



Software Engineering Project



Development of electronic schedules for ambulance services

2nd Semester/ year : 2022

Dr. Basma Alqadi
From the date of 1-2-2022 to date 9-6-2022

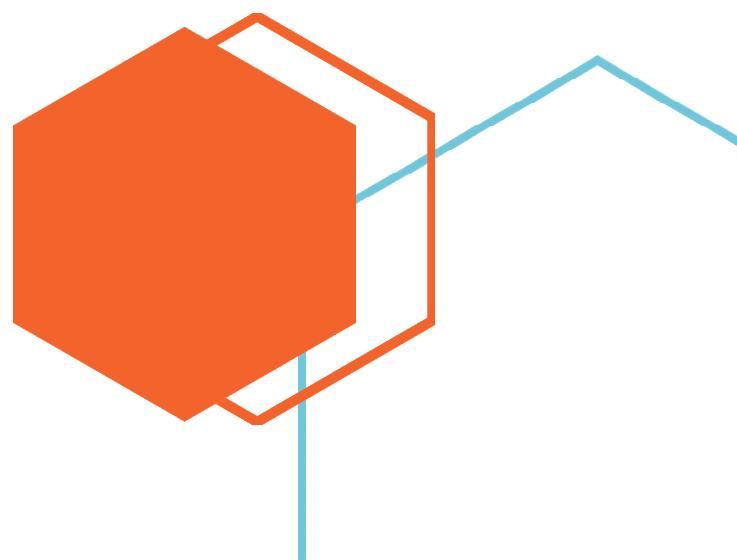




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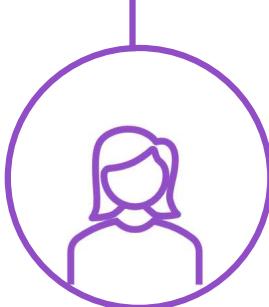


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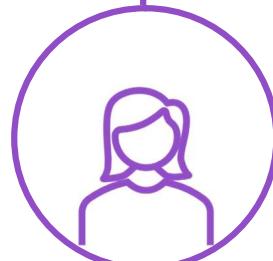
Leader

shmowkh Abdullah Al-Daghailbi



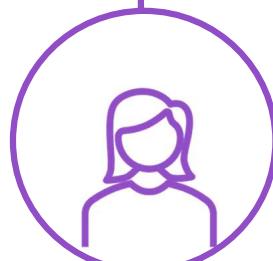
Member

Alhanouf abdullah alatif



Member

Atheer Abdullah Alshareef



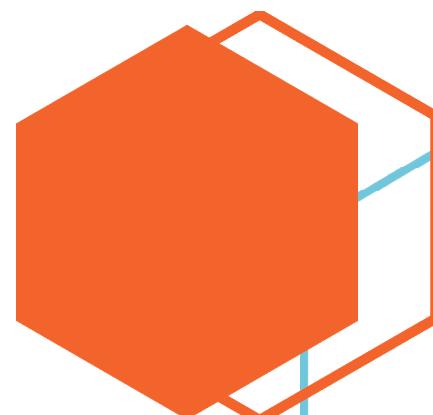
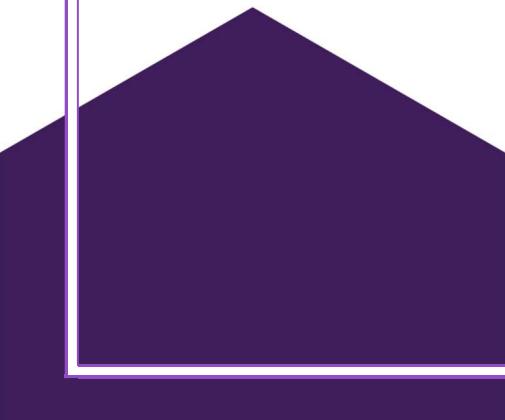
Member

Sarah Abdullah bagazi



Customer

Haya saud alrusais





1. Project Description

1.1 Introduction

1.1.1 Purpose :

Through this project, electronic schedules for operational emergency work in the Saudi Red Crescent Authority will be created and designed with the highest quality and flexibility in a manner that serves the emergency work, where the schedules are easily tracked and followed up, improving the workflow process and assisting in making decisions and taking into account keeping pace with the systems available in the Saudi Red Authority

1.1.2 Scope:

The electronic tables in the Saudi Red Crescent Authority are tables that provide electronic services to improve the management of all services needed by the employees of the Authority, through which it is easy for the employee or the director of the authority and all beneficiaries of these tables to manage and deal with and access to all their services through the design of a website with a distinctive and easy interface the use

1.1.3 Intended Use:

We will use this document to help us during the development of the project as a guideline and we will also use it after the development of the project to help us review what happened during the development timeline, see what we did wrong and fix the wrong things in the future.



1.1.4 Assumptions:

One of the assumptions we made about tables for electronic is that we have to allow users to easily access the site so that they can access it through the search engines available to them, allowing them to access the site even though the search engine is a bit outdated to make it easier for users to access any device It was (laptop, mobile phone, etc.)

Another assumption is that technical support available in the user interface is available throughout the day to provide assistance to users

1.1.5 Intended Technology :

We're going to build a website that is easy to learn and use, so we choose PHP and HTML , we use PHP because it's good with loading speed websites and that's will help for reduce the risks.

The program will be designed using SwiftUI, which is more user-friendly than other UIs.

It contains an Simulator that will help in predicting the program's final shape. we will issue one or more Categories With these formats (PDF, Word,excel) Export reports to different formats such as HTML, Excel, PDF, Word. the graphics and designs will be created using CANVA, which is easy to use



1.2 Objectives of the project:

- Ease of identification and tracking of shifts
- Send group emails and text messages
- Knowing the times and types of vacations to be more accurate
- Available to all service providers on all types of devices and at all times
- Create an accurate schedule that is available to all service providers and can be played on any device
- Training on the program so that it is complete in all respects

1.3 The Challenges that encountered us during the project's development

- ❖ The involvement of Stakeholders very limited , so the communication to obtain some information is difficult
- ❖ Difficulty in building the technological infrastructure due to our lack of experience
- ❖ Understanding the project took time
- ❖ Fear of not having a guarantee of project quality and application



2. Team members

Skills & background

involvement

shmowkh

- great designer
- she has Good knowledge in general Java.

Research/Design review

Alhanouf

- good programmer Developed
- her ideas Often successful.

Requirements Analysis

Haya

- Reliable and Fast learner.
- she is dependable programmer in java

Requirements Gathering /
Stakeholder Interviews

Atheer

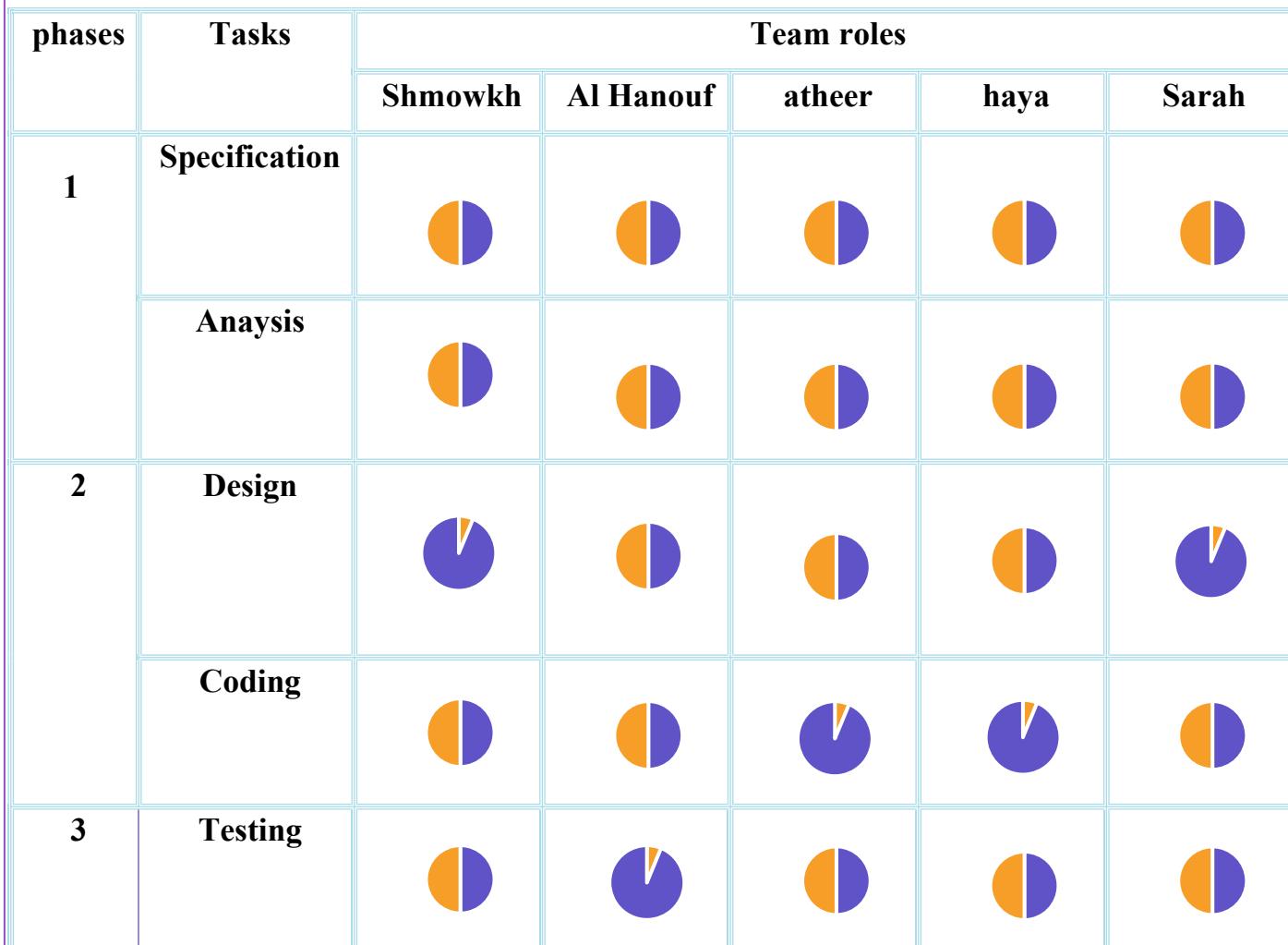
- Passion for developing and
building web pages

Interview with an
IT representative

Sarah

- Passion to learn programming languages

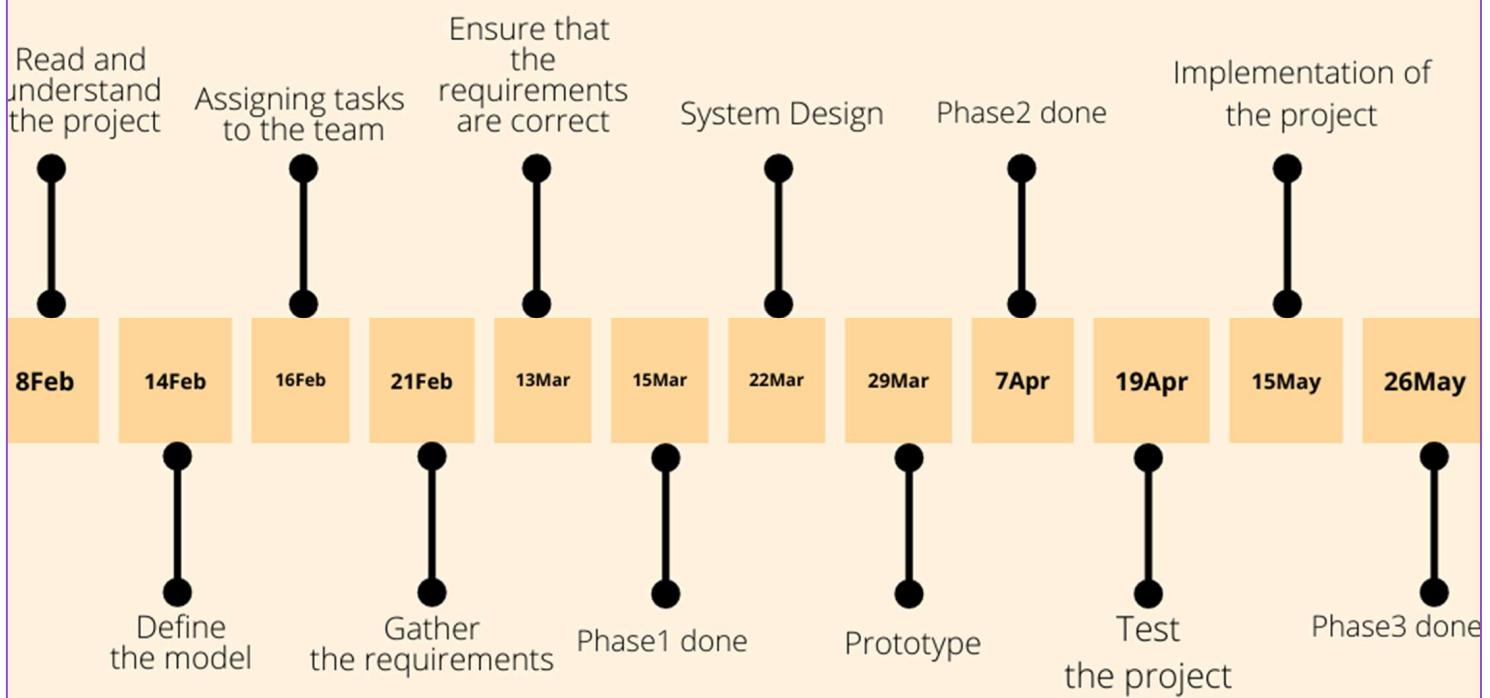
Data collection





3. Project timeline :

Project Timeline:





4. Software Development Lifecycle:

4.1 Why do we choose the waterfall model?

We chose the waterfall model because the client's requirements were clear to us and there are many rules and regulations to follow and there are no additional modifications during the life of the project, we met the client and he assured us of that.

We have also implemented previous projects using the waterfall model And in this model, the stages of the model are processed and completed one by one.

As it is clear from the system, it needs a high degree of security and future risk management, so it is suitable for projects with specific goals and requirements.

It is easy to manage due to the rigidity of the model and each stage has a specific outcome and review process.

