

EXCELSSIOR EDUCATION SOCIETY'S
K. C. COLLEGE OF ENGINEERING AND
MANAGEMENT STUDIES AND RESEARCH



(Affiliated to the University of Mumbai)

Mith Bunder Road, Near Hume Pipe, Kopri, Thane(E)-400603

**Department of Computer Engineering
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● Introduction to Topic

- In the dynamic landscape of modern organizations, the effective management of human resources is paramount to achieving strategic goals and maintaining a competitive edge. The HR Management System (HRMS) emerges as a comprehensive solution, seamlessly integrating technology and human resource management practices to streamline processes, enhance efficiency, and foster a more strategic approach to workforce management.
- The HRMS serves as the central hub for all HR-related activities within an organization, providing a robust platform for managing employee information, recruitment, performance appraisal, training, and more. This system not only automates routine HR tasks but also empowers HR professionals with valuable insights through analytics, aiding in informed decision-making.
- In this digital age, **HR MANAGEMENT SYSTEM** With the advent of technology The HRMS consolidates and centralizes employee data, providing a secure and accessible repository for personal details, qualifications, and performance records.
- Facilitating employee development, the HRMS aids in planning, implementing, and tracking training programs to enhance skills and knowledge.
- As organizations continue to recognize the strategic importance of their human capital, the HRMS emerges as a critical tool in fostering a positive employee experience, ensuring compliance with regulations, and driving organizational success. This introduction sets the stage for exploring the various dimensions and functionalities of the HR Management System, ultimately contributing to the evolution of modern HR practices within the organization..



● Need of Project

- The need for a Human Resources (HR) Management System stems from the growing complexity of modern organizations and the crucial role HR plays in managing human capital effectively. Here are some key points highlighting the necessity of such a system:
- A Human Resources (HR) Management System serves as a centralized hub for employee information, automating administrative tasks and enabling data-driven decision-making. By ensuring compliance with evolving regulations and streamlining processes like payroll and leave management, it empowers HR professionals to focus on strategic initiatives. Through intuitive self-service portals and enhanced communication channels, it fosters employee engagement and collaboration while adapting to organizational growth and complexity. In essence, it's a vital tool for modern businesses to optimize HR operations, promote transparency, and drive sustainable success through effective talent management
- Centralized Data Management: A HR Management System provides a centralized platform to store and manage employee information such as personal details, job history, performance evaluations, training records, and benefits. This centralized database ensures data integrity, security, and accessibility.
- Streamlined Processes: Traditional paper-based HR processes can be time-consuming, error-prone, and inefficient. An HR Management System automates routine administrative tasks such as payroll processing, leave management, and employee onboarding, thereby freeing up HR personnel to focus on strategic initiatives.



● Problem Statement

Inefficient and disjointed human resources (HR) management processes within our organization hinder productivity, compliance, and employee engagement. Manual handling of tasks such as employee data management, payroll processing, leave tracking, and performance evaluations results in errors, delays, and suboptimal decision-making. Lack of a centralized HR management system leads to data fragmentation, compliance risks, and difficulty in accessing real-time insights for strategic workforce planning. Moreover, the absence of streamlined communication channels and self-service options undermines employee satisfaction and engagement levels. To address these challenges and enhance organizational efficiency, there is a critical need for the implementation of a comprehensive HR management system that integrates seamlessly with existing workflows, ensures regulatory compliance, empowers employees, and enables data-driven decision-making processes.

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Literature survey In Tabular Format

Year	Associated Person/People	State of the System
1982	Walker A.J.	HRIS development: Project team guide to build effective personnel information system
1984	Beer et al	Defined HRM as those involved in complex decision.
1999	Robert b.	Calculating return on investment on HR
2005	Hufelid, M.A	Becker work force of cord card management Human capital to execute strategy
2006	Behuselid	Strategic HR management, from journal of management



● Algorithm for Project Development

1. Project Initiation:

- a. Define project Objectives: Create a HR Management System which helps to maintain records of employee and improve communication.
- b. Provide performance reviews as well as track record of hours attended by employee
- c. Access resources and timeline feasibility

2. Planning and Design :

- a. Design the UI architecture for Admin, HR, Manager and Employee
- b. Create a database to maintain all the records and information
- c. Make a connection between all the different profiles

3. Development:

- a. Build different profiles and features regarding each profile
- b. Code in order for these profiles to interact.
- c. Implement for each profile to send, receive or update data accordingly

4. Testing:

- a. Test the app for functionality, user-friendliness and performance
- b. Address and fix any identified issues

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● **Algorithm for Project Development**

5. User Testing:

- a. Conduct beta testing with a small group to gather user feedback.
- b. Make improvements based on user suggestions.

6. Development:

- a. Develop the program in order for it to receive, store or update data.

7. Documentation:

- a. Documentation app architecture, design decisions and key features.
- b. Create instructions for user to easily operate.

8. Project Closure:

- a. Verify project completion and compliance with standards.
- b. Archive project data and records.

9. Post- Project Review:

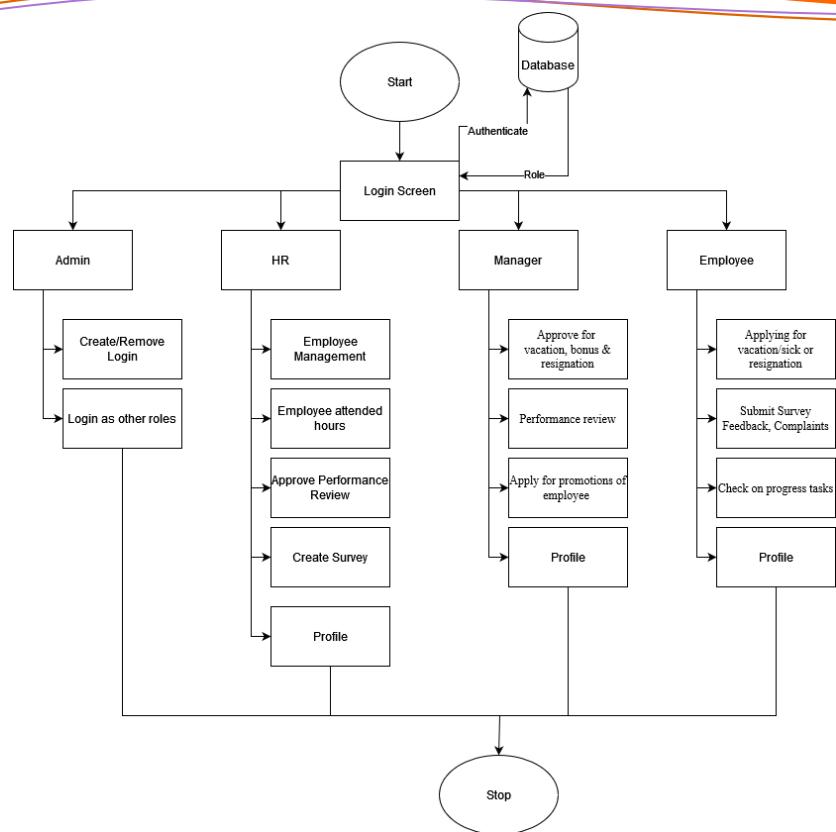
- a. Evaluate project performance against objectives.
- b. Identify areas for improvement and lessons learned.

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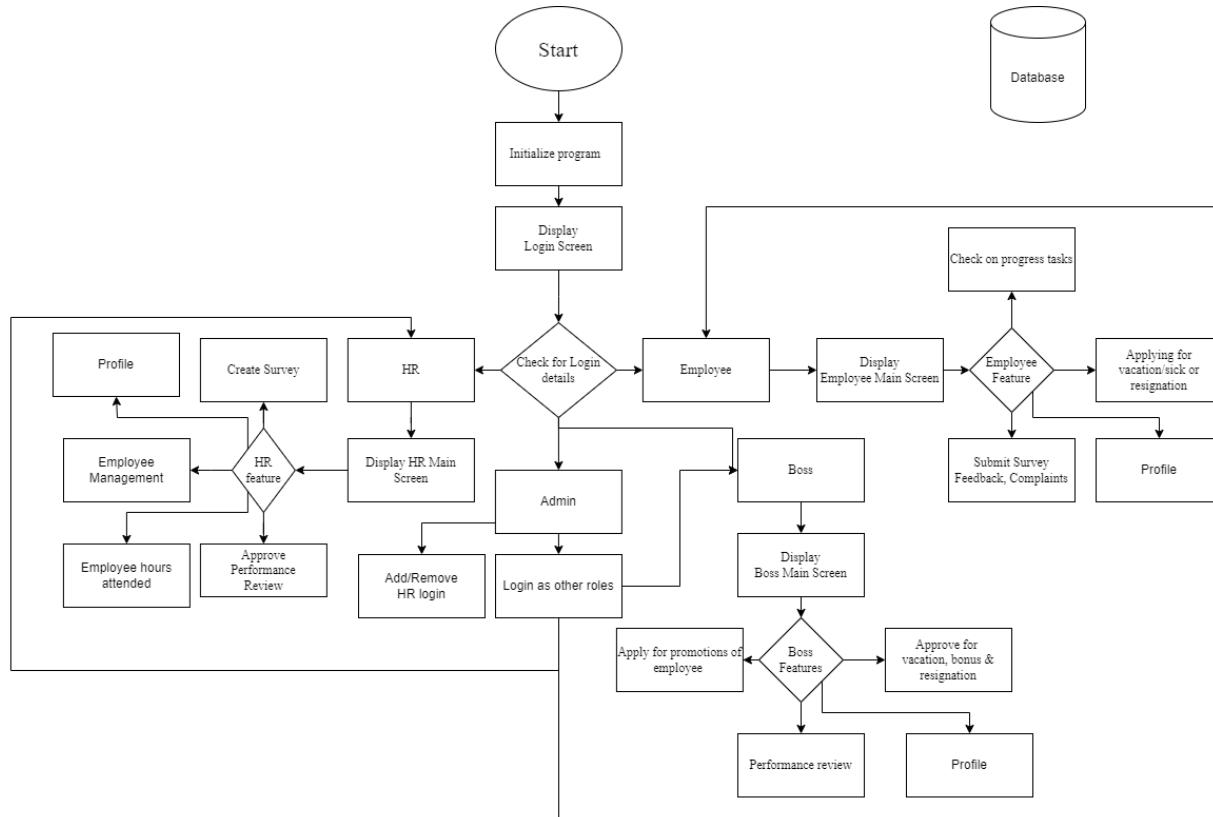
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● Block Diagram



