BIRZEIT UNIVERSITY

Faculty of Engineering and Technology

Computer Science Department

Software Engineering - COMP433

Course Project – Phase 4

Project Name: Human Resource Management System

Prepared By:

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Date :1/2/2024

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Acronyms and Abbreviations

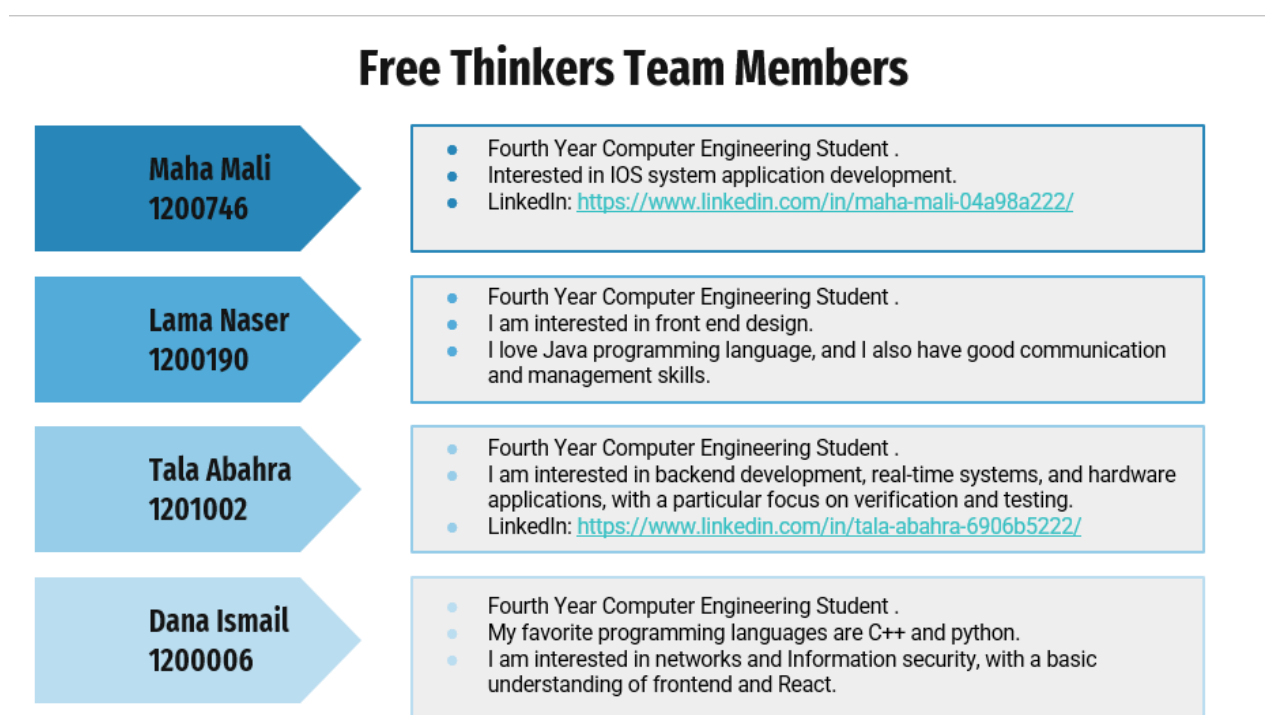|	
UR	User Requirements
SR	System Requirements
HR	Human Resource

Team Information
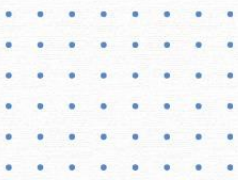
Team Name

Our team's name is: **Free Thinkers**

Team Structure and Members

The figure below shows the names of team members and each member's field of interest.

Free Thinkers Team Members

Maha Mali
1200746
- Fourth Year Computer Engineering Student .
- Interested in IOS system application development.
- LinkedIn: https://www.linkedin.com/in/maha-mali-04a98a222/

Lama Naser
1200190
- Fourth Year Computer Engineering Student .
- I am interested in front end design.
- I love Java programming language, and I also have good communication and management skills.

Tala Abahra
1201002
- Fourth Year Computer Engineering Student .
- I am interested in backend development, real-time systems, and hardware applications, with a particular focus on verification and testing.
- LinkedIn: https://www.linkedin.com/in/tala-abahra-6906b5222/

Dana Ismail
1200006
- Fourth Year Computer Engineering Student .
- My favorite programming languages are C++ and python.
- I am interested in networks and Information security, with a basic understanding of frontend and React.

Figure 1:Team Members

Team Members Roles

Figure 2:Team Member Roles

Team Management Strategy
Meetings

Meetings to complete the project will take place through several programs due to the closure of the university as a result of the war on Gaza. We will use Zoom to see the achievements of each team member once a week for an hour. Google Meet to discuss and select ideas. We will meet twice a week, each time for two hours, and a WhatsApp group to exchange files between team members.

After the end of the war on Gaza and the return to the university, a face-to-face meeting will be held between the team members in the Najad Zani building (Blue Dome) to share ideas and discuss the project.
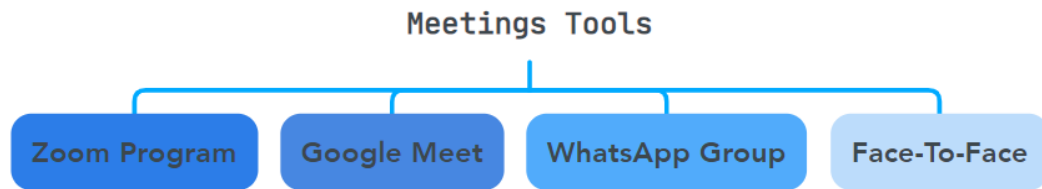
Figure 3: Meetings Tools

Decisions

As for making decisions, team members will vote on the idea, and the idea that receives the highest vote will be used. In the event of equal votes, a lottery will be made using the program: https://wheelofnames.com .

Introduction

In today's era, technology is no longer just part of our lives but an integral part of our existence. Technology faces us everywhere: in our smart devices, smart homes, offices, and entire daily lives. It overlaps incredibly with every aspect of our lives, and we find ourselves in constant need of keeping pace with this progress. Technology is not only a means of entertainment and communication; it is also a means of improving our quality of life and increasing our productivity. If you are not benefiting from the technological tools and resources available in our world today, you may miss out on great opportunities. Technology gives us the strength to achieve our goals more efficiently, whether we are talking about developing our personal skills or strengthening our professional environment. So, let's be wise and take advantage of this digital age. Not only do we have to adapt to technology, but we also have to build on it and develop ourselves as part of it.

Any organization offering a certain amount of leave to its employees faces the obligation to attend in accordance with local laws and regulations in Palestine, including the Palestinian Labor Code. However, the problem lies in the time and effort wasted in monitoring and tracking the attendance and departure of employees and monitoring leave and remote work orders. Therefore, it is necessary to find a system that helps reduce effort and time wasted in managing this process in order to facilitate decision-making processes as well as the process for the department's staff to manage their leave by requesting various types of leave available to them, such as annual leave and sick leave. The system is also expected to facilitate the review of the staff member's historical leave record and allow managers to monitor the performance of their staff by confirming or rejecting the required leave.

Human resource processes aren't always smooth sailing. Whether your department is working through time-off requests, keeping employee information up-to-date, or answering the same questions over and over, manual tasks and a high workload can slow you down. To solve this dilemma, a consistent program will be built that combines organization and flexibility. The system will be seamless and interconnected system that

facilitates the management of various type of vacations and tracking employee attendance and absences, providing a better experience for employee and administration. The system also allows them to effortlessly review the date of their vacation and the number of vacations remaining with the employee. Managers will also be able to monitor the performance of the team , interact with them and make decision to refuse or accept vacations within the agreed controls and work standards.

This system is considered the best for stockholder in developing themselves and improving the efficiency and quality of the system used in their organization. This system adopts advance human resource management techniques, as this system connects all employees, whether they work inside or outside the office. It enables them to access the system without obstacles or restrictions depending on the devices used. The link includes an integrated communication with the competent authorities, which makes all employees aware of the latest developments and updates on the system, no matter where they are.

In addition, the system will rely on iris fingerprint technology to ensure safety and credibility. This will allow for accurate identification and effective monitoring of users. Not only will the system ensure that company information is protected from cyberattacks, as it will take advanced safety measures to ensure data integrity and protect it from potential threats. Simply put, this system will be an advanced and reliable Human Recourse (HR) management technology, combining effective communication with comprehensive security.

Our system will be built using the latest and greatest technologies and best practices, we ensure that the system is scalable and optimized, in addition to being highly flexible trusted. We will work closely with HRMS administrators to ensure the system meets compliance All their needs and requirements. Moreover, our team has very extensive construction experience High-quality systems and programs of all sizes. We are confident in our ability to provide Appropriate solutions that meet the needs of the human resources management system.

System Features

1. **User Identification to App and Website**: The user's identity to enter the system is determined through a special number (unique number) and password specific to each employee in the company. When the user enters the employee's number with the password, the user's identity is confirmed as whether he is an employee, manager, or official in the human resources department. Then the user's system appears based on his job

2. **Attendance Recording**: Employees' attendance is recorded through the iris fingerprint to prove the employee's attendance accurately and securely. If the iris scanning device malfunctions, the employee can record attendance through a special card for each employee with his information on it.

3. **Remote Work (work from home)**: As an employee in the company, he can submit a remote work request through a special application for the Human Resources Department. When submitting a remote work request, the employee is required to enter the: day or time period for remote work (date from to), the reason, and a document if available. Then the employee submits the request. The manager has the authority to reject or accept a request to work remotely. The manager can verify the employee's work by giving the employee a set of tasks that he must complete during work and through a system on the employee's device that knows the locations the employee is working on and the duration of work on them.

4. **Daily Attendance**: This feature appears when the employee tracks his attendance on a daily basis. Through this feature, the employee can track his attendance through the application. This feature shows the employee how many working hours he has remaining and how much he has accomplished

5. **Register A Missed Attendance**: In the event that the employee forgets to record the date of his entry or exit from the institution, he can submit a request to the human resources employee through the application, and the request will be reviewed.

6. **Personal Profile**: Any employee can view his personal file through this feature. He can view his personal photo, employment history, progress rate, and achievements through illustrative tables and graphs.

7. **Notification System**: The system will offer a notification system to notify the users with messages, announcements, approvals and so on.

8. **Settings**: this feature is divided into five features:
   1. **Edit Profile**: In this feature, the employee can: change his profile picture, modify personal information, modify the employee's phone number.
   2. **Modify Password**: In this feature, the employee can modify the password for his account.
   3. **Support Team**: In this feature, the employee can access the numbers of the technical support team in the event of any emergency occurring to solve a problem, and through this feature he can reach important numbers within the organization
   4. **Dark Mode**: In this feature, any user of the application can use the application in dark mode
   5. **Integration with Email Notifications:** Through this feature, the employee can link the application with email to receive notifications and announcements. It is also allowed to cancel this feature or modify the email entered.

9. **Requests for Leaves and Approvals**: this feature is divided into two parts:

    1. **Submit a Leave Request**: Employees can submit a request to leave work through a human resources application. Employees can also specify the start time of leave and end time, in addition to specifying the type of leave (annual leave, sick leave, work leave, etc..).