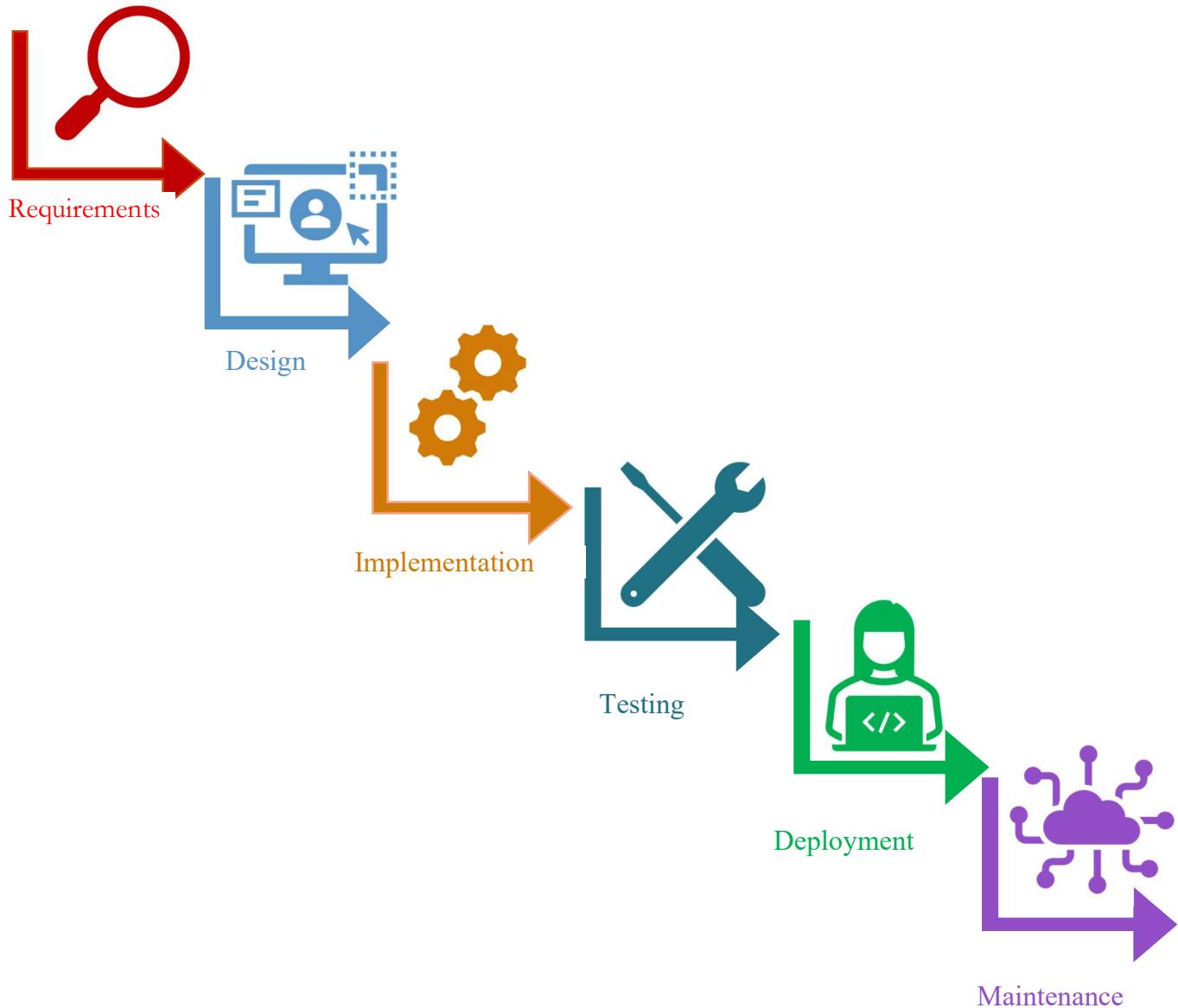
Also preferred in projects where quality is more important compared to schedule and cost

And also from the features of the model that help us in the project:

- ✓ Suitable for small projects where requirements are well defined
- ✓ Work can be divided into small projects where requirements become easy to understand
- ✓ The project relies entirely on the project team with minimal client intervention
- ✓ Elaborate documentation is done at every phase of the software's development cycle



Waterfall Model :





1- Requirement Gathering Stage :

During this phase, detailed requirements of the software system to be developed are gathered from client

2- System Design Stage :

- Plan the programming language, for Example Java, PHP, or database like Oracle, MySQL, etc.
- Or other high-level technical details of the project.

3- Implementation Stage :

After design stage, it is built stage, that is nothing but coding the software.

4-Testing And Integration Stage :

In this phase, you test the software to verify that it is built as per the specifications given by the client

5-Deployment Stage :

Deploy the application in the respective environment

6- Maintenance Stage :

Once your system is ready to use, you may later require change the code as per customer request



5. Project Requirements: BRS and SRS

5.1 Define your requirement process and activities:

Requirements elicitation: 	The process of collecting requirements is one of the basic processes for understanding, so each member of the team studied the brochure provided by the Saudi Red Crescent Authority to determine the requirements. Then we contacted an employee of the Saudi Red Crescent Authority to collect more requirements necessary to complete the project
Requirements analysis: 	The stage of requirements analysis is after collecting the requirements and organizing them in an orderly manner to facilitate their analysis. We gathered as a team and analyzed and understood the requirements and understood everything that falls under them correctly and ways to deal with them



Requirements validation:



The requirements validation process is important to make sure that all the requirements we have collected and analyzed are correct and safe, we collaborate as a team in sorting out the requirements and then analyzing them to make sure they are correct

Requirements management:



After we collect, analyze and validate requirements, the requirements management process will be continuous throughout the project and include communication between the project team and stakeholders.

Of course there may be changes in the system and we as programmers accept these changes or modifications by stakeholders at the requirements stage. This process does not end with the end of the project, but can be renewed with other developers



Dependencies and limitations:

Depend on	Task name
access application	Full depend on internet
Sign up/log in	Matching the recorded information
Project start (SRS-design and implementation -testing and deliver)	Sponsor approval
Notifications event	Allow notifications.
remember the user and password	Allow “remember me” service

6. Main functionality and characteristics

- ✓ Create tables of the highest quality, flexibility, and keep pace with changes and development
- ✓ Designing and developing electronic schedules suitable for emergency operational work in the Saudi Red Crescent Authority
- ✓ Create modern, accurate schedules that are available on all types of devices, all the time
- ✓ Create tables capable of knowing the quality of performance of employees by clarifying them with graphs and improving them
- ✓ Improving the workflow process and assisting in taking decisions and taking into account Attempt to deliver the project on time and achieve all the requirements of the organization
- ✓ Commitment to implement all requirements and to the highest quality



7. Intended users and key usability goals:

1- President of the Saudi Red Crescent Authority:

Responsible for running the business and the functions of the authority and overseeing the system and employee productivity.

2- Saudi Red Crescent employees:

Facilitate the schedules so that they are more accurate and available at any time and on any device to know the shifts and put them in the schedules and find out what suits the employee.

3- executive company:

The executive company can implement the project in a professional manner, as they are people with expertise and have specialized certificates, where the executive management studies the documents (project management plans documents) and approves them to be applied by the executive company.

4- IT (information Technology) center:

Optimizing the database and thus improving productivity and efficiency to solve problems in minutes and save time, make communication easier, increase security and protection.



8. Software Requirement Specification SRS

8.1 Functional requirements :

Functional requirements, according to try to focus on the intended behavior of the system or what the system will do. Accordingly, the tasks that the project will do are listed as follows:

User requirements definition

1. Create schedules and time rules that must meet the objectives of the emergency work.

System requirements specification

- 1.1 The system shall be complete and comprehensive for all requirements of ambulance work.
- 1.2 The system shall be available at all times and throughout the year.
- 1.3 The system shall be based on automatically defined working hours.

User requirements definition

2. The system shall contain an e-mail service for employees through electronic spreadsheets, integrating with the e-mail server and the active directory.

System requirements specification

- 2.1 Each user has a registered e-mail belonging to the organization through which transmission and communication can be carried out and cannot be used anywhere else.
- 2.2 The user shall be able to login to the system through e-mail.
- 2.3 The user shall be able to retrieve his/her password by e-mail.



User requirements definition

3. The system shall be able to locate employees geographically.

System requirements specification

- 3.1 Using GPS technology to locate employees.
- 3.2 The names of the employees shall be recorded in each branch of the organization.
- 3.3 If any employee is transferred to another branch, his name will be erased from the current branch and registered in the new branch.

User requirements definition

4. All service providers and employees shall have accurate and up-to-date schedules readily available to them at any time on any device.

System requirements specification

- 4.1 The system shall support all operating systems.
- 4.2 The ability to log into the system from multiple devices.
- 4.3 Tables shall be easily updateable, so that any change in them should be recorded immediately.
- 4.4 The schedules shall be accurate so that they contain all the details of employees and service providers.
- 4.5 If there is any change in the employee's information, the system shall allow him to do so.



User requirements definition

5. The system shall support the process of sending, accepting and reviewing any procedure electronically.

System requirements specification

5.1 When any process occurs, shall be directed to the person responsible for accepting this process electronically within the system.

User requirements definition

6. The system shall contain a personal page for each employee in which data about the employee, his classification and his position are entered.

System requirements specification

6.1 The system shall enable the user to modify his/ her information , witch includes password , e-mail address and phone number.
6.2 The data entered about the employee shall be invisible except by him.
6.3 When a change occurs in the employee's data, the system shall be able to update and change it.
6.4 The system shall require login before displaying any information about the employee.
6.5 The system shall allow the registration of new employees and the inclusion of their information.
6.6 The user shall be able to choose the system language (Arabic and English).



User requirements definition

7. There shall be a search engine for employees in the program to restore a previous scheduling and return to it at any time.

System requirements specification

7.1 Upon completion of any schedule, it is saved in the database for reference at any time.
7.2 The search should be by scheduling date.
7.3 Arrange the tables in the database from oldest to newest.

User requirements definition

8. The site shall contain drop-down lists in the table to facilitate the selection of the shift and the request for service.

System requirements specification

8.1 The drop-down lists shall be visible at the top and divided into sections (service requests - shift selection - communication - alerts and notifications - personal information).

User requirements definition

9. The system shall provide a printing service.

System requirements specification

9.1 The system shall show the option to print in the drop-down lists.



User requirements definition

10. The system shall contain an icon showing the working hours required of the employee during the month and the hours that were covered as overtime working hours.

System requirements specification

- 10.1 The system shall specify the number of hours required per month according to the user's job.
- 10.2 The system shall be programmed so that it calculates the number of additional hours that have been worked after the end of the user's work every day until the end of the month and show it as an icon.

User requirements definition

11. The system shall enable the user to specify the notifications and alerts received by him and sending short messages.

System requirements specification

- 11.1 Notifications and alerts shall be through the program, e-mail or messages, and these options are visible to the user so that he can choose the appropriate one for him.
- 11.2 When the user is out of work, notifications and alerts shall be disabled for him
- 11.3 If the notification is not necessary, the system should provide the option not to show.
- 11.4 The system shall be able to allow employees to send text content.
- 11.5 The system shall allow the user to choose short messages as a way to receive messages related to the changes.
- 11.6 The number of characters allowed should not exceed 150 characters.
- 11.7 Any content in the electronic schedules, the system shall be able to automatically program it so that it appears in front of the user as notifications or alerts on the hour and day that is determined.
- 11.8 When a change occurs in the electronic table, it is shown to the user with a short message containing the change that occurred when he chose this method.
- 11.9 Short messages should not require a network connection.
- 11.10 The system shall be able to send messages to a number of users or to one user when changes occur(Changes can be related to one user or multiple users).



User requirements definition

12. The system shall allow choosing the format of the file to be exported.

System requirements specification

12.1 The ability to export the schedule as a PDF or XPS document.

12.2 The system shall allow employees to download files.

User requirements definition

13. The system shall record attendance and leave, enable them to choose shifts and adjust

System requirements specification

13.1 Set all available shifts and their times.

13.2 All shifts are recorded with their start and end times.

13.3 When the employee attends, the time he attended and the time he leaves is recorded.

13.4 Divide the number of shifts by the number of employees.

13.5 When requesting a change of shifts, the system shall show the available shifts, the times of which shall be identical to the user's schedule and there is no conflict.

13.6 The system shall calculate annual leaves, so that the user cannot request a leave when the days for which he took leave exceeded 25 days.

13.7 If the user does not log in to the system after the start of his working time by 10 minutes, it will be calculated in the delays with recording the number of minutes of delay.

13.8 If the employee is not logged out of the system after the employee's working hours are over, the system will record the number of overtime hours he worked.

13.9 At the end of each month, the system will be zeroed in terms of the number of absences, overtime and delays after depositing salaries.



8.2 non-functional requirements

Non-functional requirements or system qualities capture required properties of the system, such as performance, security, maintainability, etc. in other words, how well some behavioral or structural aspect of the system should be accomplished.

The non-functional requirements of the system are described as follows:

product requirement :-

❖ Performance :-

- ✓ Automated, Rules-Based Scheduling
- ✓ Improve productivity & performance to expectations
- ✓ The system shall minimize errors

❖ Usability:-

- ✓ User-friendly website
- ✓ Convenient database search
- ✓ The framework will have the choice of changing the language of the site.



❖ **Efficiency:-**

- ✓ The search results must appear within a period of no more than (7) seconds from the submission of the search request .
- ✓ Real-Time Schedule Access
- ✓ Comprehensive Time Clock Exports
- ✓ The system shall maintain data by keeping backups of all updates to the database for user's information.

❖ **Dependability:-**

- ✓ Accurate Call Schedule Visibility
- ✓ Make data-driven decisions to proactively adjust staffing strategy
- ✓ Centralized source of truth for on-call schedules
- ✓ The system must be highly reliable
- ✓ Knowing and improving employee workflow KPIs and improving them to the level of expectations and ease of data pulling and exporting.



❖ Security:-

- ✓ Stop working when accessing more than one device with the same account.
- ✓ There ought to be proper security relating to the accessing of data by unauthorized .
- ✓ The system must place restriction on confidential information so that it can not be printed or exported .

organisational requirement :-

❖ Environmental :-

- ✓ The system design should be based on responsive web design.

❖ Operational :-

- ✓ Full support for the Hijri calendar according to the Umm Al-Qura calendar.
- ✓ Use colors compatible with the main page and tables it helps to make it easier to read and order .
- ✓ Full support for the Gregorian calendar.
- ✓ Allow to print schedules pdf .

