



Daffodil
International
University

Project Documentation

Project Name: Employee Management System (EMS)

Course Title: Object Oriented Design

Course Code: SE-221

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Submission Date:

25 May, 2024

DECLARATION OF PROJECT

Author Name: Md. Rasel Hossain

Student ID Number: 0242220005341013

Title of Project: Employee Management System (EMS)

Academic Session: Spring – 2024

As author, I formally transfer ownership of the project to Daffodil International University, specifically to be housed within the Software Engineering Department. Additionally, I grant DIU the authorization to replicate this project, either wholly or partially, solely for research or academic exchange purposes.

Author:

Certified By:

Signature

Signature of Supervisor

Md. Rasel Hossain

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ID Number: 0242220005341013

Lecturer, Dept. of SWE, DIU

Date: 25 May, 2024

Date: 25 May, 2024

AKNOWLEDGMENT

Firstly, I am humbly grateful to Allah for bestowing upon me the strength to initiate and successfully conclude my project.

Secondly, I extend my heartfelt thanks to **Daffodil International University** for presenting me with this remarkable opportunity and for the development of this project. Additionally, I would like to express my appreciation to my software engineering department, particularly our esteemed department head, **Dr. Imran Mahmud**, and my dedicated teachers for their exceptional teaching and instilling excellence.

This project, an **Employee Management System (EMS)**, is designed to compile, integrate, and manage all the employee data of a company. It brings me immense pride and joy to have been able to work on such a project and to actualize a dream of mine.

Furthermore, I would like to acknowledge the unwavering encouragement and support of my dearest parents, as well as my friends who have contributed to this project.

Lastly, I would like to express my gratitude to my esteemed teacher, **Akash Ghosh**, for his brilliant teaching and guidance during the course of his study and my project.

In gratitude,

Md. Rasel Hossain

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LIST OF ABBREVIATIONS

- **Employee:** A class representing an employee's details.
- **EmployeeManagementSystem:** A class containing methods to manage employee operations.
- **readEmployees():** Method to read employee objects from a file.
- **writeEmployees():** Method to write employee objects to a file.
- **addEmployee():** Method to add a new employee to the system.
- **displayList():** Method to display all employees.
- **searchRecord():** Method to search for an employee by ID.
- **maleemp():** Method to display male employees.
- **femaleemp():** Method to display female employees.
- **frmdhaka():** Method to display employees from Dhaka.
- **frmors():** Method to display employees from other districts.
- **displaybasic():** Method to display basic information of all employees.
- **clearScreen():** Method to clear the console screen.
- **about():** Method to display project and programmer details.
- **logo():** Method to display the system logo.

Abbreviations in functions:

- **add:** Add
- **read:** Read
- **write:** Write
- **display:** Display
- **search:** Search
- **maleemp:** Male Employees
- **femaleemp:** Female Employees
- **frm:** From
- **dhaka:** Dhaka
- **ors:** Others
- **basic:** Basic Information
- **clear:** Clear
- **about:** About
- **logo:** Logo

LIST OF DESIGN SYMBOLS

=	-	*	“ ”
:	□	—	
\	/	^	~

ABSTRACT

Employee Management System (EMS) is an all-inclusive software solution crafted to simplify and enhance the management of staff within companies. It acts as a unified platform for the efficient management of various elements of employee data, HR Administrator, and communication.

Employee Management System (EMS) provides multiple features such as storing employee information (Add Employee, Delete Employee, Modify Employee, Display Employee List, Search Record, Display Basic Info, Display Basic Contact Info, List of Male Employee, List of Female Employee, List of Employee from Dhaka, List of Employee from Others District, List of Employee of Main Branch, List of Employee of Others Branch, About & Exit). The system priorities data safety, integrity, and ease of access by implementing strong authentication methods and data encryption standards.

With easy-to-use interfaces and adaptable modules, Employee Management System (EMS) promotes smooth communication among management, HR divisions, and employees. It boosts cooperation by offering tools for planning, managing leaves, and analyzing performance, thereby cultivating a productive workplace.

Furthermore, Employee Management System (EMS) uses analytics and reporting functionalities to draw valuable conclusions from employee data, assisting in data-driven decision-making and resource distribution for strategic planning.

By utilizing technology to automate regular HR duties and improve organizational productivity, the Employee Management System (EMS) emerges as a crucial

instrument in contemporary workforce management, enabling companies to make the most of their human resources and concentrate on realizing their primary goals.

PROJECT OVERVIEW

Employee Management System (EMS) is an all-encompassing software tool that I've developed using the C language on the CodeBlocks platform. It's intended to revolutionize how businesses handle their workforce. With careful attention to detail, the EMS is engineered to effectively tackle numerous employee-centric operations, including data storage, retrieval, and modification. The powerful capabilities of the C language enable the EMS to offer high-quality performance, coupled with a range of features aimed at enhancing human resources (HR) procedures.

Constructed on the CodeBlocks platform, the EMS comprises modules explicitly crafted for handling employee information. These modules enable profile creation, attendance tracking, performance assessment, and payroll management. The system's structure is designed for scalability, allowing for effortless integration of new features and customization to suit a myriad of business needs.

The EMS stands out with its intuitive user interface that simplifies navigation for both managers and employees. It provides a convenient platform for tasks such as managing leave requests, task assignment, and facilitating communication. With a core focus on data security and integrity, the system employs robust encryption and authentication measures to safeguard sensitive employee information.

Developed using the C language on the CodeBlocks platform, this project is a valuable resource for businesses aiming to optimize their HR operations. It offers a cohesive and efficient instrument to ease staff management, ultimately enhancing the overall productivity of the organization.

OBSTACLES

Creating an Employee Management System (EMS) in the C language can present several obstacles along the development journey. One significant challenge revolves around the complexity of handling data structures and memory management efficiently. Implementing functionalities such as storing employee information, managing records, and performing operations like adding, deleting, or modifying entries requires meticulous attention to data organization and manipulation. Additionally, ensuring the system's robustness and security poses another hurdle. Preventing vulnerabilities like buffer overflows or unauthorized access demands rigorous validation and error handling mechanisms. Moreover, integrating a user-friendly interface within the constraints of a console-based application in C adds complexity, as it lacks built-in support for graphical elements, making user interaction less intuitive. Balancing functionality, efficiency, and security within the limitations of the C language can indeed be a challenging yet rewarding endeavor in developing an Employee Management System.

TECHNOLOGY REQUIRENMENT

Software and Application Platform:

- IntelliJ IDEA Community Edition 2024.1.2

Hardware:

Unfortunately, there is no hardware used in my Employee Management System (EMS) project.