    2. **Review the Request and Make A Decision**: Once the employee submits a leave request through the application, the request is automatically sent to the responsible human resources employee. The responsible human resources employee receives a notification or email informing him of the existence of a new leave request, and then the decision is made to reject or accept the request. A notification is sent to the employee through the application regarding the acceptance or rejection of the request.

10. **Requests for Vacations and Approvals**: This feature is divided into two parts:

    1. **Submit a Vacation Request**: Employees can submit a request to vacation work through a human resources application. Employees can also specify the start time of vacation and end time, in addition to specifying the type of vacation.

    2. **Review the Request and Make a Decision**: Once the employee submits a vacation request through the application, the request is automatically sent to the responsible human resources employee. The responsible human resources employee receives a notification or email informing him of the existence of a new leave request, and then the decision is made to reject or accept the request. A notification is sent to the employee through the application regarding the acceptance or rejection of the request.

11. **Extra Vacations**: If an employee has exhausted all his vacations, he can submit a request for additional vacation through this feature. And the decision is made by the human resources employee and the manager in the event of acceptance or rejection.

12. **Leaves Balances**: The system will keep tracking the number of monthly leaves available to each employee. This will appear as a pie chart on the home page such that the number of leaves for each employee will be determined according to a specific value.

13. **Vacation Balances**: The system will keep tracking the number of annually vacations available to each employee. This will appear as a pie chart on the home page such that the number of vacations for each employee will be determined according to a specific value, for example in the Civil Service Law, this value equals 30.

14. **Socials and Updates**: This feature can be divided into four features as following:

    1. **Announcements**: Announcements can be for all the employees in the organization made by the Manager of it. It can be also for some employees (a specific department) made by the department manager. Moreover, it can be for a single employee (congratulation for a birthday, a message of reassurance for unrequested absence…). All employees can comment or react on the announcements using emojis to express their feelings or opinions.

    2. **Attachments and Downloads**: The managers can attach in this section files (e.g., PDFs, presentations) for employees to download.

    3. **Polls and Surveys**: The managers in this section can create polls or surveys to gather feedback or opinions from employees.

4. **Events Calendar**: This calendar displays upcoming events, meetings, holidays, or training sessions

15. **Employee leave and Vacation History**: Employees can review their historical leaves and vacation records with their dates.

16. **Access to Employee Information**: The managers of a specific department can view information (personal and leaves and vacation history) for employees of his department only, while the manager of the organization can view this information for all employees and departments' managers.

17. **Managerial Oversight**: The organization's managers can view diagrams showing the percentage of vacations and leaves of the employees for a specific year.

18. **Employee's Calendar View**: The system offers a personalized calendar showing both approved and waiting leaves and vacations requests for the entire year such that different leave types (like annual and sick leaves) will be color-coded for easy identification. Also, this feature offers two more features on this section as following:

19. **Leave and vacation request filters**: This feature allows employees to view the calendar based on leave or vacation types, approved status, or specific date ranges.

20. **Leave and Vacation Requests Modification**: Employees have the ability to hover over specific dates on the calendar to access detailed information about the leave or vacation request, including type, duration, and approval status. Then he will have the ability to modified this request details.

21. **Multi Language Support**: The system provides an option to switch between Arabic and English languages for better accessibility.

22. **Messages System**: The system offers a messaging system to exchange messages between employees and their managers based on their unique code numbers.

23. **Training and Support Resources**: In this feature, the employee can see a guide that contains: how to use the application, the Palestinian labor law, types of vacations, types of leaves, and the law of the remote work system in the organization.

24. **Resignation Request**: With this feature, the employee can submit a resignation request, faster and saves time and effort on the employee and the human resources official. When submitting the application, it is required to include the type of resignation and the reason

25. **Ratings**: The system provides a rating system for employees, through which it gives ratings (excellent, very good, good and acceptable) to employees based on the number of vacations and leaves for each employee.

26. **Maintaining**: HR software engineering maintenance capability includes many strategies and practices to ensure that software remains adaptable, cost-effective and manageable over time.

27. **Efficiency and Scalability:** HR software systems prioritize efficiency, scalability, and response time to deliver a user-friendly experience. They optimize resource use, reducing delays in tasks like leave requests, employee records management, and payroll.

28. **Usability and acceptance:** The system must be usable and acceptable to users, and user-friendly design is the cornerstone to ensure employees and customers interact effectively with the HR system.

29. **Security**: To make transfers smooth and secure, our system has data security to ensure that all personal and financial information is encrypted by the database's PIN that can only be accessed by logging the employee into his account.

Software Development Process

IT projects have the advantage of dynamism and speed of change, making the use of incremental development methods smart and efficient. So, the incremental software development approach will be employed in this project due to the possibility of changing the project's needs over time and the potential for a clearer project vision to emerge.

The customer remains in constant contact with the company that designs the system, and therefore if the customer wants to modify something, he can modify it from the beginning, and this does not cost the company time or effort, this approach not only provides adaptability to evolving project requirements but also allows for a clearer understanding of the project's goals as time progresses. the program and can use the system's features after a period of time of approximately three to four months from the start of the project. In addition to this, input and ongoing feedback is essential throughout the entire development process to introduce further improvements.

This project is adopting an incremental development approach, which means we're taking a step-by-step approach to building it. We're breaking the project into smaller, manageable pieces and working on them in defined timeframes known as "sprints." Each sprint lasts three weeks and consists of various stages.

An incremental programming improvement approach will be utilized in this task because of the potential for project requirements to change over the long haul and the potential for a clearer venture vision to arise. This approach not only gives the capacity to adjust to changing venture necessities but additionally takes into consideration a superior comprehension of task objectives after some time. Moreover, ceaseless information and input are significant during the advancement interaction to work with nonstop upgrades.

This task improvement process included a gradual methodology, breaking it into more modest parts and executing them in three-week portions called runs. Each run comprises various stages, including figuring out the business, gathering prerequisites, planning, executing, testing, and coordinating. Toward the end of every emphasis, a gathering will

be held to accumulate client criticism, and the runs with the most noteworthy need and highest business worth will be tended to first.

After completing each sprint, we meet with the client to get their feedback. This feedback loop is crucial for making improvements, adjustments, and ensuring that the system aligns with the client's expectations and needs. We will work first on the most complex part of the requirements that require time to complete, so that we ensure that they are completed at the beginning to avoid any obstacle, and we make sure that the most important feature of the project is developed and available early for use.

The project will be divided into four releases. The first three releases will focus on the basic features required for the human resources system to ensure that the basic features work correctly. In the fourth release, the secondary features of the system will be developed.

In the first release, focus was placed on the basic feature of the system, which is logging in and out of the employee in an easy way for the employee, as well as creating accurate attendance reports to schedule appointments with high efficiency and sending them to the relevant managers.

The second release, provides a system for employees to request vacations and leave through a phone application and website. Submitting the request includes basic details such as vacation dates and reasons. Managers can review these requests and make decisions to approve or reject them while sending a notification to the employee who submitted the request over the phone.

In the third release, the remote work system will be developed, allowing the employee to submit a request to work remotely through an application on the phone or the website, and the manager can review and verify that the employee is actually working remotely.

The latest release will contain features and improvements to the system that enable users to use the system smoothly and comfortably.

By gradually working on the system, we ensure that the human resources system is developed systematically and that feedback is obtained on a regular basis from the client. This allows for continuous developments and improvements to the system.
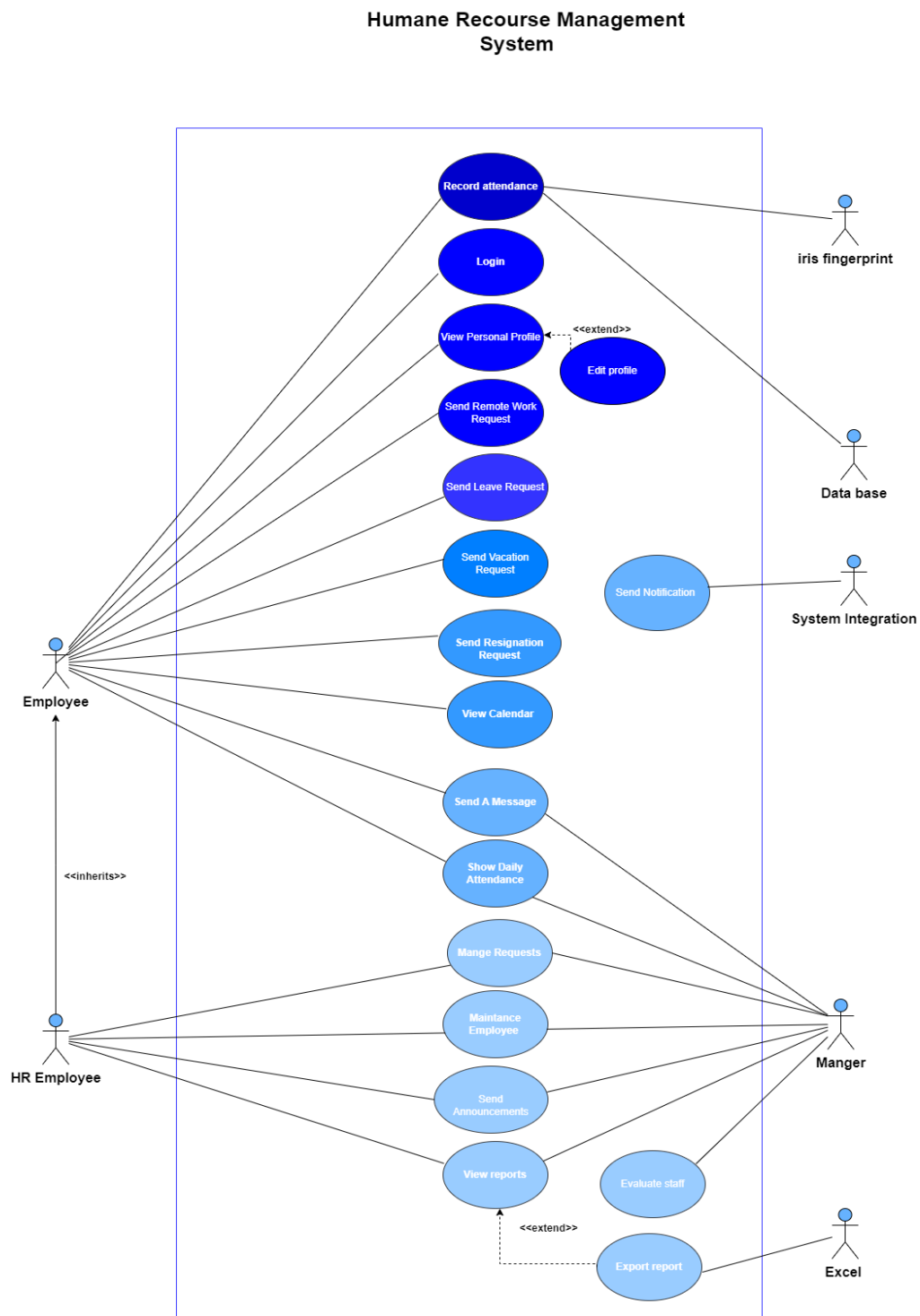
2. Use Case Diagram

Figure 4:Use Case Diagram

2.1 Description of Use Case

2.1.1 Attendance recording: The attendance recording system uses iris fingerprint to accurately record the attendance and departure of employees with the exact date and time within the company's designated databases. It independently and automatically verifies attendance, whether there are tardiest or absenteeism, and the system allows HR to process requests for correction of an error in a recording.