Flow-chart



● Requirement Hardware and Software

Hardware :-

1. Minimum Requirements:
 - a) Processor:- Dual core processor @2.4Ghz
 - b) Ram:- 4GB Ram
 - c) Storage:- 2GB free space
 - d) Internet:- speed: 3mbps

1. Recommended Requirements:

- a) Processor:- Quad core processor @2.8Ghz
- b) Ram:- 8GB Ram
- c) Storage:- 4GB free space
- d) speed: 6mbps

Software :-

1. Minimum Requirements:
 - a) OS: Windows 10 22H2
 - b) Python: Version 3.11 with pil, firebase, firebase_admin and tkcalendar modules installed
1. Recommended Requirements:
 - a) OS: Windows 11 22H2
 - b) Python: Version 3.12 with pil, firebase, firebase_admin and tkcalendar modules installed



● Feasibility Study

1. Technical Feasibility:

- a) Python latest module required.
- b) Internet access required.

2. Economic Feasibility:

- a) Development costs are manageable within the allocated budget.
- b) Firebase is cost efficient database to use.

3. Operational Feasibility:

- a) The project aligns with the organization's capabilities and resources.
- b) Integration into existing operations is feasible.

4. Legal and Regulatory Feasibility:

- a) No significant legal barriers are foreseen, and compliance.

5. Scheduling and Time Feasibility:

- a) Project timelines allow for timely development and deployment.

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● Proposed Methodology

1. User Interface: -

- a. Intuitive design for employee self-service and admin dashboards.
- b. Responsive and user-friendly interface.

2. Database Management: -

- a. Centralized database for secure storage of employee data.
- b. Database management system for efficient data retrieval.

3. Application Logic: -

- a. Employee Onboarding: Digital forms and document submission.
- b. Attendance Tracking & Performance Records
- c. Performance Management: Goal setting, feedback mechanisms.
- d. Employee Self-Service: Leave requests and personal information.

4. Technologies Used: -

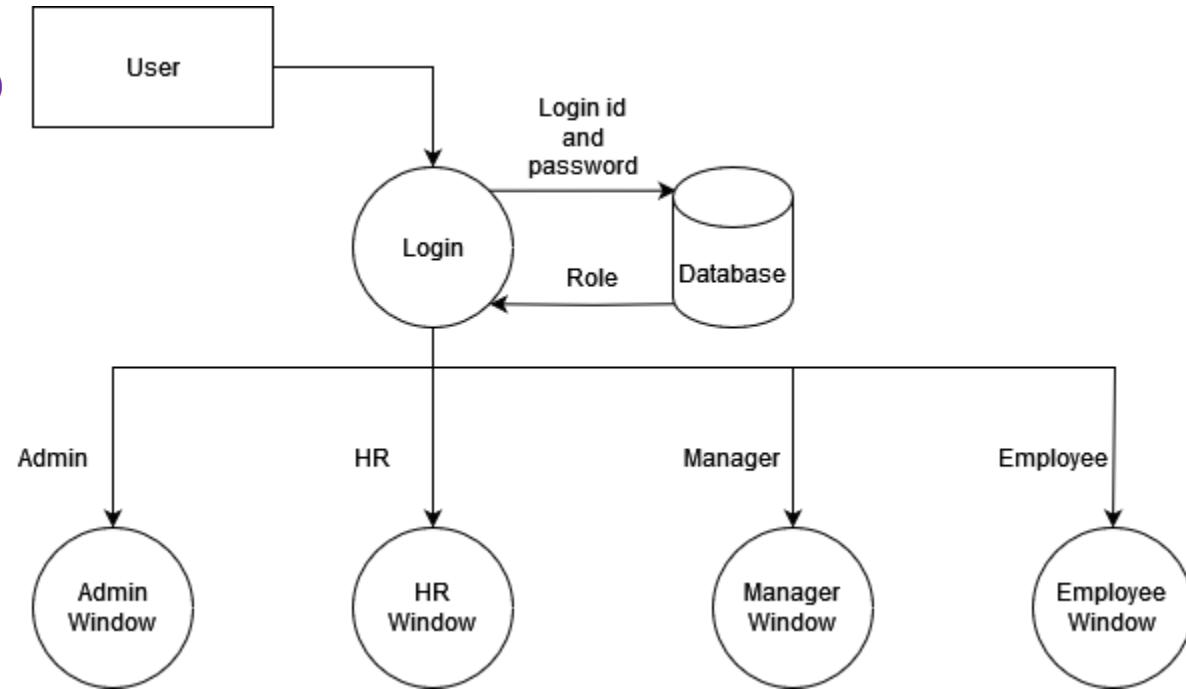
- a. Frontend: Python
- b. Database: Firebase

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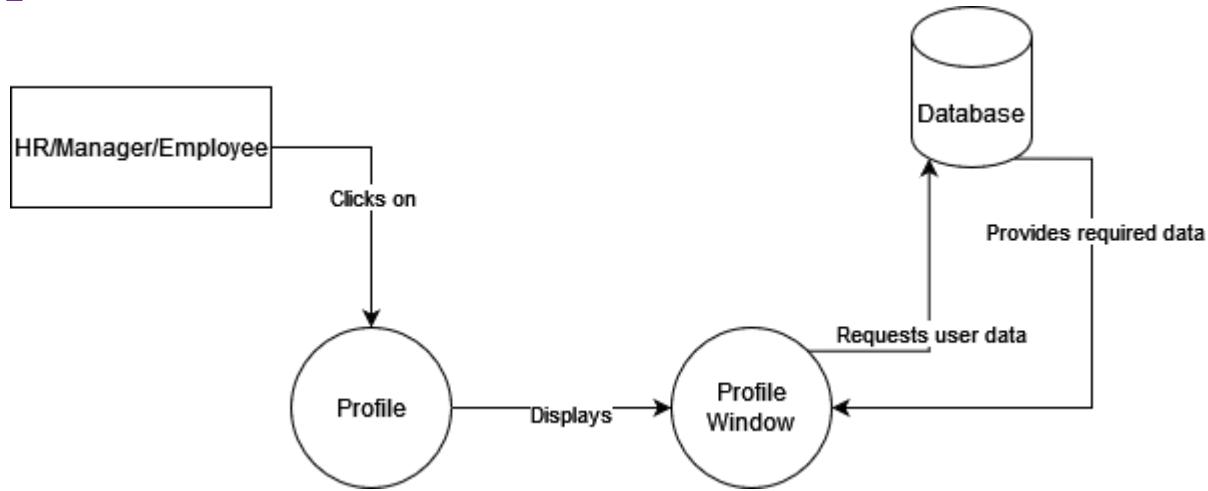
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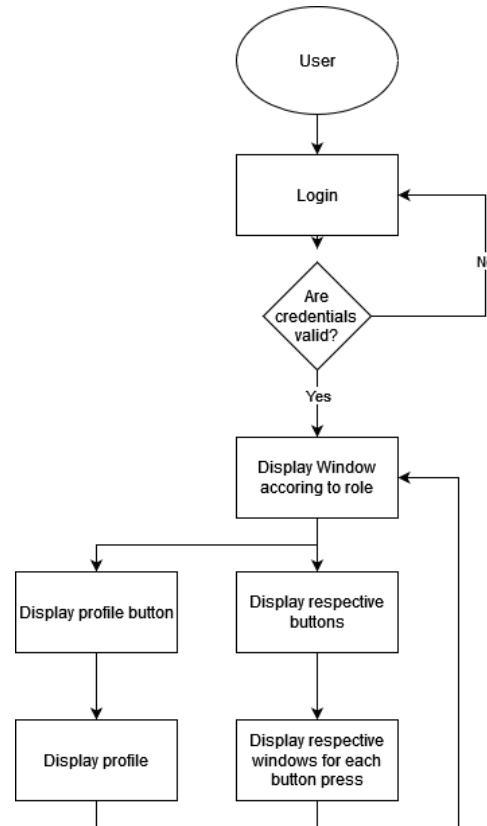
● Data Flow Diagram Level 0



● Data Flow Diagram Level 1



Activity Diagram



● Implementation Details/ Screenshots of GUI

Main Login:

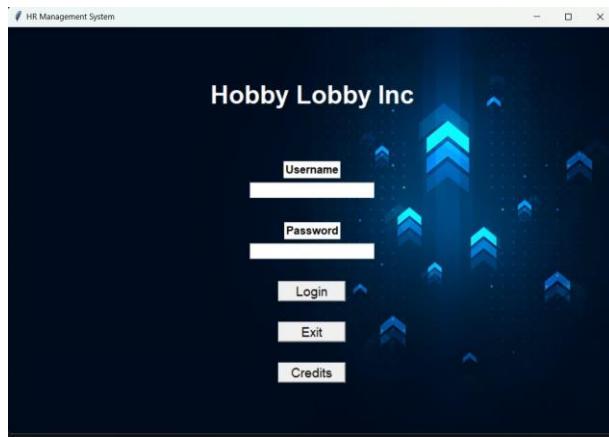
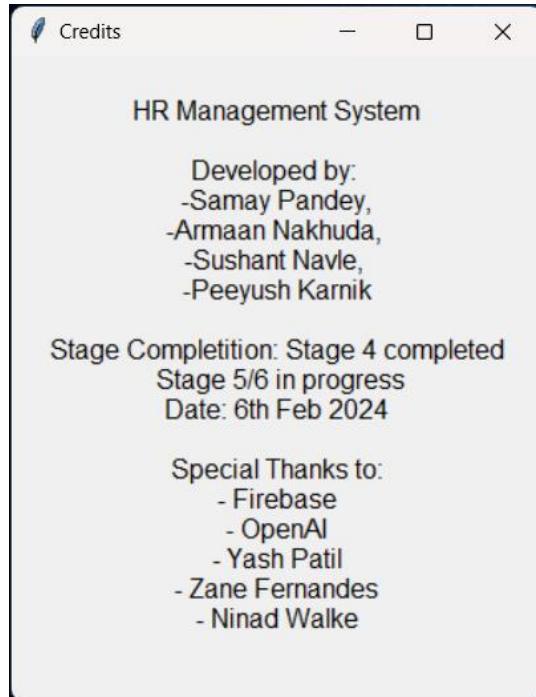


Figure 1

- The first page presented to the user upon opening the application, this page gives the input boxes to enter the username and password along with the login button and the exit and credit buttons.