External requirement :-

- ✓ The fundamental controls of the National Cyber Security Authority should be stuck to



#	Functional requirements	Description
1	request print	<ol style="list-style-type: none">1) Employee enter the username and password into the system.2) Employee login to the system.3) Employee go to export icon and then select print.4) Employee enter request print details and press submit button5) The system gets employee request a print
2	remove wrong entries from the system	<ol style="list-style-type: none">1) When the employee enter the wrong user name or password, the system removes it2) A login or password error message appears
3	view reports in different operations	<ol style="list-style-type: none">1) Employee login to the system2) Employee go to report icon Then after going to the icon view reports3) The employee views report in different operations in the system



4	Change of personal information	<ol style="list-style-type: none">1) Employee login to the system2) Employee go to the settings and the go to the personal information3) Employee sets the account information icon4) Employee select updates user's information.5) Employee enter user's information and press Submit button6) The system saves users' information
5	Take attendance of employee	<ol style="list-style-type: none">1) Employee login to the system2) The system records the employee attendance directly
6	Hours required of the employee	<ol style="list-style-type: none">1) The employee enters the user name and password into the system.2) The employee goes to the working hours icon3) The employee goes to the monthly working hours4) Show the employee his hours



7	Calculate statistics for employee	<ol style="list-style-type: none">1) Employee login to the system2) Employee go to report icon Then after going to the view state icon3) Select calculate statistics Such as working hours and salary stats.4) Employee enter statistics and press submit button5) The system calculates statistics
8	Switching shifts	<ol style="list-style-type: none">1) The employee logs into the system2) The employee goes to the service request icon3) He chooses to switch shifts4) His request is raised
9	Request to raise leave	<ol style="list-style-type: none">1) The employee logs into the system2) The employee moves to the service request icon3) Take a vacation4) Raise his request



10	Request to raise delays	<ol style="list-style-type: none">1) The employee logs into the system2) The employee goes to the service request icon3) Testing the delays4) His request is raised
11	Notify events	<ol style="list-style-type: none">1) employee login to the system.2) employee goes to the communication icon.3) employee goes to the textual content.4) the system notifies employee of events (posted new messages, employee notification).
12	Change the language	<ol style="list-style-type: none">1) The employee logs into the system2) The employee goes to the settings icon3) Choose to change the language4) Choose the language you want to convert to



13	Authenticate	<ol style="list-style-type: none">1) The login interface appears.2) Employee enter username and password.3) Press sign in button.4) "Remember me" option appears. <p>The system shall authenticate before accessing system.</p>
14	View job status	<ol style="list-style-type: none">1) Employee login to the system.2) Employee goes to the settings.3) Employee selects personal information.4) Employee chooses to view the functional status and press submit button.5) The system displays the job status of the employee.



15	Change of workplace	<ol style="list-style-type: none">1) Employee login to the system.2) Employee goes to a service request.3) Employee select request to change of workplace.4) Employee chooses new workplace.
16	Upload files	<ol style="list-style-type: none">1) Employee login to the system2) Employee go to export icon3) Employee select submit upload files and press submit button.4) Employee upload files5) The system let employee upload files



17	view the notice information	<ol style="list-style-type: none">1) Employee login to the system2) Employee go to communication icon3) Employee select view their notice information and press submit button.
18	display employee detail	<ol style="list-style-type: none">1) Employee login to the system2) Employee go to settings icon3) Employee select view personal information and press submit button4) The system displays employee information



9. Business Requirement Specification BRS:

- 1- Create electronic schedules that serve the Saudi Red Crescent Authority system.
- 2- Create schedules with the latest possible technology for all system beneficiaries.
- 3- The employee should be able to easily enter the system at any time and on any device.
- 4- The schedules contain all the services that facilitate the employee's work.
- 5- The electronic schedules achieve the goal of facilitating the work of the boss
- 6- Electronic schedules should improve communication between employees.
- 7- Establishing flexible schedules
- 8- The transmission, acceptance and review processes are electronically transferred to be managed and implemented.
- 9- Integration of schedules with the systems available in the Saudi Red Crescent Authority.



10- The schedules should be adaptable, available and reliable

11- That the results of the tables are accurate and correct

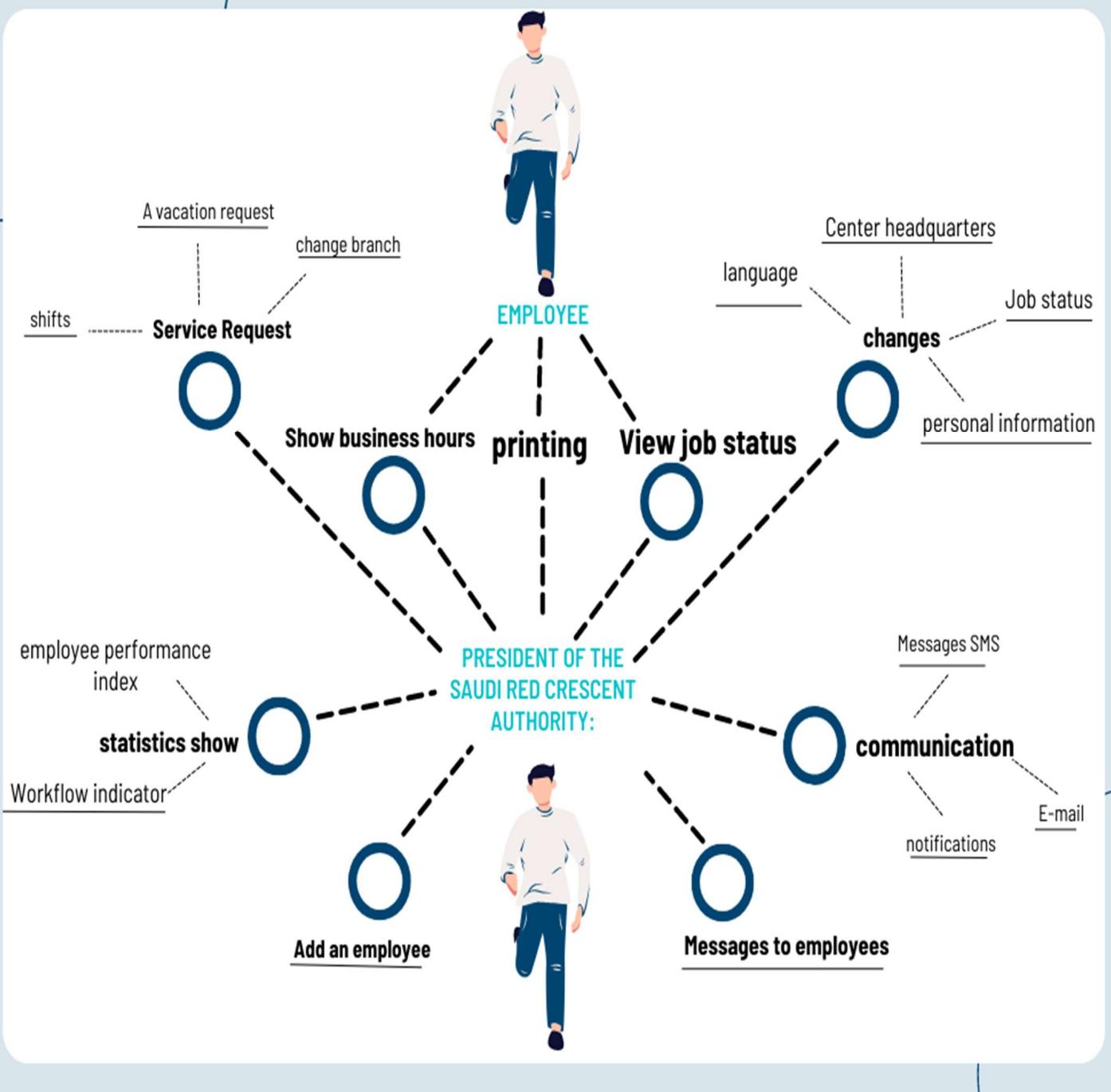
12 - Rapid response to the report of malfunctions

13- Provide assistance to new users

14- Ease of inserting and canceling new communications

15- Availability of submitting requests

16- The system includes showing the details of any accident as soon as it Occurs





10.requirement elicitation and analysis process:



+ requirements discovery :



It was discovered through the project description file of the Saudi Red Crescent, and it was discussed among the team members, then it was arranged and formulated in proportion to the project ,

Also An employee of the Saudi Red Crescent Authority has been selected to answer our questions and clarify the requirements mentioned in page 15



+ Classification and organization of requirements:



Working as a team, we tried to analyze, organize and sequence the requirements and determine the most important needs of the beneficiary from the tables



+ requirement prioritization:



Taking the requirements and services that the Saudi Red Crescent wants in the electronic tables

Creating electronic schedules that serve the Saudi Red Crescent system with the latest technologies to improve productivity by creating a website or program for electronic schedules that the employee and the system administrator can use with ease and flexibility for all services without any difficulty or problems, and that the electronic schedules achieve integration with all systems available in the Red Crescent Authority,

as well as Validate and document important requirements and maintain confidentiality of employee data except for those they are allowed access to.



Requirement specification:



Electronic schedules are created compatible with the emergency work of the Red Crescent, so that they are available and flexible for employees, and it is easy for them to enter the system,

know and access their data, know their times and appointments, and obtain their complete data on a personal page with their names and the employee's location in any branch and his location Using the Global Positioning System (GPS) so that their data is confidential and not visible except to them or if the system administrator needs access and the employee can specify the notifications and alerts he receives through the program, e-mail or text messages, and the system contains e-mail and SMS service and must To have a search engine for employees in the program to restore the schedule, and there is a feature to save any completed schedule in the databases to return to it at any time and search for it by scheduling the date from the oldest to the most recent.

Timesheets should also contain services such as employee attendance and absence appointments, vacations, and their working hours.

The system must also consist of good technology and a system for the employee to access the system in any device and at any time



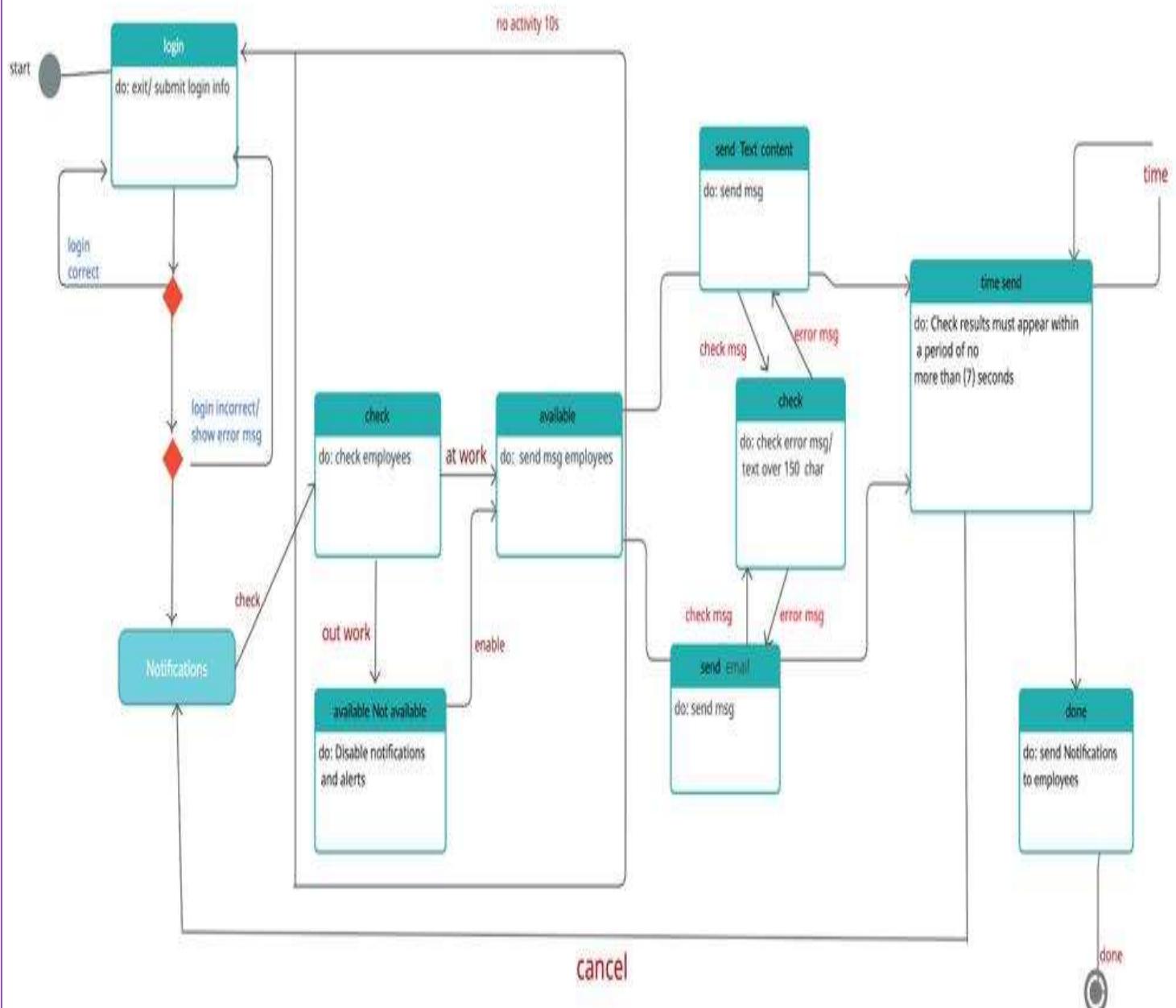
11. Requirements expectation plan and timeline

Tasks	Duration
Requirements Analysis	
Understand the project	3 days
Define Project Scope	1 day
Define the model	2 day
Determine project goals	1 day
Determine the challenges	1 day
Inquiries about questions by communicating with members of the authority	1 day
Requirements Gathering	6 days
Divide the requirements into functional, non-functional, and into SRS and BRS requirements	7 days
design Phase	
Choose the technology to design the prototype / Flow Charts	6 days
Design Review	1 day
design revision(if needed)	4 days
Development Phase	
Development phase 1	7 days
Review	1 days
Development phase 2	7 days
Review	1 days
Testing + Revision Phase	
Testing	9 days
Revisions	4 days

