



Human Resource Management System

Software Requirements Specifications



Human Resource Management System

Sponsored by iNNovative Company

Prepared by: Arooj Latif

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1 Introduction

Human Resource Management System is a software that helps a Human Resources Department of company and handle employees' personal information (citizen identity number, name, surname, birthdate, birthplace, educational information, and so on), annual leaves, payroll, trainings, skills, performance evaluation, and so on.

This HR Management System will suit an employee's personal data management, system authentication, and authorization demands. This software is basically designed for iNNovative company. All the requirements which meet the needs of the company roughly will be listed one by one.

1.1 Problem Definition

Nowadays, organizations try to improve their management and get better control over their workforce. They need software called Human Resource Management System to achieve the requirements more efficiently.

Human Resource Management System is a software that helps a Human Resources Department of company and handle employees' personal information (citizen identity number, name, surname, birthdate, birthplace, educational information, and so on), annual leaves, payroll, trainings, skills, performance evaluation, and so on.

This HR Management System will suit an employee's personal data management, system authentication, and authorization demands.

This Human Resource Management System project is being created for iNNovative company, who wants to be able to better oversee and manage its employees' data.

They will have better software to manage their personal data, as well as a control mechanism to authorize and authenticate employees' entry.

1.2 Purpose

The purpose of this document is to provide a quick overview of the HR Management System Project. The company's needs and the solution that will be offered to those demands will be clearly outlined with the help of this document. To look at it another way, this document will act as a base for validation and verification.



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1.3 Scope

This document contains the entire Human Resource Management System project definition. It essentially covers the criteria for keeping personal data, supervising authentication and authorization mechanisms, and evaluating the performance of personnel. We must complete data transfer from their present system to our new one when we create the new Human Resource Management System.

This Human Resource Management System, in particular, regulates and administers the personal database, allowing users with various role types such as manager, admin, employee, and human resource to change their data. This Human Resource Management System will give authentication and authorization mechanisms in addition to modifying personal data. With his /her username and password, any user with any role type can access the system.

1.4 User and Literature Survey

The current Human Resource Management System has become unable to meet these essential needs as a result of rapid advancement in firms, such as an increase in the number of employees, an increase in the expectations of employees' talents, and a variety of employee kinds.

The goal is to create an HRMS that will be able to adapt to iNNovative Company's changing needs. In other words, our HRMS will be a flexible system that may be modified in response to iNNovative Company's future needs.

1.5 Definitions and Abbreviations

- ❖ HRMS: Human Resource Management System
- ❖ HR: Human Resource
- ❖ SRS: Software Requirements Specification
- ❖ iNNovative: iNNovative Technology Company for which HRMS is developing
- ❖ Admin: Administrator

1.6 References

- [1] "What is MySQL, MySQL 5.1 Reference Manual". MySQL AB. Retrieved 2011-08-26.
- [2] <http://www.microsoft.com/sqlserver/en/us/default.aspx>
- [3] <https://journals.sagepub.com/doi/full/10.1177/0149206318818718>
- [4] <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0261594>



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1.7 Overview

The HRMS is arranged in such a way that any iNNovative's user may simply comprehend and use it. In other words, it serves as an HRMS user manual. Essentially, this document begins with a brief description of the issue. It continues with a thorough remedy which proposed later on.

Also included are block diagrams of our solution to help visualize the solution and system more clearly, as well as specific and functional requirements, interface requirements, constraints that may be encountered while developing the software, and relationships between user types, each of which is a data object.

2 Overall Description

The project's overall goal is to create and manage a database, design a user-friendly user interface to modify the database, and provide an authentication system to safely complete the tasks listed above.

2.1 Product Perspective

iNNovative currently has an HRMS in place. I will, however, supply them with additional capabilities and attributes structured neatly through the HRMS. HRMS, an online intranet system, will be used by four types of iNNovative employees. These people can be classified as administrator, manager, HR, or employee. After each user has completed the primary authentication page, the system will grant them authorization. Users will query and change the database using HRMS after being allowed according to their permissions (role type).

