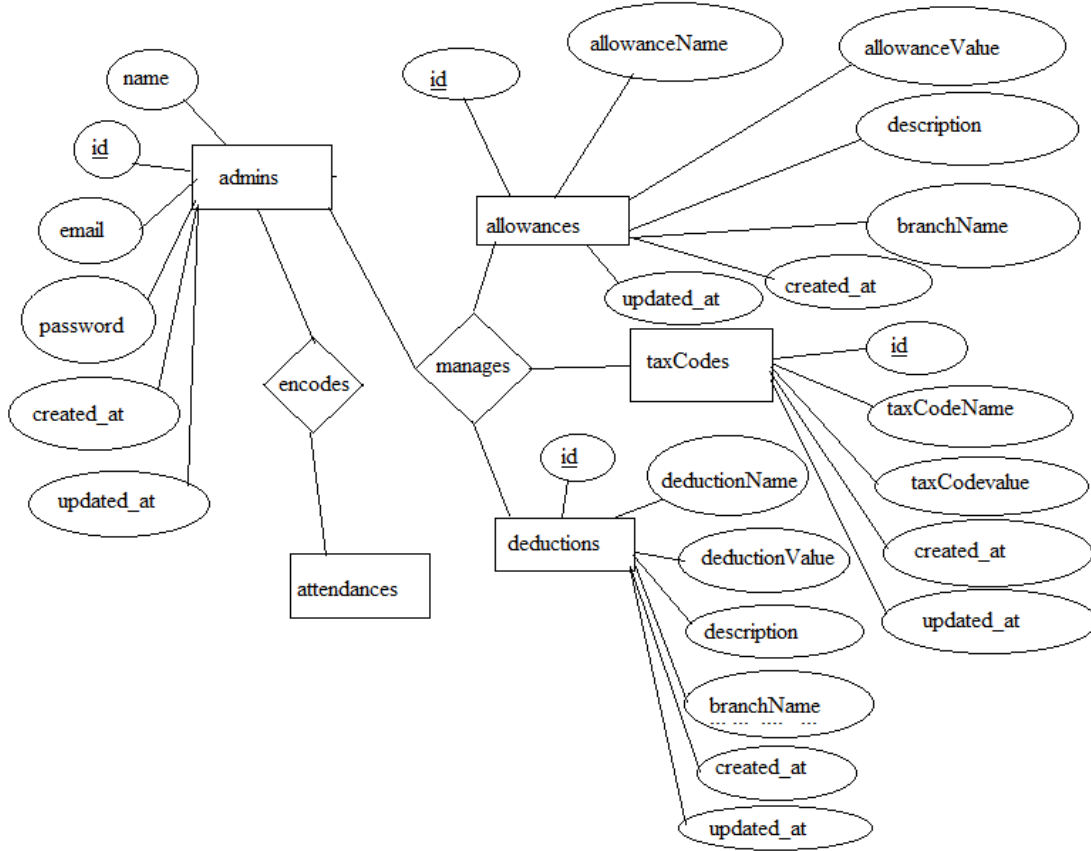


Fig: 5.1.3 : ER Diagram of Payroll System for Admins, Allowances, Deductions, Attendances, Taxcodes

The following figure represents relationship among tables named as admins, payments.