12. Design the system model for requirements

12.1 State diagram:

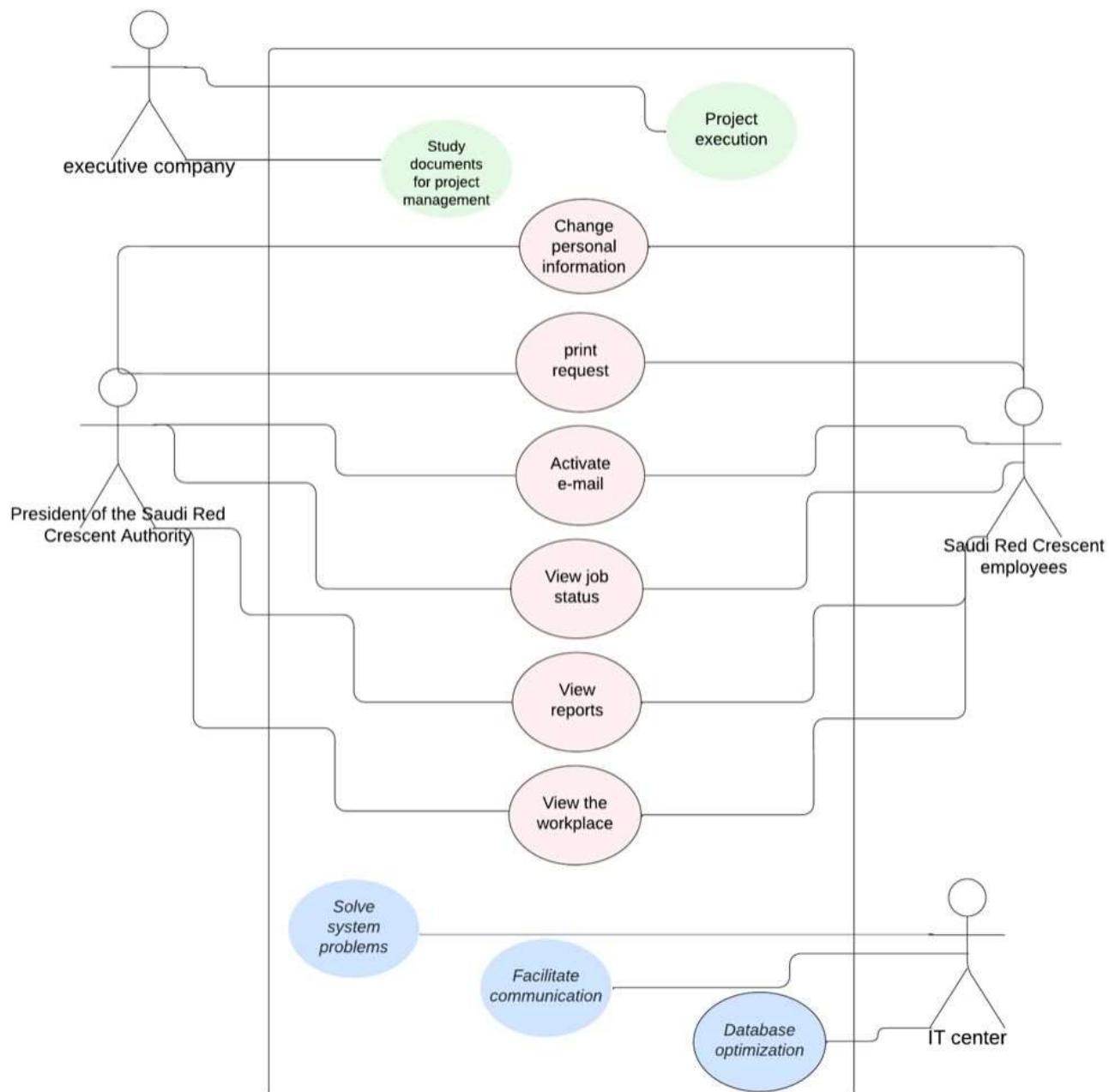
- Choosing ways to deliver notifications to employees





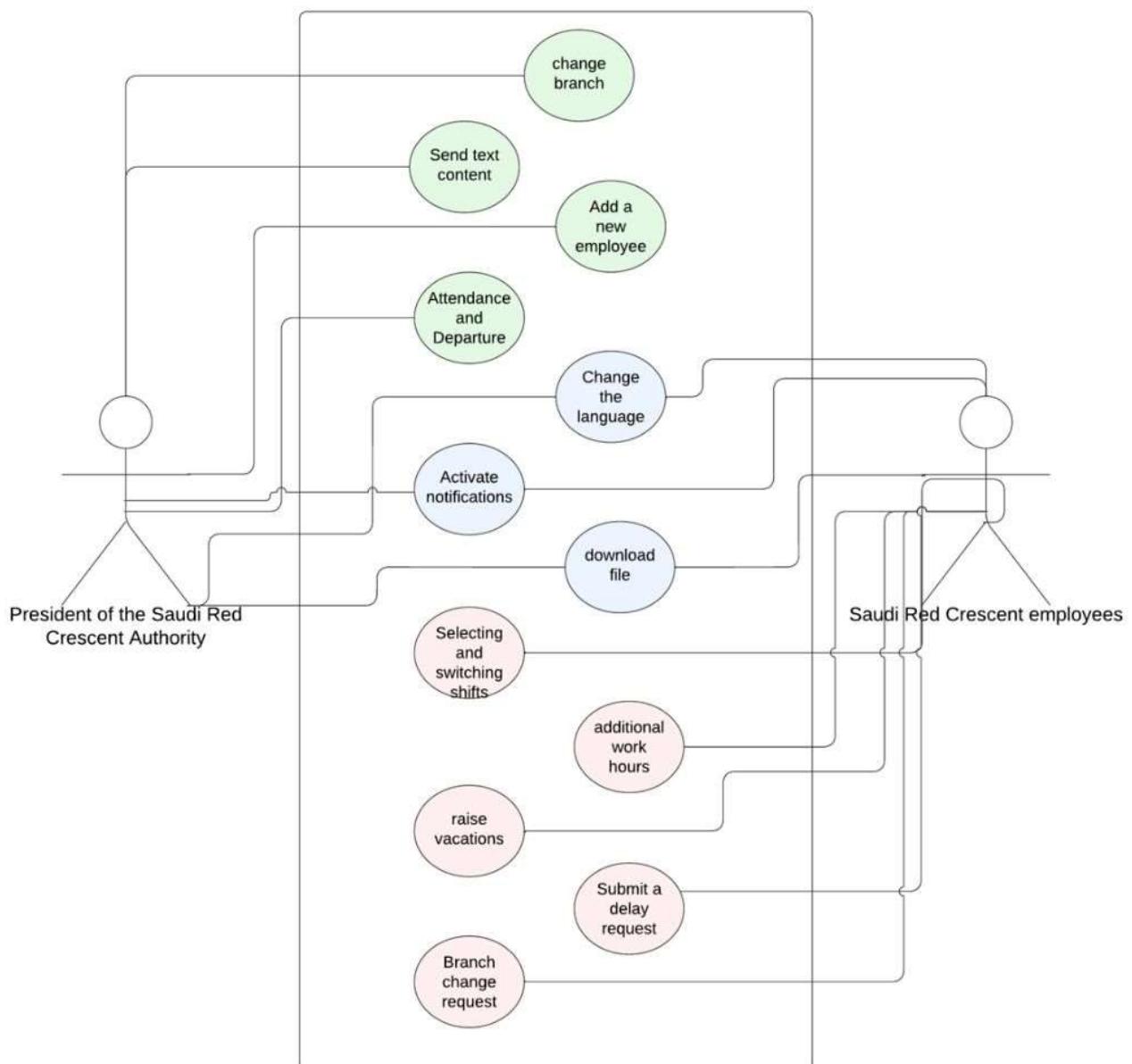
12.2 Use case diagram and tabular of some use case :

- This is the use case for functional requirements between president of the Saudi Red Crescent Authority , Saudi Red Crescent employees ,It center and executive company





- This is the use case for some functional requirements between president of the Saudi Red Crescent Authority and Saudi Red Crescent employees





❖ tabular of some use case :

❖ Branch change request:

Actor:	Saudi Red Crescent employees
Description:	At first, the employee logs in, then goes to a service request and chooses to change the branch, then chooses the appropriate branch for him and waits for the manager to approve his request
Data:	The branch you want to transfer to
Stimulus:	The user command starts when the change icon is clicked
Response:	accept the request or not
Comments:	The manager is the one who accepts or rejects the request



Attendance and Departure of employee:

Actor:	President of the Saudi Red Crescent Authority
Description:	The employee logs into the system, then records his attendance, and at the time of leaving, he records his departure
Data:	Employee attendance and departure
Stimulus:	When you click on the registration and departure icon
Response:	The system is updated upon registration to enter or leave
Comments:	This process is supervised by the manager

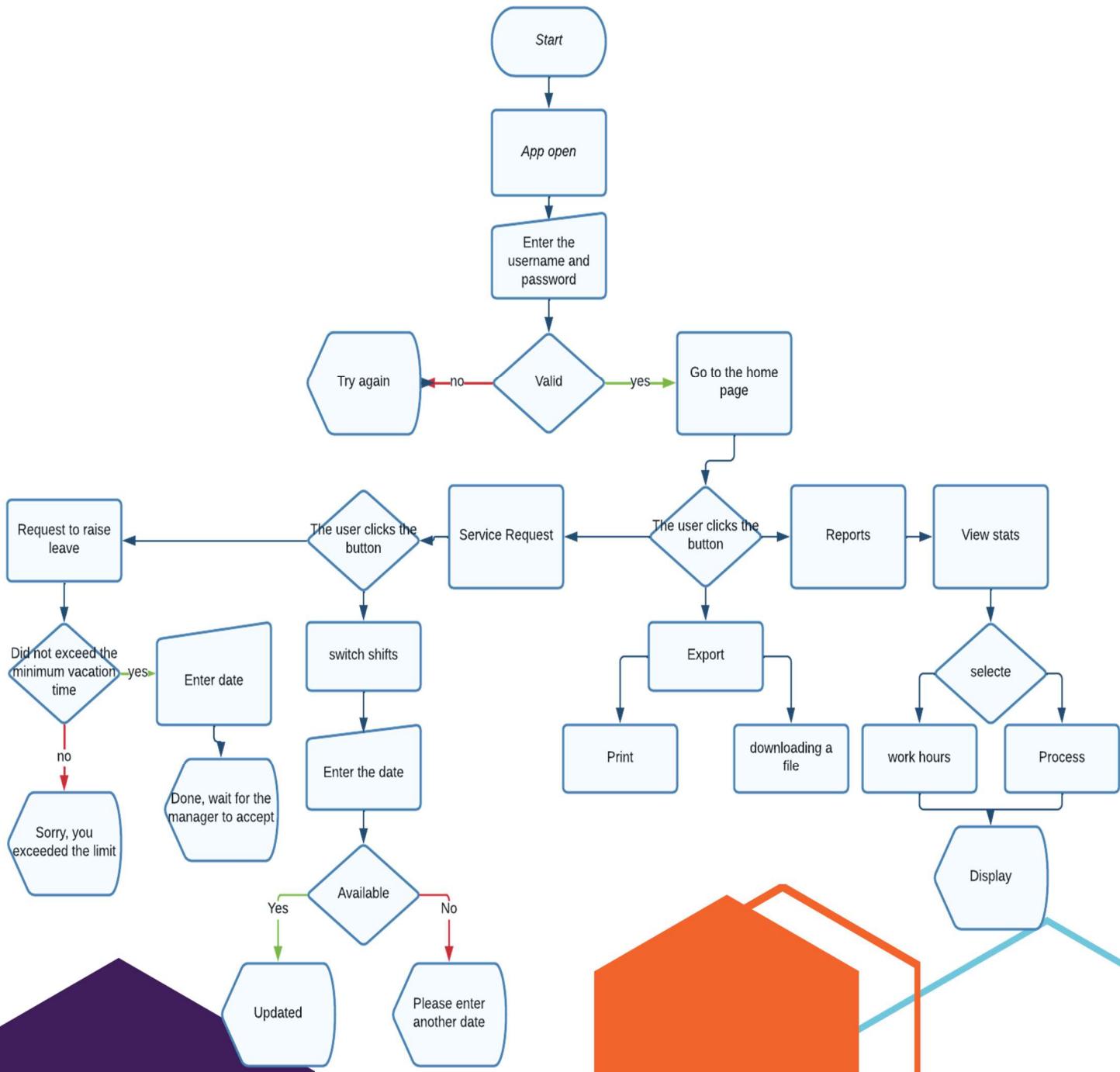
Selecting and switching shifts:

Actor:	Saudi Red Crescent employees
Description:	The employee enters, then goes to a service request, and then chooses the shift or amends it
Data:	The shift time he wants to choose
Stimulus:	Start when you press the shift icon
Response:	Waiting for an update if the selected time is available or not
Comments:	The system schedules times according to whether they are available or not



12.3 Flowchart diagram:

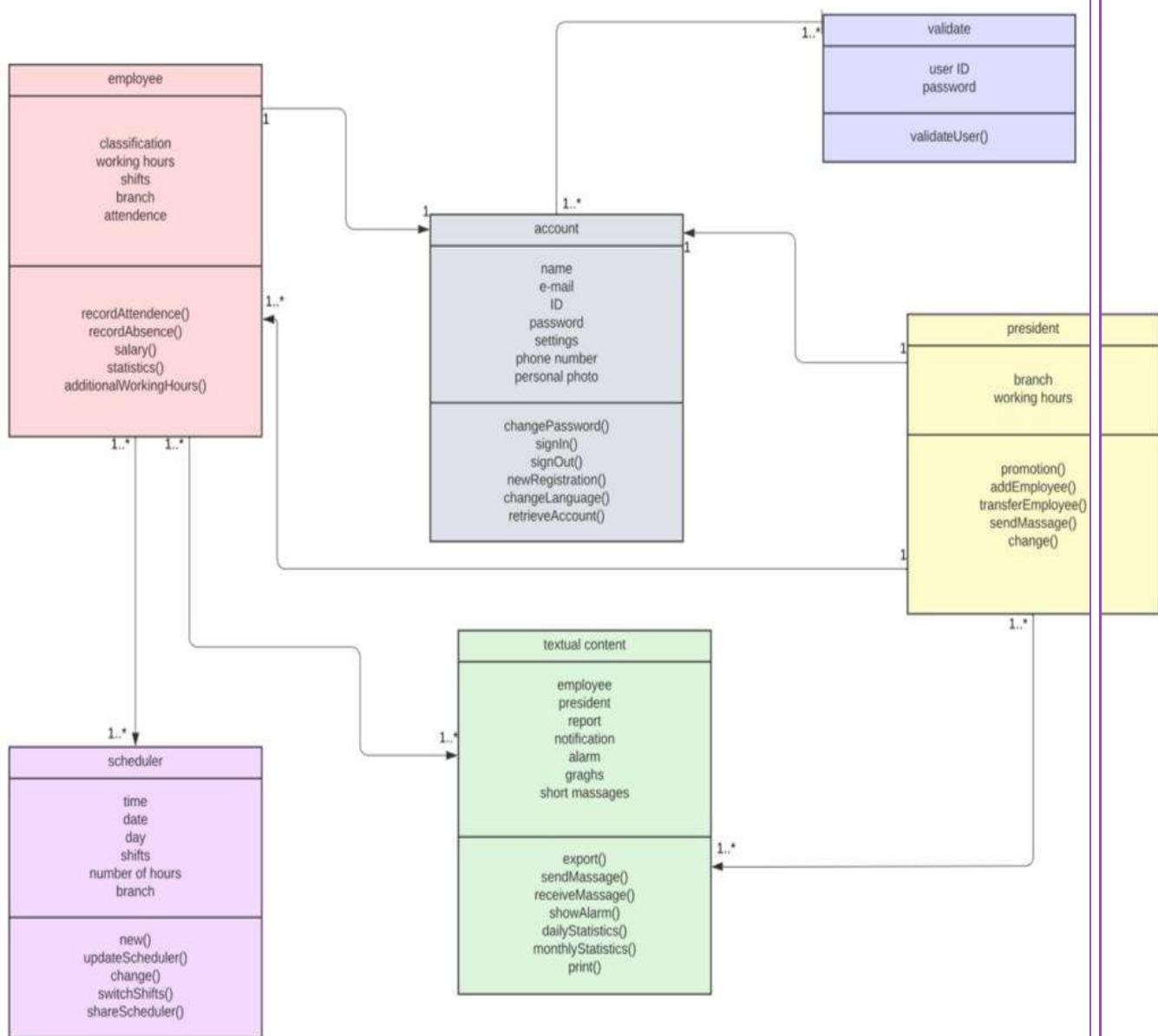
- Describes some of the requirements that the system needs, such as how to request a service, reports and export





