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## Female Breast Cancer Tracking System (Baheya Hospital)

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## Chapter 1: Introduction:

This chapter talks about the problem definition and scope for which this website will be built, the purpose and the objectives of this website, the solutions for this problem, and methodologies used to implement it. This chapter contains the following topics

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## ***1.1 Project Background:***

The choice of female breast cancer tracking system is due to the great appearance of the female breast cancer. These days many hospitals and centers around the world are interested in treating this type of disease one of these hospitals is Baheya hospital. Baheya hospital is one of charity hospitals in Egypt, it specialized in the treatment of the breast cancer for women only, Baheya is established in order to help every woman detect the cancer early to be free from breast cancer, and to make the services of the hospital easier and flexible to patients and doctors we had to update the Baheya's website to be more dynamic instead of only displays its information and events.

## ***1.2 Problem Statement:***

The administration at Baheya hospital can afford to use limited services of the hospital information system (HIS) that satisfy about 40% of their actual need ,so they can't acquire a modification of these services or request a new one whenever they need, leaving them compelled to customize the hospital needs on the available functionalities . out of the 40% mentioned above there is approximately 30% are services that's of a real value to the patients -yet are considered out of date services- and a 10% useful for the hospital's administration and a 0 % of a value to medical stuff.

By accepting to adapt with these rates, the technical stuff of Baheya fails to take into account that the turnouts at Baheya is still low as it has been only 10 months since its inception. And by continuing to believe so, they expect to face an utter chaos due to the lack of services they may be able to provide to the patients and the stuff working at Baheya.

### ***1.3 Solution Statement:***

The initial perception of the solution is to develop a web based application with the aim to raise the hospital's services to be 70% that are satisfying the patients' need ,85% for the medical stuff (consultant and specialists) , and a 30% for the administration issues as it's not a main priority for the current situation.

### ***1.4 Scope:***

Bahaya's website will be renewed to include more features that may concern both patients and doctors, some of these features are:

- 1- Making the reservation process for patients easier and allow patients to view their medical history.
- 2- Doctors will use the website to keep track of patients who are assigned to them by viewing their medical history, write a new prescription...etc.
- 3- The website also allow all system's users to communicate with each other as patients can send messages to their doctors if they need to ask anything about their examination, treatments and so on.
- 4- Moreover, if a set of doctors have the same case they can also communicate with each other, sharing medical cases, leaving comments on each other's cases.

## **1.5 Project Objectives:**

The main purpose of the system is to expand the online services that's proposed by every hospital's website to include a more interactive, quick and easy to access environment between patients and doctors that whether it's daytime or midnight, patients can track their medical situation, view files, reserve next day,...next month appointments, contact with their doctors. The system is designed also to combine the features of doctors' online workspace where doctors can view their cases, interact with their colleagues, set and arrange their schedules.

## **1.6 Methodologies:**

### **1.6.1- Main work methodologies:**

We used a combination of two methodologies which are scrum and extreme programming (XP), Scrum's simple definitions gave our team the autonomy we needed to structure our work in the most appropriate manner that's convenient for our project's scope as it defines- at the management level-a flexible product development strategy where a development team works as a unit to reach a common goal.

With Scrum methodology, the "Product Owner" works closely with the team who prioritize system functionalities, then the team must deliver potentially shippable increments of software during successive sprints, but the only matter with the scrum methodology is once a sprint's product backlog is committed, no additional functionality can be added to the sprint except by the team. And once a sprint has been delivered, the product backlog is analyzed and reprioritized, if necessary, and the next set of functionality is selected for the next Sprint.

Therefore we used extreme programming along with the scrum for more “iterative while editing” environment. As XP is a disciplined approach that’s intended to deliver a high-quality software quickly and continuously. It promotes high customer involvement, rapid feedback loops, continuous testing, continuous planning, and close teamwork to deliver working software at very frequent intervals, typically every 1-3 weeks. In XP teams are much more amenable to change within their iterations. As long as the team hasn’t started work on a particular feature, a new feature of equivalent size can be swapped into the XP team’s iteration in exchange for the understand feature.

### **1.6.2 - System analysis and design methodologies:**

#### **A. Interview:**

- Direct interviews with both doctors and patients to know the difficulties they suffer from in the hospital to solve them in our software, we choose this method because it enables us to:
  - Collect the most in-depth data.
  - Provides information about complex issues.

#### **B. Use Case Model:**

- A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. In brief, the purposes of use case diagrams as follow:
  - Used to get an outside view of a system.
  - Show the interacting among the requirements are actors.
  - Identify external and internal factors influencing the system.

#### **C. Business Process Model (BPM):**

- A business process is a collection of related, structured activities or tasks that produce a specific service or product.
- A business process model is a model of one or more business processes, and defines the ways in which operations are carried out to accomplish the intended objectives of an organization. It can describe the workflow or the integration between business processes.

#### **D. Conceptual Model:**

- Class diagram, which is a static diagram, represents the static view of an application. It is not only used for visualizing, describing and documenting different aspects of a system but also for constructing executable code of the software application. The class diagram describes the attributes and operations of a class and also the constraints imposed on the system, the purposes of conceptual model as follow:
  - Forward and reverse engineering,
  - Describe responsibilities of a system,
  - Base for component and deployment diagrams.

#### **1.6.3-Used Technologies :**

After identifying our clients' needs, so we need to make the system work more effectively, faster, smarter and able to make maintenance easily.

#### **A- Cakephp Framework:**

It is a web development framework free for rapid application development in PHP. It's a foundational structure to create web applications and enables to work in a structured and rapid manner as it is based on the Model View Controller (MVC) pattern. It helps to build the system quickly in a short time.

The MVC pattern is useful for the reuse of object code and reducing the time and the effort it takes to develop our system.

We chose this framework because it is allow to write less code, faster development, security and utilities and libraries .This framework is easy to use that it is unnecessary to have experience with it, also its online documentation is available to use and understand from it that make the development process faster and easily.

## **B- PhpStorm editor:**

It is featured packaged IDE for PHP, HTML, CSS , JQUERY and JavaScript. It has intelligent coding assistance that verify and analyze the whole project, also has fast and safe refactoring that help to perform project-wide changes in a few clicks. This editor also support Interactive debug console that allows to alter variables, call PHP functions, and define additional functions – all on the fly.

It is good editor for debugging, unit testing, performance and syntax highlighting and auto complete. The important advantage of this editor is Dataflow Analysis that helps to better understand the project's code, interpret complicated parts, and find bottlenecks in the source code and tracing dataflow that is useful when working with shared code among the members of the team.

## **Chapter 2: Extreme Programming Phases:**

This chapter shows all the phases done in XP methodology, primary analysis which contains all the requirements that will be provided by the website sources, validations, use case diagrams (models, tables), class diagram and the business process models, and the early design which contains database design and website pages and the planning phase which contains all the user stories with their priorities .This chapter contains these topics:

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## **2.1 Primary Analysis:**

In this section the system will be identified into its functional requirements, use case model for patient, doctor specialist and doctor consultant, use case tables, class diagram and business process modeling. This phase will be revisited if any requirements change in next phases.