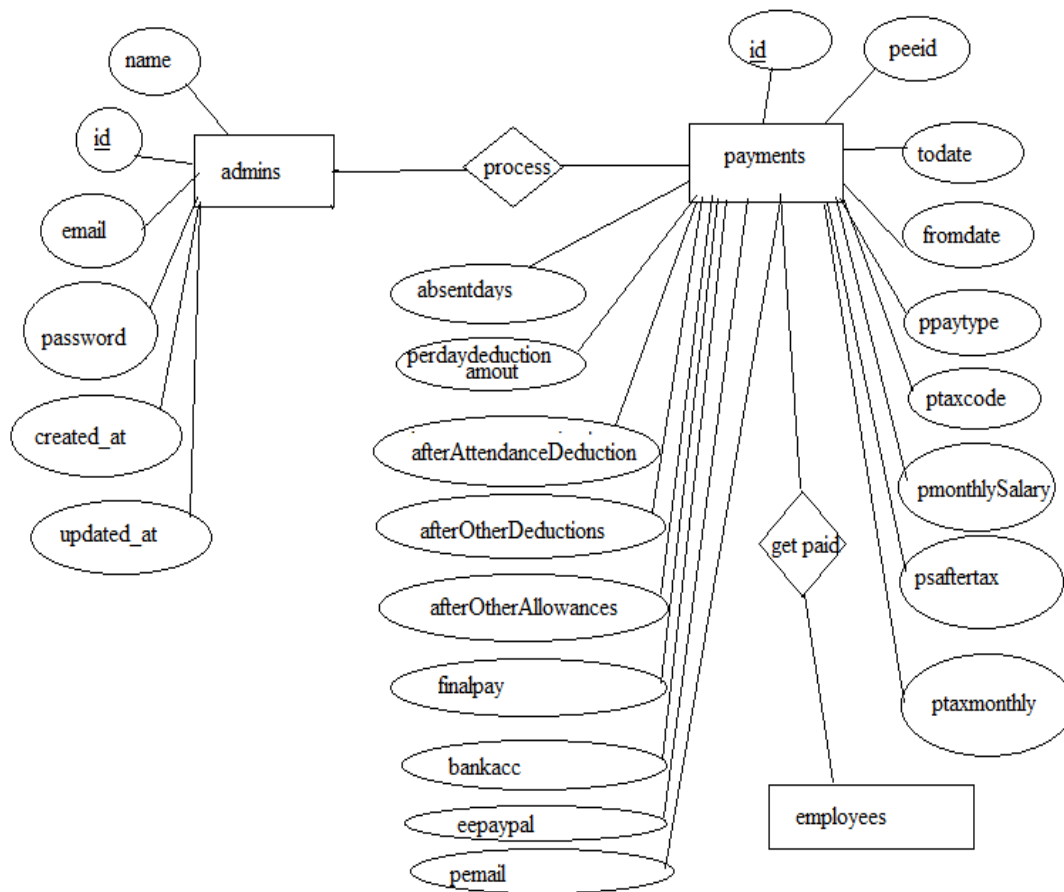


Fig: 5.1.4: ER Diagram of Payroll System for Admins and Payments Table

The following figure represents relationship among tables named as admins, adpayments, reqleaves.