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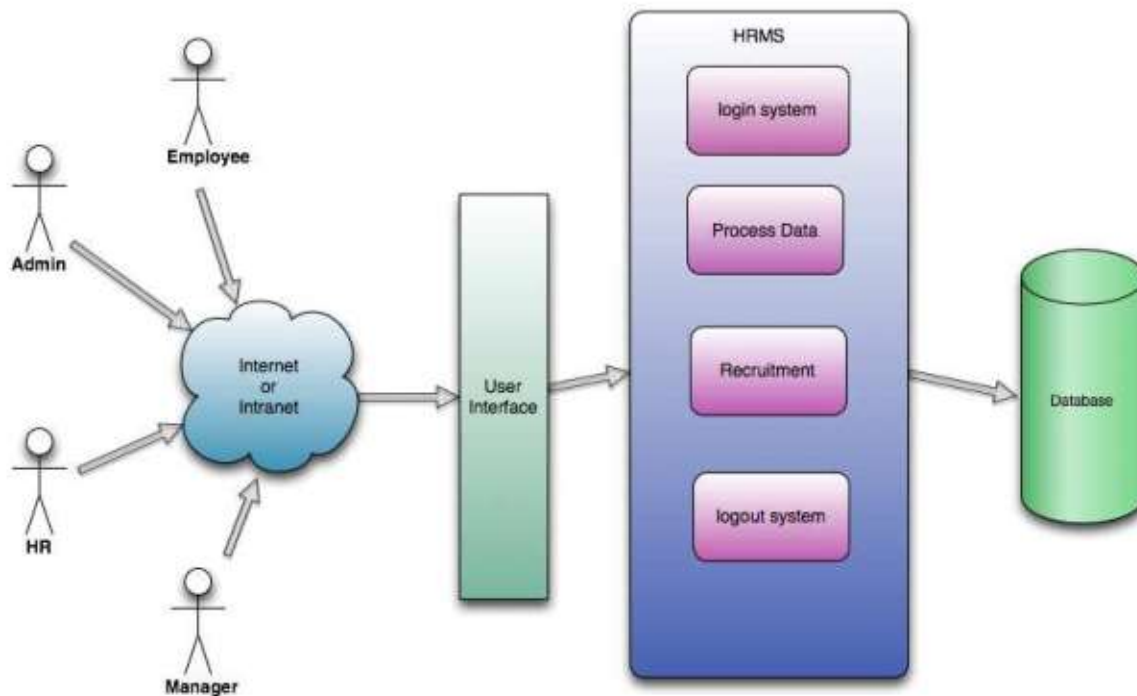


Figure 2.1.1: General Use Case Diagram

2.2 Product Functions

In order to complete necessary tasks, HRMS incorporates a few major features. The system's structure is composed up of these functions. The following are the functions:

2.2.1 Authentication and Authorization

Users will be able to access the system if they are connected to the internet. The user's account must be allowed, as well as his/her user's name and password, in order to see the interface connected to his or her role type. These responsibilities are mostly handled by the functions that fall under the Authentication and Authorization main function.

2.2.2 Process Data

These features, which can be evaluated in that process data significant function, essentially allow users to administer databases in accordance with their needs. The HRMS's most important aspect is its management chores. These capabilities allow a user to update basic personal information such as contact information, marital status, and so on.

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In addition to updating data, a user can search the database for a list of people who possess the needed characteristics. A user can also examine detailed information on a particular user or all users in a report. In other words, searching is a database operation with rows, whereas reporting is a database operation with columns.

2.2.3 Recruitment

The process of recruiting a new person, or introducing a new user to the system, can be completed in two parts. When a new user needs to be added to the system, HR must first create an employee account, at which point HRMS will automatically assign that user an id. In the second step, the administrator creates a user with the user id.