2.1.2 Send A Leave Request: this use case help the employee to apply leave request from the work. Type of leave request could be (sick leave, work leave, personal leave). To apply the leave, request the employee should enter this information (the start and end time, type of leave request, date).

2.1.3 Send Vacation Request: the main objective from this use case is to help the employee to apply vacation request, type of vacation request could be (sick vacation, work vacation, annual leave) To apply the leave, request the employee should enter this information (the start and end time, type of vacation request, date).

2.1.4 Send Remote Work Request: the employee can apply request to work from the home instead of work in the office.

2.1.5 Manage Request: this use case for the HR employee to manage the requests which is: leave Request, Vacation Request, remote work request and resignation request. In this case the HR employee mange each request individual then sends the result to employee which is (acceptable, reject or keep it in the waiting list).

2.1.6 Maintenance Employee (Add, Delete, Update, Archive): The human resources employee can manage employee records, which includes adding, updating or deleting employee's information.

2.1.7 **View Personal Profile**: this use case provides the employee to view his personal profile and see his personal information. Also, the employee can see the leave and vacation balances. Moreover, it provides an option use case which is edit the profile, that can help the employee to edit their profile.

2.1.8 **View Calendar**: each staff that using the system has his own calendar. This includes vacation and leave requests with their statues (acceptable, reject, waiting list). Also, it includes the ability to modify the requests.

2.1.9 **Messaging**: All staffs have the ability to send and receive messages from any other staff using the system.

2.1.10 **View organization social and updates**: The manager, and the HR employees have the ability to send announcements for a specific or a group of employees under certain conditions.

2.1.11 **Resignation Request:** Every employee can request for resignation. That can be approved only by the Manager.

2.1.12 **Staff Evaluation**: The manager is able to evaluate his employees at the end of each year.

2.1.13 **Login**: The employees of the organization can log in into the system application or system website.

2.1.14 View Reports: This use case gives the right to both the manager and the human resources employee to issue comprehensive reports about leaves, vacations and attendances. Also, it provides an option to export those reports using excel program on the system.

2.1.15 Show Daily Attendance: Employees can conveniently access their attendance records through the application's user-friendly interface, providing a comprehensive overview of their work progress. Additionally, it facilitates managers in monitoring and tracking daily attendance records, including dates for vacations and remote work.

2.1.16 Sending Notifications: The system improves communication, allowing for the transmission of messages, approvals, and work updates to users. It ensures prompt decision-making for delays, absences, and requests for vacations or remote work.

2.2 Description of Actors

ACTORS DESCRYPTION

01 Manger
The manger plays a major role in managing the system.

02 HR Employee
Is a vital elements in the HR framework, liable for overseeing different parts of HR inside the association.

03 Employee
The employee is a vital component in the company, and the system is designed to meet their overall needs.

04 Database
The database securely stores all company data, playing a vital role in ensuring the smooth flow of operations.

05 system Integration
It is the basis for the integration of the system with all its services provided

06 Excel
An external system tool that interacts with employees by importing and exporting data.

07 Iris Fingerprint
Iris fingerprint technology is used to verify the identity of employees in an efficient and secure manner
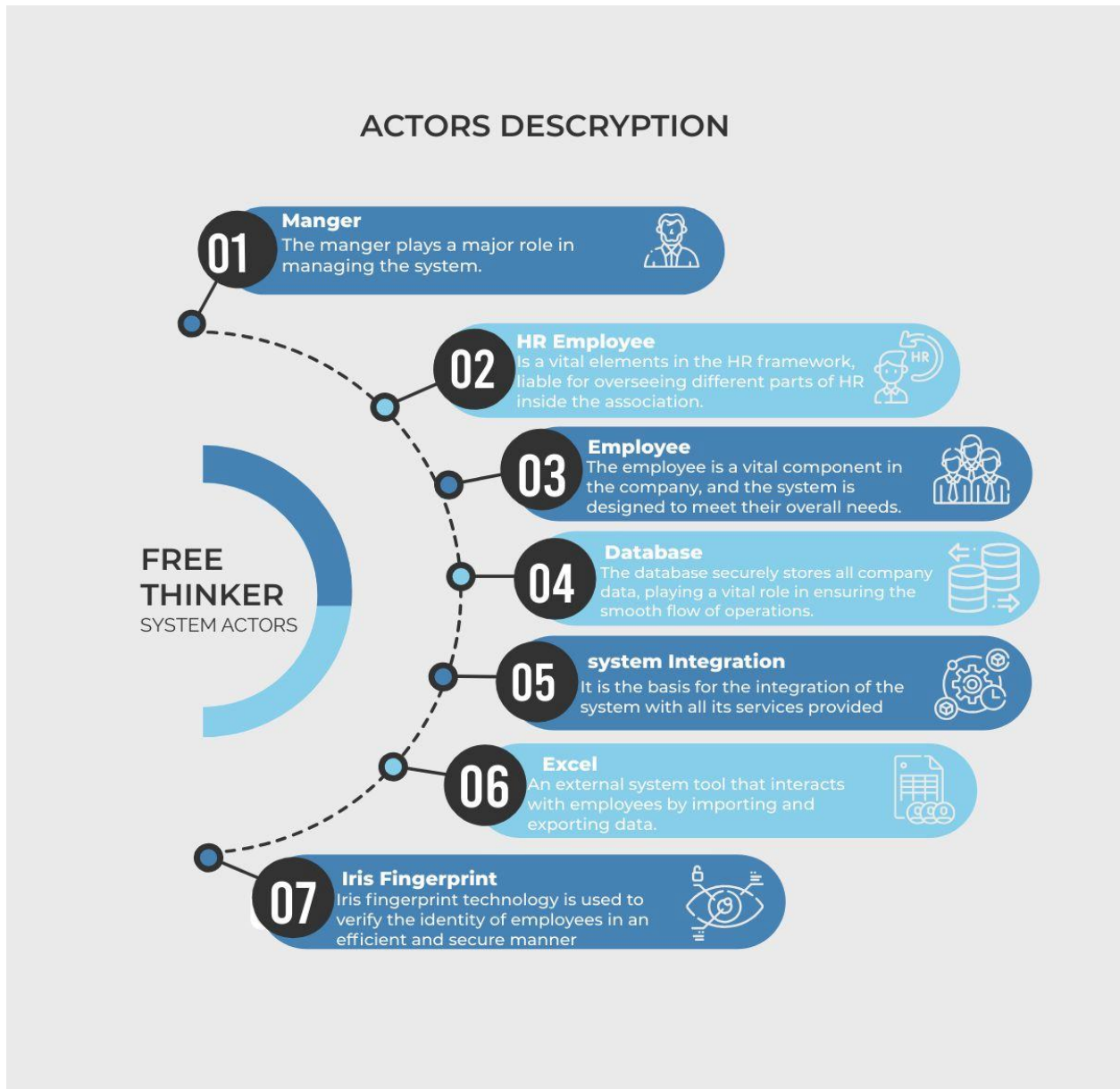
FREE THINKER
SYSTEM ACTORS

Figure 5: Actors

Manger:

The manager has an effective role in the organization as he supervises the system. He has administrative privileges as he is authorized to review requests for leaves and departures and then reject or accept them. Manger have the ability to access and audit reports. He also has the right to make decisions related to employees' working hours inside the office or remotely, depending on the company's situation. His administrative authority is sufficient to monitor all employees and contribute to making strict and decisive decisions, such as approve new employee or fireoff employee.

HR Employee :

The human resources employee is one of the most important elements for the success of this system, as he is responsible for managing various matters such as monitoring attendance and absence records for employees and dealing with attendance and absence requests and requests for leaves and departures. It interacts with the system by facilitating the organization's operations and maintaining accurate and updated information for employees without errors. He may participate in making reports and supervising support and training.

Employees :

Employees use the system to record their attendance, relying on iris scans for accurate and secure tracking. This enables the system to maintain a detailed log of their check-in and check-out times. Employees have the capability to submit requests for remote work and vacation through a dedicated application. They provide details such as the date and

time period for remote work, reasons for the request, and any necessary documentation. Managers can review and either approve or reject these requests.

Each employee has the privilege to access their personal profile within the system. This profile includes essential information such as a personal photo, employment history, progress rate, and achievements, presented through illustrative tables and graphs. The system incorporates a notification system for sending messages, announcements, and approvals. This feature ensures that employees receive timely alerts and messages related to their work, requests, and other crucial information. This organizational structure presents a clear breakdown of how employees interact with the system across different functionalities.

DataBase :

The database plays a crucial role in establishing a strong link between user data and iris fingerprints, providing secure storage directly associated with individual profiles. This connection is seamlessly extended to the precise recording of daily attendance, encompassing dates, times, leaves, verifications, and remote work details. Moreover, the system optimizes communication processes, ensuring the preservation of traceability for messages, requests, and approvals exchanged between employees and HR. This integrated approach significantly improves overall efficiency and record-keeping capabilities within the system.

System Integragtion :

System integration plays a vital role in linking the parts of the system together, which leads to effective data transfer between employees, whether they are logged in from inside or outside the organization. This results in the transmission of information with extreme accuracy. Integration between the organization's systems is necessary for the continued operation of the system, as the system must make updates at the same time,

so any update must be transmitted to everyone, such as conducting payroll and others. It can also send notifications to recommended people.

Excel :

An external system tool that interacts with employees by importing and exporting data. Where data or reports are imported and the data is exported to be transmitted to ensure that it is free of data that has been tampered with in any way, it is considered a complementary tool for people who need flexibility in dealing with matters related to HR.

Iris Fingerprint:

Iris fingerprint technology is used to verify the identity of employees in an efficient and secure manner. Employees use the device to confirm their arrival and departure times by closely scanning each individual's unique eye patterns. The device accurately records this biometric data, including date and time, in a secure database. This pioneering device enhances the accuracy of attendance tracking, contributing to improving the overall security of the system.

3. User and System Requirements

Task	Completed By	Reviewed By	Approved By
UR: 3.1	Tala Abahra	Lama Naser	Lama Naser
UR: 3.2	Tala Abahra	Maha Mali	Dana Ismail
UR: 3.3	Maha Mali	Dana Ismail	Lama Naser
UR: 3.4	Maha Mali	Lama Naser	Tala Abahra
UR: 3.5	Lama Naser	Tala Abahrs	Maha Mali
UR: 3.6	Lama Naser	Dana Ismail	Dana Ismail
UR: 3.7	Dana Ismail	Tala Abhra	Maha Mali
UR: 3.8	Dana Ismail	Maha Mali	Tala Abhra

Note: when we describe the user and system requirements, we use the template which is provide from the instructor, so when we describe the system requirements, we include the functional requirements. Then we put sperate section for non-functional requirements.

(UR 3.1) Attendance Recording: The system shall be accurately recording the attendance and departure of employees using iris fingerprint with the exact date and time within the company's designated databases. It independently and automatically verifies attendance, whether there are tardiest or absenteeism, and the system allows HR to process requests for correction of an error in a recording.

> **(SR 3.1.1):** Using iridescent fingerprint techniques, each employee's unique should recorded its iris when employed and securely stored in the organization's own database, serving as a key to identifying the subsequent employee in the fingerprint device.