SUPPORT

As the author of the Employee Management System (EMS), I am passionate about providing comprehensive user support. I am here to assist users with any technical questions, troubleshoot any issues they may encounter, and guide them through every aspect of the system. My goal is to ensure that every user has a seamless experience by quickly resolving any problems they may have with data, system navigation, or any other challenges they encounter while using the EMS. I am committed to providing personalized and reliable support that empowers users to fully utilize the system and maximize its benefits.

MILESTONE & REPORTING

The project progressed through four distinct phases:

- Information Analysis
- Development
- Design
- Testing
- Documentation

Milestone No.	Task Names	Hours	Date
01	Information Analysis	03	02 May, 2024
02	Development	08	05 May, 2024
03	Design	02	16 May, 2024
04	Testing	04	19 May, 2024
05	Documentation	06	22 May, 2024

Each phase was integral to the structured development and implementation of the project.

TRAINING

Our tailored training program for the Employee Management System (EMS) offers comprehensive guidance to users, empowering them to navigate and utilize the system efficiently. Through hands-on sessions, participants learn to manage employee records, execute system functionalities, and handle data effectively. Our training focuses on user-friendly techniques, ensuring a smooth understanding of the EMS features and fostering confidence in utilizing its capabilities. We provide step-by-step instruction, practical examples, and personalized support to equip users with the skills necessary to leverage the EMS effectively within their organizational context.

CONTACT ME

Please feel free to reach out to me using any of the following contact methods:

- Email Address: hossain22205341013@diu.edu.bd
- Mobile: +880 1834710071

REQUIREMENT ELICITATION

The system necessitates the involvement of three distinct user roles:

- HR Administrator
- Manager
- Employee

These roles are integral to the functioning and utilization of the system.

Task of HR Administrator:

HR Administrator tasks involve overseeing system operations, managing user access, and ensuring data integrity within the Employee Management System (EMS). HR Administrator handle user permissions, monitor system functionalities, and maintain security protocols. They are responsible for overseeing employee data, generating reports, and addressing technical issues that may arise. Additionally, HR Administrator play a key role in implementing system updates and ensuring compliance with organizational policies and procedures.

Task of Manager:

This section of the Employee Management System (EMS) empowers managers with the tools they need to effectively oversee their teams and optimize their performance. This section provides a centralized platform for managing employee records, tracking attendance, monitoring performance, and facilitating communication. Managers can easily access employee profiles, view attendance records, set performance goals, and provide feedback. Additionally, the section enables managers to delegate tasks, assign projects, and track progress, ensuring that all team members are working towards common objectives. By streamlining managerial processes and fostering effective communication, this section contributes to a more productive and efficient work environment.

Task of Employee:

Employee tasks within the Employee Management System (EMS) encompass managing personal data, accessing pertinent information, and utilizing system functionalities to update profiles, submit necessary documentation, and request modifications or leave. The system serves as a hub for accessing schedules, company resources, and fostering collaboration among colleagues and supervisors. Furthermore, employees leverage the EMS for providing feedback, tracking performance indicators, and engaging in training initiatives facilitated by the system.

System Task:

Employee Management System (EMS) operates through a range of essential tasks focused on streamlined data management, user access control, and fostering communication. It manages employee information, allowing authorized updates to profiles and contact details. HR Administrator tools ensure secure user access. The system promotes seamless communication among employees, sharing schedules and documents, and enabling collaboration. It also handles leave requests, attendance records, and performance evaluations. By generating insightful reports, it aids informed decision-making for employee development and organizational strategies. Essentially, these tasks form the foundation of EMS: optimizing operations, enabling communication, and empowering efficient workforce management.

PROJECT METHADOLGY AND USER MANUAL

The initial page of the project serves as the Employee Management System (EMS) logo page, where, upon arrival, the project's logo will be prominently displayed. Users may proceed to the home page by pressing any key after the prompt, "Enter any keys to continue..."

Logo Screen Page:

Upon reaching the home page, HR Administrators will be welcomed and prompted to input their HR Administrator username and password for authentication and access to the system.

Log in Page Screen:

Employee Management System (EMS) boasts a secure login page, requiring a unique ID and password for personalized access. This streamlined platform centralizes administrative tasks, enhancing efficiency in managing employee records, scheduling, and performance tracking. The login process ensures data confidentiality, safeguarding the integrity of the EMS for seamless, secure functionality.

Upon successful login, the Main Menu will be presented, featuring the following options:

01. Add Employee
02. Display All Employees
03. Search Employee by ID
04. Display of Male Employees
05. Display of Female Employees
06. Display Employees from Dhaka
07. Display Employees from Other Districts
08. Display Basic Information of All Employees
00. Exit

Please input your selection: -->

Home Page Screen:

Within this project system, the HR Administrator function enables the manipulation of employee information through selectable options, facilitating the addition, removal, or modification of employee details as required.

Option 14 is a repository of comprehensive project information. It encompasses the project's nomenclature, details concerning the project developer (inclusive of their name and relevant particulars), as well as the identity and pertinent information of the project approver.

Upon accessing the HR Administrator panel, the user will be prompted with a menu of options. Selecting "Add Employee" by choosing option No. 1 will initiate the process.

Once selected and confirmed, a series of prompts will sequentially appear, soliciting the necessary information:

- Enter ID Number
- Enter Full Name of Employee
- Enter Designation
- Enter Gender
- Enter Branch
- Enter Salary
- Enter Present Address
- Enter Permanent Address
- Enter Phone
- Enter E-mail Address

For the initial employee, the system will begin assigning ID numbers, commencing with 1. Upon providing all the requisite details, an option will prompt: "Want to enter another employee's info? (Y/N)".

Should the HR Administrator select 'Y' to add another employee, the system will re-display the options for entering employee information as previously presented.

Opting for 'N' will return the user to the home page automatically.

A picture of which is given below:

Add Employee:

Add Employees Information adding.

Delete Employee:

If you want to remove an employee's information, select option number 2, "Delete Employee." Then, enter the employee's ID number. That's the process for deleting the employee's data.

Modify Employee:

As an employee's details can evolve— like their salary, job title, address, or workplace— we've included an option called Modify Employee. Simply choose option 3. Modify Employee, and update the information by entering the employee's ID number. This way, you can easily make changes to their details as needed.

Display Employee List:

Once that's done, if the HR Administrator wants to view all employees' information, they can choose option 04, "Display Employee List." This will show details for all employees. Just scroll through to find the information, organized by their ID numbers.

Search Record:

If the HR Administrator needs details on a particular employee, they can select option 05, "Search Record," and enter the employee's ID number. This will display all the information pertaining to that specific employee.

Display Basic Info:

This feature offers a comprehensive summary of essential employee details that are crucial for quick reference. It includes fundamental information such as employee names, their respective job titles, departmental affiliations, and unique employee identification numbers. The purpose is to provide a condensed yet informative snapshot of the workforce, facilitating swift access to key employee data for managerial or HR Administrative purposes.