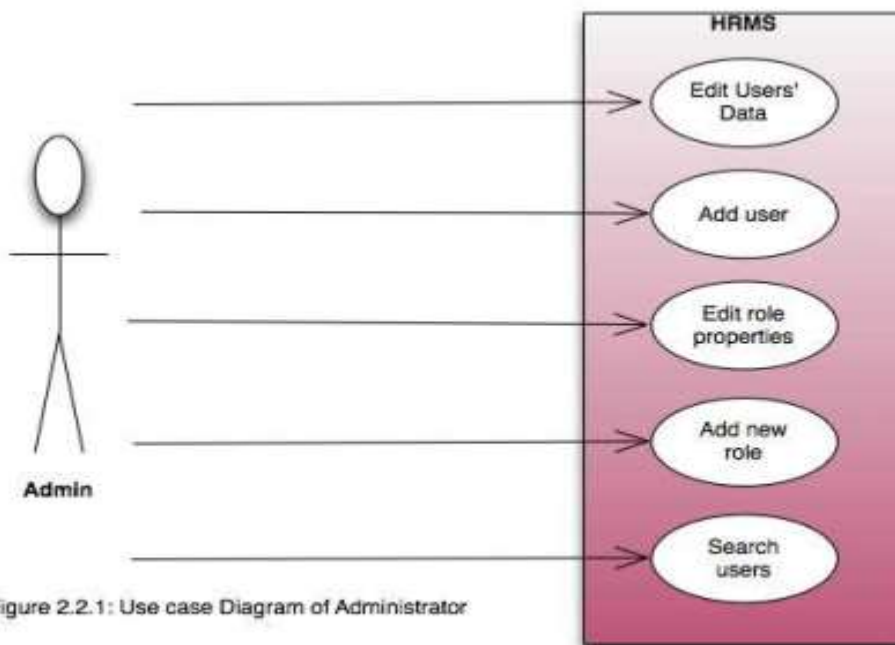


Figure 2.2.1: Use case Diagram of Administrator

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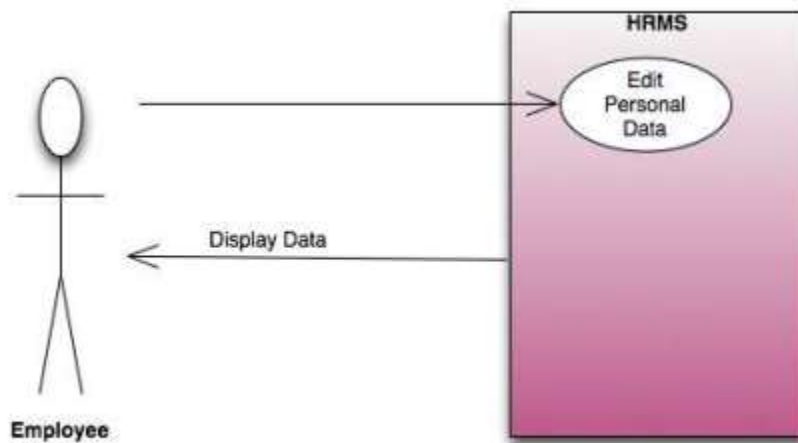