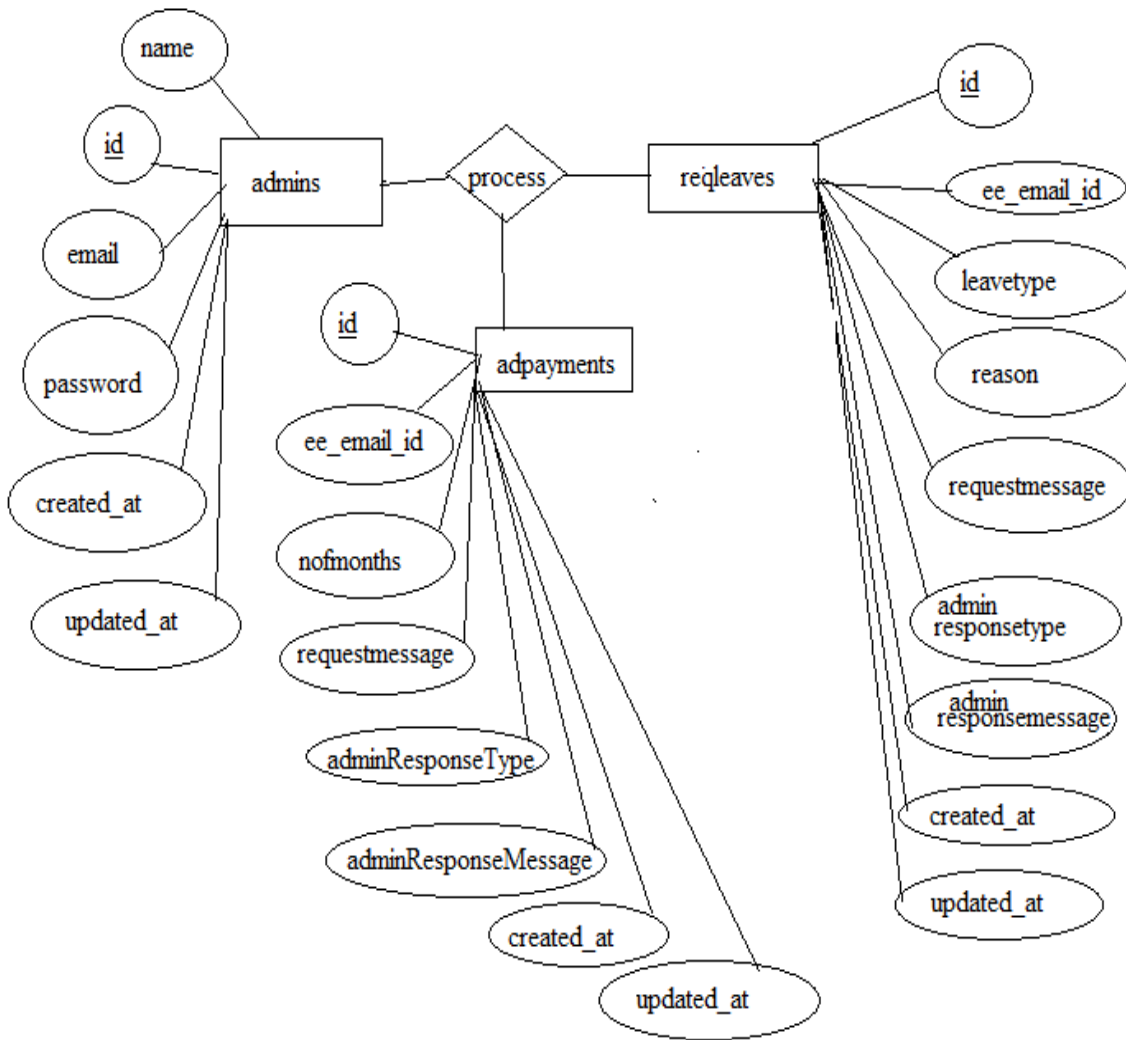


Fig: 5.1.5: ER Diagram of Payroll System for Tables Admins, Adpayments, Reqleaves.

5.2 Implementation of Front-end Design

The screenshot shows the 'Admin Login' page of a payroll system. At the top left, there is a settings icon (gears) with a dropdown menu containing 'Admin' and 'Employee' options. The main content area is titled 'Payroll System | Admin Login'. It contains two input fields: 'Admin Id:' and 'Password'. Below these fields is a blue 'Login' button and a link for 'Forgot Your Password?'. The footer of the page reads 'Web Payroll © 2018'.

Fig: 5.2.1: Frontend Design of Admin Login Page

The screenshot shows the 'Employee Register' page of a payroll system. At the top left, there is a settings icon (gears) with a dropdown menu. The main content area is titled 'Payroll System | Employee Register'. It contains four input fields: 'Name', 'Employee E-Mail Address', 'Password', and 'Confirm Password'. Below these fields is a blue 'Register' button. A tooltip message 'Please fill out this field.' is visible over the 'Name' field. The footer of the page reads 'Web Payroll © 2018'.