Display Basic Contact Info:

This function allows access to the primary contact details of all employees within the system. It presents vital communication information such as phone numbers, email addresses, and possibly office locations. This compilation of contact information streamlines communication processes within the organization, enabling efficient correspondence and ensuring easy accessibility to reach out to employees when needed.

List of Male Employees:

By selecting this option, a categorized list specifically featuring male employees is generated. This segmentation aids in analyzing and understanding the male

demographic within the workforce. It offers insights into the distribution of roles, departments, and other pertinent details, specifically among male staff members, facilitating a nuanced understanding of the organization's gender representation.

List of Female Employees:

Similar to the previous option, this function organizes a list focusing exclusively on female employees. It aims to provide a categorized overview of female staff members' roles, departments, and unique identifiers, aiding in understanding the gender distribution and roles held by women within the organization.

List of Employees from Dhaka:

This option filters and presents a comprehensive list solely comprising employees based in Dhaka, one of the significant operational locations. It streamlines access to detailed information about employees situated in this particular area, offering insights into roles, departments, and demographics specific to the Dhaka workforce.

List of Employees from Other Districts:

In contrast to the previous option, this feature compiles a comprehensive list encompassing employees stationed in districts outside Dhaka. It facilitates a broader understanding of the organization's geographical spread, presenting employee details from diverse locations apart from the primary operational district.

List of Employees from Main Branch:

This functionality focuses on providing an organized compilation of employee details specifically stationed at the main branch. It includes information on roles, departments, and other relevant data concerning staff members at the core operational branch, offering insights into the workforce concentration at the primary location.

List of Employees from Other Branches:

This feature generates a comprehensive overview of employees stationed at branches other than the main one. It aims to provide insights into the distributed workforce across various branch locations, offering details about roles, departments, and specific identifiers for employees outside the primary operational branch. This enables a comprehensive understanding of the diverse workforce spread across multiple locations within the organization.

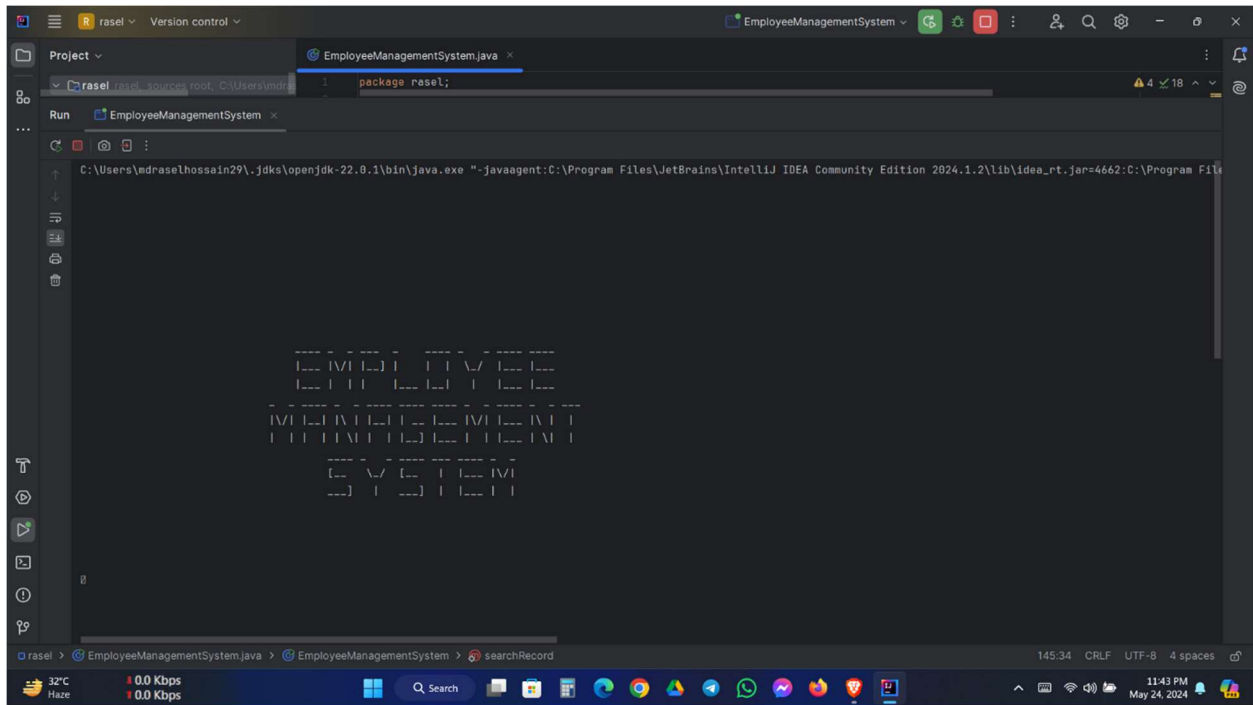
Exit:

The "Exit" option serves as a straightforward means to gracefully conclude interactions within our Employee Management System. This feature enables users to seamlessly exit the system interface, ensuring a smooth transition from the application back to their primary environment. It provides a convenient way to conclude sessions, preserving data integrity and security protocols. By selecting "Exit," users can confidently close the system, knowing that their actions and information have been securely managed, contributing to a streamlined and secure user experience within the EMS.

PROJECT ABOUT

The "About" option within our Employee Management System (EMS) serves as a dedicated space to offer comprehensive insights into the system's essence and functionality. This section acts as an informational cornerstone, detailing the purpose and significance of our EMS within the organizational framework. It provides users with a holistic view of the system's capabilities, guiding them through its various features and functionalities. Within this segment, users can explore a detailed breakdown of the system's components, such as employee data management tools, display options, and specific categorizations for streamlined information access. Moreover, the "About" section acts as a user guide, offering step-by-step instructions for navigating the interface, utilizing functionalities effectively, and accessing support channels for further assistance. It also emphasizes the stringent security measures integrated into the system, ensuring the safeguarding of sensitive employee data. Additionally, this section keeps users informed about the system's updates, enhancements, and version details, ensuring they are equipped with the latest advancements for optimal usage. Ultimately, the "About" option is an essential information hub, empowering users with the knowledge and resources necessary for maximizing the system's utility in efficient workforce management and HR Administration.