> **(SR 3.1.2):** The iris fingerprints are placed near the main door of the organization, and employees shall be required to verify their presence by scanning the iris through the device, and this process is stored at the time and date inside the staff attendance records in the database.

> **(SR 3.1.3):** In case of loss of attendance entry or check-out, employees should submit correction requests through their profile.

> **(SR 3.1.4):** HR reviews and processes audit requests immediately, by viewing the organization's cameras. Resource management has the capacity to modify and add attendance records while maintaining accuracy.

> **(SR 3.1.5):** The system should operate independently to verify attendance times, which is done in accordance with the Palestinian Labor Law. So, the system reviews all logins every day at 9 am, it checks whether there is a vacation or not.

(SR 3.1.6): employee, manager and HR are informed of the person's absence from work while he has not previously vacation, by sending them notifications.

(SR 3.1.7): The system operates in departure monitoring. If an employee leaves before the official time, it verifies that they haven't requested early departure and also sends a notification indicating this to employee, manager and HR.

(SR 3.1.8): In the event that an employee is absent from work due to remote work, it is the responsibility of the Human Resources role to adjust the record for the employee after verifying the working hours.

UR (3.2) Show Daily Attendance: Employees shall conveniently access their attendance records through the application's user-friendly interface, providing a comprehensive overview of their work progress. Additionally, it facilitates managers in monitoring and tracking daily attendance records, including dates for vacations and remote work.

(SR 3.2.1): Shall users be afforded the capability to conveniently access their daily attendance records through their personal files via intuitive and user-friendly interfaces within the Daily Attendance section.

(SR 3.2.2): The daily attendance feature comprises multiple options, including display daily records, a search section, vacation and work remotely section, monthly reports, and a graphical representations section.

(SR 3.2.3): By selecting the option to display daily records, employees shall have the ability to review all their working days within the company, sorted by day and date from the commencement of their employment. This provides employees with a comprehensive overview of their work and leave history.

(SR 3.2.4): A search field by date should be allowing users to pinpoint specific dates within their records or a designated date range. This feature enhances the ease of retrieving specific information from the attendance history.

(SR 3.2.5): in delay section the system will present to employees the days and times of delaying, accompanied by the calculation of the number of delayed hours.

(SR 3.2.6): A vacation and work remotely section shall display the days related to vacations and remote work, including reasons, and approvals, enhancing visibility and tracking for the employees.

(SR 3.2.7): Both managers and the human resources department shall have access to all employees' daily records. They have the option to choose a specific day or select a particular employee to view or modify records as needed. This flexibility ensures comprehensive oversight and management capabilities.

(SR 3.2.8): A graphical representations section, such as graphs or charts, can be integrated to offer employees a graphical representation of their attendance patterns over time. This feature enhances data visualization, providing employees with a clear understanding of their attendance trends.

(SR 3.2.9): For managers and HR, the system should include a section to generate monthly reports for each employee, detailing tardiness, leaves, and remote work, accompanied by graphical representations. The system should allow printing and saving in PDF for evaluation and tracking.

(UR 3.3) Work Remotely: The employee shall be able to send a remote work request from the system human resource application or the website for human resource system to work in home or another place instead of work in the office. Before the employee apply the remote work request the employee should log in the human recourse application system or human resource website.

(SR 3.3.1): The employee must enter this information when he wants to apply the request which is: duration for remote work (from to), start and end time of work, location (where the employee will work), any comments or notes this is optional.

(SR 3.3.2): The employee must enter his location so that the human resources administrator can follow up on the employee's work and that he is working

(SR 3.3.3): When the employee sends the request, he will wait the HR to send request status (details in 3.3.4)

(SR 3.3.4): Remote work Request status can be one of the following: acceptable, reject or keep it in the waiting list.

(SR 3.3.5): An employee who wants to work remotely must activate a special system for the company (Remote work tracking).in which he works on his computer device so that the company can know what the employee is doing Such as what programs he uses while working, how long he was working on the device, and the times he was not working on the device.

(SR 3.3.6): The employee who wants to work remotely must send the tasks (works that have been completed by the employee) to the human resources employee before the end of the work day.

(SR 3.3.7): The employee can take a break while working remotely, the duration of the break is set by the employee through the system(application system or website) and this is agreed upon according to the policy of the company in which he works.

(UR 3.4) Mange Request: the HR employee shall be able to manage the requests (leave, vacation, remote work, resignation requests, urgent requests) which is provided by employees.

(SR 3.4.1): The Human Resources employee receives a notification that there is a request that needs to be processed

(SR 3.4.2): When the HR employee opens the human resources management application or website, he goes to the requests section (which is divided into five sections details in 3.4.3).

(SR 3.4.3): The request section continues (leave request section, vacation request section, remote work section, resignation request section, urgent requests)

(SR 3.4.4): If the request received by the human resources employee is a request to leave, the HR employee can see the information of the employee who submitted this request, which is the employee's name, employee number, employee's phone number, email, date of submitting the request, time to leave (from to) and type of leave (work leave, sick leave, personal leave).

(SR 3.4.5): In case the HR employee receives a Vacation request from an employee, he can see this information of the employee who submitted this request, which is the employee's name, employee number, employee's phone number, email, date of submitting the request, and type of vacation (work vacation, sick vacation, annual vacation).

(SR 3.4.6): The Human Resources employee must verify the leave and vacation balance for employee who submitted a request.

(SR 3.4.7): If the balance of vacations and leaves of the employee who submitted the request does not exceed the permissible limit, and the reason for submitting the request was convincing according to the Palestinian Civil Service Law and the Palestinian Labor Law, then the human resources employee will make an initial approval and then send the request to the manager to give the final decision.

(SR 3.4.8): In the case that the employee exceeds the balance of leave or vacation allowed according to the Palestinian Civil Service Law and the Palestinian Labor Law, the decision is transferred to the manager

(SR 3.4.9): The request for remote work is processed by the HR employee via seeing this information which is (employee's name, employee number, employee's phone number, email, date of submitting the request, location where the employee will work) and the period which the employee will work remotely.

(SR 3.4.10): In the urgent requests these requests are processed by HR employee in an urgent manner because they are urgent cases such as deaths and urgent illnesses

(SR 3.4.11): The human resources employee must send the request status to the employee who submitted the request, and the request status may be one of the following (acceptable, reject or keep it in the waiting list)

(SR 3.4.12): the employee receives the result (request status) via the human resources application or the human resources website via a notification.

(UR 3.5) Request A Vacation: The system shall allow any employee to request a vacation.

> **(SR 3.5.1)**: The employee shall be able to request a vacation by providing the system with vacation's start date, vacation's end date and the type of the vacation (sick vacation, annual vacation, work vacation, motherhood vacation...etc).

> **(SR 3.5.2):** If the employee has already used up all his vacation, then the system should prevent him from the request and then it suggests request an extra vacation (explained in SR 3.5.3).

> **(SR 3.5.3):** The system should allow for an extra vacation request by providing the start and end dates of the vacation, vacation type as well as the reason of requesting an extra vacation.

> **(SR 3.5.4):** The system shall check if the provided start and date of the requested vacation will not exceed the number of days allowed for this employee annually. In this case, the request will not be sent.

> **(SR 3.5.5):** The employee shall be able to modify a vacation request specification (start/end dates or type) that did not approved yet.

(UR 3.6) View Personal Profile: The system shall allow the employee to view his personal profile.

> **(SR 3.6.1)** The employee shall be able to view his personal profile to see his profile picture and personal information (detailed in SR 3.8.2).

> **(SR 3.6.2)** The employee shall be able to see his personal information which they are his full name, employee's ID number, phone number, email, home address and job position.

> **(SR 3.6.3)** The employee shall be able to see his leave and vacation balances as two pie charts, one for the leave balance and the other for vacation balance. These charts give an oversight on consumed leaves and vacations rate.

> **(SR 3.6.4)** In the personal profile, there will be a setting section containing updating profile picture, home address and phone number.

> **(SR 3.6.5)** the setting section also contains the ability to activate or stop activation of the dark mode. Moreover, it contains the ability to exchange between languages (Arabic and English).

> **(SR 3.6.6)** In addition to that, the employee can update his account password by providing the old one and the new one

(UR 3.7) Login to the System: The system should allow all employees to login in a smooth and secure manner.

(SR 3.7.1): All users shall log in with their own number (It is given by the system automatically and consists of 6 digits) and password, a minimum of 8 char that includes a combination of upper- and lower-case letters, numbers, and symbols.

(SR 3.7.2): The system is required to authenticate employees based on the data it has entered (detail 3.7.1).

(SR 3.7.3): The worker expects a secure login process with the restriction of not being able to access unauthorized information Such as viewing other employees' data, only employees can view their personal information, and anything else is considered unauthorized, with the exception of the manager and HR.

(SR 3.7.4): If the password is entered incorrectly 3 times in a row, he must wait a few minutes to try again just once. If the process fails, the account will be closed and the problem will be referred to specialists such as the manger.

(SR 3.7.5): In the event that the password is not remembered, the system shall enable the forget-the-password service, and verify the employee's identity by calling employee and giving him the code and sending the code to throw company's email, and employee must enter them within a short time, not exceeding a minute.

(SR 3.7.6): If the code does not arrive, the system allows a resend request only once.

(SR 3.7.7): An employee using an iris fingerprint or a special card must have seamless access in order for his entry process to be completed.

(SR 3.7.8): Employee will be required to change their passwords every 90 days; this is to ensure protection and reduce hacking attempts.

(UR 3.8) Maintenance Employee: The system provides the ability to add, delete, modify and archive employees in accordance with the company's needs.

(SR 3.8.1): First, the manager and the HR department must log in as shown in 3.7, so that the maintenance employee can see the options shown in 3.8.2.

(SR 3.8.2): The option to add, delete, modify, and archive is presented to the manager, while HR only offers him the ability to modify data, otherwise it is unauthorized.

(SR 3.8.3): The manager must enter the employee's full name to confirm whether there is an old record of the employee from before within the archive department. In the event of a file, it must be retrieved and his account activated by giving him a new number and a new password. However, if the employee does not have a record, the manager must add the name of the new employee along with his job title and what powers are applicable, such as accessing the employees' personal information.

(SR 3.8.4): After adding the new employee's name as in point 3.8.3 to the manager, click on Upload the employee's CV and thus all the employee's data (employee name, employee number, place of residence, experiences, and certificates) is uploaded into the system.

(SR 3.8.5): After adding the employee, he will be provided with his personal number and allowed to choose the password according to conditions 3.8.1, and accordingly employee can edit his personal page.

(SR 3.8.6): When the manager wants to fire any employee, he just has to search for his full name and click on the delete option, and then a screen appears to confirm the employee's deletion process, mentioning the reason. Then the application will be accepted and transferred to the archiving department.

(SR 3.8.7): If the employee submits a resignation request and after the manager approves it, the employee will be deleted as 3.8.6.

(SR 3.8.8): The system has the option of amending some employee data through HR and then submitting the request to the manager to approve this information, noting that the amendment is limited to the workplace, or amending the balance of vacations and departures. As for the rest of the personal data, he does not have the right.

Note: each member was required to discuss two user and system requirements only. The following user and system requirements are additional.

(UR 3.9) Request a leave: The system shall allow the employee to send a leave request.