There are 4 types of windows which will open following the user's login depending on what role has been assigned the user in the DB, the 4 types of logins are Admin, HR, Manager and Employee.





The Credits dialog which opens after clicking the credits button on the main login page.

Figure 2



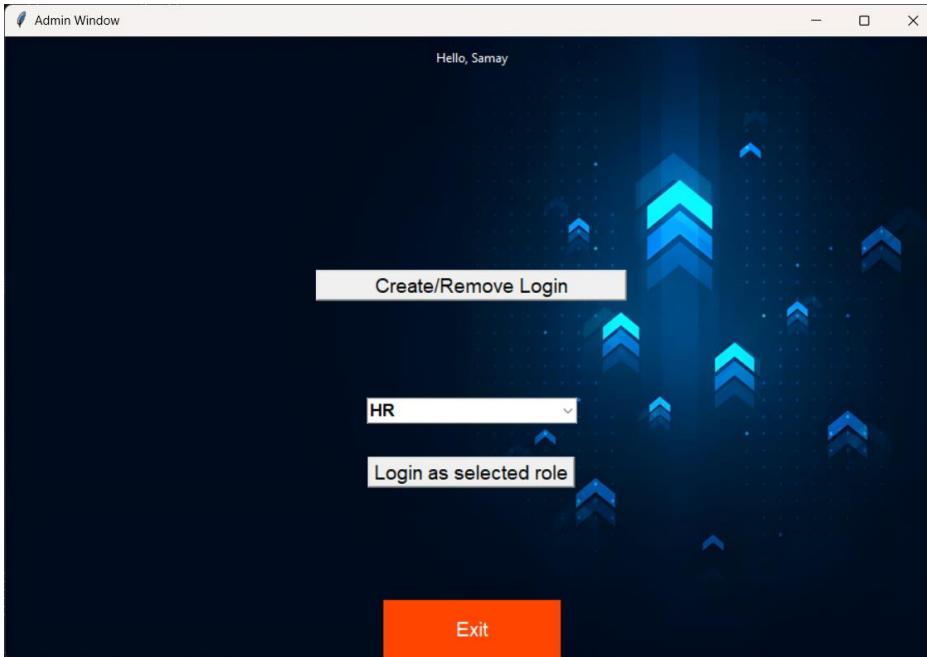


Figure 3



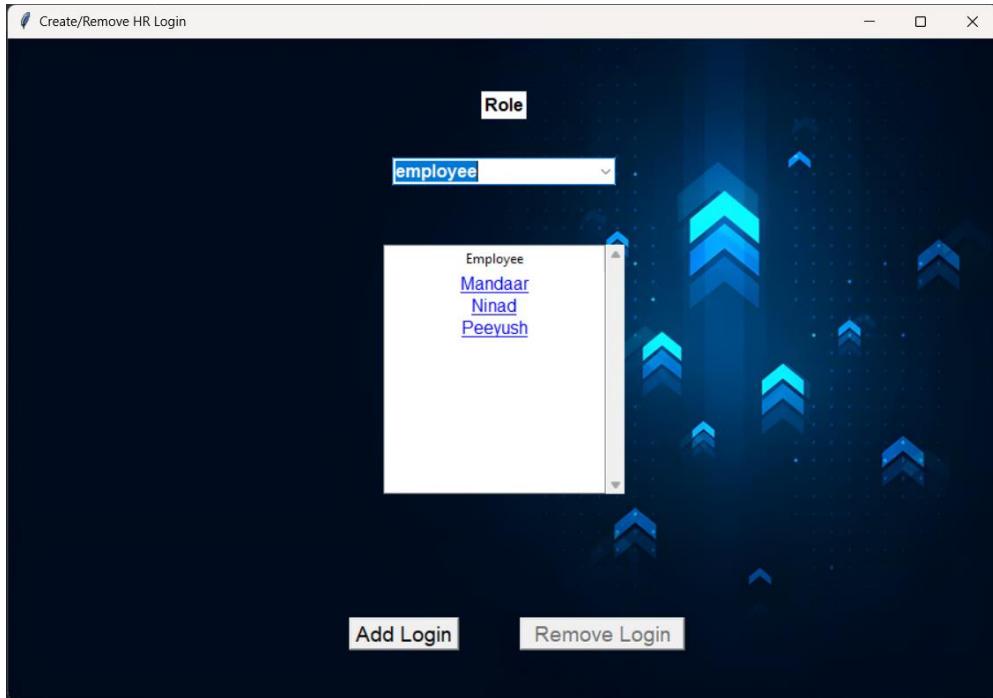


Figure 4



the first screen that is displayed to the user when the Create/Remove button is pressed, this screen gives the Admin the option to select the category of role so the logins of that role are shown, upon it being shown the Admin can select one role and delete it.

Clicking the Add login button, opens a new window

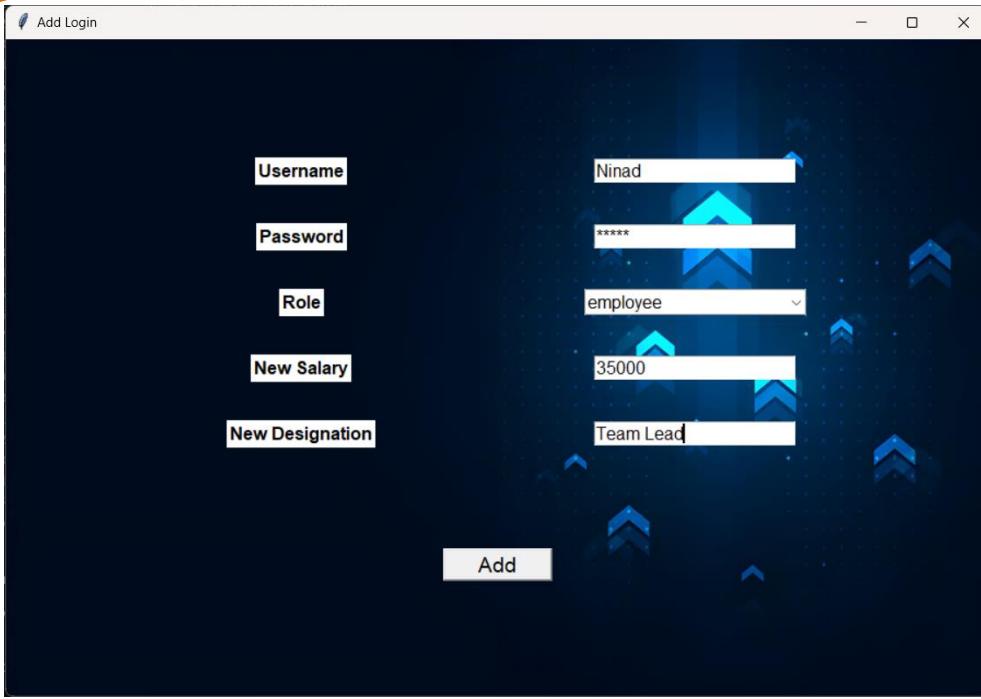


Figure 5



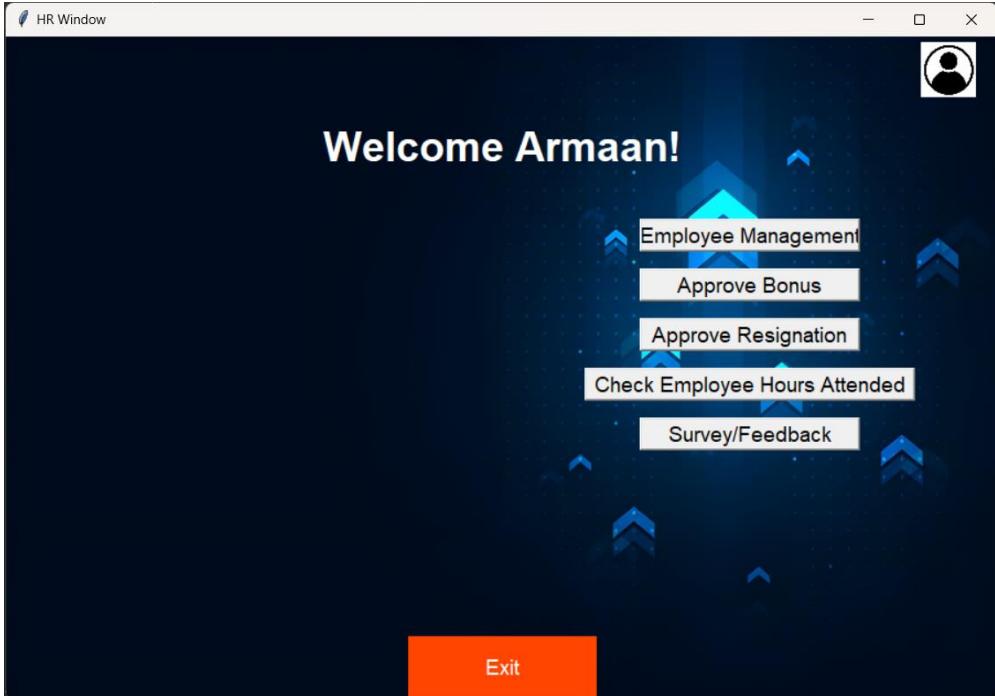


Figure 6

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The first screen shown to the HR when the user logs in, it has buttons like employee management to manage Managers and Employees, Approve and assign bonus to employees and Managers respectively, approve resignations for Managers and employees and send out survey with specified questions to the employees to be filled.