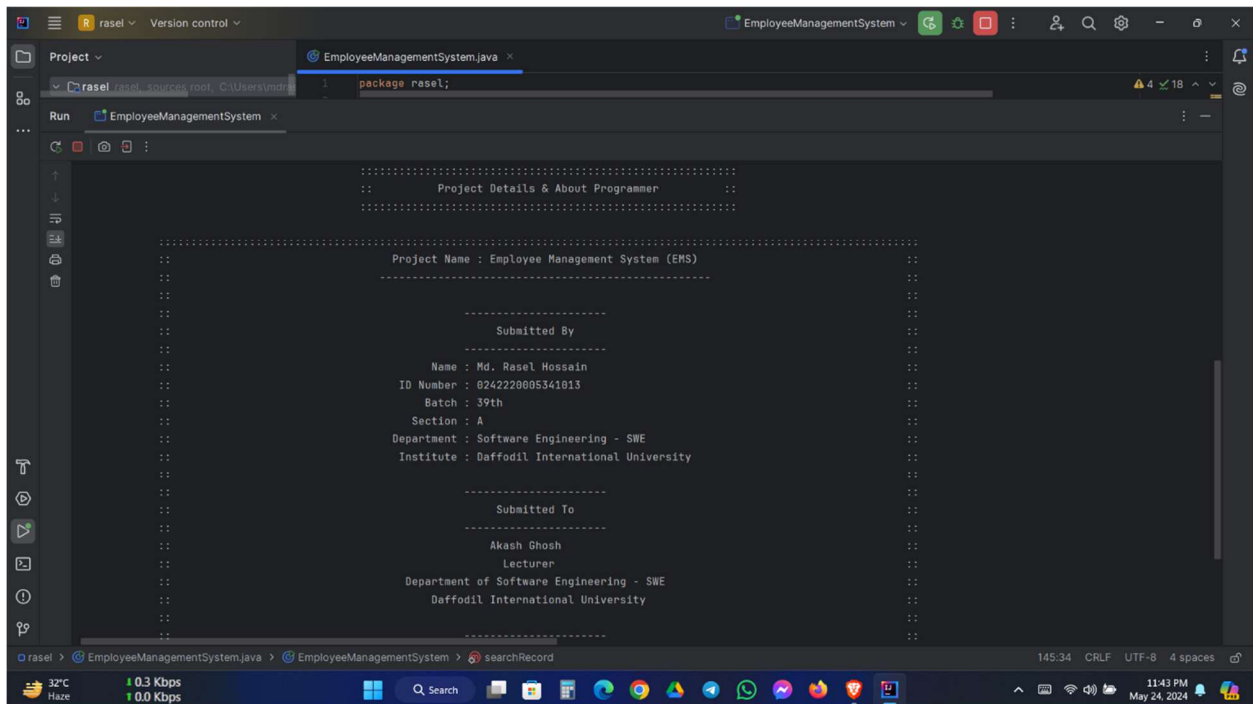
PROJECT PICTURES:



The screenshot shows the IntelliJ IDEA IDE with the project 'EmployeeManagementSystem' open. The file 'EmployeeManagementSystem.java' is displayed with the package declaration 'package rasel;'. The Run console shows the command 'C:\Users\mdraselhossain29\jdk\openjdk-22.0.1\bin\java.exe -javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.1.2\lib\idea_rt.jar=4662:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.1.2\bin\java.exe' and the output of the program, which is a decorative ASCII art logo.

```
package rasel;
```

```
-----  
[ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ]  
[ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ]  
-----  
[ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ]  
[ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ]  
-----  
[ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ]  
[ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ] [ _ _ ]  
-----
```



The screenshot shows the IntelliJ IDEA IDE with the project 'EmployeeManagementSystem' open. The file 'EmployeeManagementSystem.java' is displayed with the package declaration 'package rasel;'. The Run console shows the output of the program, which is a text-based project details and programmer information screen.

```
-----  
Project Details & About Programmer  
-----  
::  
Project Name : Employee Management System (ERS)  
::  
-----  
Submitted By  
-----  
::  
Name : Md. Rasel Hossain  
ID Number : 0242220005341013  
Batch : 39th  
Section : A  
Department : Software Engineering - SWE  
Institute : Daffodil International University  
::  
-----  
Submitted To  
-----  
::  
Akash Ghosh  
Lecturer  
Department of Software Engineering - SWE  
Daffodil International University  
::  
-----
```

The screenshot shows a Java IDE with the following components:

- Project Explorer:** Shows the project structure with a file named `EmployeeManagementSystem.java`.
- Run Console:** Displays the output of the program. The text shown is:


```

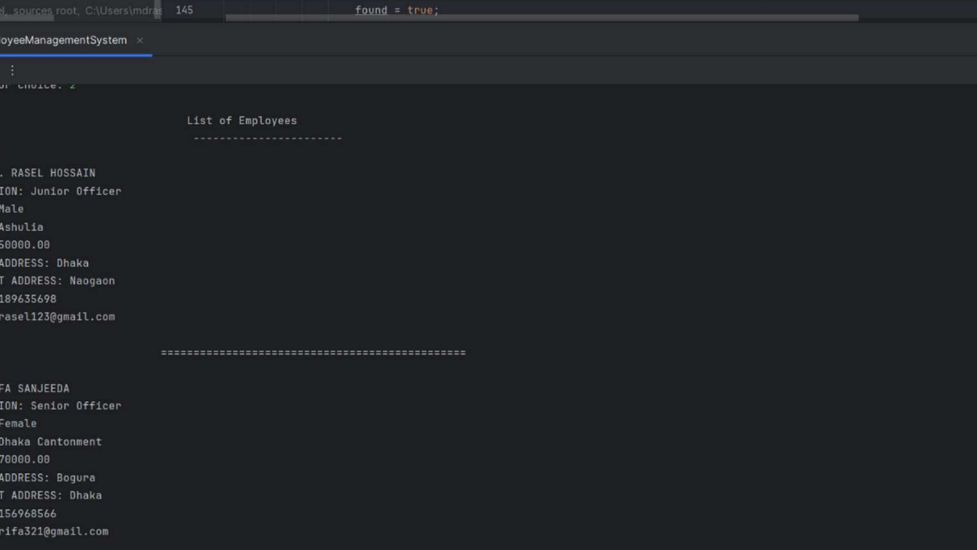
      Department of Software Engineering - JSC
      Daffodil International University

      -----
      Submission Date
      -----
      24 May, 2024

      Copyright | 2024 - Md. Rasel Hossain. All Right Reserved.
      -----

      Enter any key to continue...

      Employee Management System
      1. Add Employee
      2. Display All Employees
      3. Search Employee by ID
      4. Display Male Employees
      5. Display Female Employees
      6. Display Employees from Dhaka
      7. Display Employees from Other Districts
      8. Display Basic Information of All Employees
      9. Exit
      Enter your choice: 1
      
```
- Bottom Bar:** Shows the status bar with the file name `EmployeeManagementSystem.java`, the current line and column (145:34), and the encoding (CRLF, UTF-8, 4 spaces).
- System Tray:** Displays the system clock as 11:43 PM on May 24, 2024, along with network and battery status.