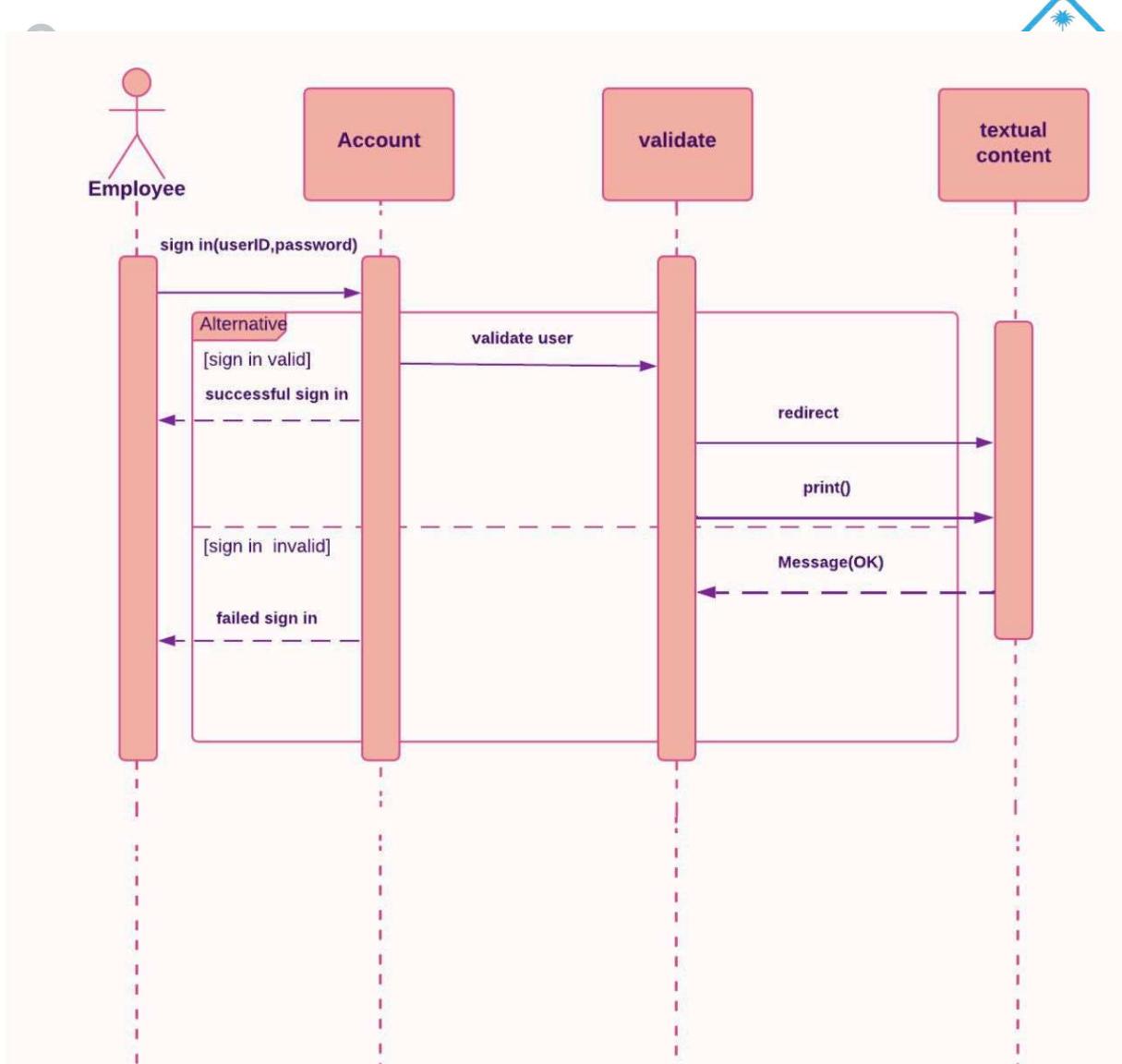
اسباب والمعلومات
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All classes in the system and the associations
between them

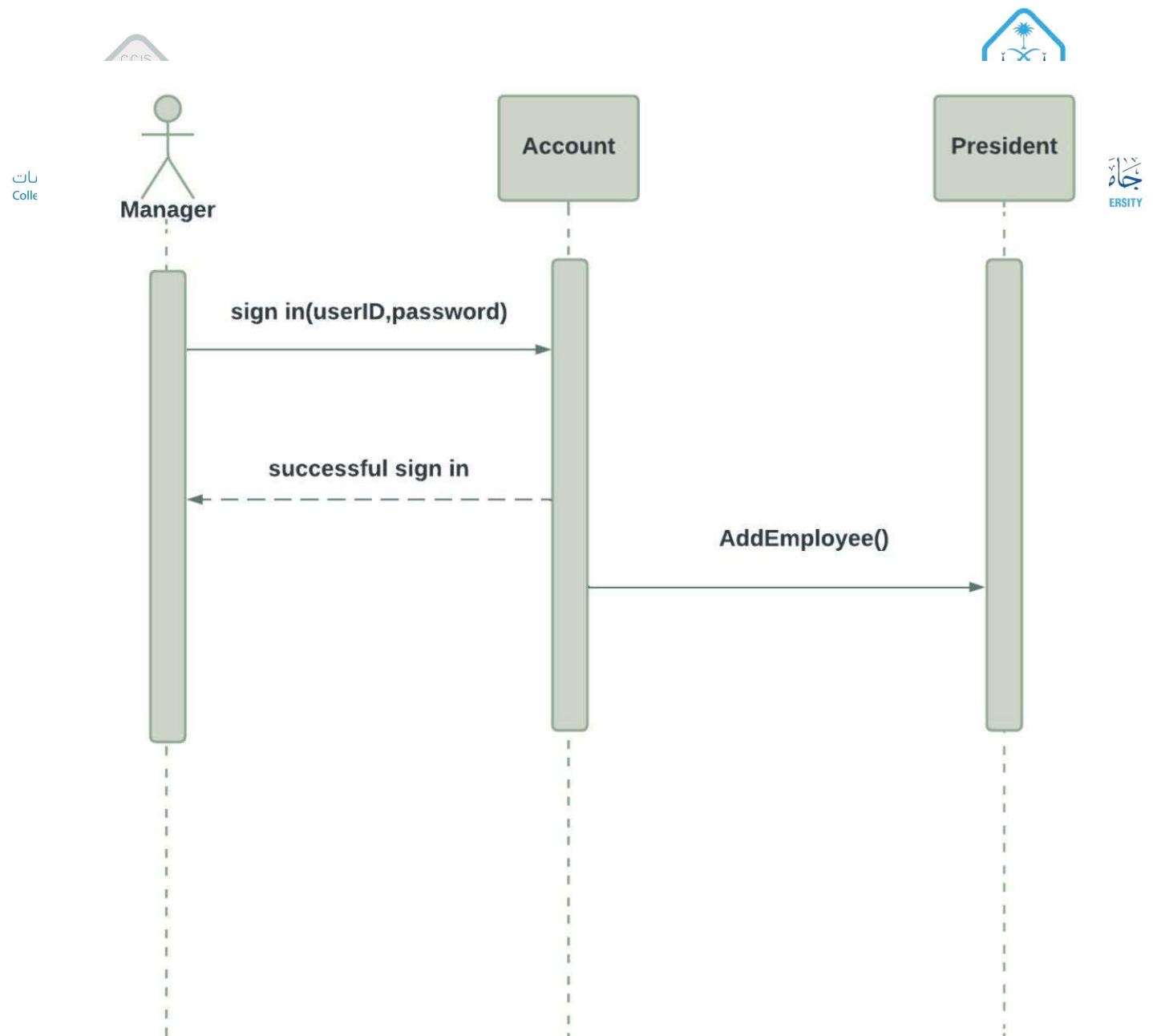


12.5 Sequence diagram :

Request to print a schedule by the employee



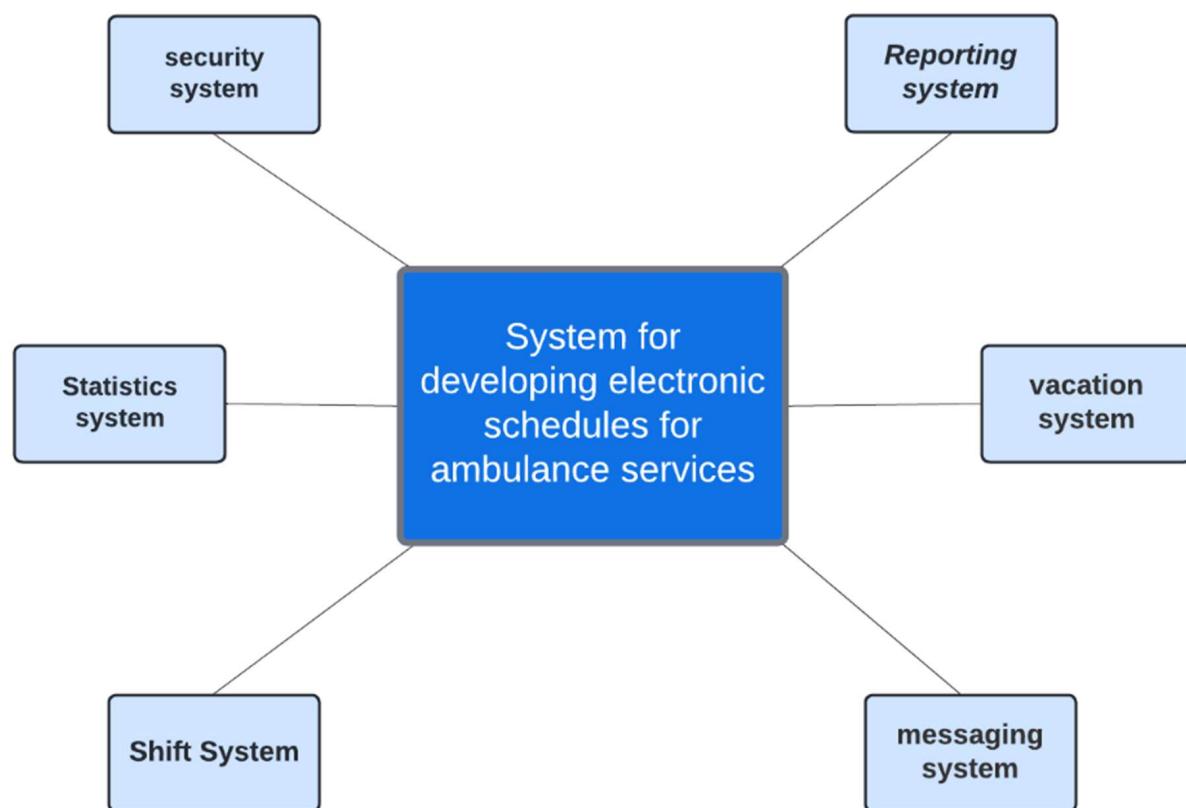
Adding an employee by the manager





12.6 Context model

All systems associated with the electronic schedules system for ambulance services





13. The appropriate architectural design and pattern

We chose the MVC structure, as it consists of three sections (models, views, control panels):

Models: are the classes that deal with the database.

Views: is the user interface.

Observers: They are the mediators between them.