### **2.1.1 Functional Requirements:**

#### **A: For Guests:**

- **View ads:**
  - Anyone can see Baheya's events/news at the home page of the website.
- **Reserve:**
  - Anyone can reserve online :
    - If it is his first time to reserve in Baheya then he must fill form [name, age, gender, address, mobile phone].
    - If not, he must enter his hospital ID and then choose his suitable date.

#### **B: For Patients:**

- **Login:**
  - Once the patient go to the hospital for examination then he will has an ID which is his username and password for his account.
  - Any patient can login to his account using his hospital ID for the first time then as user name and password then he can change it.
  - In first time logging in patient should provide an e-mail and phone number to be easy to contact with him.
- **View medical history:**
  - Once the patient has an account he has a history which is private to him only, the history will contain the date, the treating doctor and the doctors' notes for each prescription, X-ray, tests, doses, etc.
  - Once the patient sees the history he can demand any of his files (prescription, X-ray, analysis, doses, etc.) to be downloaded by searching only using its date.

- **Send\ Receive Messages:**

- The patient can send/receive messages to/from the hospital itself or to/from any doctor he wants.
- The doctor can communicate with patients using video or voice calling.
- The doctors' emails will be available in a list so it will be easy for the patient to choose his doctor.

- **Notifications:**

- The patient will receive notifications (using his e-mail or phone number). The notifications will be for
  - Reminding him with next examination date, doses date.
  - Any replying for his messages.
  - Any cancelled reservation.
  - Baheya's events.
  - Anything the hospital wants the patient to know.

## **C: For Doctors:**

- **Doctors' Login:**

- Doctors will be able to login using their emails on the hospital's domain and a random code will be generated once they entered the user name correctly, then they can set the account's password.

- **View Appointments:**

- The system enables each doctor/specialist to view his/her appointments with patients who come for the first time or who are used to come for regular examination or who are referred newly to them.
- In order to distinguish between the three kinds of patients in the appointments list they will be labeled using two colors; yellow for new patients, and pink for regular patients, blue for referred patients.
- Each case will be displayed to doctors as an entire project where the medical record for this case will be auto shared among all specialists who will be assigned

by the doctor himself, and will be responsible for carrying out doctor's instructions.

- **Display Record:**

- The system allows doctors/specialists to access their patients' medical records.
- For both pink labeled patients and blue labeled patients, their medical record will be auto displayed to help the doctor/specialist memorize their situation, then they can update that record by adding his/her new notes.
- For yellow labeled patients, system will initiate patients' records using the information which patients has filled in the reservation application, then the system will display these information in the new patients' medical record which will be displayed to the doctor.

- **View Tests & labs' Results:**

- Doctors and specialists can view tests and labs' results of patients' last examination

- **Prescribe:**

- The doctor will write prescriptions for patient's right after their examination, the prescription then will be sent directly to the concerned patient so that she can view it any time.
- Consequently, the prescription system will be turned into an online one as doctors will immediately write prescriptions online and they can choose whether to print it for the patients or it will be suffice to send it to the patient account.
- Patients can view the last prescription only.

- **Update Record:**

- After examination, doctors will add notes to update the medical record of their cases.

- **View patients' board:**

- The system retrieves list of all patients that doctor/specialist pursuing their records

- **Search:**

- Doctors/specialists can search for a specific patient by his ID or Name.

- **View patients' board:**
  - The system retrieves list of all patients that doctor/specialist pursuing their records.
  
- **Add instructions:**
  - After examination, doctors will add some instructions like doing a certain type of x rays, or having Physiotherapy for a specific duration, all these instructions is to be written using certain template for instance, it may be entered as:

DATE: NOV,3	INSTRUCTIONS
RADIATION	A sequence of instructions .....
THERAPY	
PHYSIOTHERAPY SESSIONS	A sequence of instructions .....

- Each instruction's row will be transformed automatically into a task in the patient's project/case.
- **Assign Specialists**
  - The doctor then can assign up to many specialists to carry out the sequence he wrote with the concerned patient.
  
- **Make a copy:**
  - A specialist who is assigned to different tasks can make a copy of these tasks to be added to his/her profile for more work organizing.
  
- **Comment:**
  - Doctors/specialists who are assigned to the same tasks can track their progress by adding comments and replying on each other.

- **Archive projects/tasks:**
  - Once, doctors decide that a patients has cured completely, they can archive this patient's case.
  - Also, specialists can archive tasks if they got the doctor's permission.
- **Attach files :**
  - The task owner (doctors/specialists) can attach files to the task itself, while the others can also attach files in a comment.
- **Delete Projects/tasks:**
  - Doctors only have the permission to delete tasks from their workspace.
  - Only Administration has the permission to delete an entire patient's case.
- **Un follow tasks:**
  - Specialists can choose to un follow tasks whenever s/he won't be related to this task anymore.
- **Answering Questions:**
  - Every doctor/specialist has a specific time to answer the questions that the patients leave them at any time or ask at the time specified by the doctor.
  - The doctor opens tab "Inbox" then all questions that belongs to him appear in the screen then he comment in every question by using button comment.
- **Timeline:**
  - All doctors and specialists have a timeline on their accounts where they can:
  - **write posts:** identify the subject of each post such as "meeting calls", "hosting conference".
  - **Notify others:** select other doctors/ specialists to be notified or tagged in their posts, selection can be added by category, for instance, doctors of department X only, or specialists who are pursuing case X with doctor Y, and so on.
  - **Confirm:** As the timeline is designed mainly for official announcements between administration and stuff or between the departments or the stuff themselves, there will be a confirmation button where anyone that's selected to be notified of a certain post can confirm attending or seeing this post.

- **Comment:** anyone selected to be notified of a post can also leave comments on this post.
- **Un follow tasks:**
  - Specialists can choose to un follow tasks whenever s/he won't be related to this task anymore.
- **Add sub tasks:**
  - Doctors/ specialists each on his workspace can divide main tasks into sub tasks, the same requirements of main tasks are also applicable to the sub tasks.
- **Notifications:**
  - Notifications are displayed into 2 boxes:
  - **Activity log:** where users will be notified if any updates or changes are added to the projects/ tasks/Timeline posts to which they are assigned.
  - **Types of activity log notifications:**
    - A task is assigned to you.
    - Posts you are following.
    - New comments are added to task x.
    - New files are attached to task x.
    - New sub tasks are added to the task x.
    - You have been added to new project.
    - The task is marked complete.
    - Task is archived/ deleted.
    - ....
- **Reminder:**
  - Where users will be notified of tasks' due dates, and can view their tasks in terms of:
    - Due soon: a task is due in less than twenty four hours.
    - Due later: a task is due in more than twenty four hours.
    - Recently past due: a task is recently overdue.
    - Past due: a task is past due.

- **Sort :**

- Doctors and specialists can sort the search Results by:
  - Assignee (Assigned/ un assigned)
  - Type (Project/task)
  - Recently modified
  - Due Dates
  - Statue(in progress-completed but not archived- archived)
  - Creation time
  - Completion time

- **Main Search :**

- Doctors and specialists can search using the preset keywords which are (Tasks they are assigned- tasks and conversations they have created – tasks and conversation they are following) or the can search for person “x” to display the recent posts of person “x”.