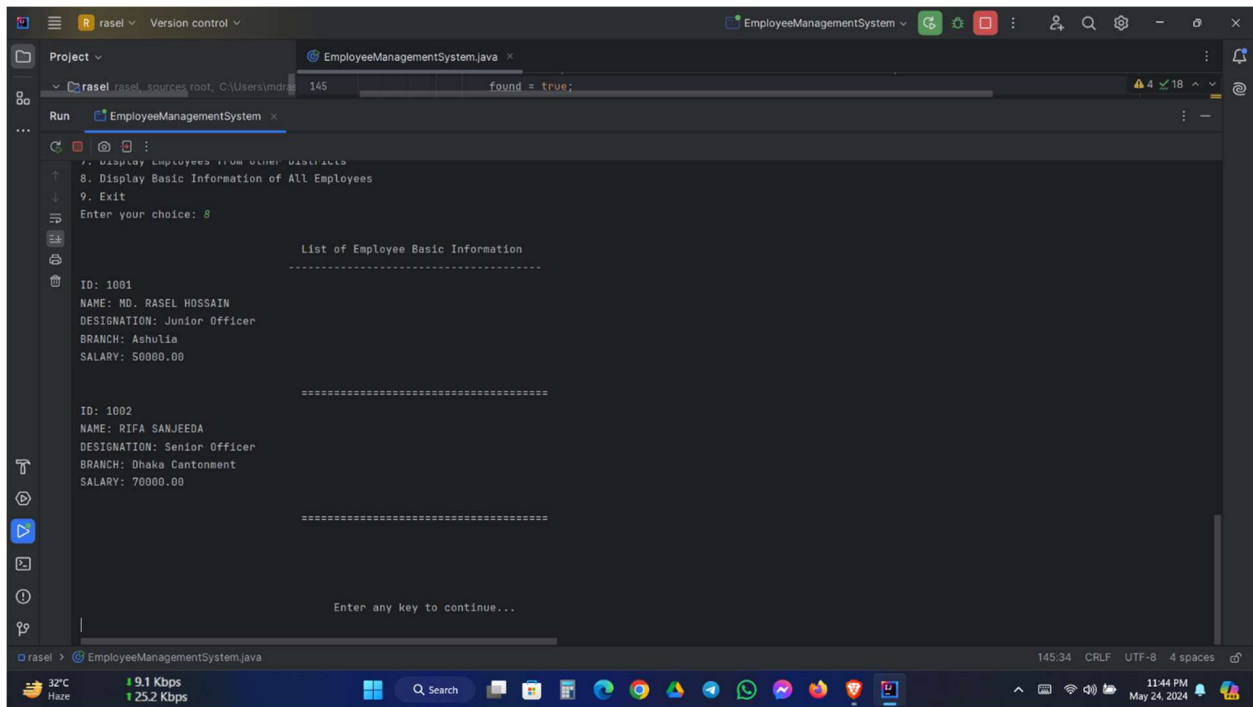
```

Enter your choice: 2

List of Employees
-----
ID: 1001
NAME: MD. RASEL HOSSAIN
DESIGNATION: Junior Officer
GENDER: Male
BRANCH: Ashulia
SALARY: 50000.00
PRESENT ADDRESS: Dhaka
PERMANENT ADDRESS: Naogaon
PHONE: 0189635698
E-MAIL: rasel123@gmail.com

=====
ID: 1002
NAME: RIFA SANJEEDA
DESIGNATION: Senior Officer
GENDER: Female
BRANCH: Dhaka Cantonment
SALARY: 70000.00
PRESENT ADDRESS: Bogura
PERMANENT ADDRESS: Dhaka
PHONE: 0156968566
E-MAIL: rifa321@gmail.com

=====
  
```



DESIGN AND IMPLEMENTATION

IntelliJ IDEA Community Edition 2024.1.2 Application

REQUIREMENT SPECIFICATION

The system requirements for this software application necessitate a Windows operating system, specifically Windows XP, Windows Vista, or Windows 7. The minimum hardware specifications include a processor speed of at least 2.0 GHz, a hard disk capacity of no less than 40 GB, and a RAM size of 512 MB. These requirements ensure optimal performance and functionality when running the software, guaranteeing a stable and efficient user experience within the designated operating environments.

FILE MANAGEMENT

In this project, an extensive file management system has been implemented to meticulously organize and store data. Each added functionality within the project has been allocated a dedicated individual file. This approach maintains a structured architecture, ensuring that every distinct function is housed within its own specific file. This methodology enhances readability, ease of maintenance, and streamlined access to and management of various project functionalities.

USE CASE

Use Case	Add Employee
Goal	To add a new employee to the Employee Management System.
Precondition	<ul style="list-style-type: none">• The user must be logged in to the Employee Management System.• The user must have the necessary permissions to add employees.
Success End Condition	<ul style="list-style-type: none">• The new employee is added to the Employee Management System.• The user is notified that the employee was added successfully.
Failed End Condition	<ul style="list-style-type: none">• The employee is not added to the Employee Management System.• The user is notified that there was an error adding the employee.
Primary Actors	HR Administrator
Secondary Actors	N/A
Description / Main success scenario	<ul style="list-style-type: none">• The HR Administrator clicks on the "Add Employee" button.• The HR Administrator enters the employee's information into the form.• The HR Administrator clicks on the "Submit" button.

	<ul style="list-style-type: none"> • The Employee Management System (EMS) validates the employee's information. • If the employee's information is valid, the Employee Management System (EMS) adds the employee to the database. • If the employee's information is not valid, the Employee Management System (EMS) displays an error message to the HR Administrator. • If the employee was added successfully, the Employee Management System (EMS) displays a success message to the HR Administrator.
--	--

Use Case	Display All Employees
Goal	To retrieve and display a list of all employees in the Employee Management System.
Precondition	<ul style="list-style-type: none"> • The user must be logged in to the Employee Management System. • The user must have the necessary permissions to view employee information.
Success End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) retrieves and displays a list of all employees. • The list of employees includes relevant employee information, such as employee name, employee ID, department, and job title.
Failed End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) is unable to retrieve or display the list of employees. • The user is notified that there was an error retrieving the employee list.
Primary Actors	HR Administrator, Manager, and Employee
Secondary Actors	N/A
Description / Main success scenario	<ul style="list-style-type: none"> • The user clicks on the "Display Employee List" button or menu option.