> **(SR 3.9.1):** The employee shall be able to send a leave request by providing the leave duration (from a specific hour to a specific hour, or from a specific hour to the end of the work day) and leave type (sick leave, work leave…etc).

> **(SR 3.9.2):** If the employee has already used up all his number of leave hours allowed monthly, then the system will prevent him from the request. After that, the system should suggest an extra leave request to the employee (detailed in SR 3.9.3).

> **(SR 3.9.3):** the system should allow for an extra leave request by providing the leave duration, leave type and the reason of the extra leave.

> **(SR 3.9.4):** The system shall check if the requested leave duration will not exceed the number of hours allowed for the employee. In this case, the request will not be sent.

> **(SR 3.9.5):** The system shall allow the employee to modify a leave request specification (duration or type) which did not approved yet.

(UR 3.10) View personal calendar: The system shall allow the employee to view his calendar.

>**(SR 3.10.1):** The employee shall be able to view his annual calendar that shows the requested vacation, leave or remote work on the specified days.

>**(SR 3.10.2)**: When an employee selects a specific day on the calendar, he shall be able to see the request type on this day along with its status (approved, rejected or waiting).

(UR 3.11) View Organization Social and Updates: The system shall allow the employee to view the social and updates that is sent by the manager or by the HR employee.

>**(SR 3.11.1):** The employee shall be able to view four different sections which they are announcements, attachments, polls and surveys and organization's event calendar.

>**(SR 3.11.2):** The announcements section should include important information that can be send for a specific employee, for a specific department or for all employees.

>**(SR 3.11.3):** The attachments section should include files sent from the manager or from the HR manager to the employees so that they can download it on their devices.

>**(SR 3.11.4):** The polls and surveys section should include polls for a specific topic so that the manager or the HR employee can have an oversight on the employees' opinions.

>**(SR 3.11.5):** The organization's event calendar section should include the annual calendar for the company that shows important events or holydays for the company.

(UR 3.12) Send A Message: The system shall allow the employees, HR employees and the manager to send messages between each other.

(UR 3.13) Evaluate Employee: The system shall allow the manager to evaluate the employees.

(UR 3.14) Request for Resignation: The employee shall be able to send a resignation request.

(UR 3.15) View Reports: The HR employee and the manager shall be able to issue comprehensive reports about leaves, vacations and attendances. Also, the system should provide an option to export those reports using excel program on the system.

4. Non-Functional Requirements

4.1 Maintaining: HR software engineering maintenance capability includes many strategies and practices to ensure that software remains adaptable, cost-effective and manageable over time.

We designed the software with a standard structure and divided it into easily manageable components and modules, making it easier for developers to understand and adjust clean and well-structured code as needed. This allows to update or replace certain parts easier without disabling the entire system. To ensure business preservation, we used version control systems to track changes in code base. This facilitates collaborative development, maintains a history of changes, and allows you to return to previous versions if necessary.

An ad hoc technical support team efficiently resolves technical problems and minimizes disruptions caused by software-related issues. They perform regular updates and maintenance every six months, address security weaknesses, protect sensitive data, fix software errors, and process user feedback. Users are informed through daily notifications about disabling the software for one hour in the evening to address all issues in the software.

The project is designed to ensure scalability, initial software architecture, and the ability to handle increased data and user burdens as the organization expands, ensuring the program can handle an increasing number of staff and human resources data.

4.2 Efficiency and Scalability: HR software systems prioritize efficiency, scalability, and response time to deliver a user-friendly experience. They optimize resource use, reducing delays in tasks like leave requests, employee records management, and payroll. The software is designed to accommodate the growing number of users and data in HR systems, handling over 500 simultaneous users without a significant decrease in performance.

We ensure user satisfaction by ensuring that processes such as access to employee records are completed promptly. The goal is to achieve a response rate of 98% in human resources management systems, so that the task is completed in less than a quarter of a minute at most, providing a fast and efficient user experience, which is crucial to user satisfaction and ensuring that human resources management processes are completed promptly, especially in environments Competitive human resource management, in order to achieve competitive advantage.

4.3 Usability and acceptance: The system must be usable and acceptable to users, and user-friendly design is the cornerstone to ensure employees and customers interact effectively with the HR system. At first, we have a prototype of the imaginary UI system and use a certain category of users and test the system so that we can take an ideal system that makes it easier for users to navigate through the system with clear lists, easy-to-navigate interfaces, quick-to-respond design and user operating notifications, and includes effective search and ranked lists in design elements. It makes users able to learn how to use the system quickly, and they can learn on the app at a speed of no more than an hour at most.

The app allows all the user desires and this enables them to achieve self-sufficiency, reducing their reliance on HR staff for routine queries and transactions. Thus, human resources teams can focus on more strategic initiatives while staff deal efficiently with their human resources needs. Just an easy-to-use system that improves commercial relationships and positive reputation in the market. The system

application and website are responsive to various screen sizes to keep the system's appearance as consistent as possible.

4.4 Security: To make transfers smooth and secure, our system has data security to ensure that all personal and financial information is encrypted by the database's PIN that can only be accessed by logging the employee into his account, So we activated the individual login feature that allows an employee to use the same password to access their account through desktops or phones anywhere and anytime Our system also includes the most important human resources transfers in easy formats that provide instant data as well as relevant information that can be customized according to your organization's needs. In addition, the eye fingerprint is used in the registration process of the system, which cannot be encrypted or imitated either. The system must support access from any device, with authentication required, following security procedures, and ensuring authorized access.

Phase 3
Class Diagram

Class Digram Link: https://drive.google.com/file/d/1mviSkF4WQ-6dmUjMPVd1pG1IW2zFRPHR/view?usp=sharing

Figure 6: Class Digram

Use Case Specification

Attendance Recorded Use Case (Tala Abahra -1201002)

1. Brief Description

The system shall be accurately recording the attendance and departure of employees using iris fingerprint with the exact date and time within the company's designated databases. It independently and automatically verifies attendance, whether there are tardiest or absenteeism, and the system allows HR to process requests for correction of an error in a recording.

The actor for this use case is the Employee.

2. Flow of Events

The use case begins when the employee registers their attendance through the iridescent fingerprint device at the start of their workday.

2.1 Basic flow

1. The employee places their iris near the scanning device for fingerprint verification.
2. The system captures and analyzes the unique iris fingerprint for identification.
3. The system compares the captured iris fingerprint with the stored data in the Iris Fingerprint Database.
4. Upon successful verification, the system displays a green signal on the iris scanning device, indicating the successful operation.
5. The system records the time and date of the employee's arrival in the attendance records.
6. Simultaneously, a notification is sent to the respective manager informing them of the employee's presence.
7. The attendance records are seamlessly integrated into the HR system for payroll and performance evaluation purposes.
8. Employee chooses "Attendance daily" from the HR home page, application, or website.

9. The system displays all of the employee's attendance records, as well as the date and time of each operation he completed through a user-friendly interface on their personal page.

10. After Time work, the system operates to verify the records of all employees.

11. If the employee is present, it ensures there is no delay.

12. If the employee is not present, the system works to ensure they request leave and updates the Data Pace accordingly.

2.2 Alternative Flow

2.2.1 Handling Database Unavailability

1. The employee places their iris near the scanning device for fingerprint verification.
2. The system captures and analyzes the unique iris fingerprint for identification.
3. The system compares the captured iris fingerprint with the stored data in the Iris Fingerprint Database.
4. The system finds that the attendance recording database is inaccessible or experiencing problems.
5. The system generates an alert or notification to administrators or technical support of the database's unavailability.
6. Employees attempting to register attendance receive a notification or message stating that the attendance recording procedure is now unavailable.
7. The system may use a temporary storage method (fallback mechanism) to save attendance records locally on the recording device or in a temporary cache.
8. The system makes periodic attempts to reconnect with the database.
9. Once the database is available or the difficulties have been rectified, the system returns to regular operation.
10. The system reconciles the temporary attendance records with the main database to maintain data integrity.

2.2.2 Manual Attendance Recording

1. The employee realizes they forgot to record attendance using the iris fingerprint.
2. The employee has to sign onto the manger application or website.
3. Employee chooses "Attendance daily" from the manger home page, application, or website.
4. The employee submits a manual attendance request "which is a button in Attendance daily.
5. The manual attendance request includes details such as date, time, and reason for the manual request.
6. The HR department receives a notification about the manual attendance request.
7. HR reviews the manual attendance request and verifies its authenticity.
8. If the request is valid, manger approves the manual attendance entry.
9. If the request is not valid or lacks sufficient information, manger rejects the manual attendance entry and may request additional details from the employee.
10. If approved, manger manually enters the attendance record into the system, marking the employee as present for the specified date and time.
11. The system sends a confirmation to the employee about the successful manual attendance entry.
12. The manual attendance entry is recorded in the Attendance Records Database.

3. Special Requirements

An eye scan-based attendance system requires careful preparation for safety and efficiency. Properly controlled infrared light intensity prevents eye damage, with a 99.9% safety rating. High-speed scanning technologies enhance efficacy, with an immediate reaction time of less than a second. A balanced approach to hardware and software upgrades is crucial for optimal performance.

The eye scanning algorithm must maintain a 99.9% accuracy rate for precise identification. Regular updates and a multi-factor authentication system enhance security. The database is secured through encryption and access controls, ensuring 99.9% reliability. Efficient database access and rapid scan data matching, along with backup mechanisms like personal identification codes, minimize system

failure risks. User registration processes are straightforward and secure, with clear guidance on positioning for the eye scanning process.

4. Entry Conditions

Employees must have their iris data recorded, iris scanning equipment must function properly, and the system infrastructure must be accessible.