Fig: 5.2.2: Frontend Design of Employee Register Page

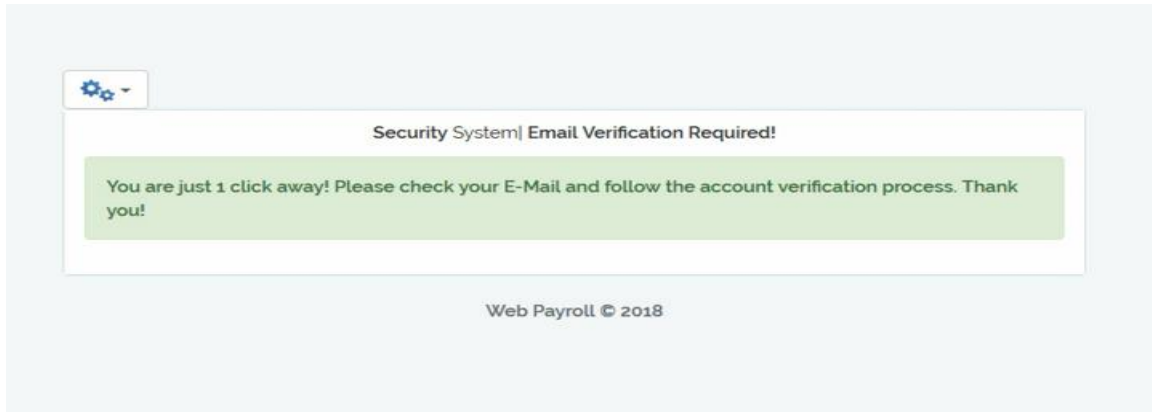


Fig: 5.2.3: Email Verification Required Page

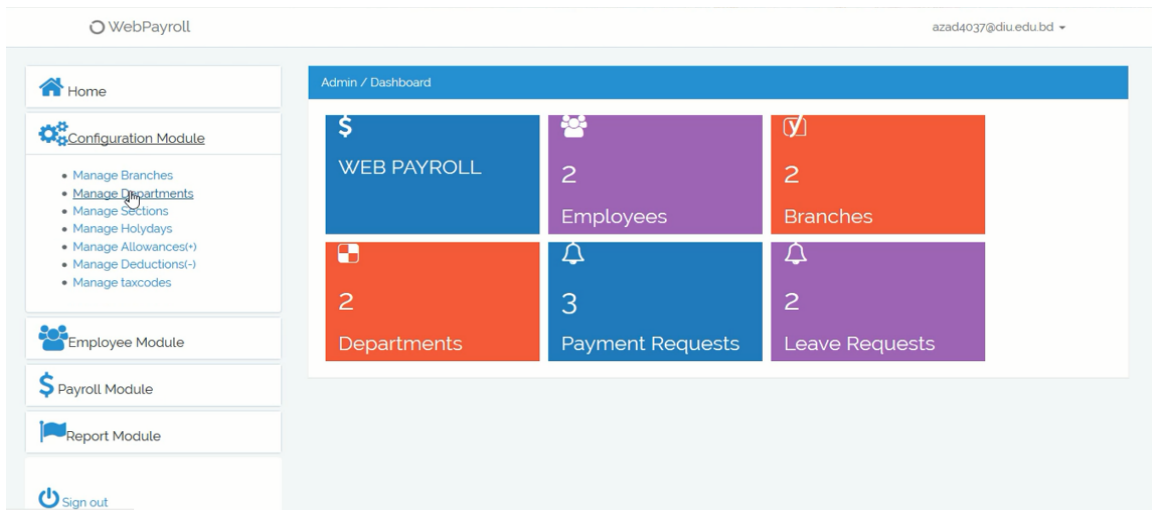


Fig: 5.2.4: Admin Dashboard Page

Branch Management Page

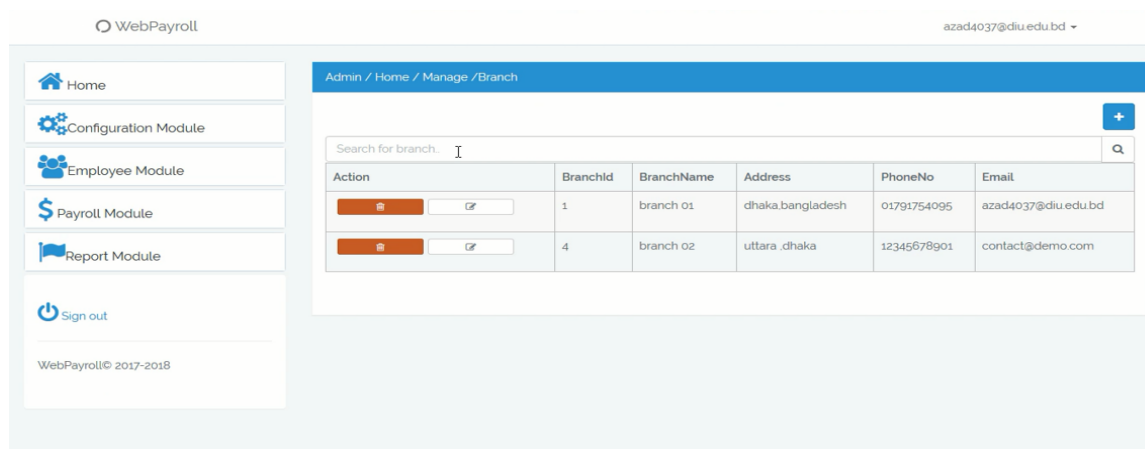


Fig: 5.2.5: Frontend Design of Branch Management Page

Department Management

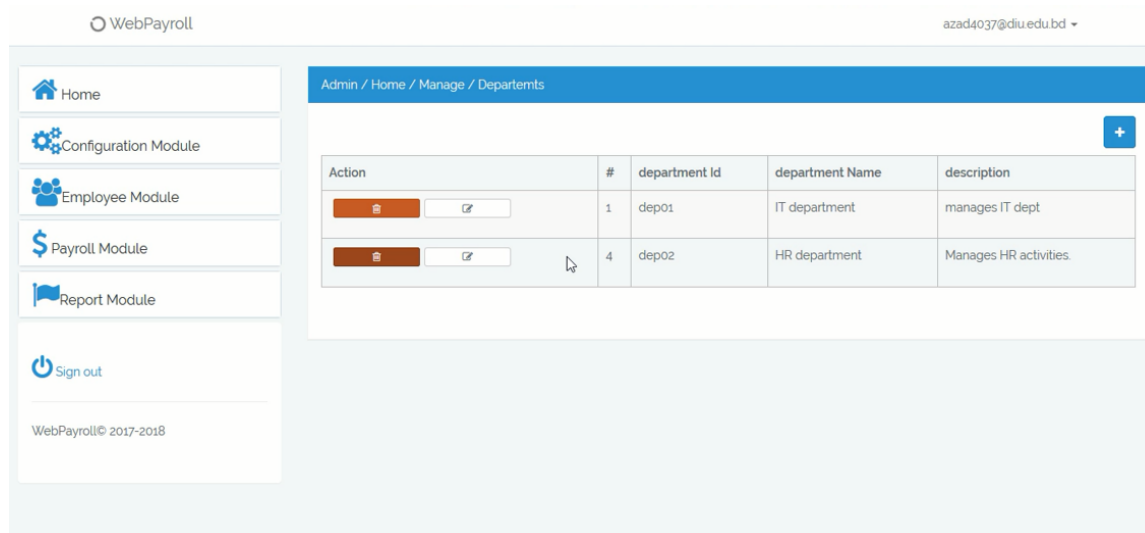


Fig: 5.2.6: Frontend design of department management page

Tax Codes Management

The screenshot displays the 'Tax Codes Management' interface. On the left is a sidebar with navigation links: Home, Configuration Module, Employee Module, Payroll Module, Report Module, and Sign out. The main content area features a breadcrumb trail 'Admin / Home / Manage / Tax Codes' and a green notification box stating 'Successfully Added'. Below this is a table with three columns: Action, TaxCode Name, and Value (%). The table contains three rows of data. At the bottom of the table, there is a pagination control showing '1' and '2' with navigation arrows.

Action	TaxCode Name	Value (%)
	bdt1	0
	bdt2	10
	bdt3	15

Fig: 5.2.7: Frontend Design of Tax Codes Management Page

Employee Management

WebPayroll azad4037@diu.edu.bd

Admin/ Home / Add /Employee

General Information

Select BranchName*	branch 01
Select DepartmentName*	IT department
DesignationName*	Jr IT Officer
First Name *	Nayeem2
Middle Name	
Last Name*	Azad
Employee Id*	Azad two