Figure 2.2.2: Use case diagram of Employee

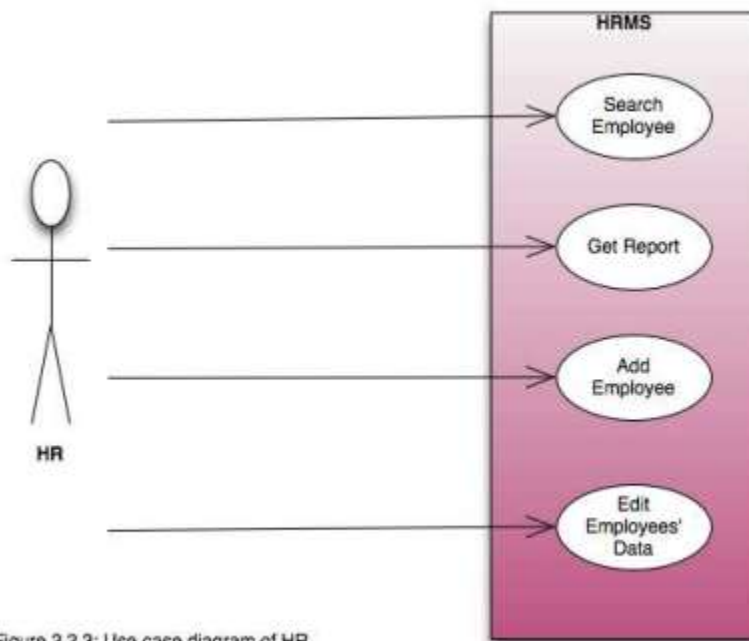


Figure 2.2.3: Use case diagram of HR

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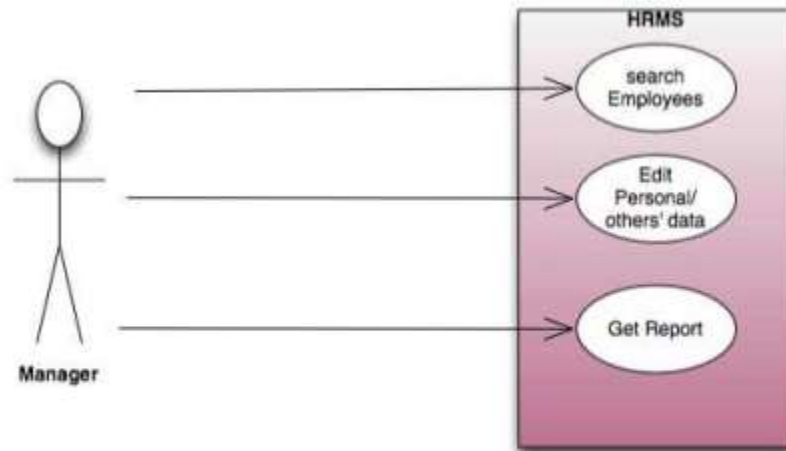


Figure 2.2.4: Use case diagram of Manager

2.3 Constraints, Assumptions and Dependencies

❖ Regularity Policies

Each user must be an iNNovative employee. In other words, HR creates and admin authenticates each user's account.

❖ Hardware Limitations

The operating system under which HRMS will run has no limitations. The HRMS system and database, on the other hand, will run on a server that must be available at all times. Any internet browser can be used to access the system.

3 Specific Requirements

3.1 Interface Requirements

When users log in to HRMS, they will see the same page. A username and password are required on this page.



Figure 3.1.1: The interface which is seen to every user to enter the system



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Users will see the interface when they have been authorized, which contains the information from the first tab of the user role types. This interface is divided into tabs based on the role types assigned by the administrator during the login process. Users may, by the way, have many roles. A user with several roles will be able to see all of the tabs linked to his/her role kinds. Personal Data Tab, Employee List Tab, Add New Employee Tab, Add New User Tab, Manage Users Tab, Users List Tab, and Arrange Roles Tab are examples of these tabs.

Employees have access to simply the Personal Data Tab, while HR users have access to the Employee List Tab and the Add New Employee Tab.

The Manager role grants access to only the Manager Tab. The Admin position grants access to the User List and Arrange Roles tabs. These are the default authorizations, although an administrator can change them using the Arrange Roles Tab. These tabs can be explained in further depth as follows:

3.1.1 Personal Data Tab

Employees will be able to see their personal information, which is presented in a user-friendly way, and they will also be able to change, update, or manage some personal information that is editable, such as contact information and training information, using this tab. Users with the role of Employee will only view this tab.

3.1.2 Employee List Tab

This page displays a list of all employees in a format that can be customized (there will be a check box near each employee). There are two function buttons on this tab: report and search. When the report button is selected, a window appears, allowing the user to choose any column from which to view the information of the specified employees (the employee list is selectable, so HR can specify users by selecting them from the list) or all employees.

3.1.3 Add New Employee Tab

HR can use this page to add new employees to the employee database (when a new employee is hired) and fill up their personal master data. This option creates a new employee without requiring authentication or authorization. To put it another way, being added via this interface by HR is insufficient to gain access to this system. Administrators must validate this account. When an administrator selects this tab, a popup appears that looks like this:



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Figure 3.1.4.1: The first step of creation of a new user

3.1.4 Add New User Tab

Admins can create new users in the system using his tab. Admin can create a user with a unique ID and set up authentication and authorization for that user. This user will be generated by synchronizing with an employee in the employee database who has the same ID.

3.1.5 Manager Tab

Managers can modify the details of employees who are assigned to them using this tab. When this tab is selected, a search and report button (similar to the one in the Employee List Tab, but this one is confined to employees whose manager is the user) appear, as well as a list of employees who are associated with him/her. When the Manager selects a user for whom the system should show or modify information, the system presents that user's information in editable form.