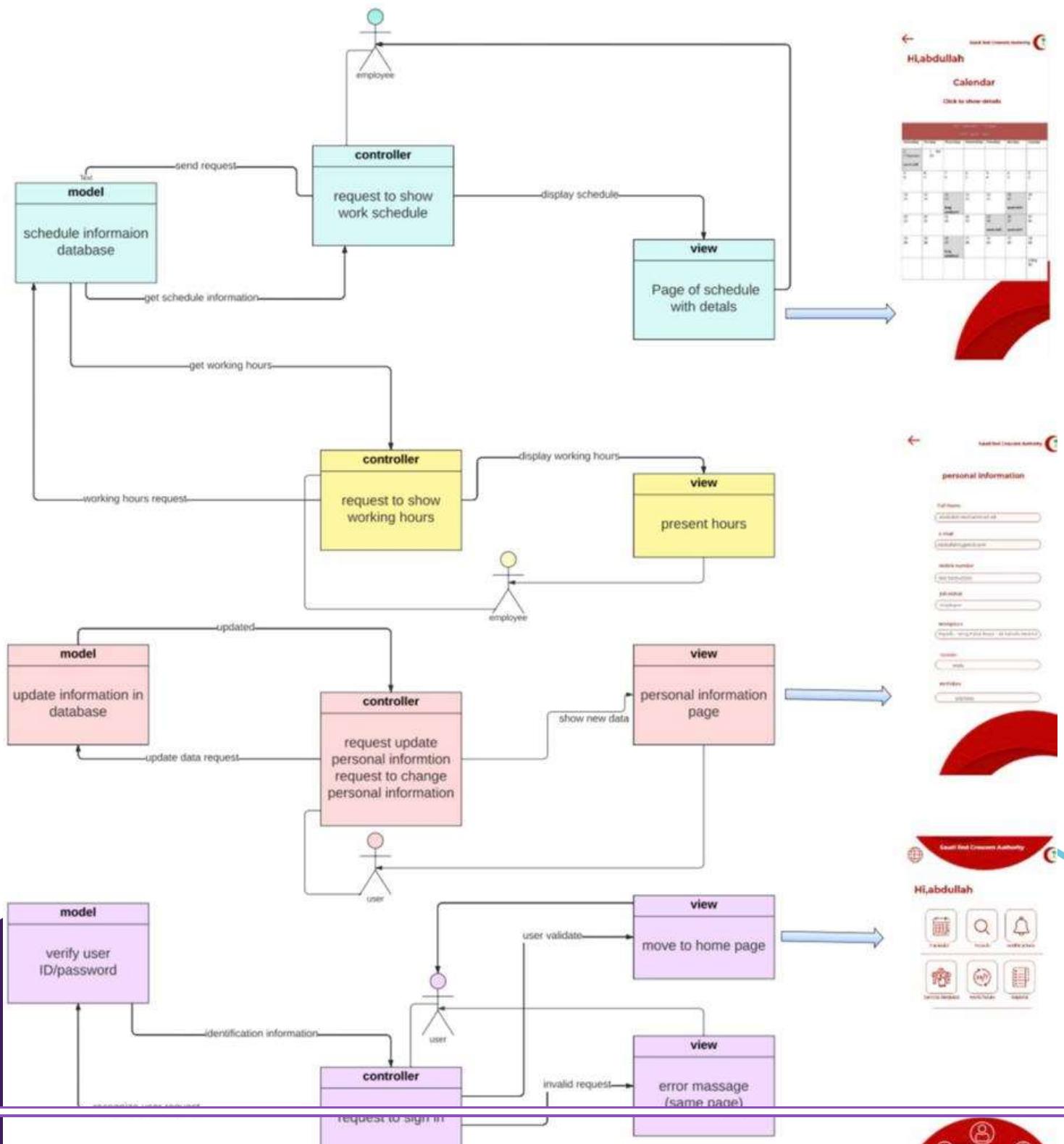
We chose MVC because it is easy to work with in case of modification in the future. Also, more than one developer can work on each section separately and because it is suitable for dealing with the system

Benefits :

- 1) Multiple teams can develop or program the same application without interfering with each other's work
- 2) Organizes large-size web applications
- 3) Easily Modifiable
- 4) Faster Development Process
- 5) Easy planning and maintenance
- 6) Provides multiple views
- 7) MVC returns data without any format that we can reuse with other interfaces

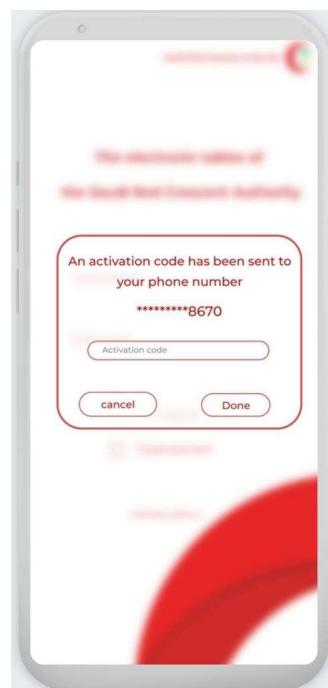
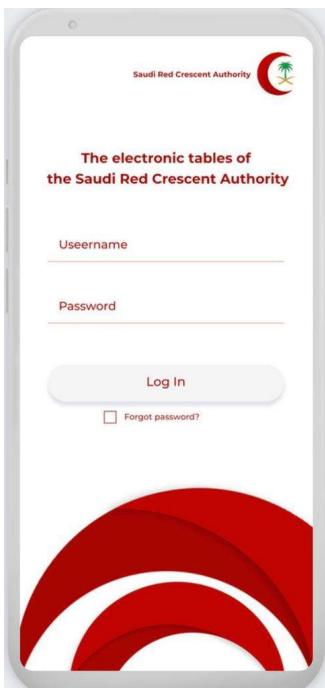


- 8) It gives us a clear design
- 9) Ease of detecting errors
- 10) Rapid development process, as it consists of three sections, more than one developer can work on each section separately.





14. System interfaces:





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The screenshots illustrate the mobile application interface for service requests:

- Service Request Screen:** Shows a "Service Request" section with four options: "pick a shift", "vacation request", "change branch", and "switch shifts".
- Vacation Request Screen:** A form to enter vacation details, including "from" and "to" dates, and a "Reason for vacation" field.
- Success Message:** A message indicating the request was "done successfully" and is "Waiting for official approval".
- Language Selection:** An "Arabic" language selection screen.
- Switch Shifts Screen 1:** A dropdown menu showing "Sunday from 8PM to 5AM" selected.
- Switch Shifts Screen 2:** A dropdown menu showing "Wednesday from 4AM to 12PM" selected.
- Change Branch Screen:** A list of branches with "Riyadh, Othman Bin Affan Road" selected.
- Success Message:** A message indicating the request has been "successfully submitted" and is "Waiting for confirmation of acceptance".



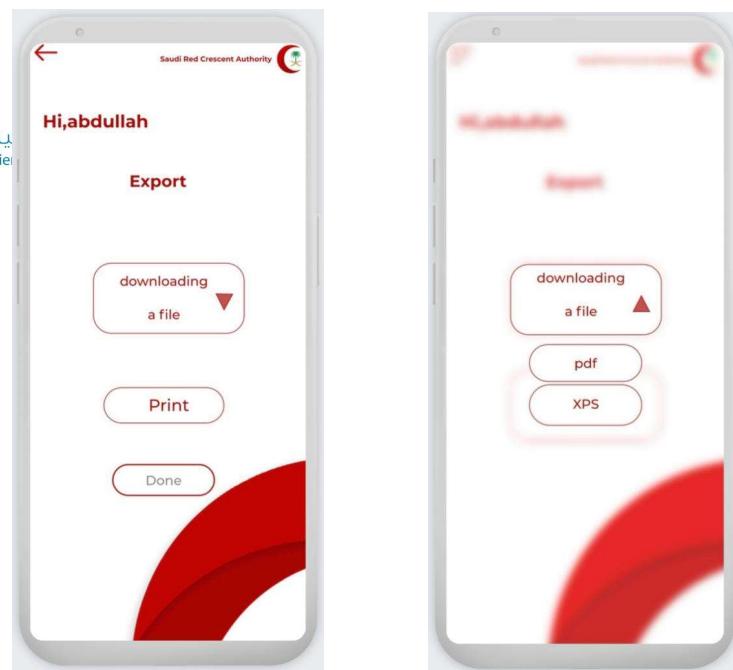
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15. Link to the prototype:

<https://xd.adobe.com/view/9ef91488-16fc-4fbc-8f3a-7cb984508607-cbaa>

16. The implementation:

loginpage

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SAUDI RED CRESCENT AUTHORITY



The electronic tables of
the Soudi Red Crescent Authority

Username:

Password:

loginpage

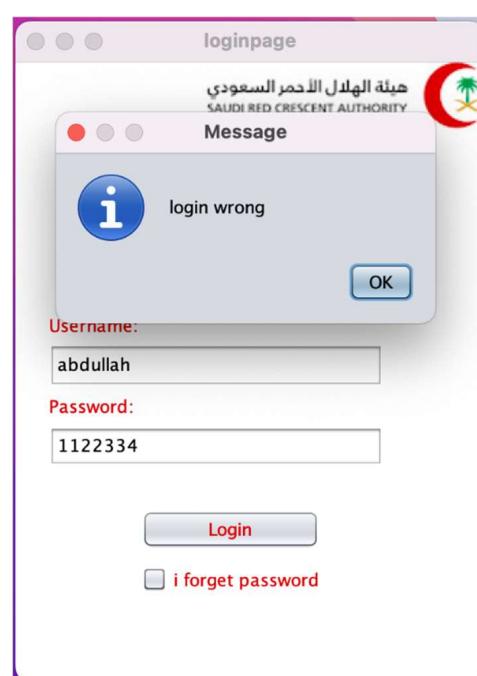
هيئة الهلال الأحمر السعودي
SAUDI RED CRESCENT AUTHORITY



The electronic tables of
the Soudi Red Crescent Authority

Username:

Password:





File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

Search (%+)

Source Design History

```
2 package app;
3 import javax.swing.JFrame;
4 import javax.swing.JOptionPane;
5
6 public class loginpage extends javax.swing.JFrame {
7
8     public loginpage() {...3 lines...}
9     @SuppressWarnings("unchecked")
10    Generated Code
11
12    private void loginActionPerformed(java.awt.event.ActionEvent evt) {
13        // TODO add your handling code here:
14        switch (username.getText()) {
15            case "ali" :{
16                switch (password.getText()) {
17                    case "123": {
18                        massgphone massgphone=new massgphone();
19                        massgphone.show();
20                        dispose();
21                    } break;
22                    default:JOptionPane.showMessageDialog(null, "login wrong");
23                }
24            }break;
25
26            case "ahmad" :{
27                switch (password.getText()) {
28                    case "1234": {
29                        massgphone massgphone=new massgphone();
30                        massgphone.show();
31                        dispose();
32                    } break;
33                    default:JOptionPane.showMessageDialog(null, "login wrong");
34                }
35            }break;
36
37            case "hamad" :{
38                switch (password.getText()) {
39                    case "1234": {
40                        massgphone massgphone=new massgphone();
41                        massgphone.show();
42                        dispose();
43                    } break;
44                    default:JOptionPane.showMessageDialog(null, "login wrong");
45                }
46            }break;
47        }
48    }
49}
```

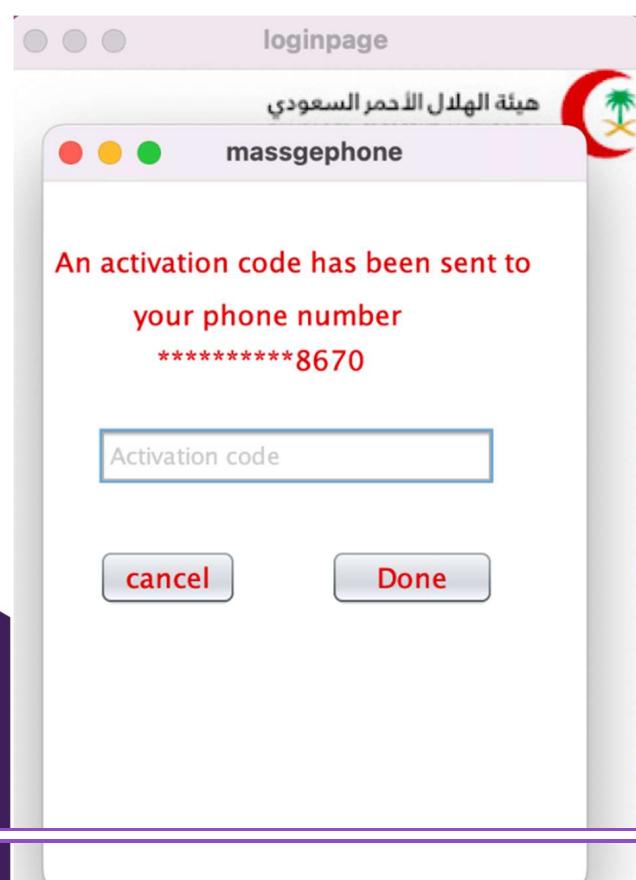


File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

<default config>

```
179     }break;
180     case "abdullah" :{
181         switch (password.getText()) {
182             case "112233": {
183                 massgphone massgphone=new massgphone();
184                 massgphone.show();
185                 dispose();
186             } break;
187             default:JOptionPane.showMessageDialog(null, "login wrong");
188         }
189     }break;
190     case "muhammed" :{
191         switch (password.getText()) {
192             case "aa123": {
193                 massgphone massgphone=new massgphone();
194                 massgphone.show();
195                 dispose();
196             } break;
197             default:JOptionPane.showMessageDialog(null, "login wrong");
198         }
199     }break;
200     default:JOptionPane.showMessageDialog(null, "login wrong");
201     throw new AssertionException();
202 }
203
204     private void usernameActionPerformed(java.awt.event.ActionEvent evt) {...3 lines}
205
206     private void passwordActionPerformed(java.awt.event.ActionEvent evt) {...3 lines}
207
208
209     public static void main(String args[]) {
210         try {
211             for (javax.swing.UIManager.LookAndFeelInfo info : javax.swing.UIManager.getInstalledLookAndFeels()) {
212                 if ("Nimbus".equals(info.getName())) {
213                     javax.swing.UIManager.setLookAndFeel(info.getClassName());
214                     break;
215                 }
216             }
217         }
218     }
219
220
221
222
223
224
225
226 }
```

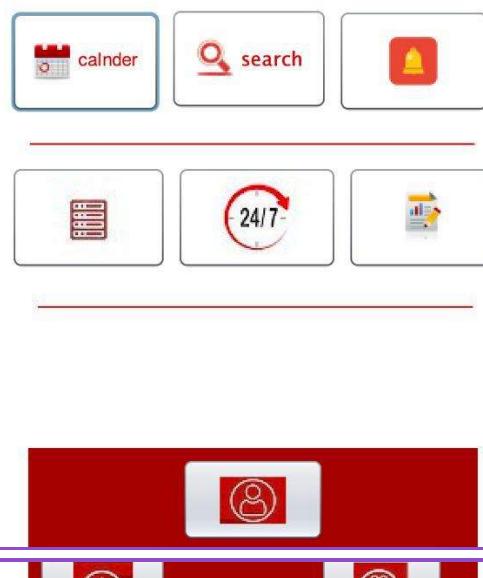
Output





The screenshot shows an IDE interface with the following details:

- File Menu:** File, Edit, View, Navigate, Source, Refactor, Run, Debug, Profile, Team, Tools, Window, Help.
- Toolbar:** Standard icons for file operations like Open, Save, Print, etc.
- Project Explorer:** Shows files and packages under "app".
- Code Editor:** Displays Java code for a class named `massgphone`. The code includes imports for `java.awt.Color`, `java.util.HashMap`, `javax.swing.JFrame`, `javax.swing.JLabel`, and `javax.swing.JPasswordField`. It contains methods for initializing components, handling button actions, and returning to login pages.
- Output Panel:** Shows the output of the build process.





```
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
<default config> Search (⌘+F)
Source Design History
package app;
import javax.swing.JFrame;
public class homepage extends javax.swing.JFrame {
    public homepage() {
        initComponents();
    }
    @SuppressWarnings("unchecked")
    private void workhoursActionPerformed(java.awt.event.ActionEvent evt) {...3 lines}
    private void calnderbuttenActionPerformed(java.awt.event.ActionEvent evt) {
        JFrame freme =new JFrame();
        calnder c1=new calnder();
        c1.show();
        dispose();
    }
    private void reportActionPerformed(java.awt.event.ActionEvent evt) {...4 lines}
    private void sreverrequstActionPerformed(java.awt.event.ActionEvent evt) {...3 lines}
    private void notificationActionPerformed(java.awt.event.ActionEvent evt) {...3 lines}
    private void searchbuttenActionPerformed(java.awt.event.ActionEvent evt) {
        // search page
        JFrame freme =new JFrame();
        search page1=new search();
        page1.show();
        dispose();
    }
    private void personalinformationActionPerformed(java.awt.event.ActionEvent evt) {
        //personalinformation page
        personalinfor page2=new personalinfor();
        page2.show();
    }
}
```