Employee Email*	
Pay type*	Monthly
Salary Amount *	20000
No. of hours daily *	8
No. of days Monthly *	22
No. of days Yearly *	300
Daily Salary *	800
Hourly Salary *	100
Monthly Salary *	20000
Apply Taxcode value (%) *	0
Bank Account No. *	
Paypal *	

Fig : 5.2.8: Frontend Design of Employee Add Page

Payment Request Management

WebPayroll azad4037@diu.edu.bd

Admin / Home / Manage / Employee / Requests

Request serial Id*

Response Type*

Response Message*

#	EE id	No of months	request message
3	azad4037@diu.edu.bd	+2 months advanced	I need 2 months adadvanced
4	azad4037@diu.edu.bd	Regular payment request	I need 1 months adadvanced
5	azad4037@diu.edu.bd	+1 month advanced	I need 1 month advanced please

WebPayroll© 2017-2018

Fig : 5.2.9: Frontend Design of Payment Request Management

Leave Request Management

WebPayroll azad4037@diu.edu.bd

Admin / Home / Manage / Employee / Requests / Leave

Successfully Notified

Request serial Id*

Response Type*

Response Message*

#	EE id	Leave Type	Reason	request message
3	azad4037@diu.edu.bd	Temporary	Reason of Leave	Request Leave Application

Employee Module

- Add Employee
- Manage Employees
- Encode attendance
- Payment Requests
- Leave Requests

WebPayroll© 2017-2018

Fig : 5.2.10: Frontend Design of Leave Request Management

Attendance Encoding

WebPayroll azad4037@diu.edu.bd

Admin / Home / EnCode / Attendance

Attendance was not encoded for requested query!