3.1.6 User List Tab

An Admin can list all users on this tab. There is now a search button in the Manage Users Tab that allows the admin to search for a user in the list. After selecting the user, a new window with that person's information appears. Admin can update all of the user's information, including their roles (roles part of a user can be changed only by admin). When an administrator tries to update a user's role, a list of all roles defined in the system appears. This list allows the administrator to pick and deselect roles; this option defines the user's authorization. If any of these roles is selected, the user is automatically unauthenticated.

3.1.7 Arrange Roles Tab

An Admin can use this tab to see a list of all roles defined in the system, see all users who have these roles, set permissions for all roles, and create new ones. There are two lists and two buttons above them in this tab. "Change Permissions" and "Create



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New Role" are the two buttons, and the two lists are Roles List above and Users List below. When an administrator selects a role from the list above, all users who have that role are listed below. The admin can utilize this list to not only display users in that job, but also to alter their roles.

3.2 Functional Requirements

I'll go through the key functions of HRMS as well as the data flow in this part. As a result, the project's primary functions, such as authentication, personal data processing, recruiting, report generation, and graphical user interface unit, will be discussed step by step.

3.2.1. Functional requirement

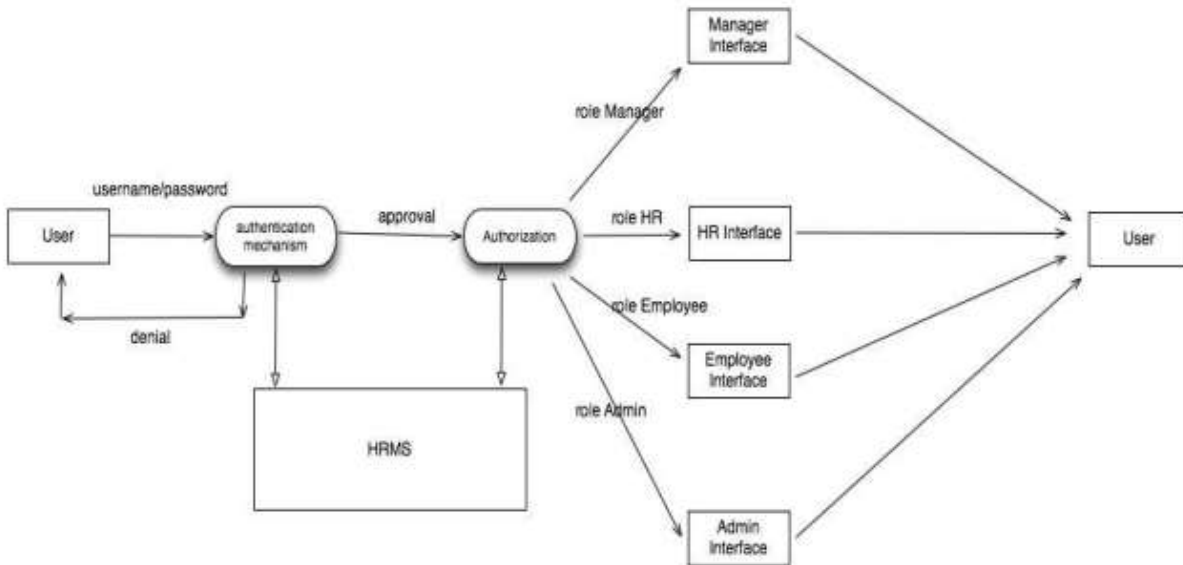
3.2.1.1 Authentication

Login	User can login to the HRMS system with his/her username and password.
Logout	User can logout from the HRMS system.
Login failure	If the user does not exists in the database or the user did not get authorized by the HRMS admin yet.

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3.2.1.2 Authorization

User role check	After logging in, the user role will be checked from the database and the user interface will be created according to that role/roles.
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3.2.1.3 Process Data

Display	User with defined roles can display the content of the database. Being more specific, employee can only view his/her personal information. Manager can see not only his/her personal information but also employees' information who are working under his/her coverage. Admin and HR can display their personal information and all employees' information.
Edit	A user with employee role can edit his/her specific personal information. Manager can only edit employees' personal information that is under his/her coverage except user role type. HR can edit all employees' information except user role type. Admin can edit all information related to all employees' including their user role type.
Search	User with manager role type can search the content of database for the employees who are under his/her coverage. HR and admin roles can search all the employees' information in the database. Search feature works on specific keywords showing employees' characteristics, peculiarities, skills, features, and etc. For example, HR wants to find employees who are well trained in "Java Programming Language". He/she will write the specific keyword in the search bar and press the available search button. Afterwards, he/she will find a list of all the employees' who know "Java Programming Language".