The screenshot shows a Java IDE interface with a dark theme. The main window displays a Java source code file named `personalinfor.java`. The code implements various event handlers for buttons like search, personal information, logout, general, and a main method setting the Nimbus look and feel.

```
private void notificationActionPerformed(java.awt.event.ActionEvent evt) {...3 lines }

private void searchbuttonActionPerformed(java.awt.event.ActionEvent evt) {
    // search page
    JFrame freme =new JFrame();
    search page1=new search();
    page1.show();
    dispose();
}

private void personalinformationActionPerformed(java.awt.event.ActionEvent evt) {
    //personalinformation page
    personalinfor page2=new personalinfor();
    page2.show();
    dispose();
}

private void logoutActionPerformed(java.awt.event.ActionEvent evt) {
    // return log in page
    JFrame freme =new JFrame();
    loginpage page=new loginpage();
    page.show();
    dispose();
}

private void generalActionPerformed(java.awt.event.ActionEvent evt) {
    // go to general page
    JFrame freme =new JFrame();
    general page4=new general();
    page4.show();
    dispose();
}

public static void main(String args[]) {
    try {
        for (javax.swing.UIManager.LookAndFeelInfo info : javax.swing.UIManager.getInstalledLookAndFeels()) {
            if ("Nimbus".equals(info.getName())) {
                javax.swing.UIManager.setLookAndFeel(info.getClassName());
                break;
            }
        }
    } catch (ClassNotFoundException ex) {
        java.util.logging.Logger.getLogger(personalinfor.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (InstantiationException ex) {
        java.util.logging.Logger.getLogger(personalinfor.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (IllegalAccessException ex) {
        java.util.logging.Logger.getLogger(personalinfor.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (javax.swing.UnsupportedLookAndFeelException ex) {
        java.util.logging.Logger.getLogger(personalinfor.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    }
}
```

A Java Swing application window titled "personal information". The window has a red arrow pointing to the back button in the top-left corner. It features the logo of the Saudi Red Crescent Authority (هيئة الهلال الأحمر السعودي). The form contains several text input fields:

- Full Name: Abdualah muhammad Ali
- E-mail: Abdullah@gmail.com
- Mobil number: 966582543290
- Just status: employee
- Workplace: Riyadh-king fahd rode-al-sahafa
- Gender: male
- Birthdate: 9/9/1990



The screenshot shows a Java development environment with the following interface elements:

- Top Bar:** File, Edit, View, Navigate, Source, Refactor, Run, Debug, Profile, Team, Tools, Window, Help.
- Toolbar:** Standard icons for file operations like Open, Save, Print, Find, etc.
- File Tree (Left):** Shows project structure with source and test packages, files like manifest.mf, loginpage.java, homepage.java, personalinfor.java, search.java, massgphone.java, calnder.java, genral.java, and various image files (24h.jpeg, Calendar-icon2.png, bell-icon.png, calnder.java, candner3.jpeg, gen.jpg, genral.java, homepage.java, idpass.java, log.jpg, loginpage.java, massgphone.java, moon.JPG, not.jpg, not1.jpg, not2.jpg, not3.JPG, pers.jpg, personalinfor.java, photo1652128611.jpg, red-search-icon.png, rep.png, req.jpeg, row.JPG, search.java, world.JPG, ww.jpg).
- Code Editor (Center):** Displays Java code for the `personalinfor` class. The code includes methods for handling button actions and navigating between forms. A tooltip "Generated Code" appears over the `private void jComboBox1ActionPerformed(java.awt.event.ActionEvent evt)` method.
- Toolbars (Top and Bottom):** Various toolbars for navigation, search, and code editing.
- Status Bar (Bottom):** Shows "1:1" and "INS".

Calendar

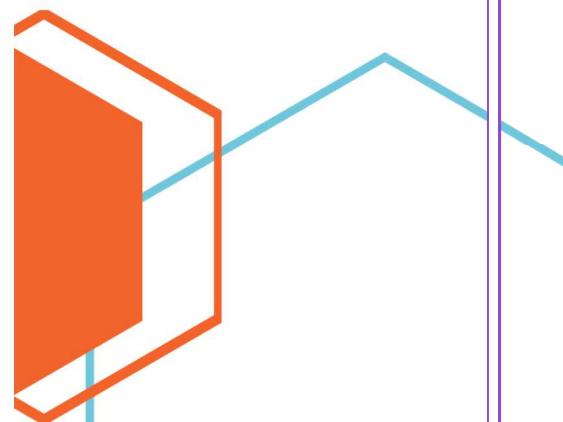
[click to show details](#)



```
1 package app;
2
3 import javax.swing.JFrame;
4
5 public class calnder extends javax.swing.JFrame {
6
7     public calnder() {
8         initComponents();
9     }
10
11     @SuppressWarnings("unchecked")
12     // Generated Code
13
14     private void returnhomepageActionPerformed(java.awt.event.ActionEvent evt) {
15         JFrame freme =new JFrame();
16         homepage page3=new homepage();
17         page3.show();
18         dispose();
19     }
20
21     private void returnhomeActionPerformed(java.awt.event.ActionEvent evt) {
22         // return homepage
23         JFrame freme =new JFrame();
24         homepage page3=new homepage();
25         page3.show();
26         dispose();
27     }
28
29     private void DonereturnActionPerformed(java.awt.event.ActionEvent evt) {
30         // TODO add your handling code here:
31         JFrame freme =new JFrame();
32         homepage page3=new homepage();
33         page3.show();
34         dispose();
35     }
36
37     public static void main(String args[]) {
38
39     }
40 }
```



Search:



The screenshot shows a Java IDE interface with the following details:

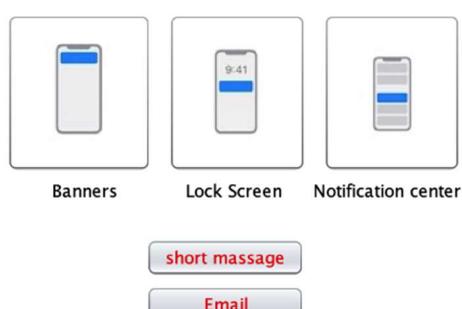
- Menu Bar:** File, Edit, View, Navigate, Source, Refactor, Run, Debug, Profile, Team, Tools, Window, Help.
- Toolbar:** Includes icons for file operations like Open, Save, Find, and others.
- Search Bar:** Search (⌘+I).
- Project Explorer:** Shows files and packages: ering, ering.ec, il, naldata, J2, Dta, Jle1, object, 2, 3, source Packages, app, 24h.jpeg, Calendar-icon2.png, bell-icon.png, calnder.java, cander3.jpeg, gen.jpg, genral.java, homepage.java, idpass.java, log.jpg, loginpage.java, massgphone.java, moon.JPG, not.jpg, not1.jpg, not2.jpg, not3.JPG, pers.jpg, personalinfor.java, photo1652128611.jpg, red-search-icon.png, rep.png, req.jpeg, rowJPG, search.java, world.JPG, ww.jpg.
- Code Editor:** The main window displays Java code for a `search` class extending `JFrame`. The code includes methods for searching and returning to the homepage, and a static `main` method setting the look and feel to "Nimbus". Error markers are present in the code.
- Status Bar:** Shows 110:19.

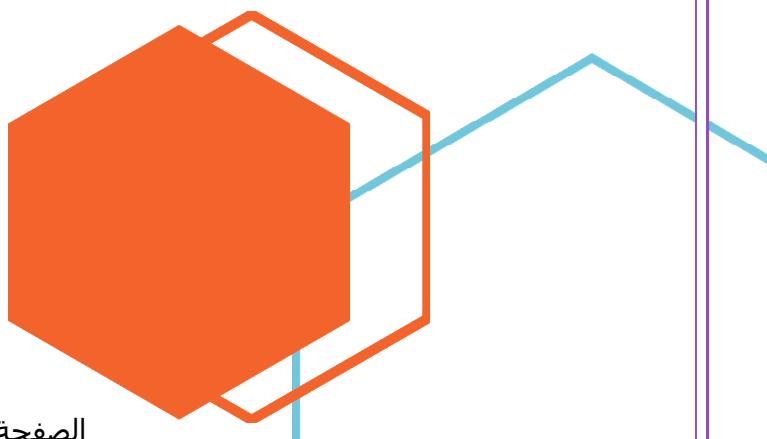


notifications :

please choose a method communication

Allow Notifications





Screenshot of a Java IDE showing the code for a `genral` class. The code handles various button actions and initializes components.

```
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
<default config> Search (⌘+F)
Source Design History
2
package app;
import javax.swing.JFrame;
public class genral extends javax.swing.JFrame {
    public genral() {
        initComponents();
    }
    @SuppressWarnings("unchecked")
    // Generated Code
    private void jButton5ActionPerformed(java.awt.event.ActionEvent evt) {...3 lines}
    private void emailActionPerformed(java.awt.event.ActionEvent evt) {...3 lines}
    private void jButton7ActionPerformed(java.awt.event.ActionEvent evt) {...3 lines}
    private void returnhomepageActionPerformed(java.awt.event.ActionEvent evt) {
        JFrame freme =new JFrame();
        homepage page3=new homepage();
        page3.show();
        dispose();
    }
    private void DonereturnActionPerformed(java.awt.event.ActionEvent evt) {
        // Done return home page
        JFrame freme =new JFrame();
        homepage page3=new homepage();
        page3.show();
        dispose();
    }
    private void sortmassgeActionPerformed(java.awt.event.ActionEvent evt) {...3 lines}
    public static void main(String args[]) {
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info : javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {

```



17. (Test Driven Development):

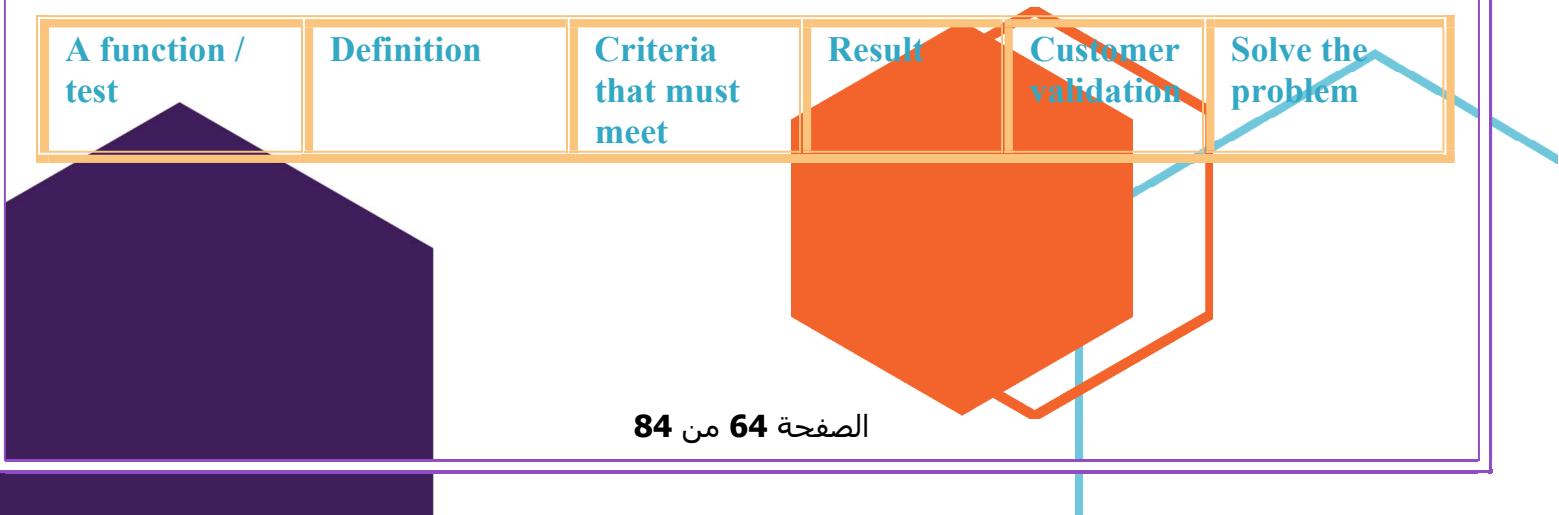
We worked as a team and attended test cases before we started in development process for the project, so that we could test every point we go through and program it directly after we finish it

17.1 validation and verification VV:

In the verification test, we will make sure that the system we developed is right or not and that the system achieves its goal without any errors and meets the requirements that we have specified.

In the validation test we will verify and ensure that the system we developed is the actual and expected system and that the system is the right one that the customer wants.