EE-ID * ee4037

Ref. Key start Date of the Month * mm / dd / 02/20

Attendance Form *

1	2	3	4	5	6	7	Sun	Mon	Tue	Wed	Thu	Fri	Sat	2	13	14	15	16	17	18	
P	P	P	P	P	P	P	25	26	27	28	1	2	3	P	P	P	P	P	P	P	P
							4	5	6	7	8	9	10								
							11	12	13	14	15	16	17								
							18	19	20	21	22	23	24								
							25	26	27	28	29	30	31								
							1	2	3	4	5	6	7								

Total absent days *

Save Cancel

Fig : 5.2.11: Frontend Design of Attendance Management

Employee Payment Process

WebPayroll azad4037@diu.edu.bd

Admin / Home / Payroll / Encode / tax

Search by EE-ID

The Search results for your query ee4037 are:

EE-ID	First Name	Last Name	Continue to Encode
ee4037	Nayeem	Azad	

Select 1st day of the month

mm / dd / yyyy

EE-ID

Continue

Fig : 5.2.12.1: Frontend Design of Employee Payment Process

Admin / Home /admin/Pay /

Employee ID* ee4037

Employee Email* azad4037@diu.edu.bd

Payment month starts* 01 / 01 / 2020

Payment Month ends* 03 / 01 / 2020

Paytype* Monthly

Monthly Salary* 25000

taxCode* 0

tax monthly%* 0

Salary after tax deduction* 25000

No. Absent days* 1

deduction amount per Absent days*

Other deduction Amount*

Fig 5.2.12.2 : Frontend Design of Employee Payment Process

WebPayroll azad4037@diu.edu.bd

Admin / Home / Reports

Search by EE-ID Clean filter by Month start or end Date or Year

EE-ID	Month starts	Month ends	paytype	MonthlySalary	TaxCode	Tax monthly %	MonthlySalary after Tax deduction	after attendance Deduction	After Ded
ee4037	2018-05-01	2018-05-31	Monthly	25000	0	0	25000	24980	24980
ee4037	2018-02-01	2018-02-28	Monthly	25000	0	0	25000	24400	23500
ee4037	2018-02-02	2018-02-15	Monthly	25000	0	0	25000	24984	24984
ee4037	2018-03-03	2018-03-16	Monthly	25000	0	0	25000	24980	24980
ee4037	2018-02-03	2018-02-09	Monthly	25000	0	0	25000	24980	24980
ee4037	2018-02-09	2018-02-15	Monthly	25000	0	0	25000	24984	24984
ee4037	2018-02-10	2018-02-15	Monthly	25000	0	0	25000	24984	24984
ee4037	2018-07-18	2018-07-20	Monthly	25000	0	0	25000	24980	24980