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Report	This feature is basically used to filter the contents of the search mechanism. For instance, as we mentioned in the above search feature. The HR wants to get a report of some specific employees who know "java programming Language". The list of employees obtained from the result of search feature he/she can get the specific report by selecting the corresponding checkbox available for each employee. Or a manager role type can get a report of some or all employees' who are working under his/her coverage by selecting the checkbox. Except employee role type, all other role types such as admin, HR, and manager can use this feature.
Update authentication	This feature can be used only by admin role type. Admin can update the role type of a specific user. For example, an employee got promotion and his role type will be changed from employee role to manager role. Admin will be able to update this authentication mechanism.

3.2.1.4 Recruitment

Add a new employee	HR role type is able to add a new employee to the database. The new employee will have all the required personal information related to his/her. The new created employee will have an id.
Add a new user	After being created a new employee by HR role, admin role is responsible for creating a new user by the specified id assigned in the "Add a new employee" feature. The unique id will be given by the system. Admin will assign a new role such as employee, manager, HR, and admin to the new created user.



Figure 3.2.1.4: Recruitment DFD

3.3 Non-functional Requirements

3.3.1 Performance requirements

- ❖ The number of HRMS online users is projected to be around 100 at most.



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- ❖ The number of users who can be added to the database is unrestricted.

3.3.2 Design constraints

3.3.2.1 Hardware Requirements

- ❖ The HRMS application will store the personal information of 500 employees. A storage capacity of around... MB is required.

3.3.2.2 Software Requirements

Because the HRMS application is a software an internet connection is required.

- ❖ The HRMS software will be installed on PCs and will be accessible through any web browser via the internet or internet.
- ❖ The Java (J2EE) framework will be used to create the HRMS application interface.
- ❖ JDK will be supported by the HRMS software.
- ❖ The HRMS software's personal database model will use MYSQL as a database management system.
- ❖ The HRMS is compatible with any platform that supports JDK technology.
- ❖ The application will require 512MB of RAM or more to execute.

3.3.2.3 Development Environment Requirements

The HRMS web-based interface and its relationship to the person database module will be developed using the Eclipse IDE.

- ❖ **Eclipse IDE**

Eclipse is a multi-language software development platform that includes an integrated development environment (IDE) and a plug-in system that may be extended. It is primarily written in Java, but it can also be used to construct programs in Ada, C, C++, COBOL, Perl, PHP, Python, R, Ruby (including on the Rails framework), Scala, Clojure, Groovy, and Scheme thanks to different plug-ins.

It can be used to create packages for the Mathematica software.

Eclipse JDT stands for Java Development Toolkit, Eclipse ADT stands for Ada Development Toolkit, Eclipse CDT stands for C/C++, and Eclipse PDT stands for PHP Development Toolkit.

- ❖ The person database module will be created, managed, and optimized using MySql Administrator or Microsoft SQL Server.



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❖ **MySql Administrator**

MySQL is a server-based relational database management system (RDBMS) that allows multiple users to access multiple databases.

Structured Query Language is the acronym for Structured Query Language. The MySQL development platform's source code is available under the GNU General Public License's terms of usage.

❖ **Microsoft SQL Server**

Microsoft SQL Server is a relational database server developed by Microsoft. It is a software product whose principal job is to store and retrieve data as required by other software applications, whether they are running on the same computer or on a networked computer (including the Internet).

4 Behavioral Model and Description

5.1 Description for software behavior

Each employee will be added to the system after HR enters their personal information. HRMS will assign an id to the newly added employee during the creation phase. Each employee has the right to be introduced to the system by admin after being added by HR. Admin chooses the user's role type at this point, and the user is immediately assigned a password. Each user sees the identical screen when the system first starts up, asking for a login and password.

Each user sees the same UI with distinct tabs corresponding to their role type/s after entering state (manager, HR, admin, employee). At this point:

❖ **Managers will be able to do**

- A manager can search the rows of the database to find employees under his supervision or all the users he wants.
- Edit the data of the employees under his supervision.
- A manager can search the database columns for information about the employees he or she wants to learn about.