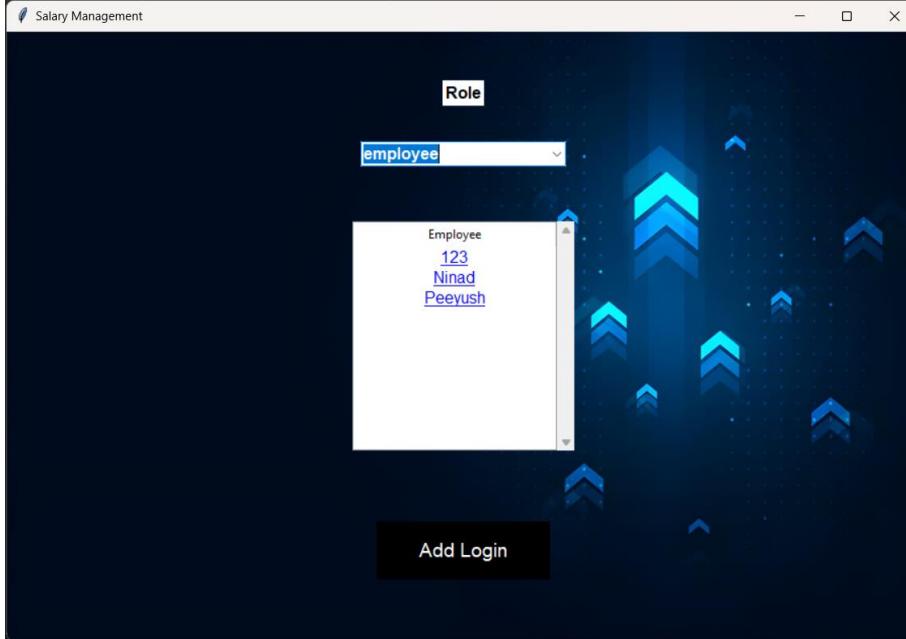


Figure 7



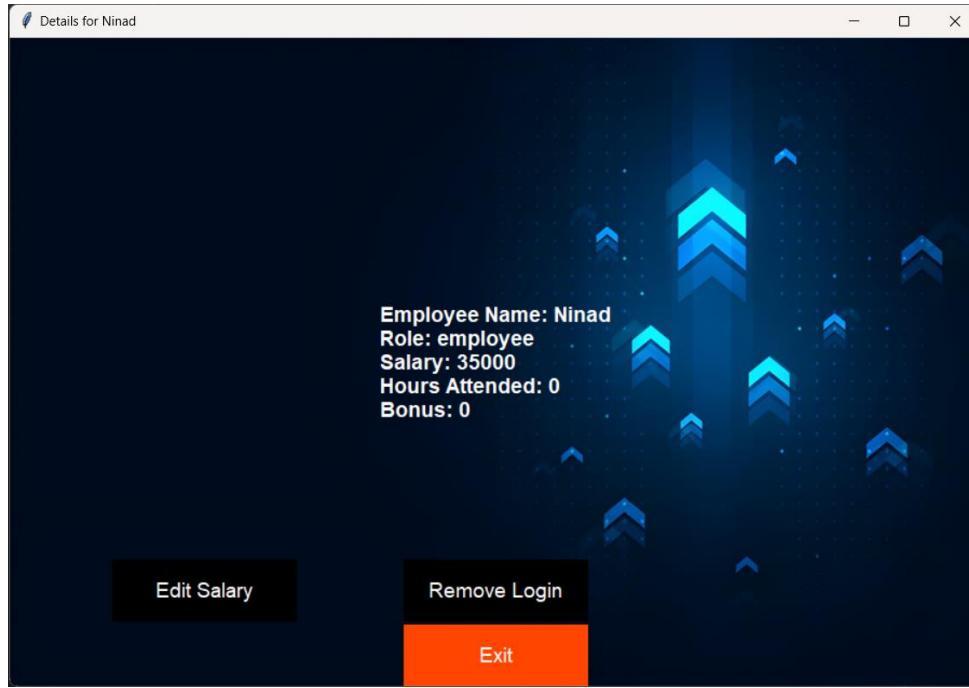
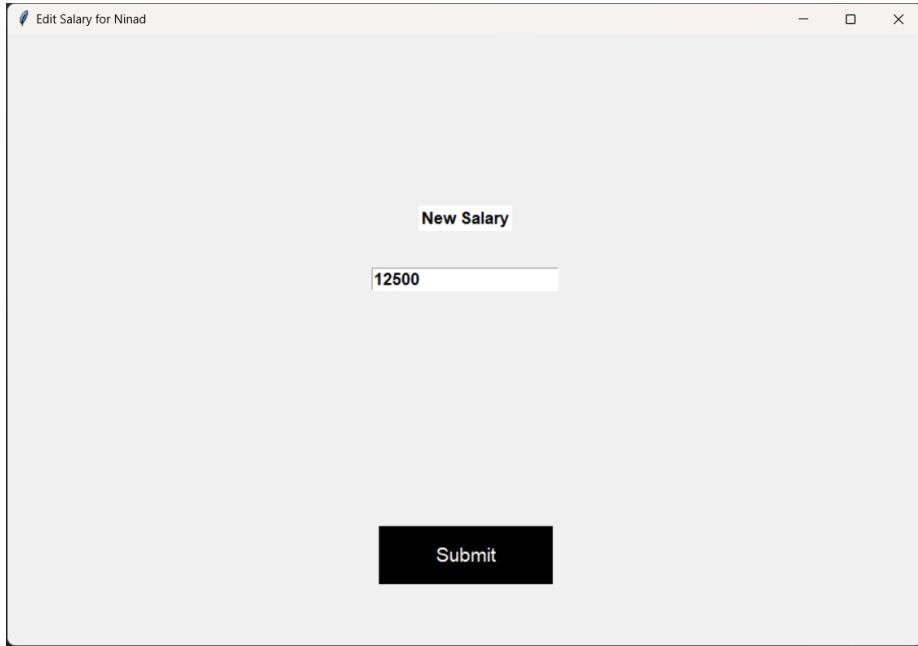


Figure 8





When the user clicks on edit salary button a new window will open asking for the input for the new salary of the Manager/Employee.