- **Dashboard:**

- Both doctors and specialists have their own dashboard where they can have a day to day summarized list/ report of all the items they should be aware of, it may contain the following items:

- **Today's List:**

- You have 10 appointments from 11 : 2
- A Meeting at 9 AM with X department
- A surgery at 4 PM.
- 2 tasks are in progress and 1 task in project Y needs your attention, etc.

- The dashboard is also to enable doctors/specialists to track their cases' progress as they will be able to do the following:

- **Add projects(cases)/tasks using drag and drop:**

They can drag and drop any number of cases to their dashboard so they can view progress charts of these cases, the number of completed and remaining tasks within these cases.

- **Rate progress:**

A task/ project owner can rate the progress of his/her case to indicate its status whether it's stable, at risk, or critical and needs attention.

- **Notify others:**

A task/project owner can choose to notify anyone among the stuff of the case condition/progress.

- **Delete Item:**

Once an item is no longer needed in the dashboard, the item owner can delete it himself.

### 2.1.2 Use Case Models:

#### A. Patient and Guest:

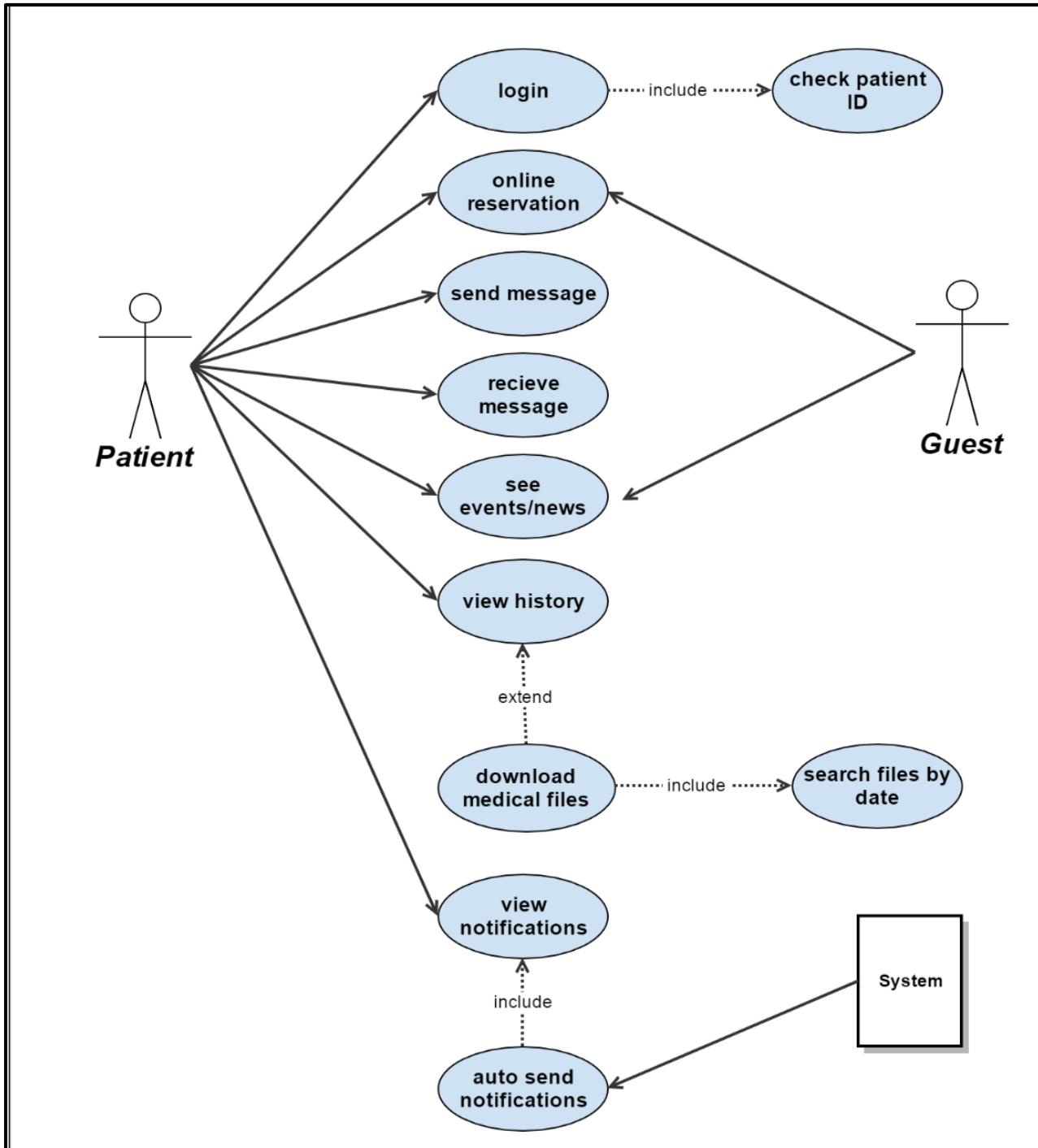


Figure 2.1: patient/guest use case

## **B. Doctor Consultant :**

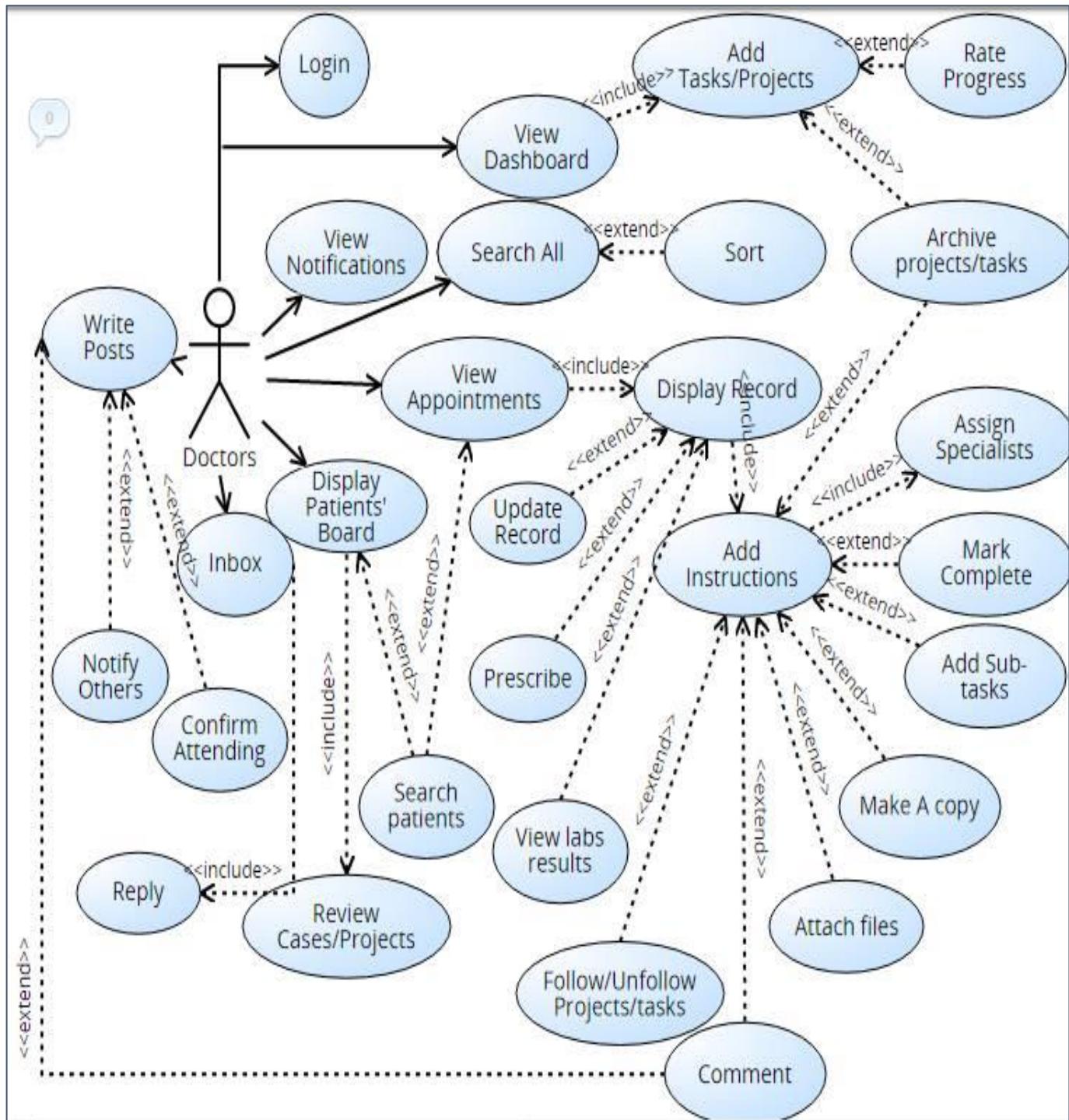


Figure 2.2: consultant use case model

### C. Doctor Specialist :

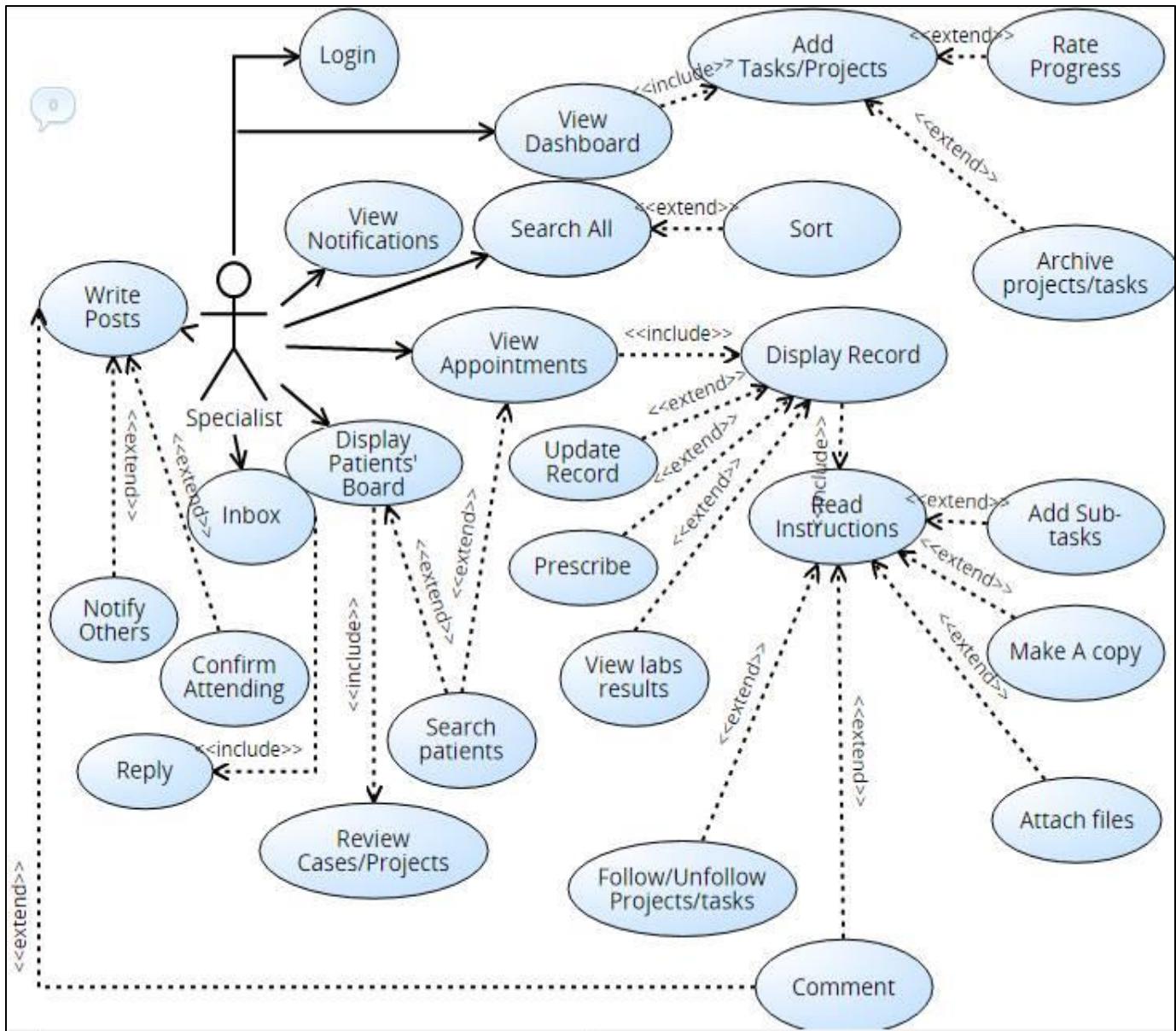


Figure 2.3: specialist use case model

### 2.1.3 Class Diagram:

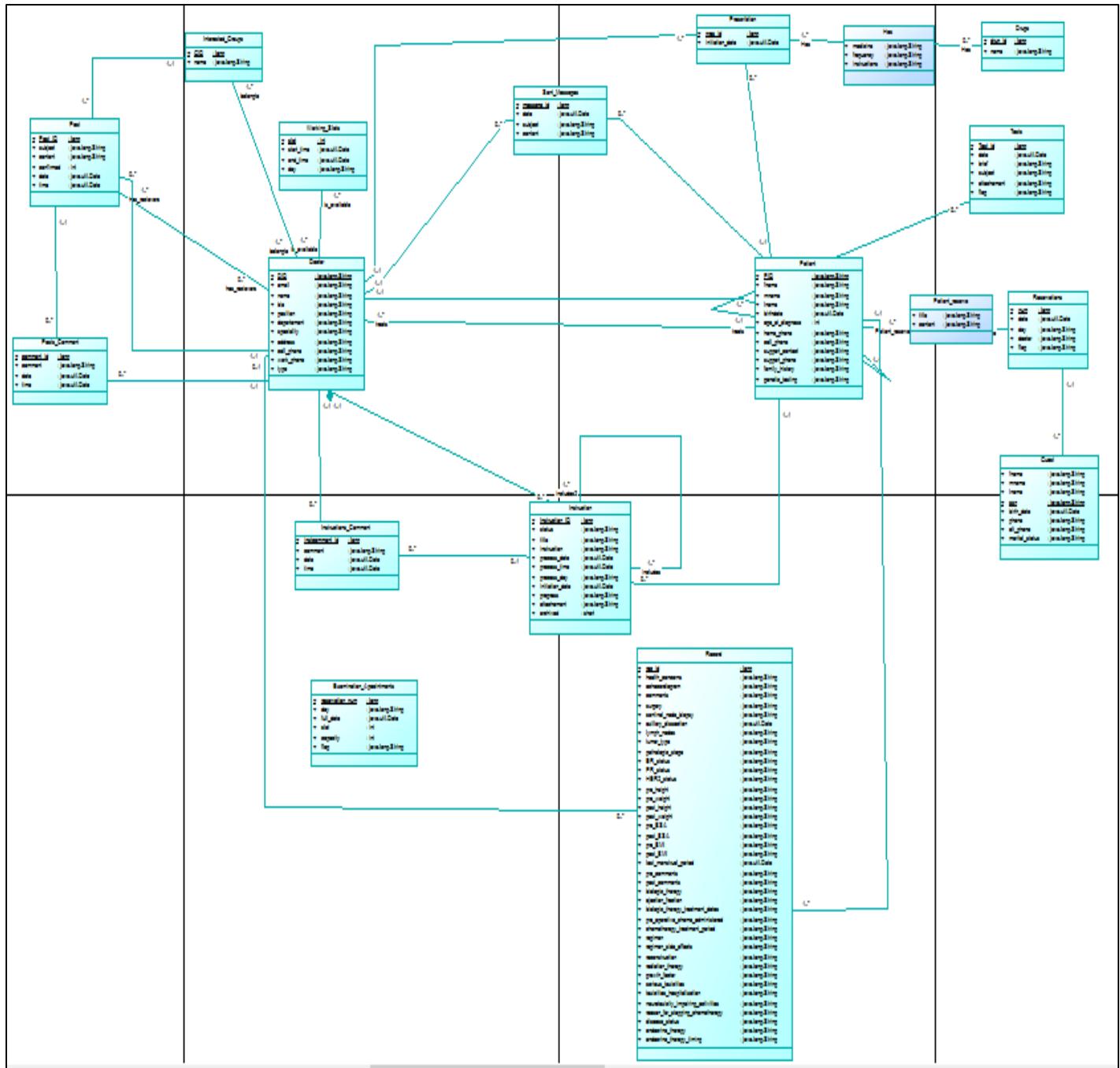


Figure 2.4: class diagram

### 2.1.4-Business Process Modeling:

#### A. Patient BPMN :

- The Design below is for describing the flow of activities of the patient and guest users of the system.
- first in sequence if user choose to see events about the site or not and If the user is a guest only he can reserve an appointment, else if he is a patient, first of all he must login successfully to the system using his ID and then he can do the following activities. Send/ receive messages to/from his doctors or the hospital's Admin, view his medical history, download any file of his medical record. And view the received notifications that are sent to remind him with the doses, examinations' dates, and/or notify him if any appointment is cancelled.