❖ **Employees will be able to do**

- Edit their personal information
- View their data in editable format.

❖ **HR will be able to do**

- Look for personnel who have the properties he wants.



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- Obtain a report on one or more employees.
- Add an employee by inputting their individual personal information.
- Edit employee information

❖ **Administrator will be able to do**

- Edit the data of any user (manager, admin, HR, employee).
- Create a valid account to login with by adding a user.
- Edit role properties; for example, it may be necessary to update the attributes of each role type so that the type of tabs that each user sees varies.
- In that case, it may be necessary to alter the properties of each role type.
- Create a new sort of role in the system.
- Because our HRMS will be a general software, there may be a need to expand the role kinds, which our system will gladly accommodate.
- Look for people who have the required capabilities or attributes.

5.2 State Transition Diagrams

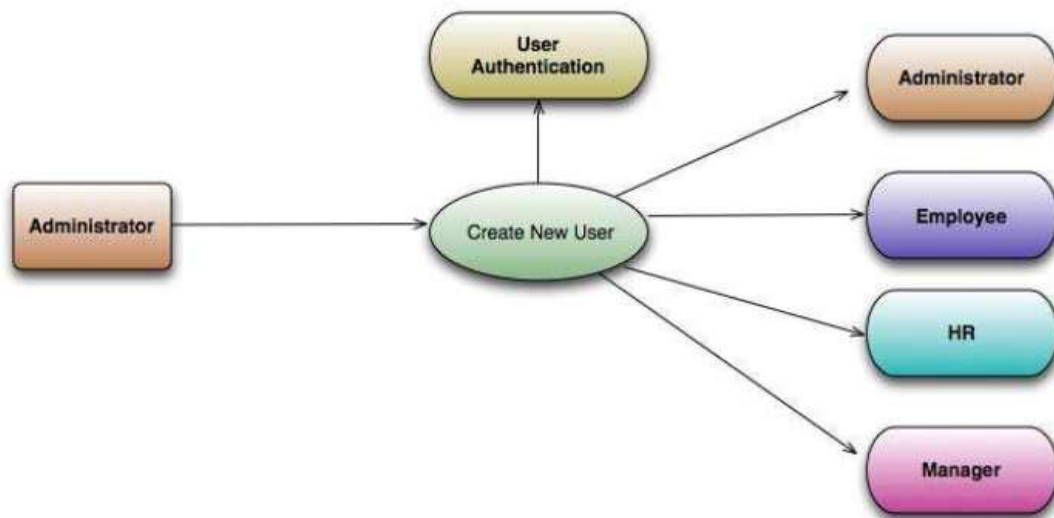


Figure 5.2.1: State diagram of the creation of a new user [3]

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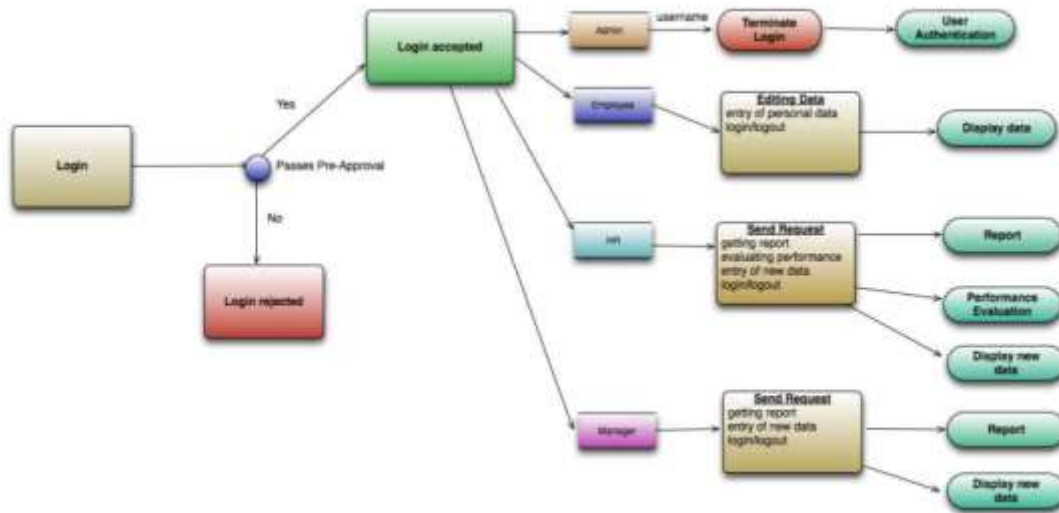