Figure 9



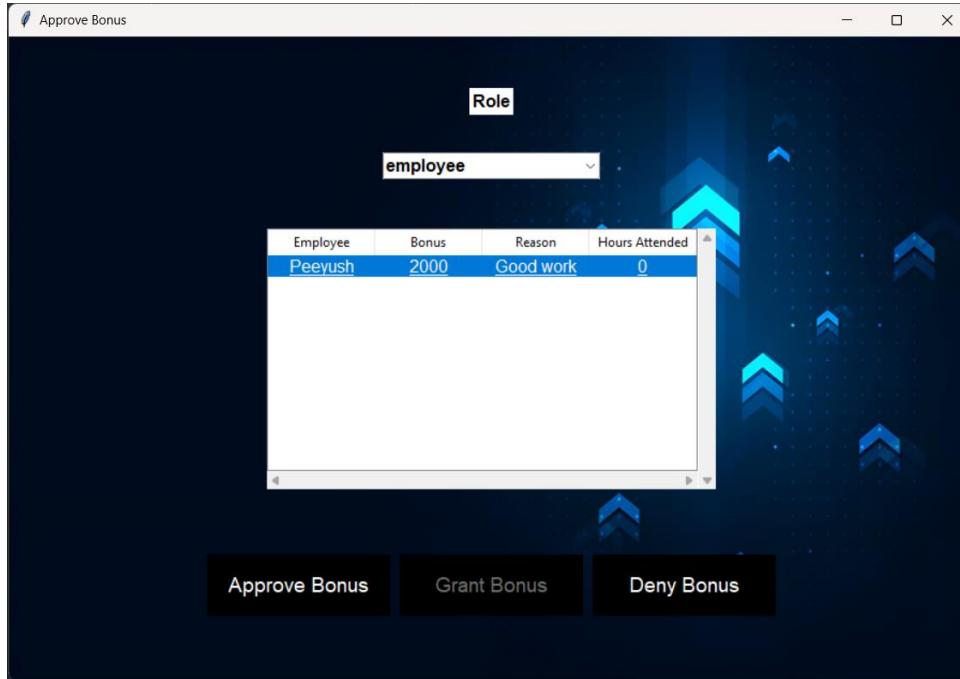


Figure 10



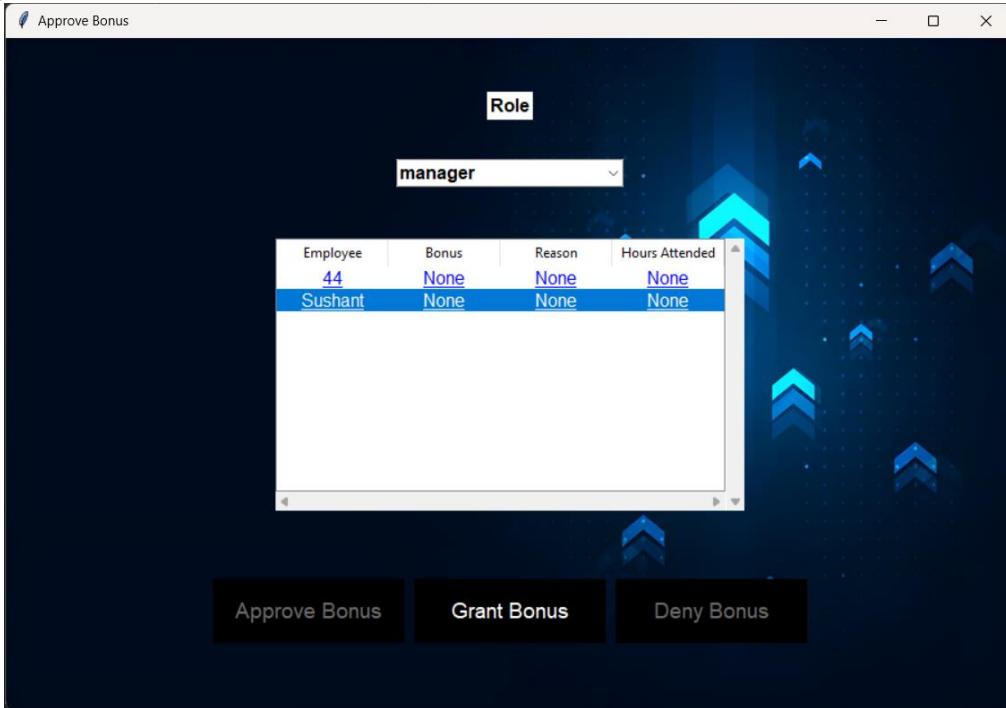


Figure 11



For Manager level the HR directly gives bonus on their discretion, therefore the grant bonus option is available which when clicked opens a new window

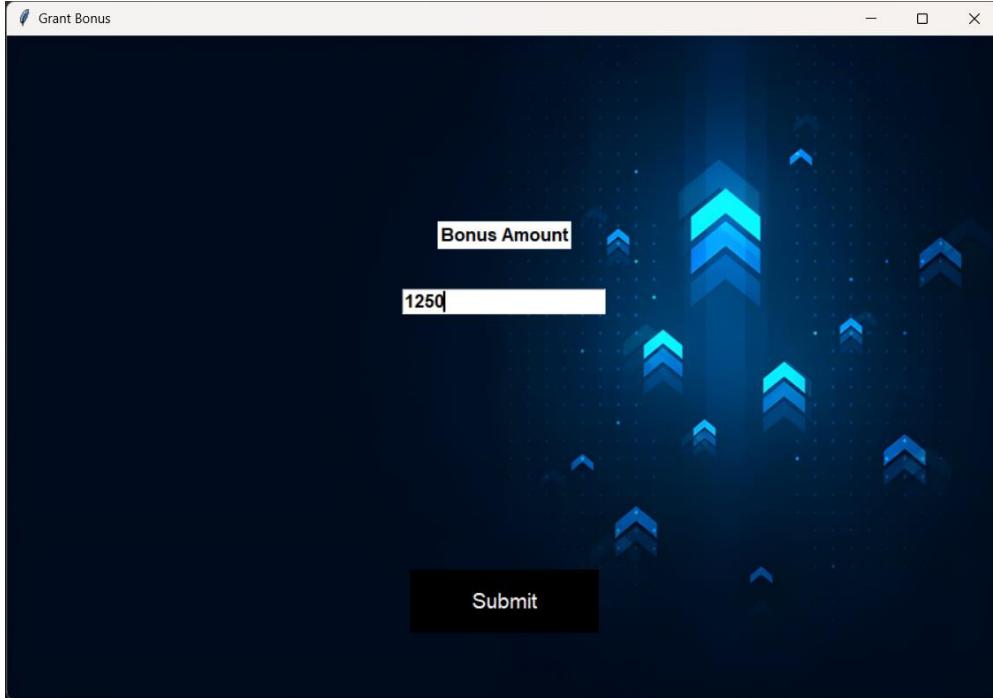


Figure 12

Gives the HR the input box to input the amount of bonus that should be provided the specified Manager, on clicking the submit button (figure 23) is shown.



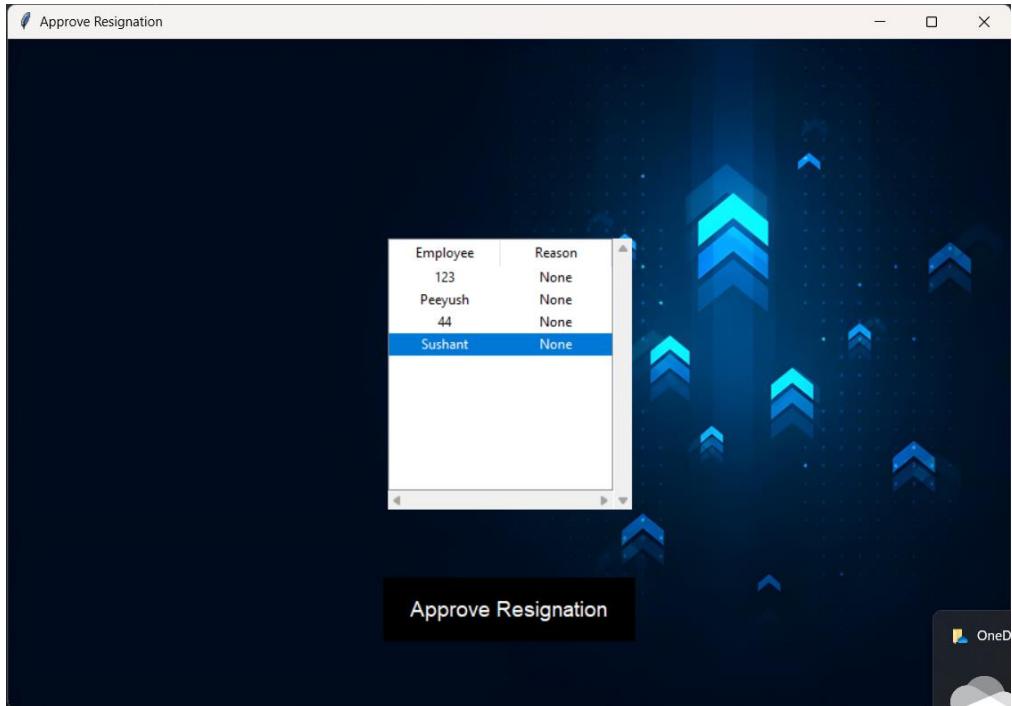
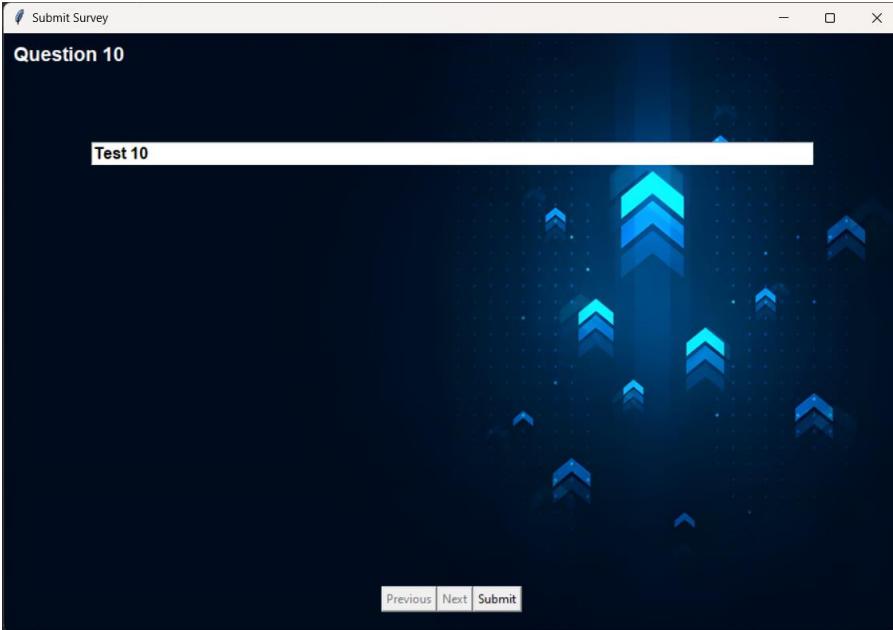


Figure 13

Upon clicking the Approve resignation button a new window shows up with the list of employees whose resignation approval is pending, upon clicking the respective employee the approve button highlights itself which can then be clicked to approve the resignation.



Show the last question of the survey along with the previous next and submit buttons to move between the questions and to assign the survey for the employees to fill it.