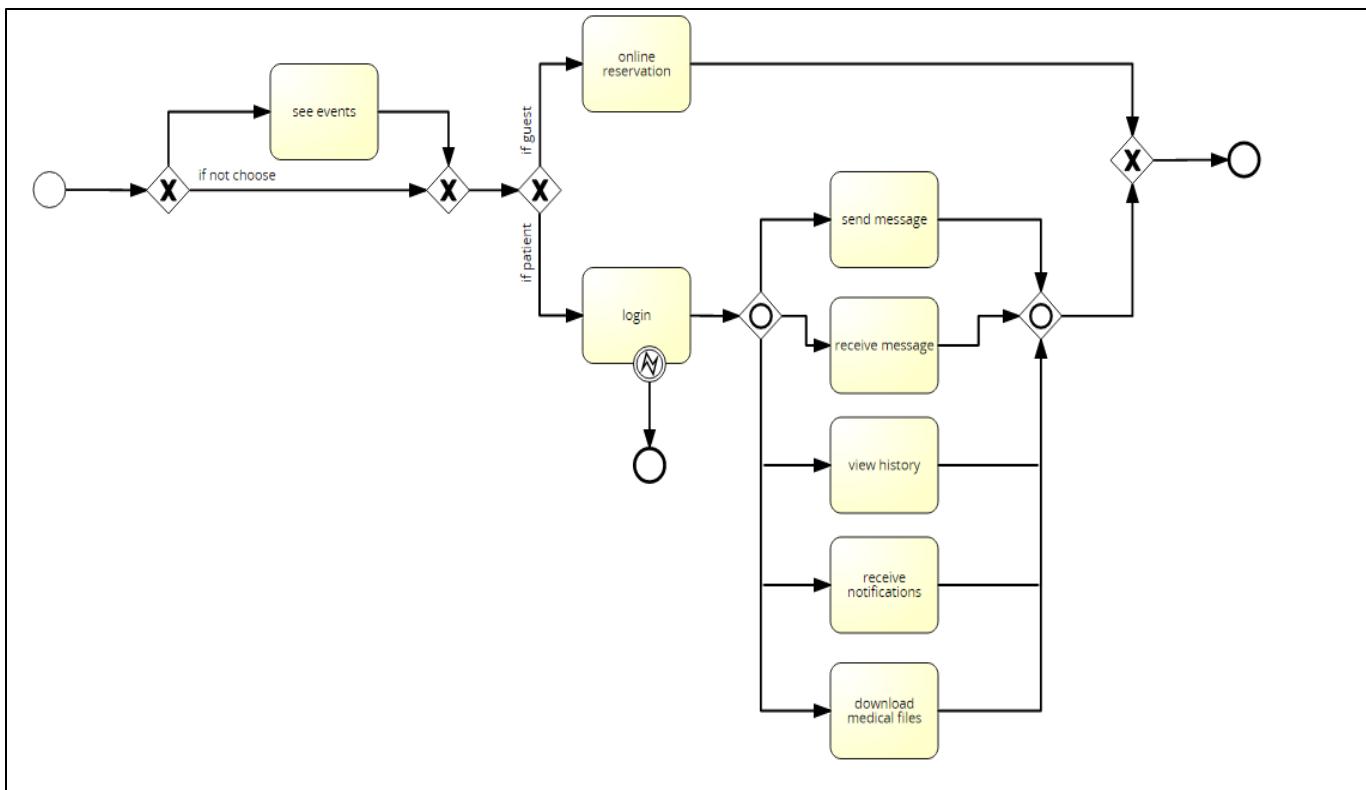


Figure 2.5: patient business process model

**B. Doctor BPMN :**

The Design below is to describe the flow of activities of the Doctor with its 2 types (specialist and consultant). When the doctor enters the home page of the web site, he can choose to see events on the site or not, and after the successful login of the doctor, he can add shortcuts for his projects/tasks, and rate their progress. He can also view the received notifications, receive and reply to his patients' messages, view his timeline where he can write /comment on/notify others to post, search for anything, and view his appointments. In view appointments and displaying patients' records the doctor can do many activities after searching and displaying the wanted record, both of the doctor types can update that record or view the labs' results, view the instructions and do some activities like following/un following projects, attaching files, commenting, but only the consultant can write prescriptions to patients, add instructions and he can also assign specialists to tasks, mark tasks as completed and archive projects/tasks