Figure 5.2.2: State Diagram of the general usage of HRMS [3], [4]

5 Testing and Evaluation

5.1 Testing and Evaluation

Testing and evaluation are the topics of this chapter. Testing is the process of running a program and looking for flaws. Testing can be done manually or automatically. Manual testing is done without the use of automated testing tools, whereas automated testing is done with automated testing tools. Evaluation is a form of evaluation that aims to establish whether software or a mix of software applications is the greatest fit for a client's needs.



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6 Planning

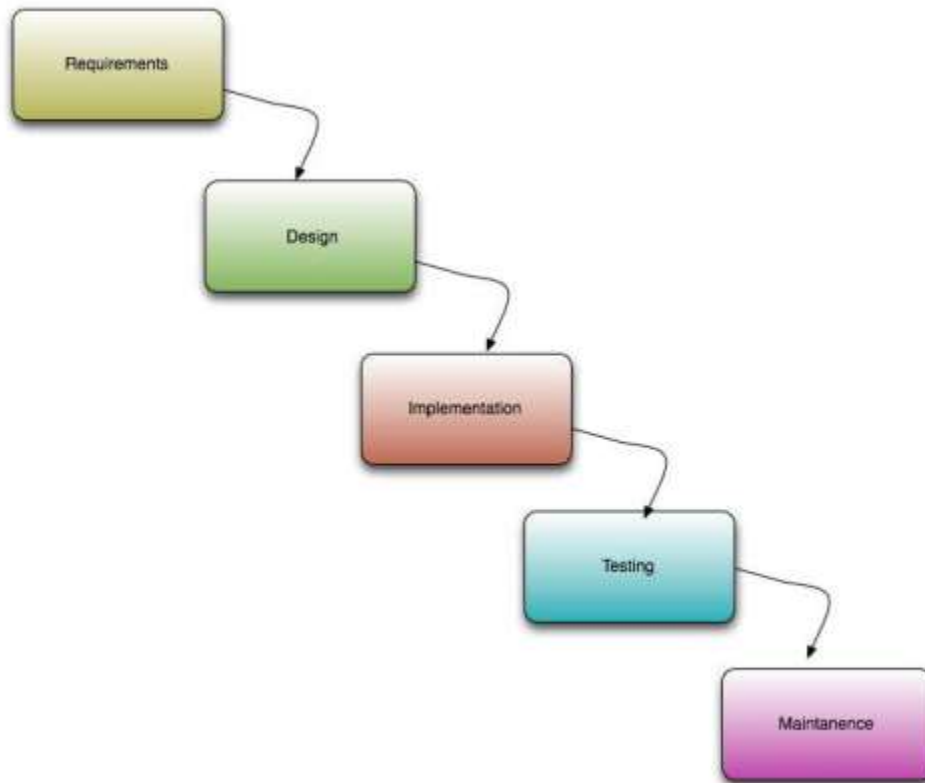
6.1 Estimation (Basic Schedule)

ACTIVITY	IMPLEMENTATION TIME		
	Month 1	Month 2	Month 3
1. Design and implementation	Month 1	Month 2	Month 3
	17-01-2022		
1.1. Design the UI		24-01-2022	
1.2. Backend Development			01-02-2022
1.3. Testing phase			12-03-2022
1.4. Submission of Project			17-04-2022



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6.2 Process Model



7 Conclusion

The design level strategy for the project HRMS is described in this document. The paper quickly outlines the problem and the solution proposed to the problem, using figures to help illustrate the problem and steps taken to fix the problem, after providing basic information about what the HRMS is. The primary functions required to construct an HRMS are introduced in the first phase of the technical design. The use case diagrams are then used to visualize these key functions and their sub-functions. User interfaces are covered in detail using figures in the second section. Finally, the data modules and their connections are discussed. Finally, this document serves as a foundation for the building of an HRMS. To put it another way, this document introduces the HRMS' technical details.