Figure 14



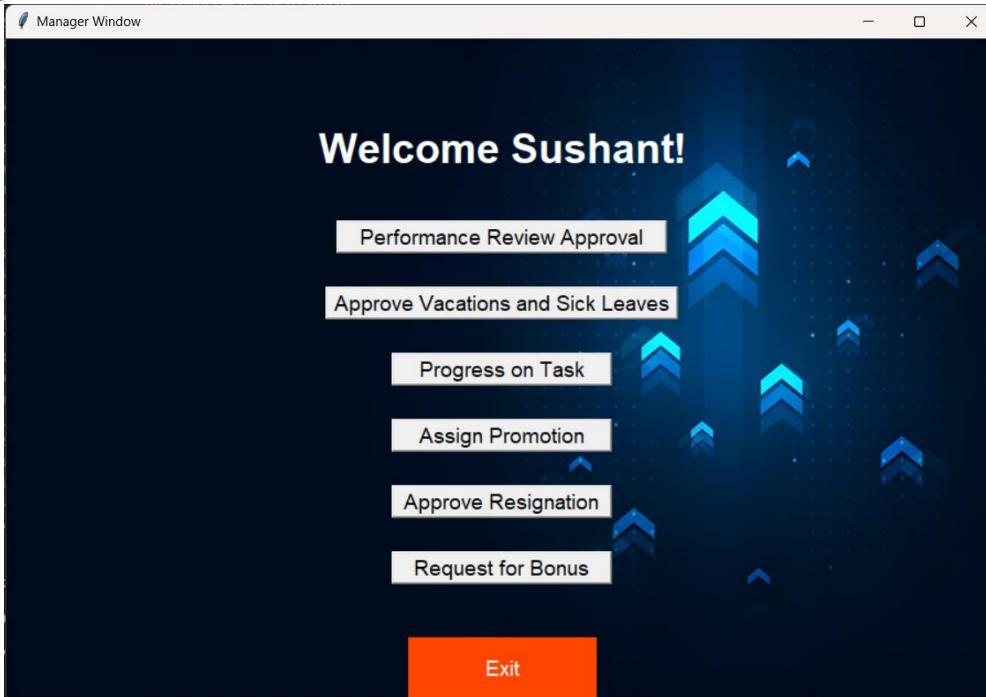


Figure 15



The window that is shown to the user who logs in at the manager level, the user has the options to approve performance reviews, approve vacation/sick leaves, check progress on tasks which are in progress by employees, assign promotions, approve resignation and request for bonus for employees

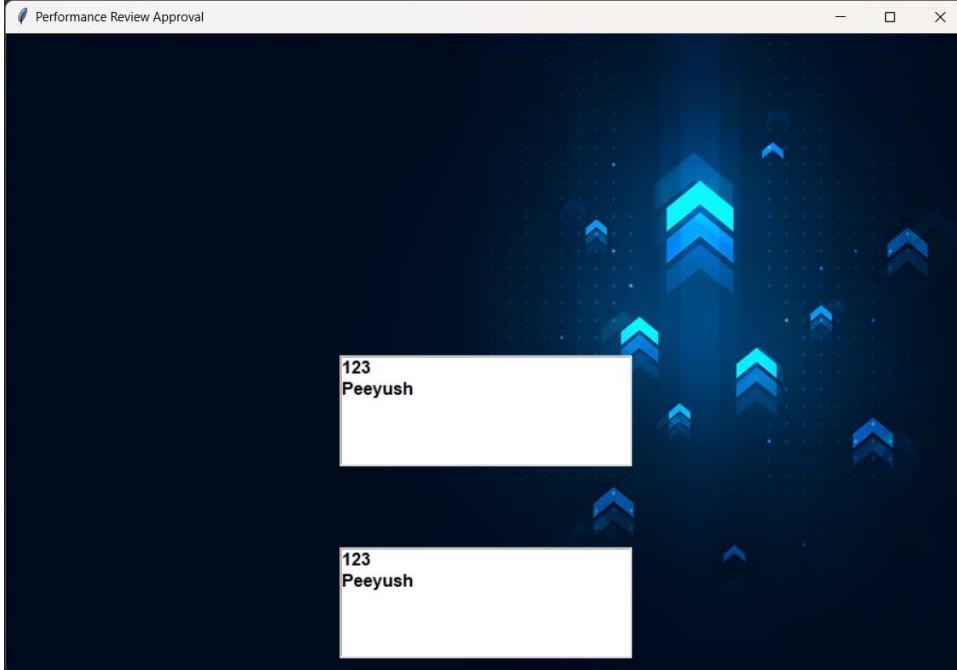


Figure 16

Opens a new window when the approve performance review button is clicked, this displays the list of employees who have filled their quarterly and annual reports separately, clicking each employee's name will give the information they have filled, that performance review can then be approved or denied by the manager.



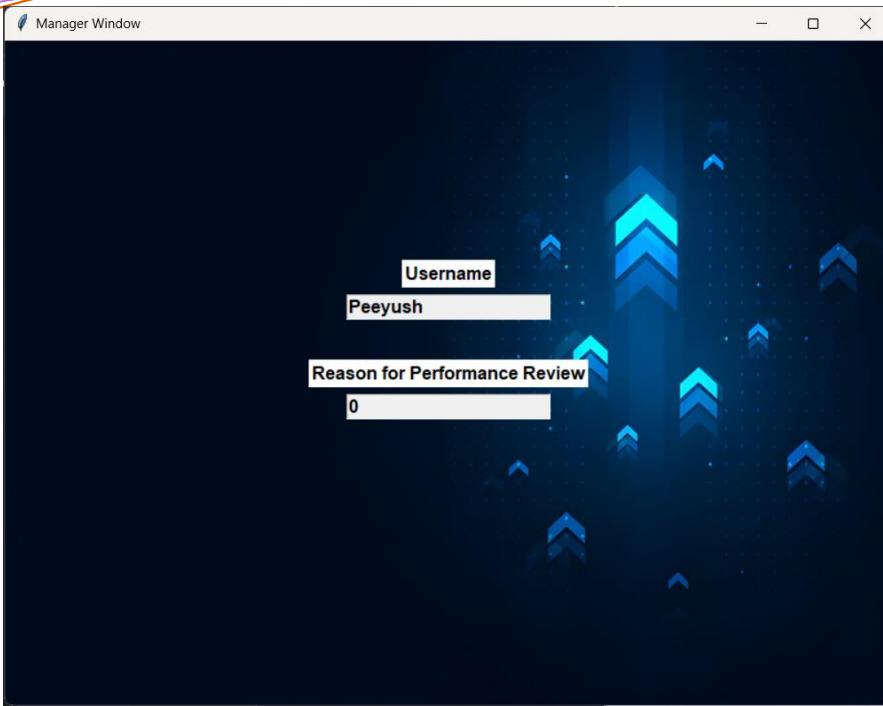


Figure 17

Shows the details of the performance review filled in by the employee along with approve and deny buttons for the performance review.



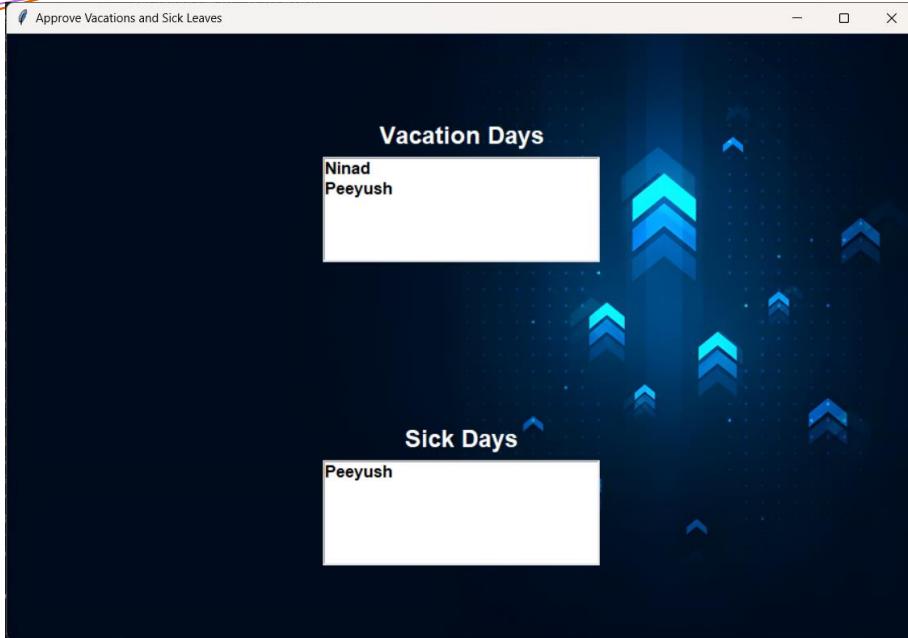


Figure 18

The list of employees whose vacation and sick leave approvals are still pending will be shown in separate list here, the Manager can then click on each user's name and view the details filled in

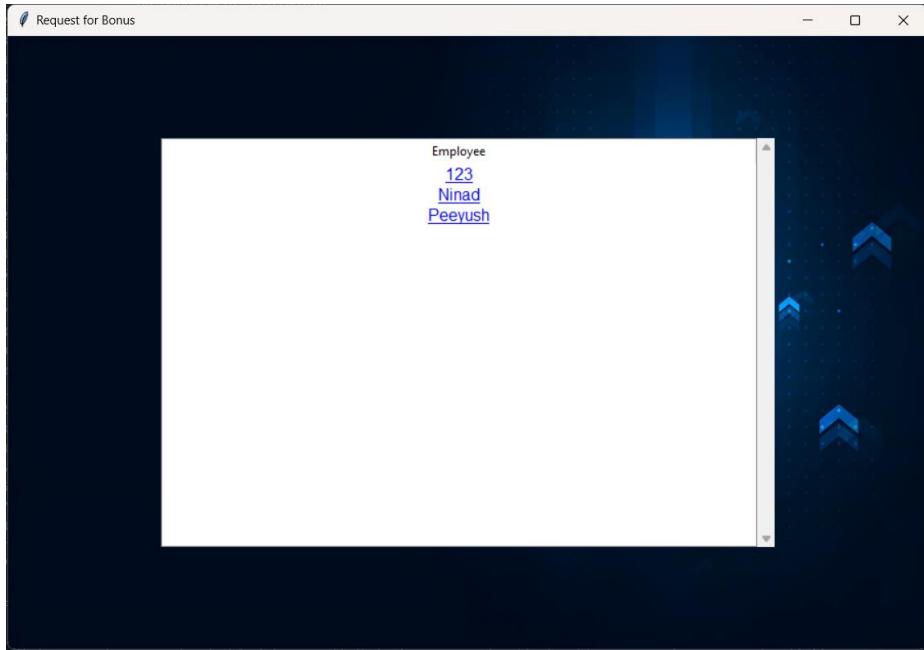


Figure 19

When the Request for bonus button is clicked a new window is created which gives the list for the employees which are clickable, upon clicking that window a new window is further created