5. Exit Conditions

Successful attendance recording, stakeholder notifications, and settlement of correction and audit requests to ensure accurate and trustworthy attendance records.
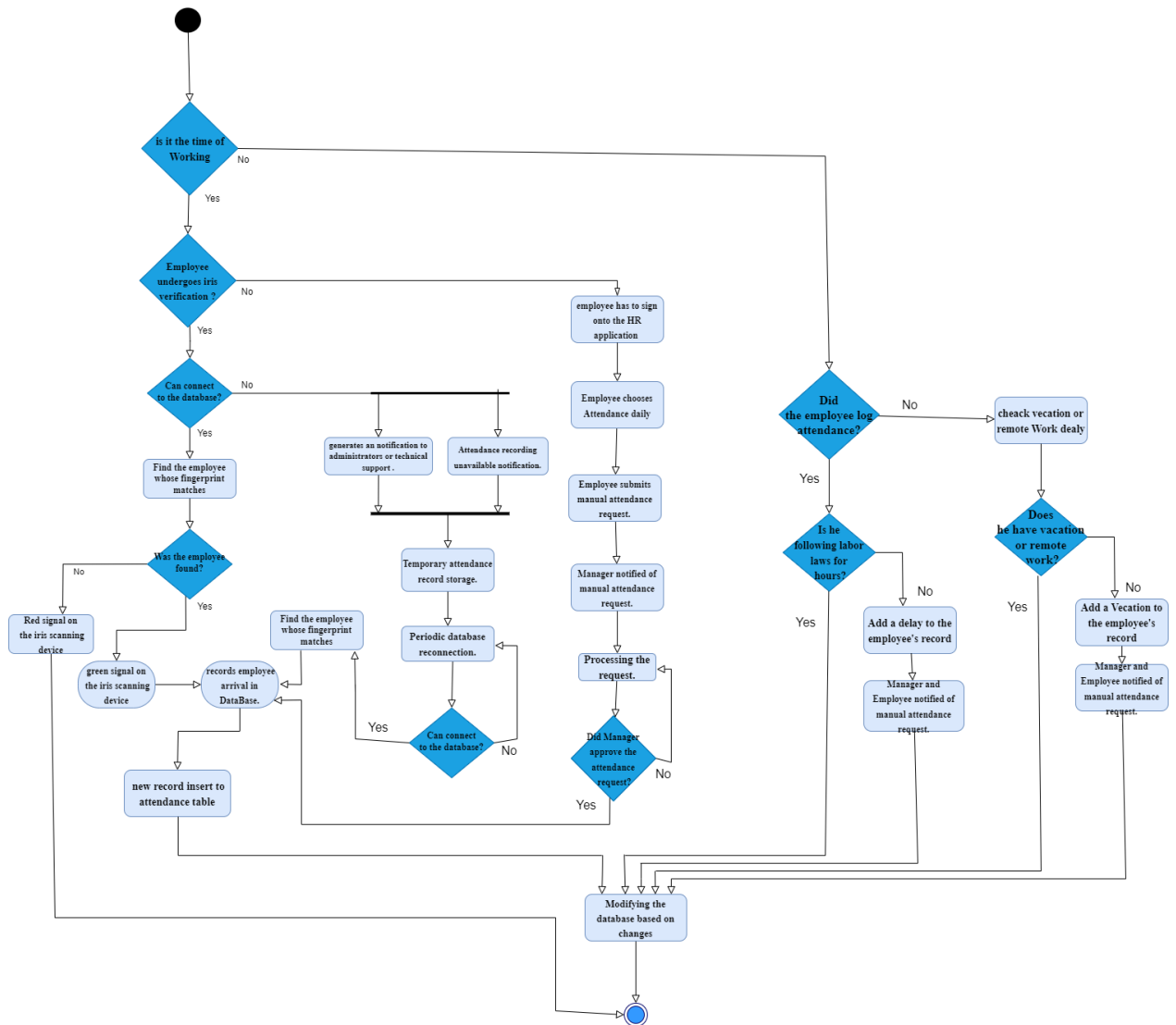
Figure 7:Attendance Record Activity Diagram

Send Remote Work Requests (Maha Mali 1200746)

1. Brief Description

This use case allows the employees including HR employee to send remote work request to work on home or other place instead of the office.

The primary actor for this use case is: Employee include HR employee, and the secondary actor Human Recourse department and manger.

2. Flow of Events

The use case begins when the employee or HR employee select "Send Remote Request" activity from the main form on the HR application or HR website.

2.1 Basic Flow – Send Remote Work Request

1. The employee must log in to the HR application or HR website.
2. The employee selects "Send Remote Work" from main page on the HR application or HR website.
3. The system displays form that contains the information (details in point 5) that the employee must fill it to complete the remote work request.
4. Name and number of employees will appear automatically on the form because the employee log in to the HR application or HR website.
5. The employee shall enter the information on the remote work request form which is: email, phone number, day and date for remote work (duration from to), start and end time of work, location (where the employee will work), comments or document this is optional.
6. After the employee fill the information of remote work request, the employee selects "Save Information".

7. The system will check the validates of data for example if the employee enters phone number in the box of email the system will appear error message to the employee.

8. If the data that enter in the form is correct the system will give the request a unique number and store it on the system

9. The employee clicks on the "Send Request" to send the remote work to HR employee.

10. Steps 1-8 are repeated for each send remote work request process.

11. The HR department receive the remote work request, then check the information in the request, also the employee remote work balance.

12. If the HR department reject the request the employee will notify via email and HR application or website.

13. If the HR department employee approve the request this is the initial approval, then the request will send to the manger for the final approval, after that if the manger approve or reject the request the employee will notify via email and HR application or website.

14. The employee can see the status for the request which is one of these options: approved, reject, keep in the waiting list through selects "View Calendar" from the main page of HR application or HR website.

2.2 Alternative Flow

2.2.1 Update remote work request

1. The employee can modify the remote work request as long as the request is in the waiting state.

2. The employee selects "View Calendar" to see the requests that the employee submitted, which is: Vacation, leave, remote work requests.

3. Then the employee selects "Remote work Request" and select specific request.

4. The system displays the specific remote work request.

5. The employee clicks on "Update Remote Work Request".
6. Then the system will display the form which the employee submits it.
7. The employee can update the information such as: duration of remote work, location.
8. The employee clicks on the "Save Change" to save update information
9. The steps 1-8 will be repeated for each update remote work request.

2.2.2 Delete Remote Work Request

1. Employee can delete the remote work request as long as the request is in the waiting state.
2. The employee selects "View Calendar" to see the requests that the employee submitted, which is: Vacation, leave, remote work requests.
3. Then the employee selects "Remote work Request" and select specific request.
4. The system displays the specific remote work request.
5. The employee selects "Delete Remote Work Request"
6. The system will display small screen contains "Do you want to Delete Remote Work request" and there is to option which is "Cancel" or "Yes"
7. The employee selects "Yes" to delete remote work request.
8. The steps 1-8 will be repeated for each update remote work request.

2.2.3 Employee Exceeded the Limit of Remote Work Requests

1. Each company or ministry has a permissible limit that an employee can work remotely instead of working within the company, and this number of days of remote work varies from company to company according to the policies of each company.

2. If the employee submits a request to work remotely and it exceeds the number of days allowed for remote work, the human resources employee

will send this request to the manager because in this case the final decision is for the manager and the decision is made based on the company's policy.

2.2.4 The Information in the Remote Work Request Incomplete

1. In the event that the employee submitted a remote work application, but the information in the application was not complete, for example, the employee did not enter the location during work or the start time and end time of work.

2. The human resources department send a notification to the employee via email and also through the human resources application or website, to alert the employee of the necessity of entering the information completely.

2.2.5 Send remote work request on an official holiday for the organization

1. If the employee when submitting a remote work request, the employee enters a day and this day is an official holiday, the human resources department will send a notice to the employee and inform him that this day is an official holiday.

3. Special Requirements

1. The system must be quick to respond so that the form to submit remote work appears when the employee wants to submit a request in less than 1 seconds.
2. The interfaces in the system must be smooth and easy to use, so that the training period for the employee to submit a remote work application does not exceed 10 minutes.
3. The system must be 99% percent secure so that the information of the employee who submitted the remote work request is not leaked.

4.   Entry Conditions

4.1 Log In

The employee must log in to the human resources application or website in order to be able to submit a request to work remotely.

5.   Exit Conditions

When the employee submits a request to work remotely, an email and a notification are automatically sent to the human resources department to inform the HR department of the existence of a request to work on.
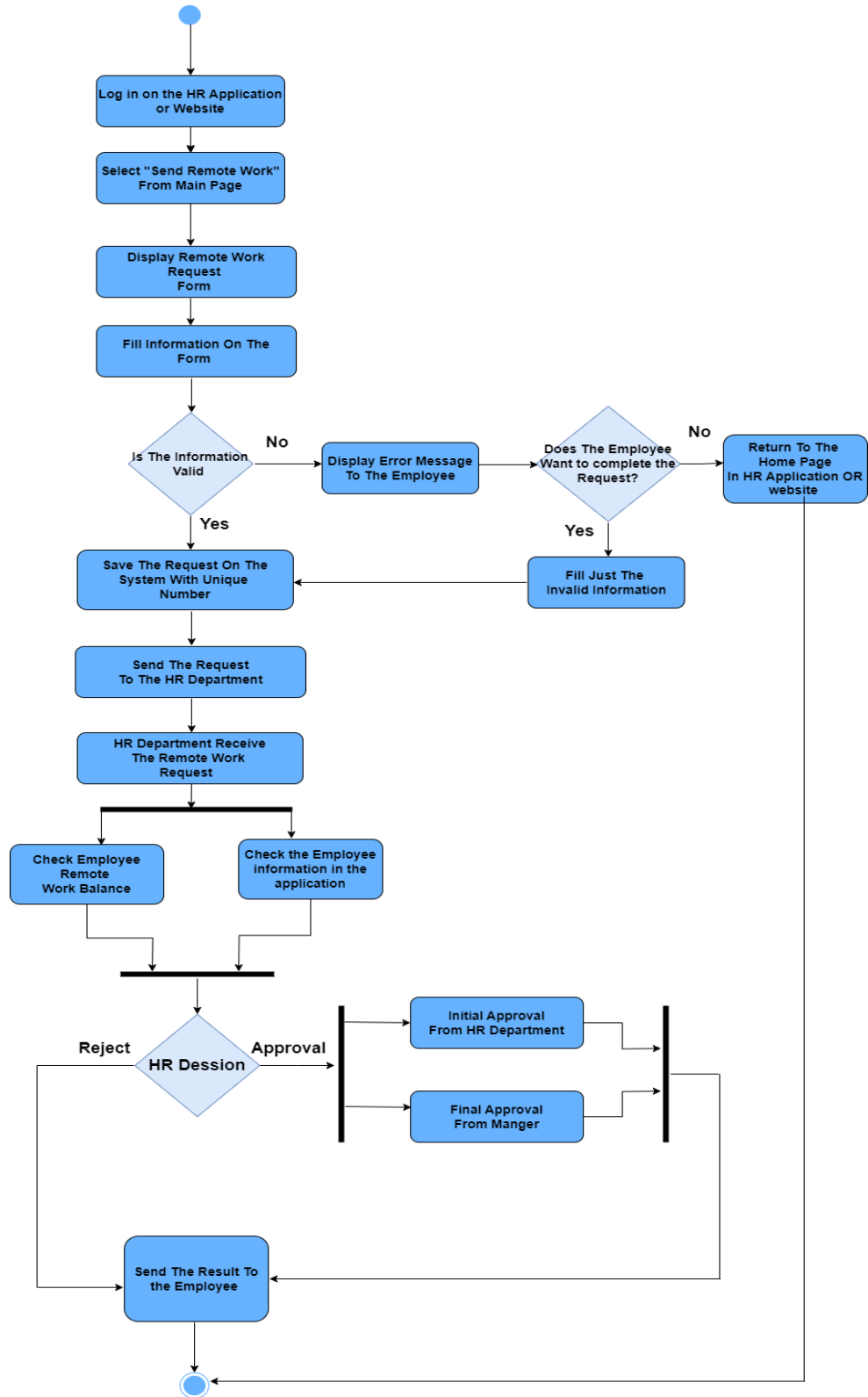
Figure 8:Send Remote Work Request Activity Diagram

Maintain Employee Information Use Case (Lama Nasser-1200190)

1. Brief Description

This use case allows the HR employee and the Manager of the association to maintain employee information in the registration system. This includes adding, modifying, and deleting employees from the system. The actor for this use case is both the HR employee and the Manager of the association.

2. Flow of Events

The use case begins when the HR employee or the manager selects the "maintain employee" activity from the Main Form.