Fig : 5.2.12.3: Frontend Design of Employee Payments List

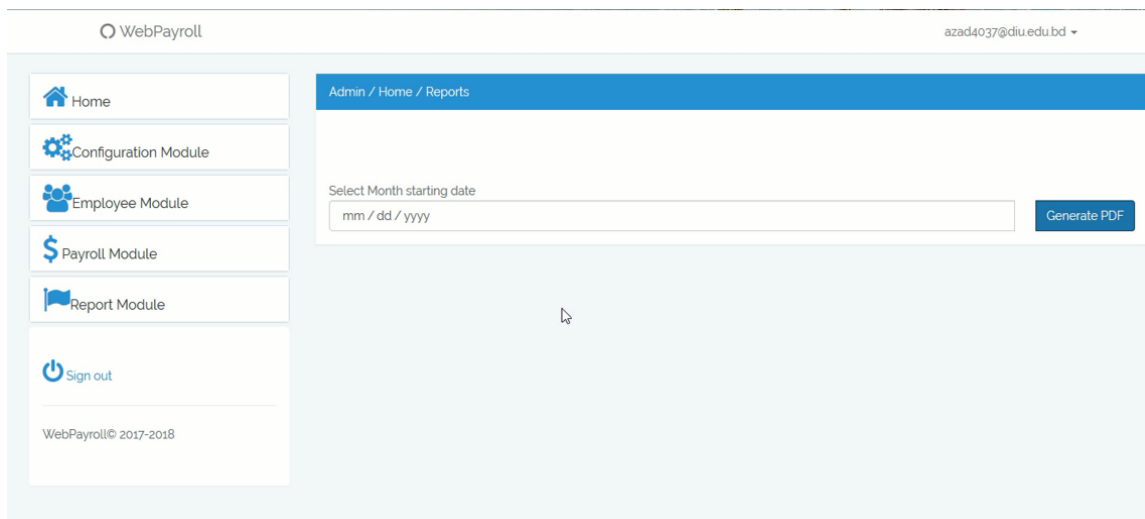


Fig : 5.2.12.4: Frontend Design of Report Generate Page

Employee Payment Requests

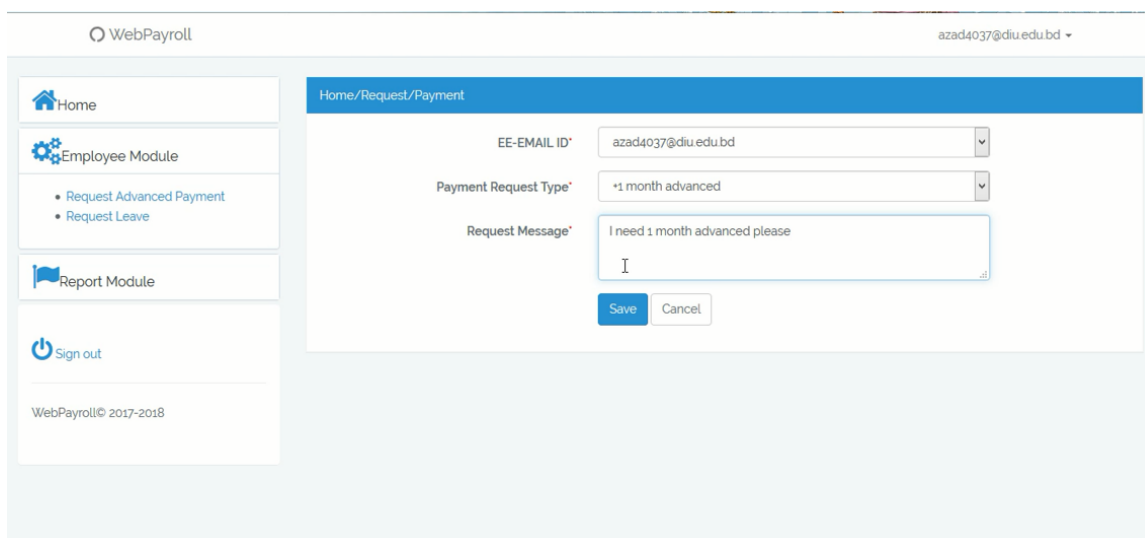


Fig : 5.2.13: Frontend Design of Employee Payment Request Feature

Employee Leave requests

The screenshot shows the 'Employee Leave requests' form in the WebPayroll system. The page title is 'Home/Request/Advanced /Payment'. A green success message at the top reads: 'Successfully Added.Please wait for confirmation message.Thank you'. The form fields are: 'EE-EMAIL ID*' with the value 'azad4037@diu.edu.bd', 'Type*' with the value 'Temporary', 'Reason of Leave*' (empty), and 'Request Leave Application*' (empty). There are 'Save' and 'Cancel' buttons at the bottom. The left sidebar contains 'Home', 'Employee Module' (with sub-items 'Request Advanced Payment' and 'Request Leave'), 'Report Module', and 'Sign out'. The footer shows 'WebPayroll© 2017-2018'.

Fig : 5.2.14: Frontend Design of Employee Leave Request Feature

Download Payment Report

The screenshot shows the 'Download Payment Report' form in the WebPayroll system. The page title is 'Home / Reports'. The form has a single input field labeled 'Select Month starting date' with a placeholder 'mm / dd / yyyy'. A 'Generate PDF' button is located to the right of the input field. The left sidebar contains 'Home', 'Employee Module' (with sub-items 'Request Advanced Payment' and 'Request Leave'), 'Report Module', and 'Sign out'. The footer shows 'WebPayroll© 2017-2018'.