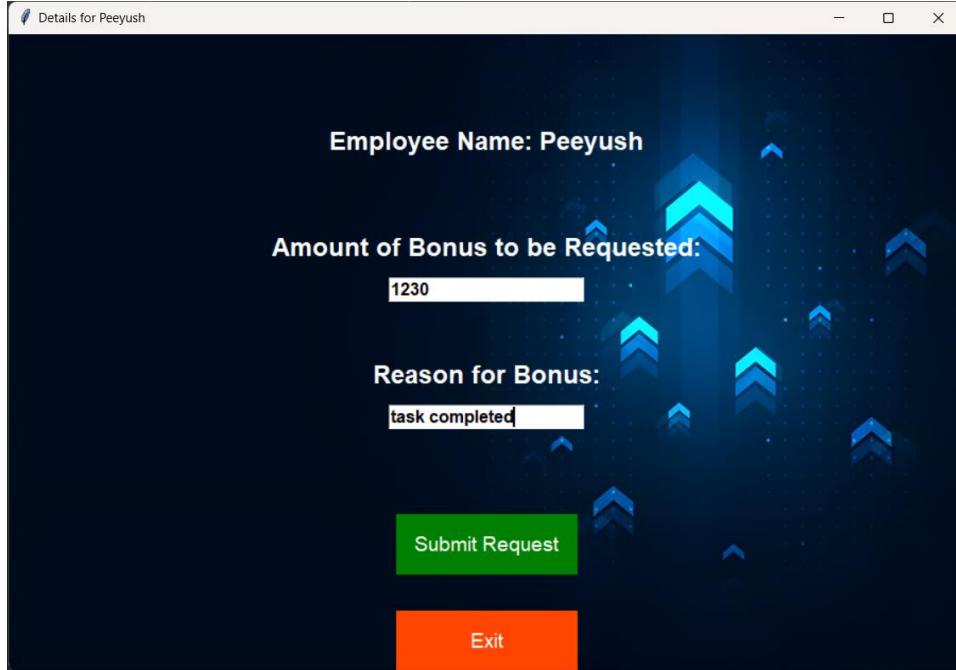


Figure 20

This new window gives the option for the amount of bonus to be requested by the manager for the employee along with the reason for this. There are also two buttons to submit the request or exit from that window.



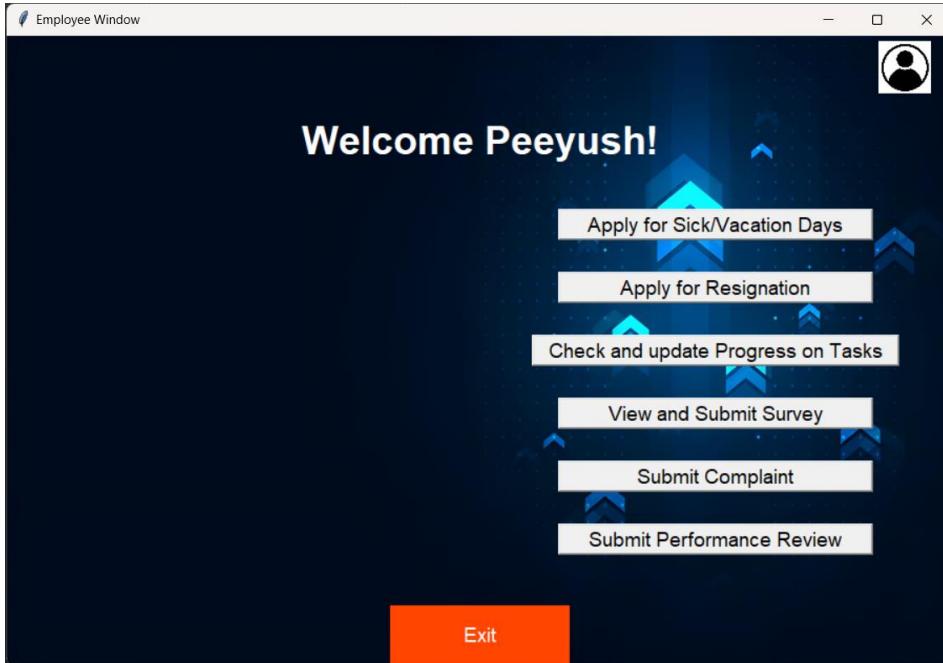


Figure 21

The window shown to the employee role and permission level, it consists of options to Apply for sick/vacation days, apply for resignation, check and update progress on tasks, view and submit surveys created by the HR, submit complaints of various things and submit their own performance review.



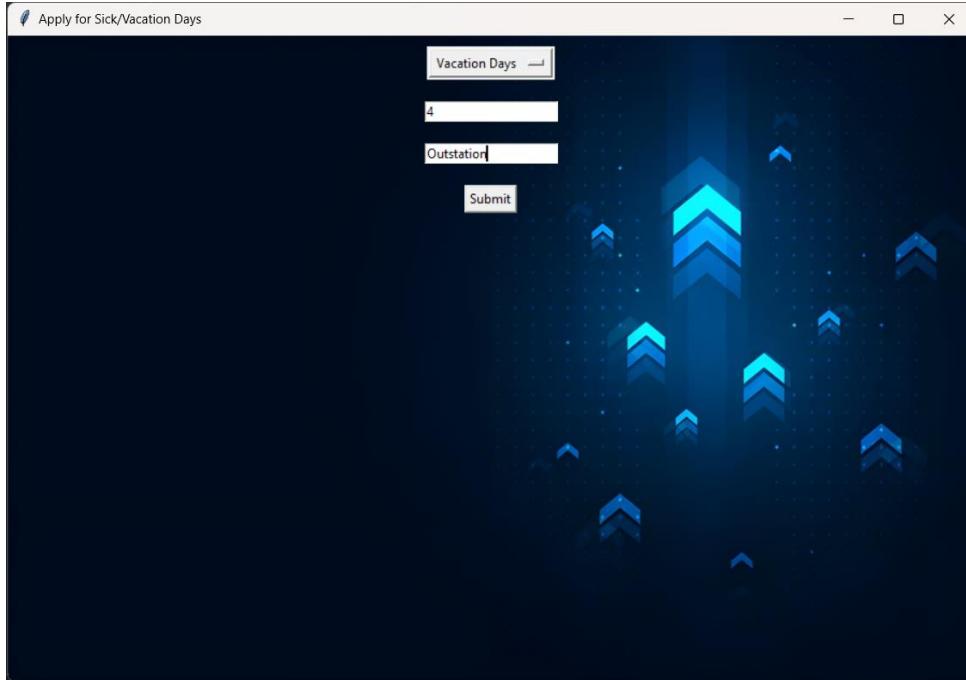


Figure 22

This window is opened when the employee clicks on the Apply for Sick/Vacation days button, it gives the employee the options to choose between the sick and vacation days request along with the number of days to be requested and the reason for the request.



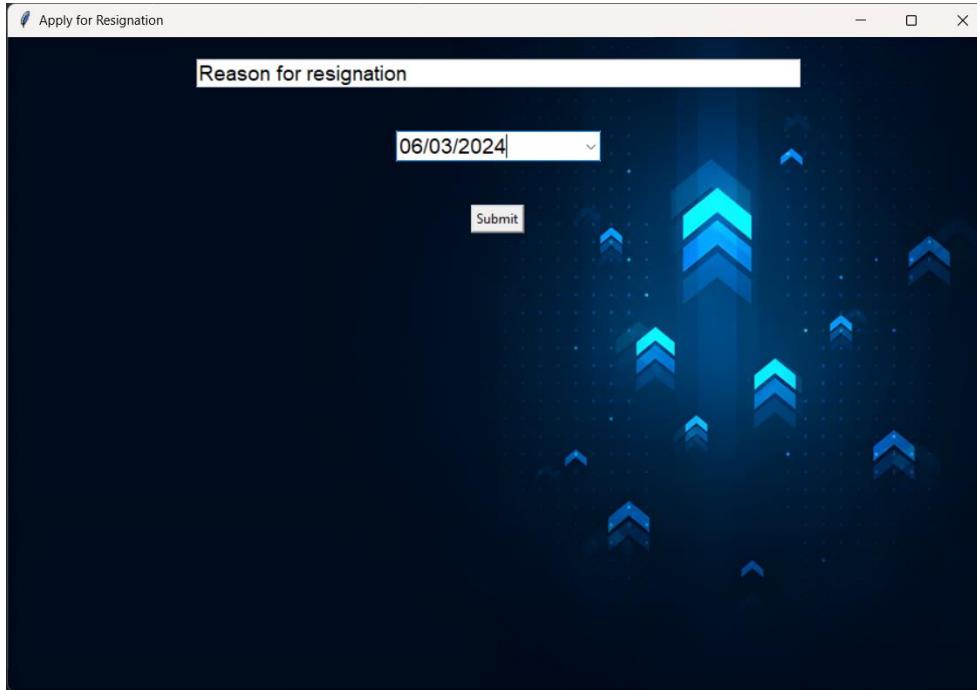
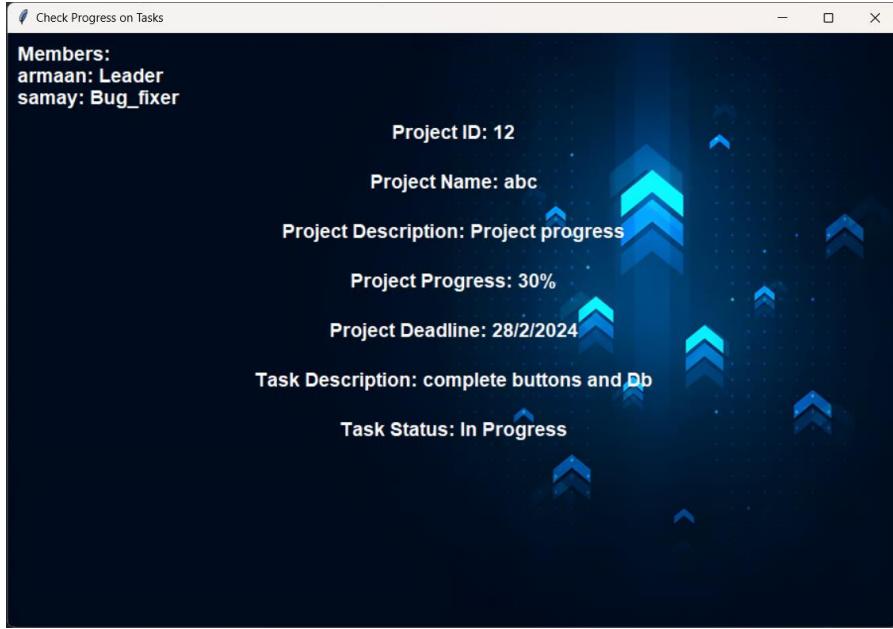


Figure 23





The window shown when the employee clicks on the check progress on task button, it also gives the option to update the progress and mark the task as completed.