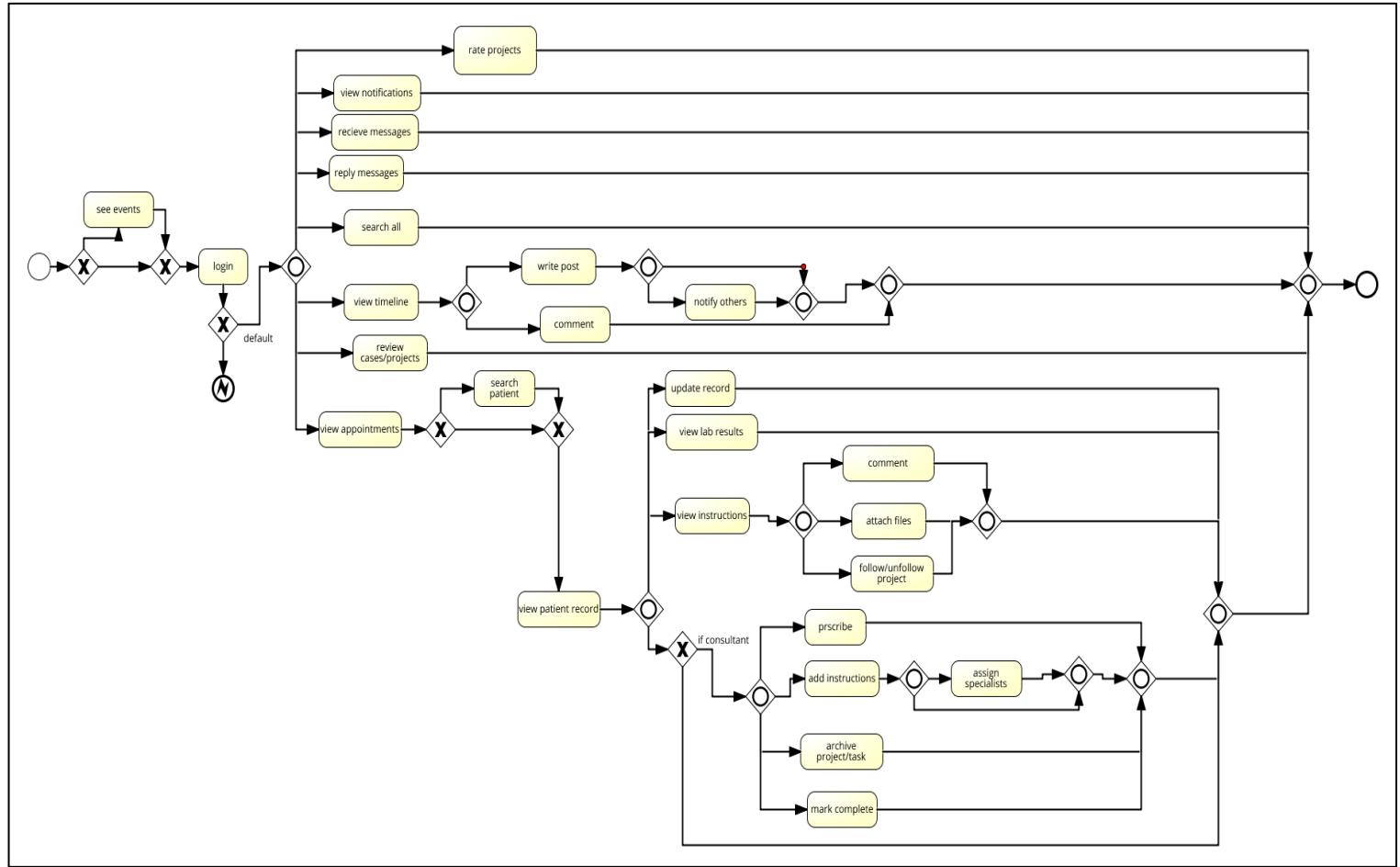


Figure 2.6: doctor business process model

## 2.2-Early Design Phase:

During the Early Design Phase, the system is designed to satisfy the requirements identified in the previous phase and transform the requirements into complete and detailed system design specifications. This phase presents the physical view of the system and describes database design and user interfaces of the system. The output of this phase can be used as an input to the iterative development phase.

### 2.2.1: Database design:

It is the process of producing a data model of database to meet the system requirements.

#### A-Conceptual database design:

The Entity Relationship Model (ER Model) is used to represent this conceptual design. ER Diagram consist of Entities: "list of entities", Attributes and Relationships.