Fig : 5.2.15: Frontend Design of Employee Payment Report Generate Page

WEB PAYROLL

EE-ID : ee4037
Month starts:2018-02-01
Month ends:2018-02-28
paytype:Monthly
MonthlySalary:25000
TaxCode:0
Tax monthly % :0
MonthlySalary after Tax deduction:25000
after attendance Deduction:24400
After other Deduction:23512
After other Allowance:30512
Final Paid:30512
Bank Account:2833823422

Fig : 5.2.16: Frontend Design of Payment Report

5.3 Test Results and Reports

Table 5.3.1: Test case for paying an employee with valid credentials

Test Case 01: Pay an Employee (with Valid credentials)						
Test case id :testcase01			Test designed by: Nayeem Azad			
Test priority (high/medium/low):low			Test Designed date:30/3/2018			
Module Name: Employee payment			Test Executed by : Nayeem Azad			
Title :Pay Employee with valid Credentials			Test Execution date:30/2/2018			
Pre-Condition: Admin must encode attendance, other deductions and allowances, no duplicate payment in same month.						
Step	Test Data	Test Data EEID	Expected Result	Actual Result	Status (Pass/fail)	Notes
1	Seach eeid	EE4037				
2	Encode deductions					
3	Encode Allowances					
4	Submit		Payment Should be successful	Success on Payment	PASS	
Post-condition: Employee Get paid						

CHARTER 6

Conclusion and Future Scope

6.1 Discussion and conclusion

This is developed to meet secure, user friendly & time saving payroll operations. This system is developed with latest technologies like Laravel and follows MVC, encrypted connection & custom optimized algorithms to secure the system.

6.2 Scope for further Developments

I have plans for further developments integrating instant easy payment gateways and 1-click bank transactions.

6.3 Limitation

Currently, there is no integrated payment gateways to this system. This is a limitation so far of this system.

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- [10] Javascript, available at <<https://en.wikipedia.org/wiki/JavaScript>>, Last Accessed on 2-03-2018 at 11.30pm
- [11] Database, available at <<https://en.wikipedia.org/wiki/Database>>, Last Accessed on 2-04-2018 at 11.00pm

APPENDIX

Appendix B:

Plagiarism Check Report

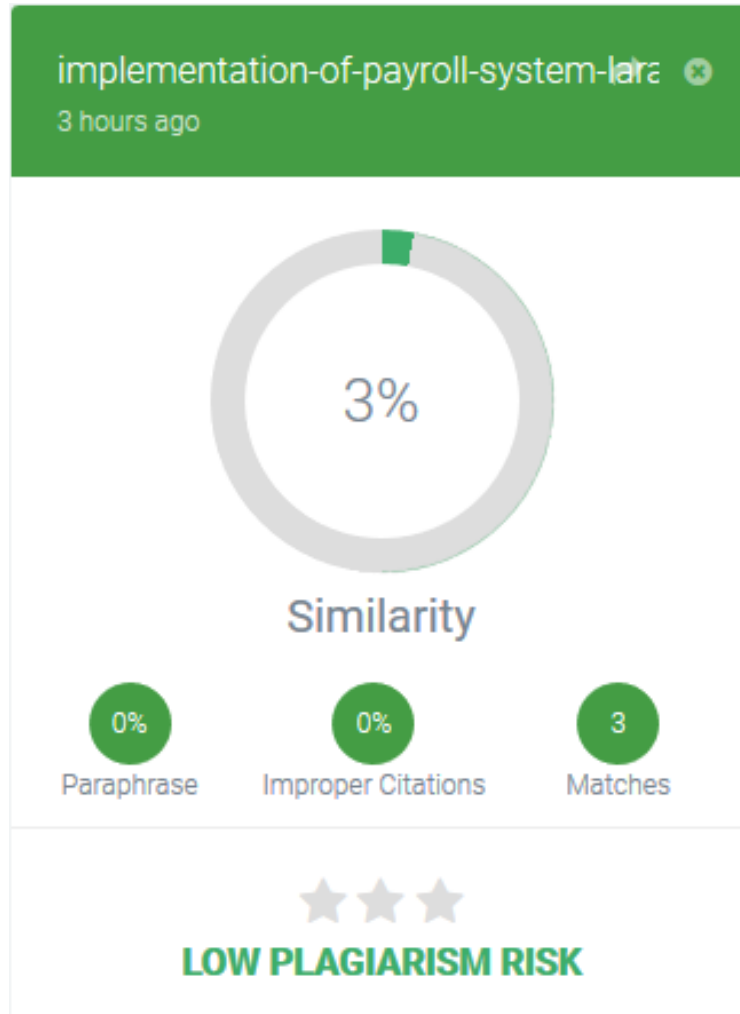


Fig:6.0 : A Screenshot of Plagiarism