	<ul style="list-style-type: none"> • The Employee Management System (EMS) retrieves the list of employees from the database. • The Employee Management System (EMS) formats the employee list and displays it to the user. • The employee list is sorted by a relevant criterion, such as employee name, department, or job title. • The employee list includes search functionality, allowing the user to filter the list based on specific criteria. • The employee list provides options to view detailed information about individual employees.
--	---

Use Case	Search Employees by ID
Goal	To locate and retrieve specific employee records based on search criteria.
Precondition	<ul style="list-style-type: none"> • The user must be logged in to the Employee Management System. • The user must have the necessary permissions to view employee information.
Success End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) successfully retrieves and displays relevant employee records matching the user's search criteria. • The retrieved employee records include pertinent employee information, such as employee name, employee ID, department, and job title.
Failed End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) is unable to locate or display matching employee records. • The user is notified that no matching employee records were found.
Primary Actors	HR Administrator, Manager, and Employee

Secondary Actors	N/A
Description / Main success scenario	<ul style="list-style-type: none"> • The user accesses the "Search Record" option or menu item. • The Employee Management System (EMS) presents a search interface with various search fields, such as employee name, employee ID, department, and job title. • The user enters the desired search criteria into the respective fields. • The user initiates the search process by clicking on the "Search" button or using a similar action. • The Employee Management System (EMS) processes the search query and retrieves matching employee records from the database. • The Employee Management System (EMS) organizes and displays the retrieved employee records in a clear and accessible format. • The user can refine or modify the search criteria to narrow down the results. • The user can view detailed information about individual employees by clicking on their respective records.

Use Case	Display of Male Employees
Goal	To retrieve and display a list of all male employees in the Employee Management System.
Precondition	<ul style="list-style-type: none"> • The user must be logged in to the Employee Management System. • The user must have the necessary permissions to view employee information.
Success End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) retrieves and displays a list of all male employees. • The list of male employees includes relevant employee information, such as employee name, employee ID, department, and job title.

Failed End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) is unable to retrieve or display the list of male employees. • The user is notified that there was an error retrieving the list of male employees.
Primary Actors	HR Administrator, Manager, and Employee
Secondary Actors	N/A
Description / Main success scenario	<ul style="list-style-type: none"> • The user clicks on the "List of Male Employees" button or menu option. • The Employee Management System (EMS) retrieves the list of male employees from the database. • The Employee Management System (EMS) filters the employee list to include only male employees. • The Employee Management System (EMS) formats the male employee list and displays it to the user. • The male employee list is sorted by a relevant criterion, such as employee name, department, or job title. • The male employee list includes search functionality, allowing the user to filter the list based on specific criteria. • The male employee list provides options to view detailed information about individual male employees.

Use Case	Display of Female Employees
Goal	To retrieve and display a list of all female employees in the Employee Management System.
Precondition	<ul style="list-style-type: none"> • The user must be logged in to the Employee Management System. • The user must have the necessary permissions to view employee information.

Success End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) retrieves and displays a list of all female employees. • The list of female employees includes relevant employee information, such as employee name, employee ID, department, and job title.
Failed End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) is unable to retrieve or display the list of female employees. • The user is notified that there was an error retrieving the list of female employees.
Primary Actors	HR Administrator, Manager, and Employee
Secondary Actors	N/A
Description / Main success scenario	<ul style="list-style-type: none"> • The user clicks on the "List of Female Employees" button or menu option. • The Employee Management System (EMS) retrieves the list of female employees from the database. • The Employee Management System (EMS) filters the employee list to include only female employees. • The Employee Management System (EMS) formats the female employee list and displays it to the user. • The female employee list is sorted by a relevant criterion, such as employee name, department, or job title. • The female employee list includes search functionality, allowing the user to filter the list based on specific criteria. • The female employee list provides options to view detailed information about individual female employees.

Use Case	Display Employees from Dhaka
Goal	To retrieve and display a list of all employees residing in Dhaka from the Employee Management System.
Precondition	<ul style="list-style-type: none"> • The user must be logged in to the Employee Management System. • The user must have the necessary permissions to view employee information.
Success End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) successfully retrieves and displays a list of all employees residing in Dhaka. • The list of Dhaka-based employees includes relevant employee information, such as employee name, employee ID, department, job title, and address.
Failed End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) is unable to retrieve or display the list of employees in Dhaka. • The user is notified that there was an error retrieving the list of Dhaka-based employees.
Primary Actors	HR Administrator, Manager, and Employee
Secondary Actors	N/A
Description / Main success scenario	<ul style="list-style-type: none"> • The user clicks on the "List of Employees from Dhaka" button or menu option. • The Employee Management System (EMS) retrieves the list of all employees from the database. • The Employee Management System (EMS) filters the employee list to include only employees whose address indicates residence in Dhaka. • The Employee Management System (EMS) formats the Dhaka employee list and displays it to the user. • The Dhaka employee list is sorted by a relevant criterion, such as employee name, department, or job title.

	<ul style="list-style-type: none"> • The Dhaka employee list includes search functionality, allowing the user to filter the list based on specific criteria. • The Dhaka employee list provides options to view detailed information about individual Dhaka-based employees.
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Use Case	Display Employees from Other Districts
Goal	To retrieve and display a list of all employees residing in districts other than Dhaka from the Employee Management System.
Precondition	<ul style="list-style-type: none"> • The user must be logged in to the Employee Management System. • The user must have the necessary permissions to view employee information.
Success End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) successfully retrieves and displays a list of all employees residing in districts other than Dhaka. • The list of non-Dhaka employees includes relevant employee information, such as employee name, employee ID, department, job title, and address.
Failed End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) is unable to retrieve or display the list of employees from other districts. • The user is notified that there was an error retrieving the list of non-Dhaka employees.
Primary Actors	HR Administrator, Manager, and Employee
Secondary Actors	N/A
Description / Main success scenario	<ul style="list-style-type: none"> • The user clicks on the "List of Employees from Other Districts" button or menu option. • The Employee Management System (EMS) retrieves the list of all employees from the database.