For Verification Test and Validation Test We used the template below





1- Change shifts	The employee wants to change the shift to another time , if he can't , he must choose another available time.	The shift time must be available and compatible with the employee's schedule. If all times are not available, a message will appear to him.	The criteria has been finalised and works well	The customer test the function and accept the result	
2- Log in	The user wants to log into the system.	The user must have an ID inside the system, enter the user and password correctly, a text message is sent containing the verification number and the user must enter it	The criteria has been finalised and works well	The customer test the function and accept the result	



3- Attendance and departure registration	The time of attendance and time of departure of the employee is recorded daily in the system.	Registration is done by the manager, the employee log into the system	The criteria has been finalised and works well	The customer test the function and accept the result	
4- Delays and absences.	Employee delays and absences are calculated and stored in the system.	Absence registration is if the employee did not log in to the system and did not have a leave, and the delays were recorded if the employee entered the system after 10 minutes or more from the time he started his work	The criteria has been finalised and works well	The customer test the function and accept the result	



5- Send text content	sends messages to employees to notify them when something happens, whether public or private messages.	The sender must be registered in the system, an internet must be available.	The criteria didn't meet the customer's need.	The customer wants messages to be sent by the manager only.	The customer's request has been implemented and the messages only will be sent by the manager.
6- Raise vacation	The user requests a leave through the system and specifies the date of the leave.	The date entered must be valid and there is no conflict, the request must be approved by the manager.	The criteria works well but not complete.	The customer wants the employee to attach the reason for requesting the leave in a text file	Include a space for the text attachment when requesting a leave and The customer's request has been implemented.
7- Add new employee	Adding new employee information to the system and opening an account for him.	The new employee must have an ID defined within the system, a new employee is added by the manager only.	The criteria has been finalised and works well	The customer test the function and accept the result	



8- View job status	The user wants to see statistics or reports on the work situation during a period of a week or a month.	The date required to view the job status must be valid.	The criteria works well but not complete.	The customer wants to add more graphics	The customer's request has been implemented and the graphics have been added.
9- Change branch	The employee requests to change the workplace to another branch.	The required branch must have a place available for the employee, the manager must approve the employee's request.	The criteria has been finalised and works well	The customer test the function and accept the result	
10-Change personal information	When there is a change in the employee's information, he will want to update it.	He must be logged into the system, in the event that the information to be changed is related to security such as the password, a message must be sent to the user to verify the user.	The criteria has been finalised and works well	The customer test the function and accept the result	



11-Change job status	Update the employee's job status within the system upon promotion.	Job status update can only be done by the manager	The criteria has been finalised and works well	The customer test the function and accept the result	
12-Print	User wants to print report/schedule work.	The printer contains enough ink.	The criteria has been finalised and works well	The customer test the function and accept the result	
13-Change language	Change the current language to another language.	The user must be logged into the system	The criteria has been finalised and works well	The customer test the function and accept the result	



18. regression test and release testing

+ regression test:

In regression testing, we develop a specific set of requirements and test them with the functions that precede them, so that we make sure that the current functions did not affect the previous functions and that there is no conflict or error that occurs.

So we will work on the functions we have according to their priority.
Starting from the functions No. 1-2-3(change shifts , log in , attendance and departure regeneration) in the table above, we applied the regression test on them and tested it and it worked successfully.

We added functions No. 4 and 5(Delays and absences , send text content) , then we applied the regression test from function No. 1 to function No. 5, and it turned out that there is a logical error between function 3 and 4, as the system will calculate the employee as absent when he is late, we fixed it and re-tested.

After that, we also did a regression test on functions from 1 to 9 (we added raise vacation , add new employee , view job status, change branch) and we got an error at the function view job status , as the numbers and arithmetic operations of the reports were not correct, we reviewed and corrected it and the calculations and numbers became correct.

Then we added the rest of the functions from 10 to 13 (change personal information, change job status, print , change language) and did a regression test from the beginning to the last function and it worked fine.



release testing:

We as a team followed the steps in the table below to make sure that release testing Ready to use and in some steps, we hired a member from outside our team

	Task	Team member	Result
1	Make sure all defects are resolved	Shmowkh	It was checked by a team member for all defects in the previous stages and resolved correctly
2	verify all previous tests if they are correct or not and make sure that each test in the test matrix has passed	Haya	We checked all the tests, made sure they were working properly and checked them
3	Verify that all tests run automatically on the current build	Alhanouf	We took each part of the system separately, tested each part and validated each part and then checked as a whole
4	We performed all non-functional system tests manually and monitored the results	Alhanouf	We manually tested all non-functional systems and monitored the results for their correct application and consideration in the system



5	Verify by installing the system on a clean machine	Sarah	We tried a slot via the website to test how it works
6	We asked someone outside of our team to run the system on the website and point it to the correct use	Atheer	After he used our system and followed the instructions, we asked him the questions: Is the system easy to use, how was his experience after using the system
7	Running the system on different versions of devices	Sarah	After we run the system on more than one device, we discover that the system is operable on different versions
8	Verify that all steps are completed in the system as a whole	Atheer	After we finished, we checked all the steps of the system at each stage. Did we do it and the step we didn't do we completed
9	Consistency check :BRS , user manual , system tests , staged , delivery plan, and software must all match	Haya	We made sure that the BRS was implemented as it was written



19. Black box testing:

For log in:

Input:

-Enter username and password

Action:

-Verify username and password

Output:

-If true, log in and send the verification code to the mobile number
-If it is wrong, it will either choose I forgot the password to change it, or it may not be registered in the system

For Service Request:

1) vacation requests:

Input:

-Enter the date to be chosen and the reason for applying for the leave

Action and output:

-Either leave is accepted if he has enough vacation balance and time is available
-Or it will be rejected if the time is not available or there is not enough credit for the vacation, and this is shown by updating the page



2) change branch:

Input:

- After the list of branches appears, the branch to be tested is selected to transfer to

Action and output:

- Either accept the request if there is capacity in the branch and there is a need
- Or refuse to change the branch if the branch is full and this is shown by refreshing the page

3) switch shift:

Input:

- The appropriate time is selected through the list of available shifts

Action and output:

- It is automatically changed if available instead of the previous shift

For personal information:

Input:

- After choosing personal information, any information he wants is changed and verified, or displayed without any changes

Action and output:

- If there are changes, they are automatically updated



For calendar:

Input:

- After entering the calendar and choosing the day

output:

- The information will be displayed to you for the desired day

For reports:

Input and output:

- When choosing the daily report, the daily list will appear with all the details of the work
- When choosing the statistics, a graph containing the workflow will appear

For notifications:

Input:

- After going to the notifications, you will choose to enable them and how to send them

Action:

- Can be set as notifications appear on the mobile phone screen
- Or the option to show it via email, it will appear as messages on the email registered in the system
- An option will appear as a text message on the private number registered in the system

output:

- Sent notifications will appear after they are activated When it arrives, it can be ignored or displayed



For work hours:

Input and output:

- Hours will appear according to the selection -When selecting overtime hours, all required and executed overtime hours will appear
- When choosing the required working hours per month, the calendar will appear with all its information
- When you choose to attend or be late, the hours recorded by the manager will appear

For export:

Input:

- If the download is selected, two formats will appear either pdf or xps

Action and output:

- After selecting the format, it will be downloaded
- But when you choose to print, only the printer is selected, and printing is done



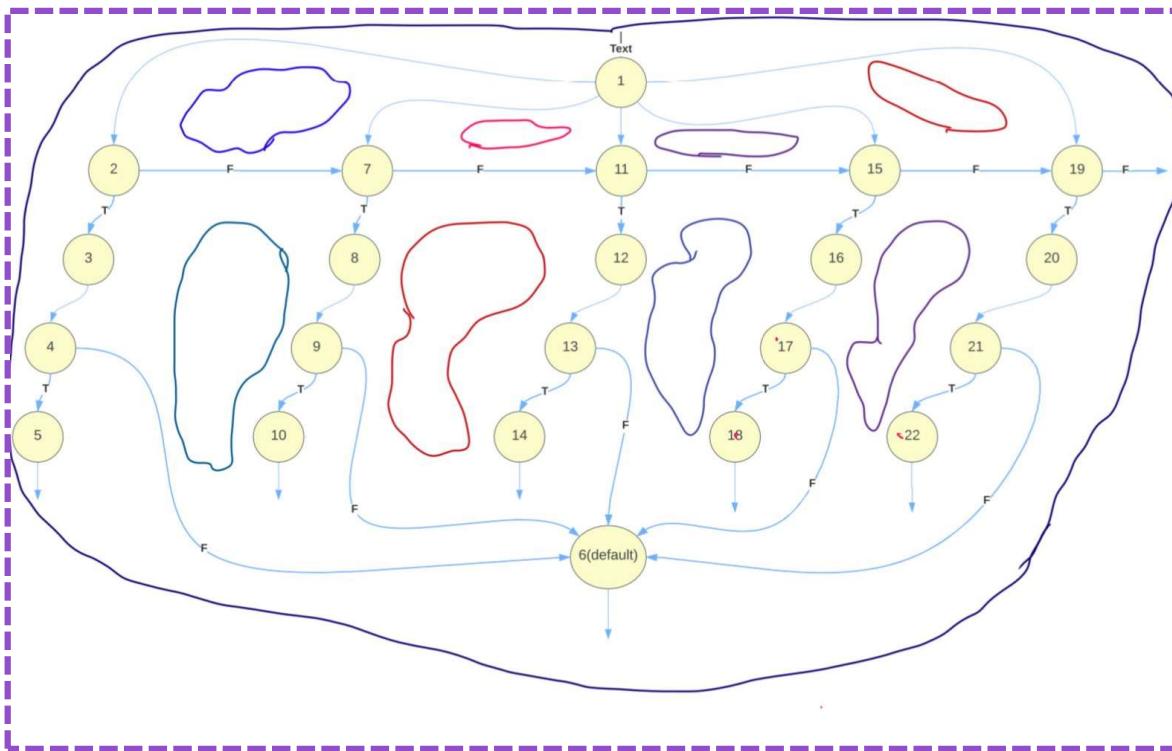
20. white box:

We try to test log in code using (White box test):

```
private void loginActionPerformed(java.awt.event.ActionEvent evt) { //GEN-FIRST:event_loginActionPerformed
    // TODO add your handling code here:
    1 switch (username.getText()) {
        2 case "ali" :{
            3     switch (password.getText()) {
                4         case "123": {
                    5             massgphone massgphone=new massgphone();
                    massgphone.show();
                    diopse();
                } break;
                6         default:JOptionPane.showMessageDialog(null, "login wrong");
            }
        }break;
        7     case "ahmad" :{
            8         switch (password.getText()) {
                9             case "1234": {
                    10                massgphone massgphone=new massgphone();
                    massgphone.show();
                    diopse();
                } break;
                default:JOptionPane.showMessageDialog(null, "login wrong");
            }
        }break;
        11    case "hamad" :{
            12        switch (password.getText()) {
                13            case "1234": {
                    14                massgphone massgphone=new massgphone();
                    massgphone.show();
                    diopse();
                } break;
                default:JOptionPane.showMessageDialog(null, "login wrong");
            }
        }break;
        15    case "abdullah" :{
            16        switch (password.getText()) {
                17            case "112233": {
                    18                massgphone massgphone=new massgphone();
                    massgphone.show();
                    diopse();
                } break;
                default:JOptionPane.showMessageDialog(null, "login wrong");
            }
        }break;
        19    case "muhammed" :{
            20        switch (password.getText()) {
                21            case "aa123": {
                    22                massgphone massgphone=new massgphone();
                    massgphone.show();
                    diopse();
                } break;
                default:JOptionPane.showMessageDialog(null, "login wrong");
            }
        }break;
        23    default:JOptionPane.showMessageDialog(null, "login wrong");
            throw new AssertionException();
    }
    //GEN-LAST:event_loginActionPerformed
```



Step 1 /



Step 2 /

Compute the cyclomatic complexity number C, for the CFG.

$$R = 9 \quad N = 22 \quad E = 29$$

$$\text{Cyclomatic complexity} = 29 - 22 + 2 = 9$$

Step 3 Basic Path Set /

- 1-2-3-4-5
- 1-2-7-11-15-19
- 1-7-8-9-10
- 1-11-12-13-14
- 1-11-12-13-6
- 1-15-16-17-18
- 1-19-20-21-22



❖ Test cases step 4/

Independent Path	Data for test cases	Expected results
1-2-3-4-5	Username = ali Password = 123	massgephone
1-2-7-11-15-19	Username = Fahad Password = 9939	Login wrong
1-7-8-9-10	Username = ahmad Password = 1234	massgephone
1-11-12-13-14	Username = hamad Password = 1234	massgephone
1-11-12-13-6	Username = Ibrahim Password = 6800	Login wrong
1-15-16-17-18	Username = abdullah Password = 112233	massgephone
1-19-20-21-22	Username = muhammed Password = aa123	massgephone



21. User Acceptance Testing (UAT):

❖ Define acceptance criteria:

This system fulfills all the requirements required by the Saudi Red Crescent to develop electronic schedules and passes all the tests successfully

❖ Plan acceptance testing:

We have prepared a set of special tests for the program acceptance test

❖ Derive acceptance tests:

	Strongly Disagree	Disagree	natural	Agree	Strongly Agree
President of the Saudi Red Crescent Authority					
1. This system helps me manage my project					
2. This system helps me manage my project reports					
3. This system helps me to display reports in different processes					
4. This system helps me to know the attendance and tardiness of employees					
5. This system helps me to send text content as desired					
6. This system helps me in knowing and calculating employee work statistics					
7. This system helps me accept and decline vacations for employees					
8. This system helps me to download files in different formats					
9. This system helps me display employee details					



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	Strongly Disagree	Disagree	natural	Agree	Strongly Agree
Saudi Red Crescent employees					
1. This system helps me in requesting printing and downloading files in different formats					
2. This system helps me to display reports in different processes					
3. This system helps me change some of my personal information					
4. This system helps me know my absence and delay times					
5. This system helps me know the hours required of me and the extra hours					
6. This system helps me to change and choose the shift time					
7. This system helps me to submit a request to take a vacation					
8. This system helps me notify events					
9. This system helps me to change the language					
10. This system helps me verify authentication before entering					
11. This system helps me to display the job status					
12. This system helps me to change the workplace and choose the appropriate branch					
13. This system helps me to download files in different formats					
14. This system helps me display notification information					



8. This system helps me to download files in different formats

9. This system helps me display employee details

	Strongly Disagree	Disagree	natural	Agree	Strongly Agree
Saudi Red Crescent employees					
1. This system helps me in requesting printing and downloading files in different formats					✓
2. This system helps me to display reports in different processes					✓
3. This system helps me change some of my personal information				✓	
4. This system helps me know my absence and delay times				✓	
5. This system helps me know the hours required of me and the extra hours					✓
6. This system helps me to change and choose the shift time					✓
7. This system helps me to submit a request to take a vacation		✓			
8. This system helps me notify events					✓
9. This system helps me to change the language					✓
10. This system helps me verify authentication before entering				✓	
11. This system helps me to display the job status	✓				

10. This system helps me verify authentication before entering				<input checked="" type="checkbox"/>	
11. This system helps me to display the job status	<input checked="" type="checkbox"/>				

12. This system helps me to change the workplace and choose the appropriate branch				<input checked="" type="checkbox"/>	
13. This system helps me to download files in different formats					<input checked="" type="checkbox"/>
14. This system helps me display notification information					<input checked="" type="checkbox"/>

❖ Negotiate test results:

- ✓ It was discovered that the requirements 5 and 6, the manager was not satisfied with it. We contacted him and found out the exact malfunction. The problem was corrected and we tested it and it succeeded.
- ✓ It was discovered that requirement and 11, the employee was not satisfied with it. We contacted him and found out the exact malfunction. The problem was corrected and we tested it and it succeeded.

❖ Reject/accept system:

Based on the above, the program has been successfully accepted by the Saudi Red Crescent Authority to develop electronic schedules for ambulance services