2.1 Basic Flow – Add Employee

1. The HR employee or the manager selects "Add Employee".
2. The system displays a blank employee form.
3. The HR employee or the manager enters the following information for the employee: name, date of birth, social security number, phone numbers, email and address, then selects "save" option.
4. The system validates the data to insure the proper format and searches for an existing employee with the specified social security number. If the data is valid the system creates a new employee and assigns a unique system-generated id number.
5. Steps 2-4 are repeated for each employee added to the system. When the HR employee or the manager is finished adding Employees to the system the use case ends.

2.2 Alternative Flows

2.2.1 Modifying an Employee

1. The HR employee or the manager selects "modify employee".
2. The system displays a blank employee form.
3. The HR employee or the manager types in the employee's id number he/she wishes to modify.
4. The system retrieves the employee's information and displays it on the screen.
5. The HR employee or the manager modifies one or more of the employee information fields: name, date of birth, social security number, phone numbers, email, and address.
6. When changes are complete, the HR employee or the manager selects "save".
7. The system validates data then updates the employee information.
8. Steps 2-7 are repeated for each employee the HR employee or the manager wants to modify. When edits are complete, the use case ends.

2.2.2 Delete an Employee

1. The HR employee or the manager selects "delete employee".
2. The system displays a blank employee form.
3. The HR employee or the manager types in the employee's id number for the student that's being deleted.
4. The system retrieves the employee and displays the employee's information in the form.
5. The HR employee or the manager selects "delete".

6. The system displays a delete verification dialog confirming the deletion.
7. The HR employee or the manager selects "yes".
8. The employee is deleted from the system.
9. Steps 2-8 are repeated for each employee deleted from the system. When the HR employee or the manager is finished deleting employees to the system the use case ends.

2.2.3 Employee already exists

If in the "Add an Employee" sub-flow the system finds an existing student with the same social security number an error message is displayed "Employee Already Exists". The HR employee or the manager can either change the social security number, or cancel the operation at which point the use case ends.

2.2.4 Employee not found

If in the "Modify an Employee" or "Delete an Employee" sub-flows the employee's unique id number is not located, the system displays an error message, "Employee Not Found". The HR employee or the manager can then type in a different id number or cancel the operation at which point the use case ends.

3. Special Requirements

When search for an employee, the system shall retrieve the employee record in no more than 3 seconds.

4. Entry Conditions

4.1 Log In

The HR employee and manger must log in to the human resources application or website in order to be able to militance an employee.
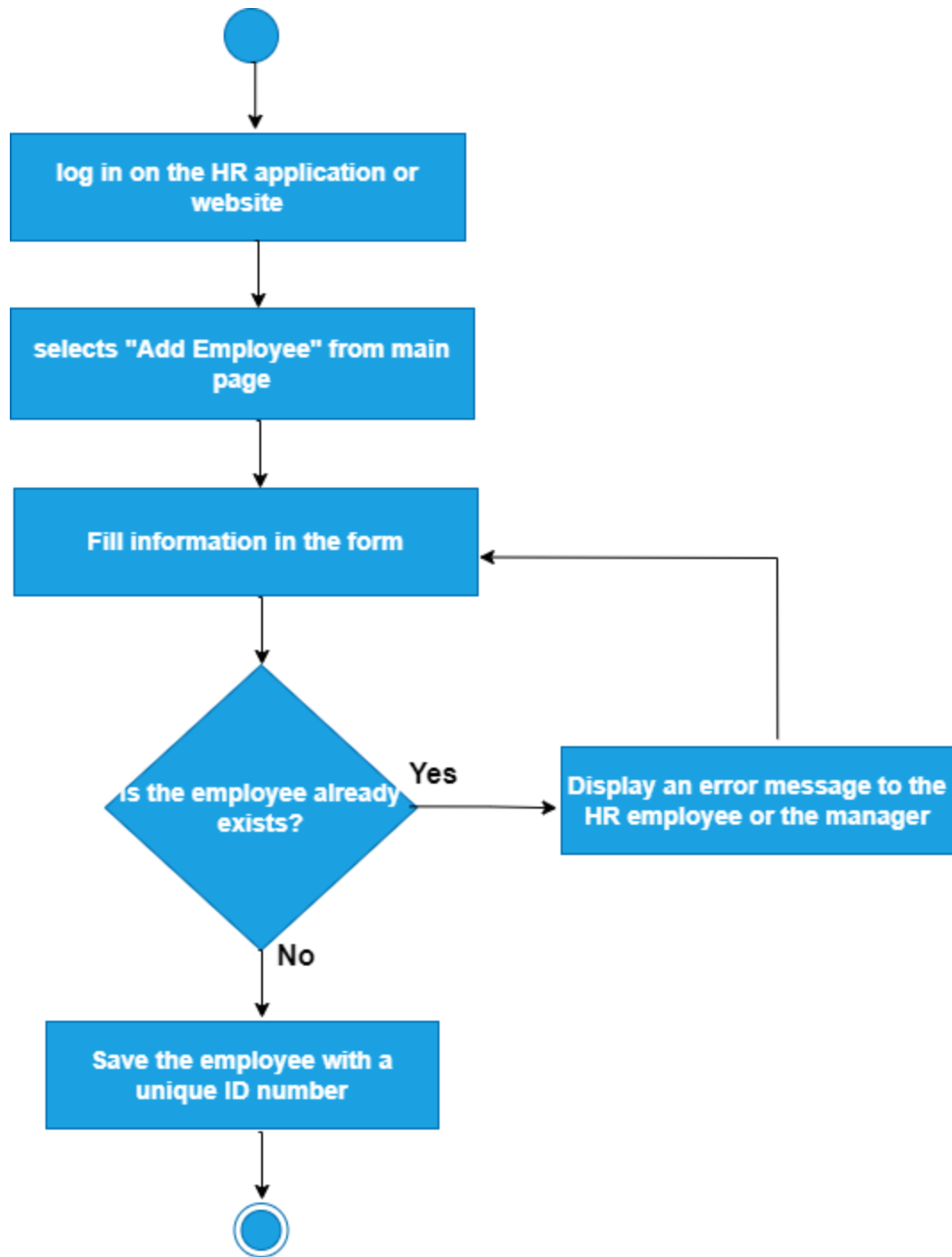
Figure 9:Add Employee Activity Diagram

Login Use Case (Dana Ismail – 1200006)

1. Brief Description

This use case allows the user to log in to the human resources system securely, and allows the employee to access the data he is authorized to view based on his job title in the organization.

The main actor is Employee, while the secondary actor code be HR manager.

2. Flow of Events

The employee must go to the Human Resources System website to initiate the login process.

2.1 Basic Flow- Log in Without Any Problem

1. The employee must go to the login page of the human resources system in order to complete the login procedures.
2. The employee must enter the user number first, then the 6-digit password.
3. The entered data is checked against the stored data.
4. After verifying the data, the employee can use the system and begin his own work within the tasks assigned to him.
5. The ability to log in with the employee's presence via iris fingerprint or card if the employee so desires.
6. Steps 1 to 5 are repeated for each login process.

2.2 Alternative Flows

2.2.1   Incorrect Password

1. If the employee fails to enter the password 3 times, he will have to wait a few minutes before trying again, knowing that this is his last chance to enter. In the meantime, an alert is sent to the employee's owner via an automated call that there is someone who wants to access your account. If another person wants to access it, press one to block him from the last chance (more details at 2). If the employee responds with the number 2, then he will be allowed the last chance.

2. What is meant by blocking is that the system will block the unauthorized person who tries to log in by preventing the address followed from completing the process without closing the account completely.

3. If the last attempt fails, the account will be locked on all devices and the problem will be raised to the Human Resources employee.

2.2.2   Forget Password

1. The employee chooses the Forgot Password option.

2. It is verified that the person who wants to change the password is the account holder by sending an email stating that you forgot your password and have requested to enter a new password and calling the employee to provide him with an identity verification number (4 char).

3. The employee must enter the verification code (4 char) in the appropriate place within a minute to complete the procedures. Otherwise, the process will be stopped from this device and the account will be alerted.

4. If the code does not arrive, see point 2.2.3

5. If the process is successful and the activation code is entered correctly, the employee must enter his iris fingerprint or present the card (QR scan). If both methods fail, the process will be stopped. If the process is successful, the employee will be able to fill in the new password field, provided that it is not less than or more than 6 characters. He is then asked to re-type the password as a form of verification. Upon passing these steps, the system returns him to the main page to re-type the password and user number so that he can then use the system.

2.2.3 Code resend request

If the code does not arrive, the employee is allowed to request resending the code only once.

2.2.4 Password expired

1. If the employee wants to log in on the 90th day, he logs in normally as described in the previous steps. After logging in, a screen appears that prevents him from doing anything else, so the employee must change the password.

2. The password must be 6 characters long. If this condition is violated, a message will appear warning of the failure of the operation and a request to try again.

3. After accepting the password, the employee must retype the password as confirmation.

4. Special Requirements

1. The system must be smooth and secure for the user and not allow access to unauthorized places.
2. The password must be 6 characters as agreed upon.
3. The system must close the account after successive failed attempts and exhausting all provided opportunities.
4. Seamless access must be provided through card or iris fingerprint.
5. The option to forget the password must be coupled with verification of the user's identity, and the service must be available for a period not exceeding 30 seconds.
6. The system must provide the option to re-send the verification code within a period not exceeding 15 seconds.
7. The system must allow the employee to log in 24/7.
8. The account is defined on a maximum of 3 devices and no other device is allowed to use the same account from another place.

5. Entry Conditions

1. The employee's account must be active and have a unique user number and password.
2. Enables the employee to access the email and phone associated with the account to verify identity in the event of any malfunction and avoid account hacking.
3. The account must be identifiable on the device to be used in order to log in.