	<ul style="list-style-type: none"> • The Employee Management System (EMS) filters the employee list to exclude employees whose address indicates residence in Dhaka. • The Employee Management System (EMS) formats the non-Dhaka employee list and displays it to the user. • The non-Dhaka employee list is sorted by a relevant criterion, such as employee name, department, or job title. • The non-Dhaka employee list includes search functionality, allowing the user to filter the list based on specific criteria. • The non-Dhaka employee list provides options to view detailed information about individual non-Dhaka-based employees.
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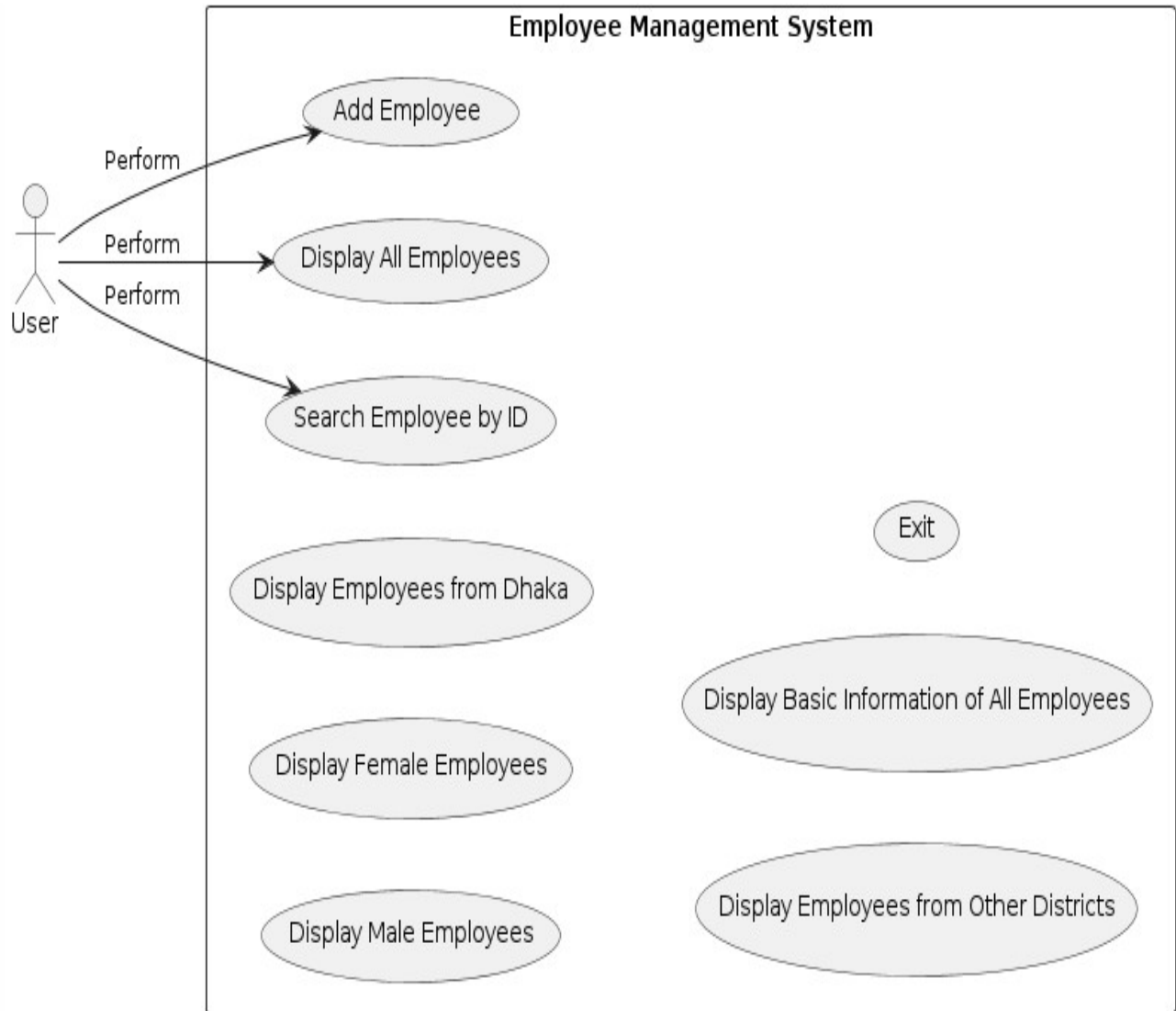
Use Case	Display Basic Information of All Employees
Goal	To view and access essential contact information for a specific employee.
Precondition	<ul style="list-style-type: none"> • The user must be logged in to the Employee Management System. • The user must have the necessary permissions to view employee contact information. • The employee whose basic contact information is to be displayed must exist in the Employee Management System.
Success End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) successfully retrieves and displays the employee's essential contact information. • The displayed contact information includes relevant details such as email address, phone number, and preferred communication method.
Failed End Condition	<ul style="list-style-type: none"> • The Employee Management System (EMS) is unable to retrieve or display the basic contact information for the selected employee.

	<ul style="list-style-type: none"> The user is notified that there was an error retrieving the employee's contact information.
Primary Actors	HR Administrator, Manager, and Employee
Secondary Actors	N/A
Description / Main success scenario	<ul style="list-style-type: none"> The user navigates to the employee's profile or record within the Employee Management System. The user clicks on the "Display Basic Contact Info" option or menu item. The Employee Management System (EMS) retrieves the employee's contact information from the database. The Employee Management System (EMS) organizes and presents the retrieved contact information in a clear and concise manner. The displayed contact information includes the employee's primary email address, work phone number, and preferred communication method (e.g., email or phone). The user can easily review and access the employee's contact information for effective communication and collaboration.

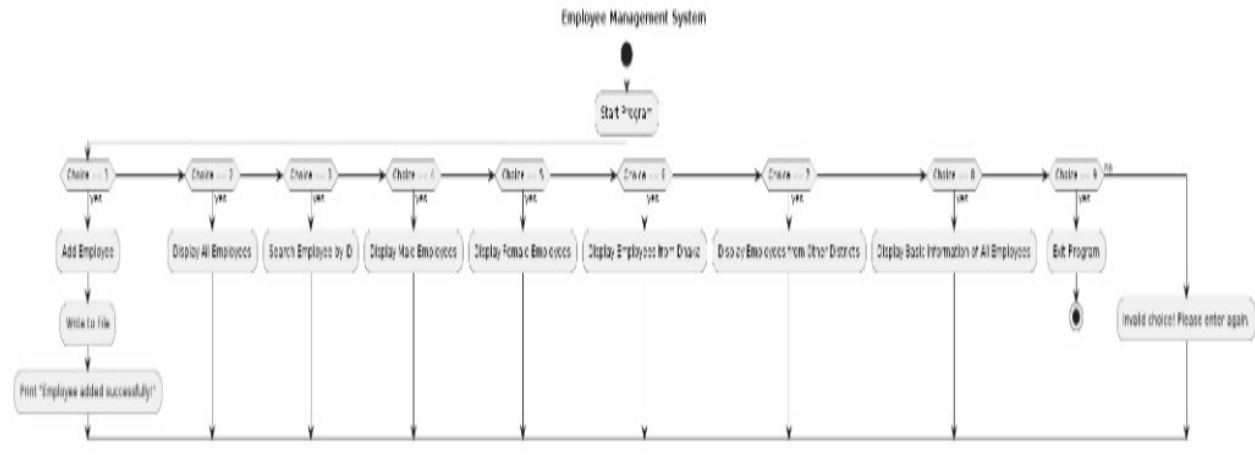
Use Case	Exit
Goal	To allow users to safely log out of the Employee Management System (EMS) and terminate their current session.
Precondition	The user must be currently logged in to the Employee Management System.
Success End Condition	<ul style="list-style-type: none"> The user is successfully logged out of the Employee Management System. The user's session is terminated, and their data is securely protected. The user is redirected to the login page, or a confirmation message is displayed.