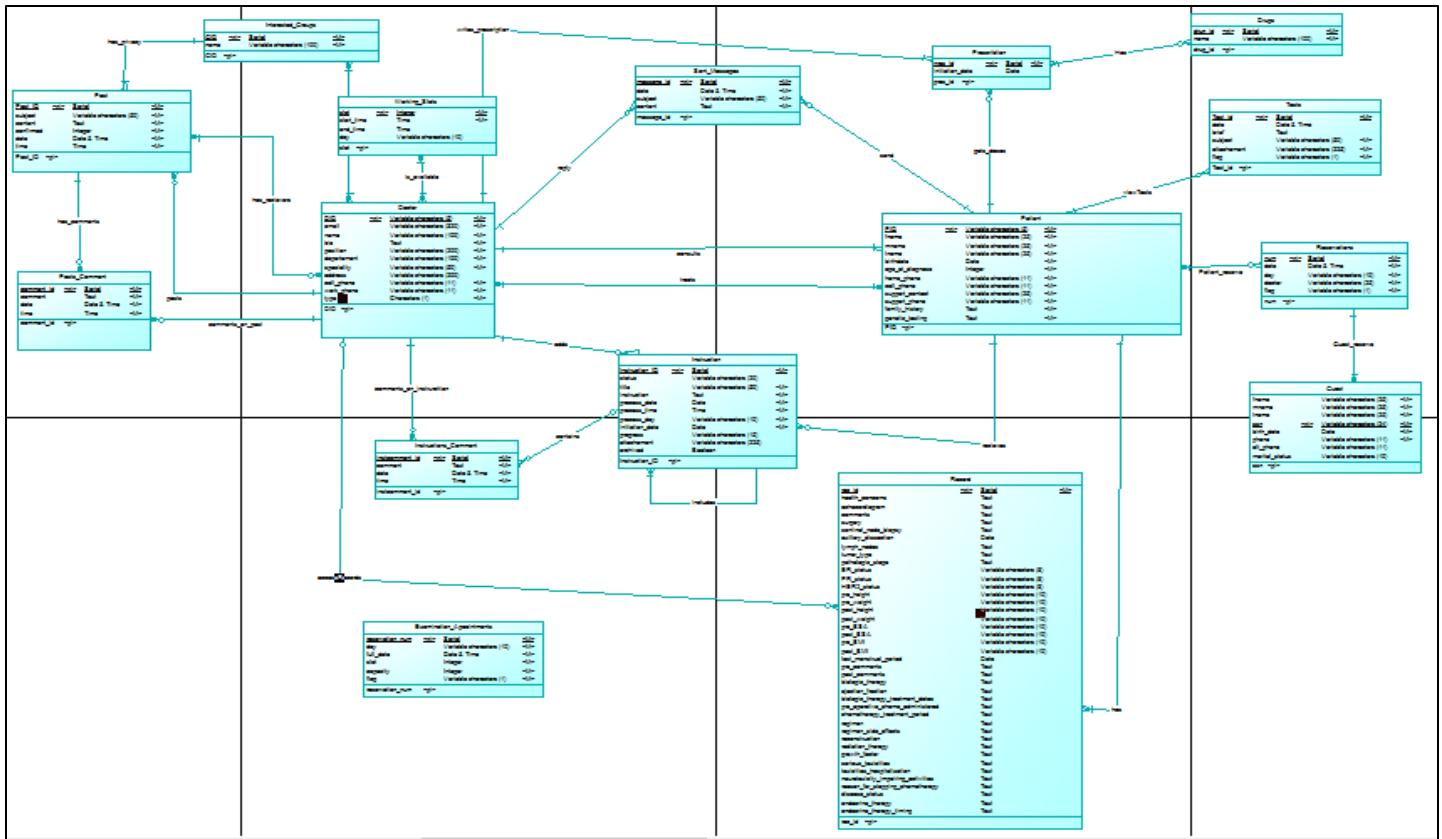


Figure 2.7: ER Model

## B-Physical database design:

The input for this step is the ER Diagram that is converted to relational tables.

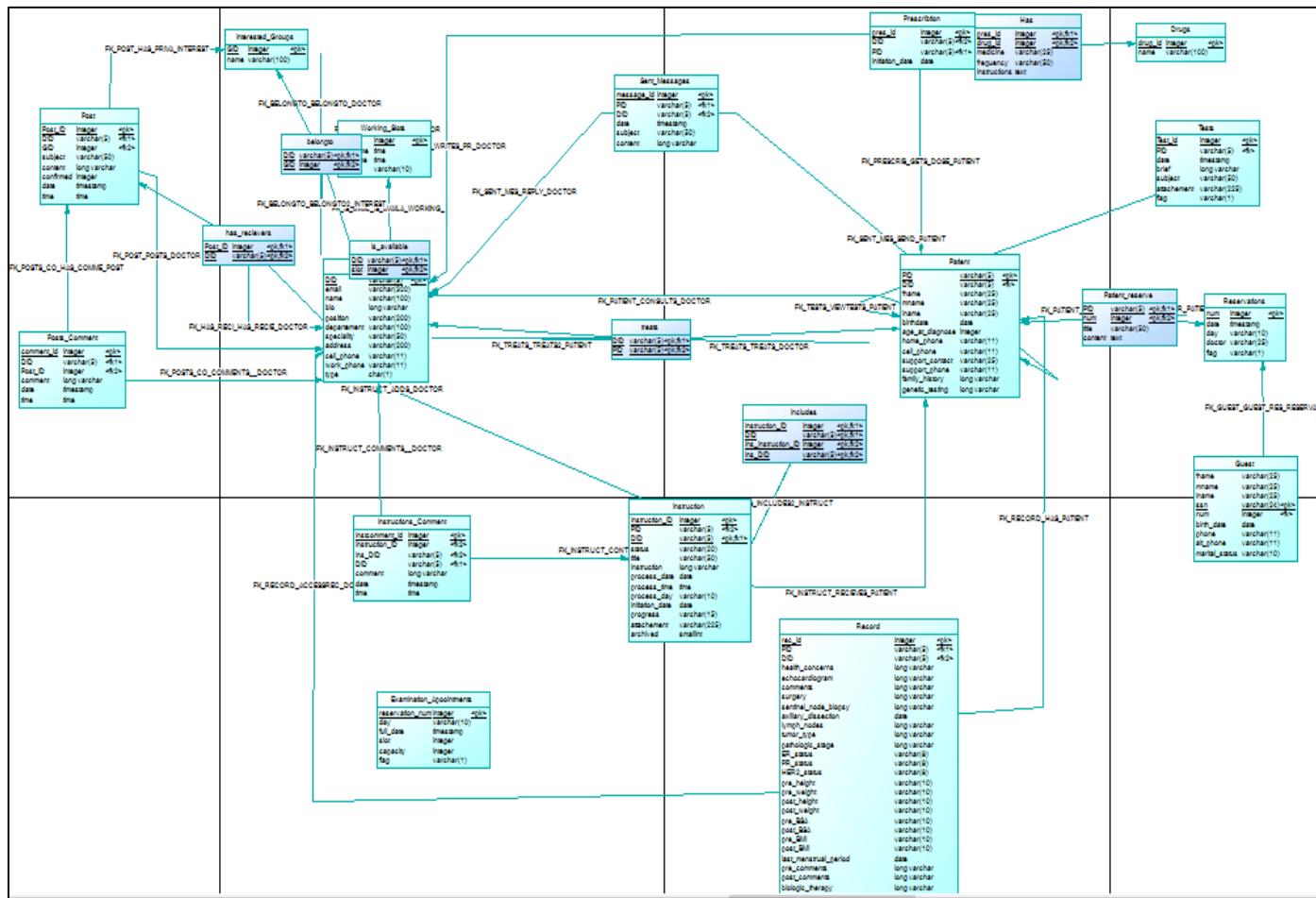


Figure 2.8: physical database model

### **2.2.3: Graphical User Interface:**

This step present the graphical user interface of the system that will have the form of a dynamic web application. The design is made using the following: HTML5, CSS, JavaScript, JQuery and Ajax. The design provides for a responsive site that will work on both desktop and mobile devices.

- **Home Page:** The main interface of the system that show the reservation link and Baheya's events.