Figure 24



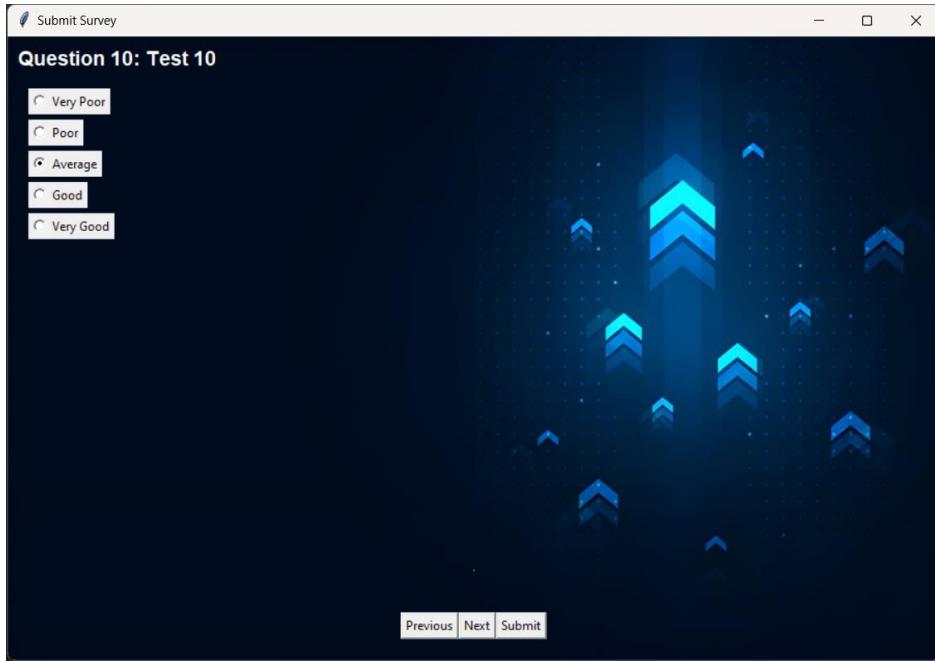


Figure 25



The window shown when the user clicks on the submit survey button to fill the survey set by the HR for the employees. The questions are displayed along with the question number and the radio buttons for the options, at the bottom of the window there are 3 more buttons for previous, next and submit.

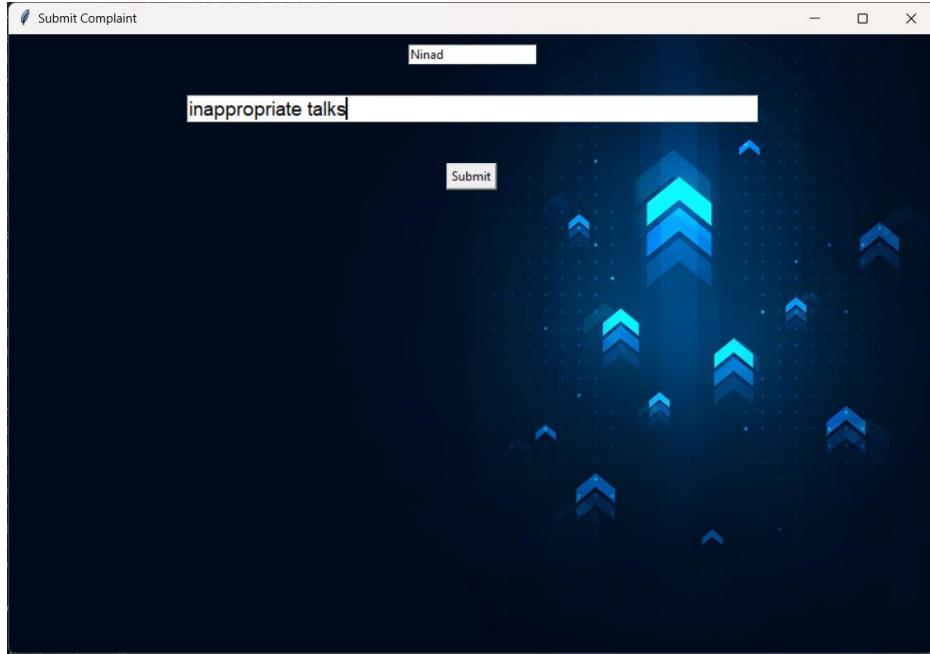


Figure 26



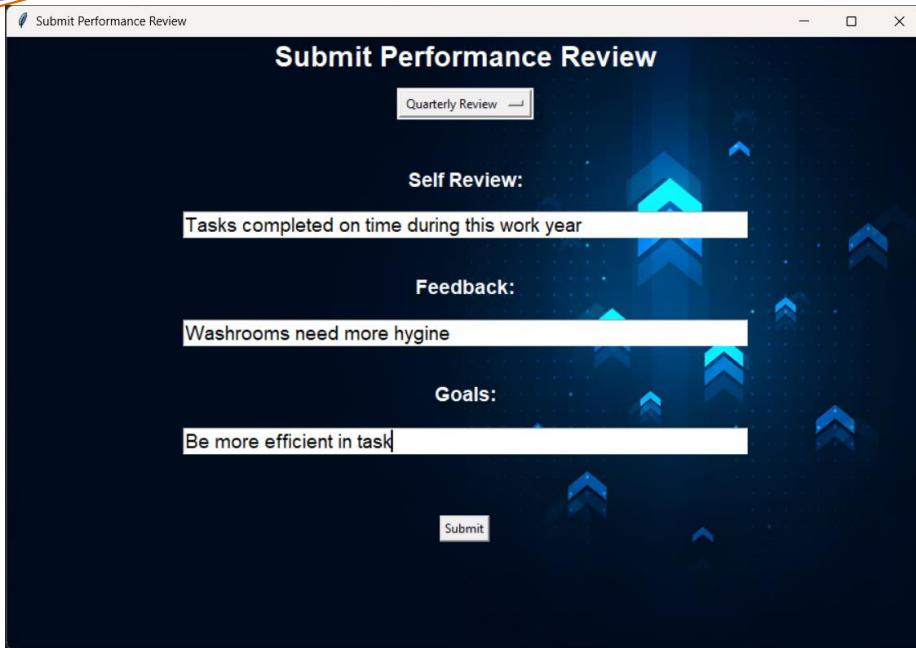


Figure 27



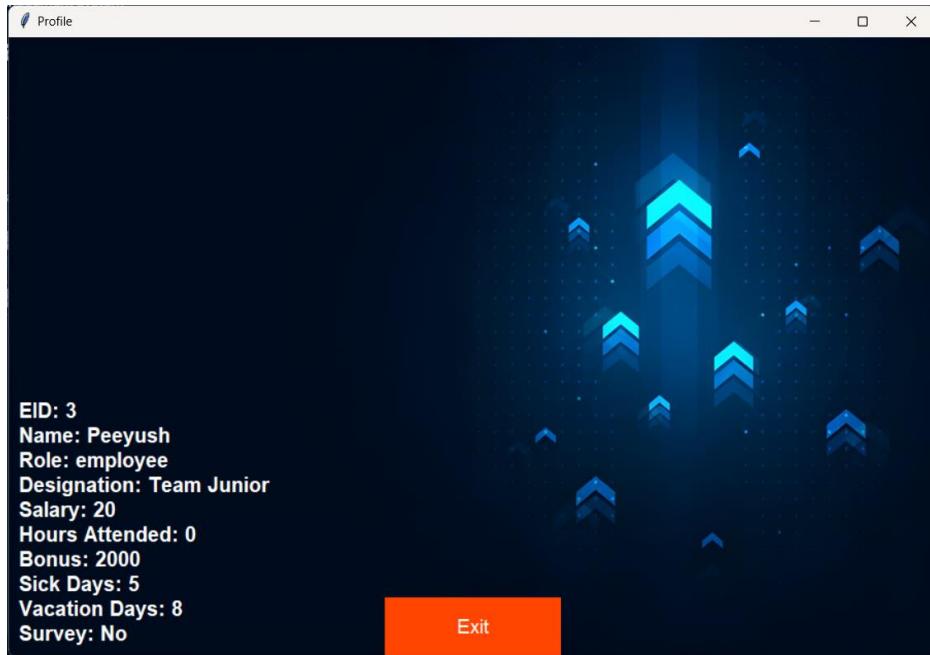


Figure 28



● References

1. Chatgpt: Helped in bug fixing along with some help for developing new ideas.
2. Stackoverflow: Used in solving bugs and getting methods to solve certain issues.
3. Youtube: Helped in getting new ideas for the project and ways to implement them.
4. Geekforgeeks: Wording for creating documentation and ppt
5. Google: Helped in info for parts of ppt and documentation along with random bug fixes.

The Github Repository of this Project with the Source code, Project Report and a copy of this PPT can be found at:
[ChampionSamay1644/Sem_4_Mini_Project \(github.com\)](https://ChampionSamay1644/Sem_4_Mini_Project)



Thank You!!!