Failed End Condition	<ul style="list-style-type: none"> • The user is unable to log out of the system due to technical issues or unexpected errors. • The user's session remains active, leaving their data vulnerable. • An error message is displayed informing the user of the failed logout attempt.
Primary Actors	HR Administrator, Manager, and Employee
Secondary Actors	N/A
Description / Main success scenario	<ul style="list-style-type: none"> • The user clicks on the "EXIT" button or option within the Employee Management System's interface. • The system initiates the logout process, confirming the user's intention to terminate their session. • The system invalidates the user's session token and securely clears their login credentials from the system. • The system redirects the user to the login page or displays a confirmation message indicating a successful logout. • The user's data is safely protected and no longer accessible without valid login credentials. • If the user attempts to access any restricted resources after logging out, they will be redirected to the login page.

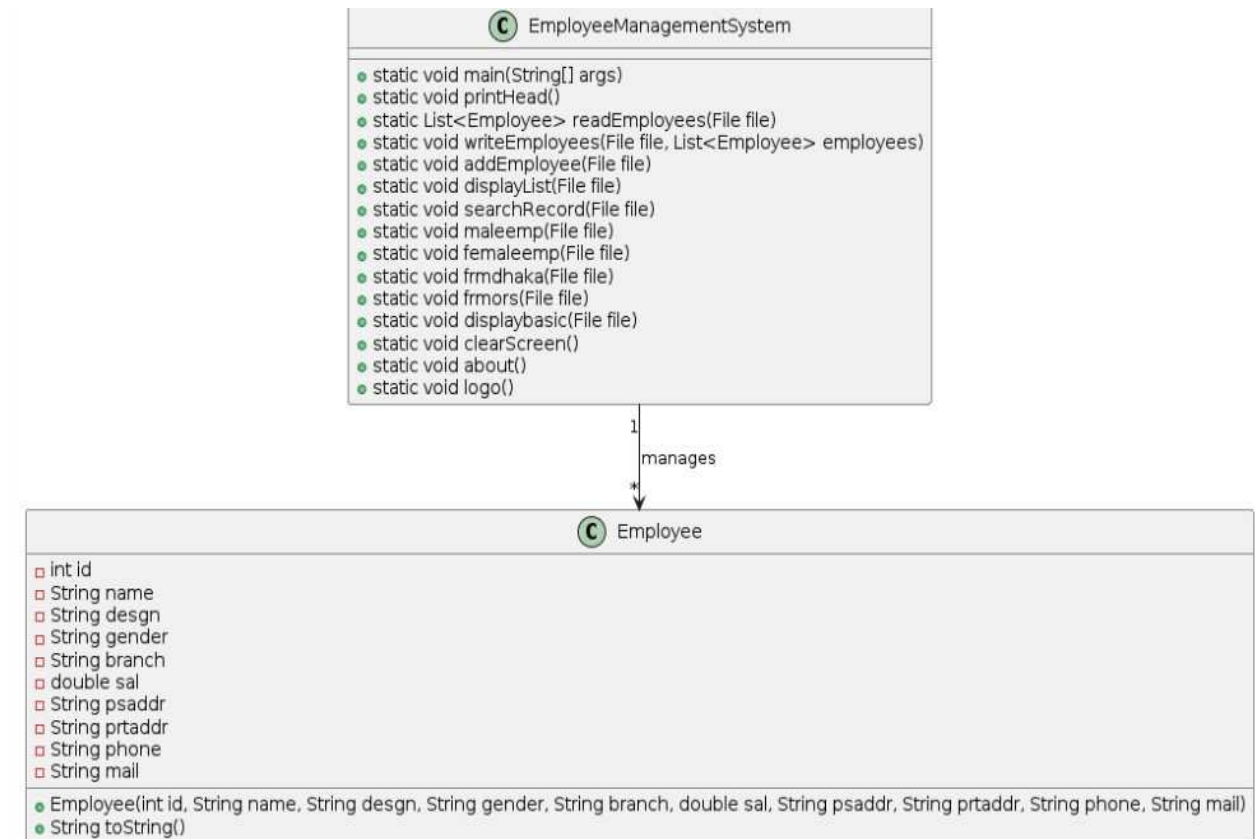
USE CASE DIAGRAM



ACTIVITY DIAGRAM



UML DIAGRAM



CONCLUSION AND RECOMMENDATION

Conclusion:

The Employee Management System (EMS) successfully fulfils its objective of providing an all-inclusive software solution for managing staff within companies. The system offers a comprehensive set of features that cater to various aspects of employee data management, HR Administration, and communication. Its priorities data safety, integrity, and ease of access, making it a reliable and user-friendly tool for organizations.

The EMS effectively streamlines employee data management by providing functionalities for adding, deleting, modifying, and displaying employee information. It enables efficient record search and retrieval and offers detailed information on employee profiles, including basic information, contact details, and gender-based categorization. Additionally, the system facilitates location-based filtering and branch-specific employee listings.

The EMS enhances communication among management, HR Administration, and employees by providing a unified platform for information exchange. It promotes collaboration by offering tools for planning, managing leaves, and analyzing performance, contributing to a productive and organized work environment.

Furthermore, the EMS leverages analytics and reporting functionalities to extract valuable insights from employee data. This data-driven approach enables informed decision-making, resource allocation, and strategic planning, ultimately contributing to organizational growth and success.

Recommendation (for Future Works):

In light of the EMS's successful implementation, the following recommendations are proposed for further enhancement:

- **Integration with Payroll and Attendance Systems:** Incorporate modules for payroll management and attendance tracking to provide a holistic employee management solution.
- **Performance Management Module:** Implement a performance management module to track employee goals, objectives, and performance metrics, enabling effective performance evaluation and feedback.
- **Leave Management Module:** Enhance the leave management module by integrating with calendar systems and automating approval workflows.

- **Skill and Training Management:** Introduce a skill and training management module to track employee skills, training needs, and certifications, facilitating targeted training programs.
- **Self-Service Portal for Employees:** Develop a self-service portal for employees to access their personal information, update their profiles, and request leaves, enhancing user engagement and convenience.
- **Mobile App Development:** Create a mobile app version of the EMS to provide employees with anytime, anywhere access to their information and essential HR functions.
- **Data Security Enhancements:** Continuously evaluate and strengthen data security measures to protect sensitive employee information against unauthorized access or breaches.
- **Regular System Updates:** Implement regular system updates to address any bugs or vulnerabilities and incorporate new features based on user feedback and evolving organizational needs.

By implementing these recommendations, the EMS can further expand its capabilities and become an even more valuable asset for organizations in managing their workforce effectively and achieving their goals.

REFERENCES

- **Employee Management Systems: A Practical Guide for HR Professionals** by Michael T. Harris (2nd Edition)
- **Human Resource Management** by Gary Dessler, Robert S. Goebel, and Theodore J. Purcell (15th Edition)
- **Managing Human Resources** by Sean Duffy, Brian Bachrach, and David Wayne (12th Edition)

GITHUB PROJECT LINK:

<https://github.com/mdraselhossain29/Employee-Management-System-ODD-Project>

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