6. Exit Conditions

1. Send an email confirming the success or failure of the password change process, along with details of the type of device and the location where the process took place.
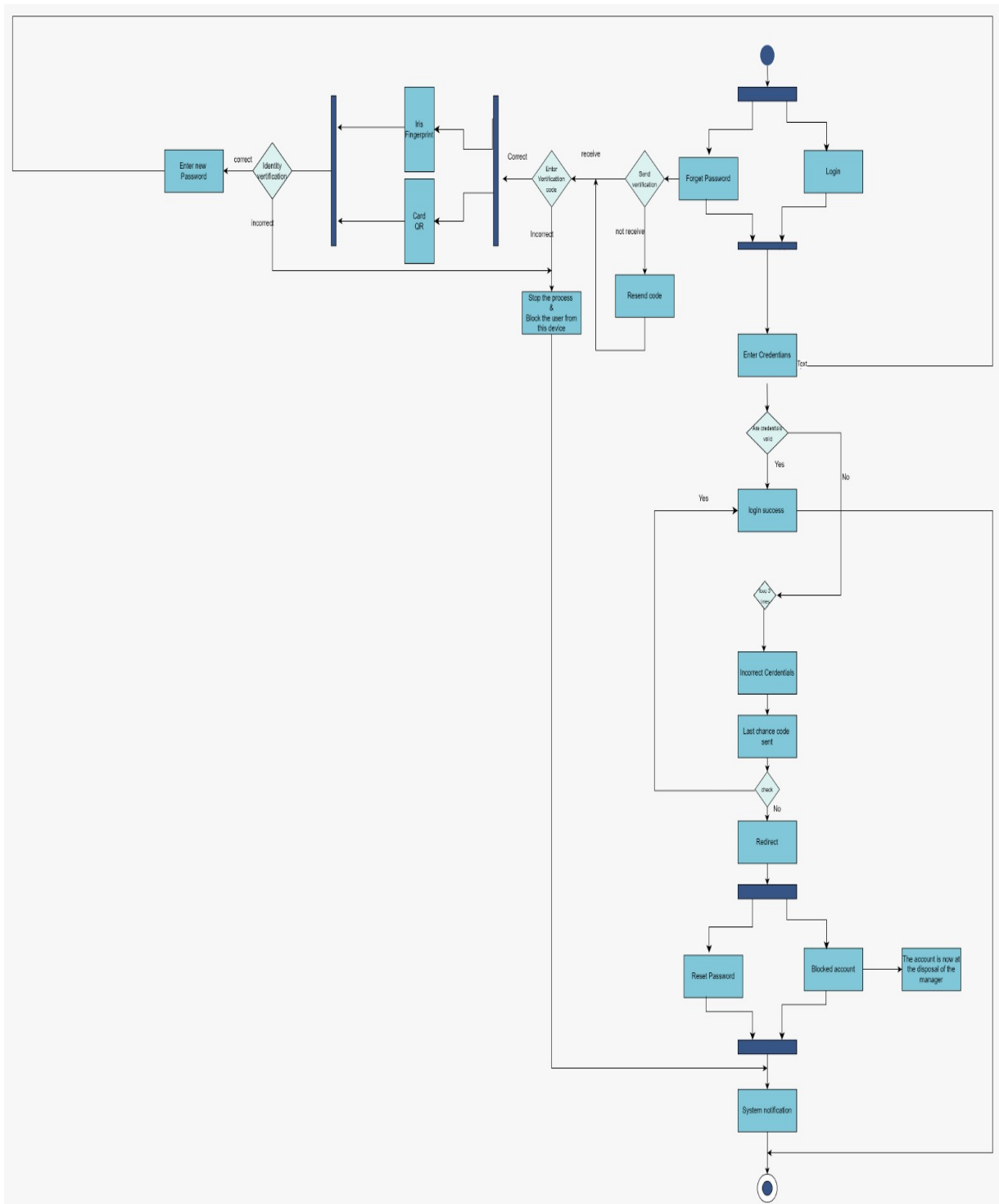2. Sending a warning notification that the account has been closed.

Figure 10:Log In Activity Diagram

Phase 4
Design Goals

Usability: Our system has user friendly interfaces. The users of the system can deal and interact with the system without the need of too much effort or support from the technique team such that each user can learn using the system in no more than one hour.

Security and Privacy: The system relies on sensitive biometric data (iris and fingerprint scan) as well as the QR code is used to identify the user and track attendance, it requires implementing strong data encryption to ensure that information is not exposed to any cyber-attacks. in addition to setting strict data access controls, this goal may influence the deployment plan to include secure communication channels and integrated, encrypted data storage solutions.

Efficiency and Scalability: Our system is characterized by a high response speed, so that when any employee submits a request through the human resources application or website, it does not take a long time. The request is delivered in less than a second. In addition, the system supports 500 users at the same time, and the goal is for the number of users to reach 1000 users at the same time.

Component Diagram
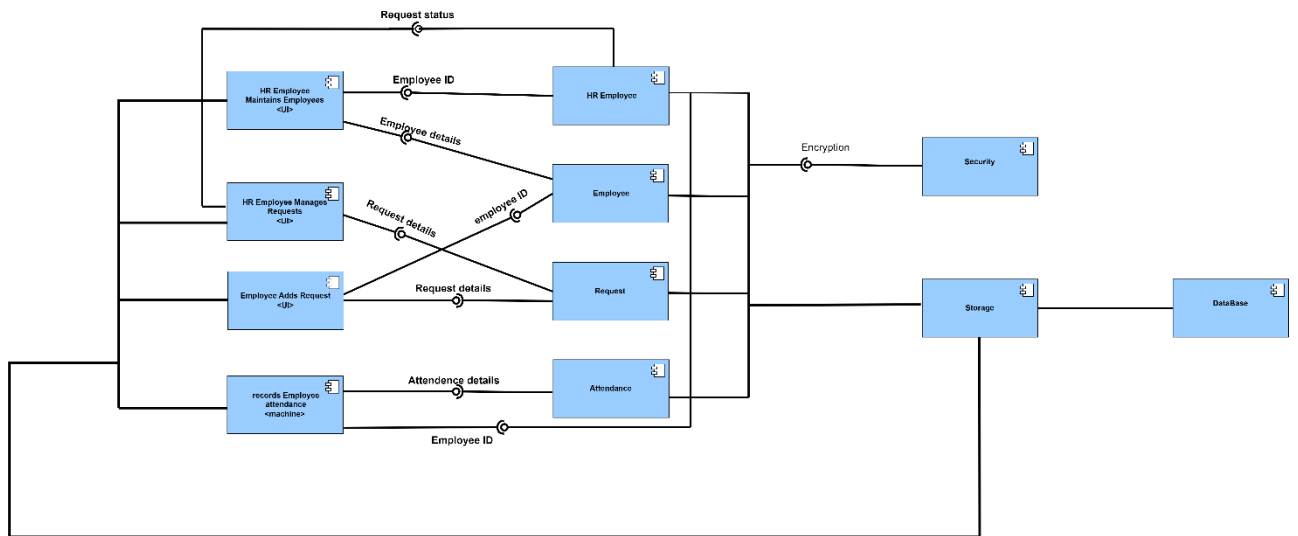
Component Brief Description

Maintain Employee User Interface: This component includes all the user interfaces that deals with managing employees such as add employee, delete employee, modify employee. Also, it contains some user interfaces for specific messages like employee not found message and employee is already exists message.

HR Employee Manages Requests User Interface: This component contains a user interface ,so through this user interface, the human resources employee manages requests related to employees such as requests for leave, departure, and remote work. Also, through this interface, the human resources employee can give initial approval to the request or initial rejection of the request.

Employee Adds Request User Interface: This component contains a user interface when an employee wants to submit a request such as leave, vacation, or remote work. This component contains the classes related to the interfaces for adding requests by employees.

Records Employee attendance User Interface: This system component is a critical machine that forms the core of employee record registration. It utilizes an interface for employee ID authentication through eye biometrics. Simultaneously, it interfaces with the attendance module to log operations with date, time, and employee ID. Essentially, it seamlessly integrates employee record-keeping and attendance monitoring, ensuring accurate and comprehensive data capture.

HR Employee Component: This component includes the HR employee class with all its attributes and methods.

Employee Component: This component includes the employee class with all its attributes and methods

Request Component: This component contains the most important requests submitted by an employee in the institution or company, such as a remote work request, a vacation request, and a leave request, so that there is a high cohesion between these classes within the request component.

Attendance Component: The attendance component is a crucial part of the system for monitoring employee presence within the company, tracking entry and exit operations. For HR managers, it is an essential tool for auditing and monitoring things like tardiness. This part gives HR managers a precise picture of employee attendance by documenting the time and date of each entry and exit. It is a useful tool for controlling attendance and managing time, which boosts productivity and allows for better tracking of employees' whereabouts inside the organization.

Security Component: This element is responsible for ensuring the confidentiality and integrity of data within the human resources management system ,it implements industry standard encryption algorithms to secure data at rest and in transit. For data at rest, the component encrypts sensitive information stored in the database, such as employees' personal details, using strong encryption methods such as AES. For data in transit, it enforces SSL/TLS protocols to create an encrypted link between client and server devices, protecting all data exchanges against eavesdropping and man-in-the-middle attacks.

Storge Component: This component acts as an intermediate data processor that collects and processes information from multiple sources within the HR system , it is also responsible for pre-processing this data, which may include operations such as validation,

conversion and caching, to ensure it is in the correct form and structure before sending it to the database.

Data-Base Component: The database component is the central repository of all HR system data. Stores structured data and ensures its integrity, availability, and security. Interacts with the storage integration component to receive preprocessed data for persistent storage. Will use advanced database management systems such as Server MySQL.

Deployment Diagram
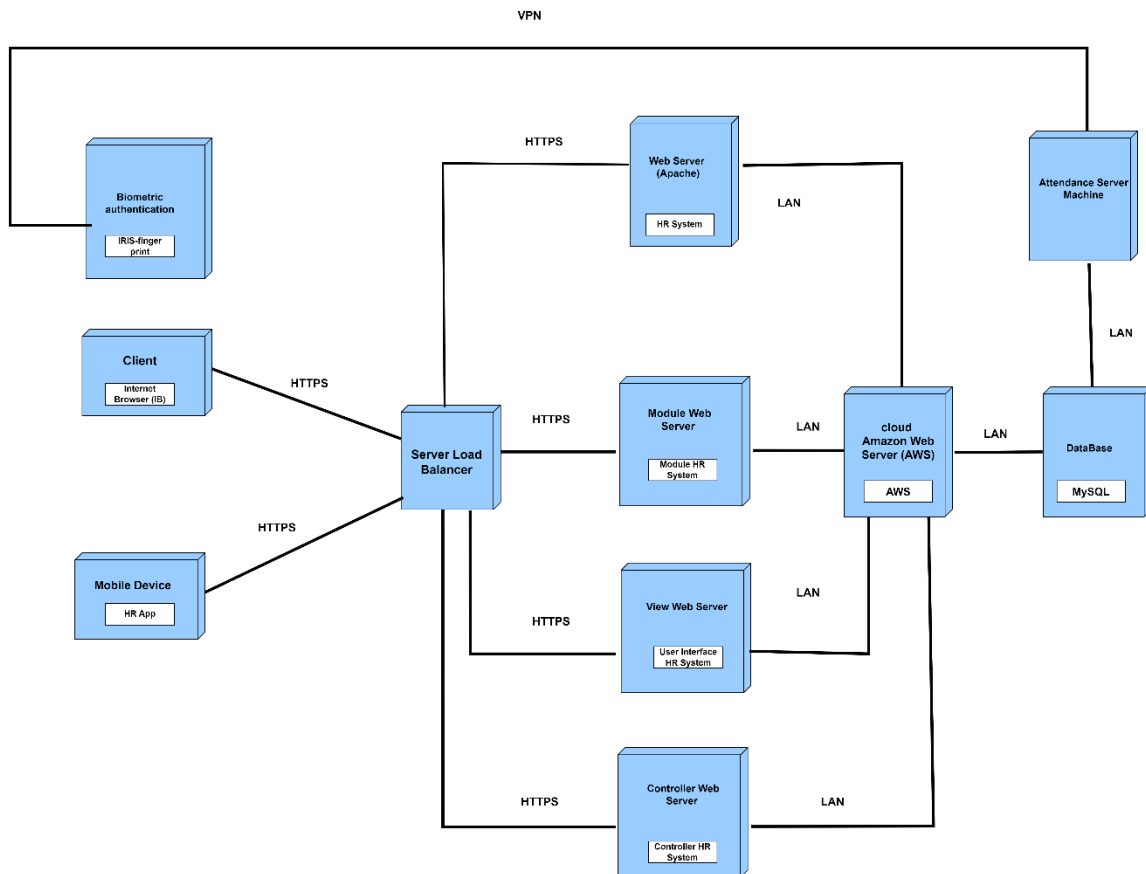
We choose Module View Controller (**MVC**) as design pattern in deployment diagram.

Figure 11:Deployment Diagram