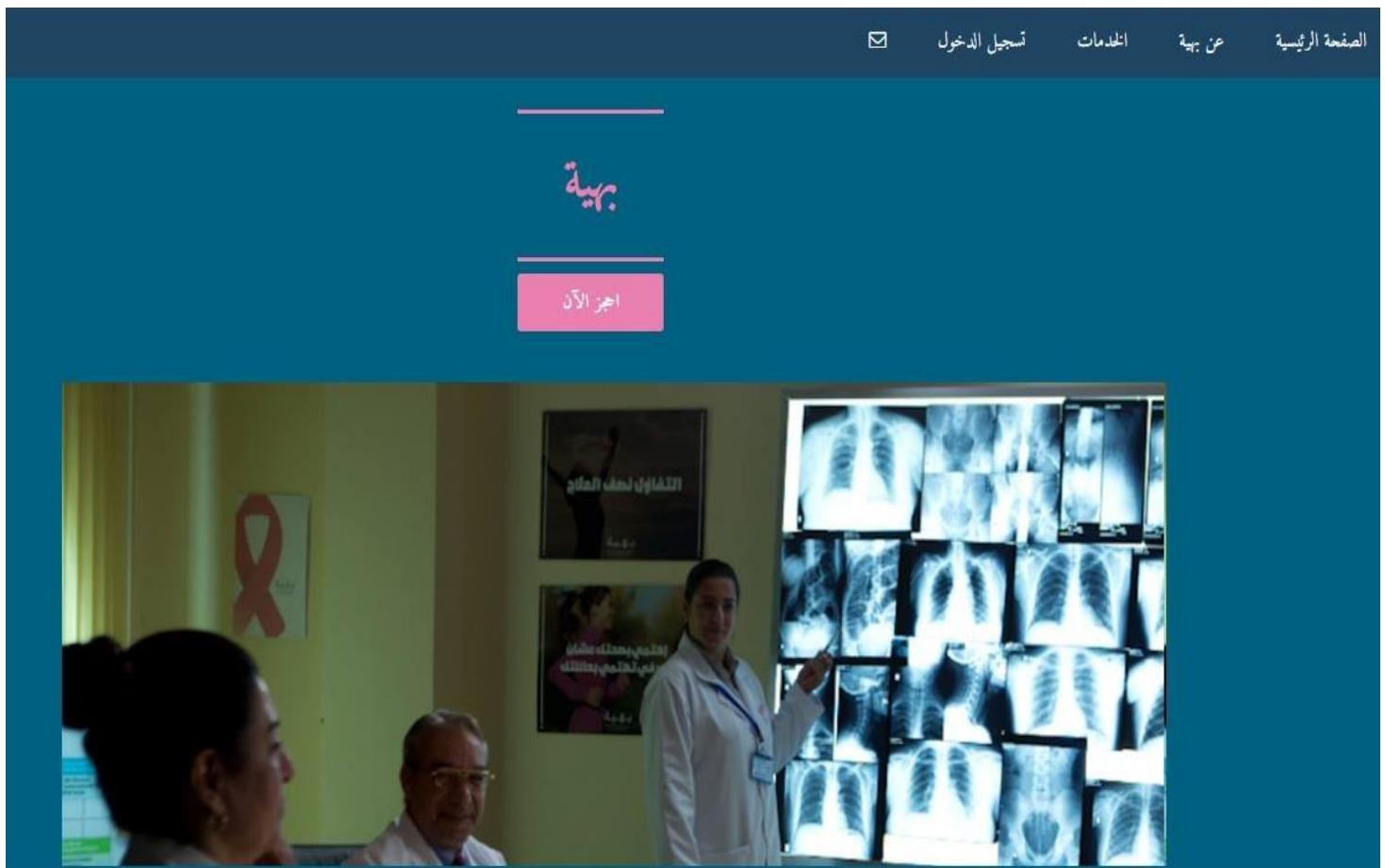


Figure 2.9: Home Page

-**Login Page:** If it is the first time for patient to enter her account so she will type her ID and password given by the hospital and later she can change it.

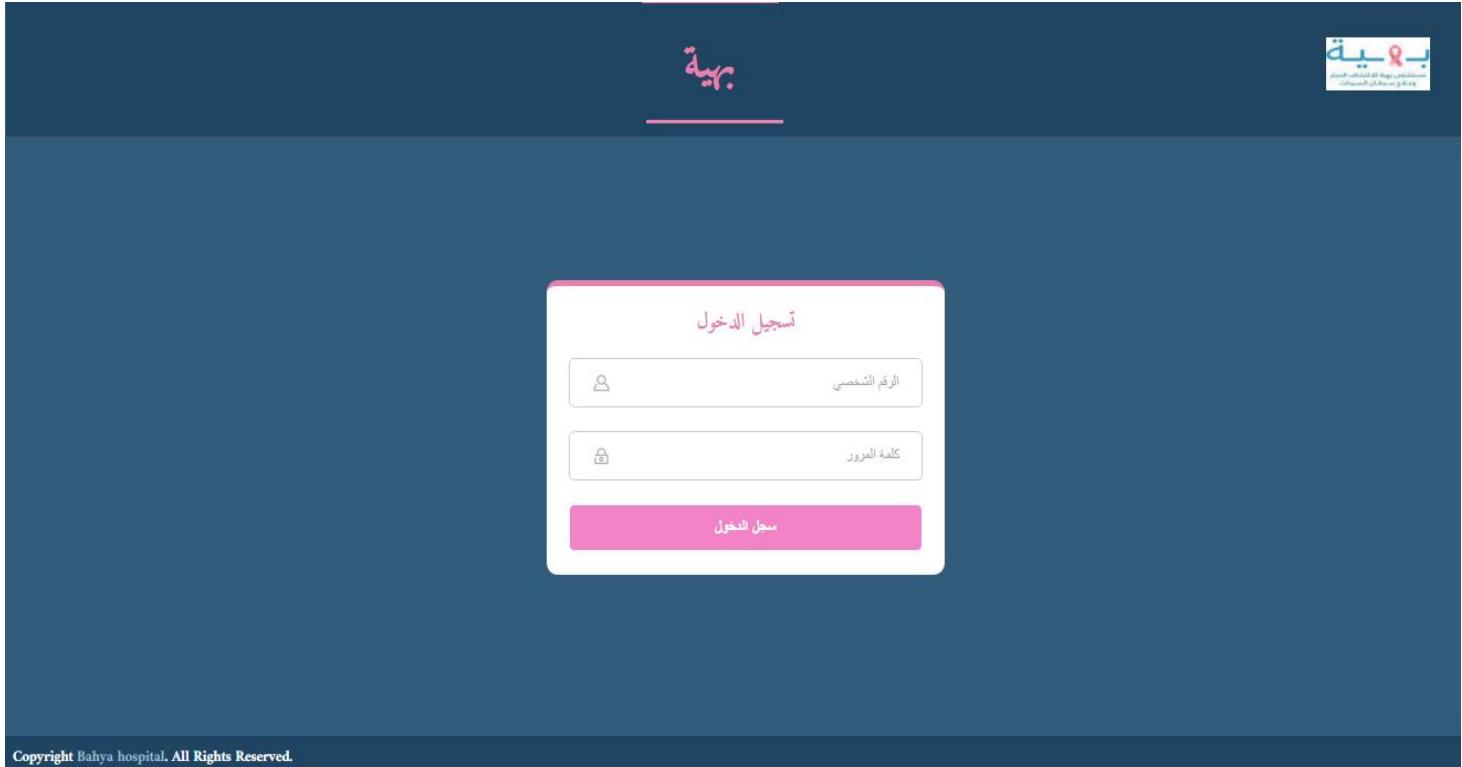


Figure 2.10: Login Page

-**Sign up Page:** If it is the first time for patient to login to his account so this page will appear to complete the missing information.

The image shows the sign-up page for the Female Breast Cancer Tracking System. The page has a dark blue header and footer and a white central form area. At the top, the text "يرجاء ادخال البيانات" (Please enter the data) is displayed in red. Below this are six input fields, each with a placeholder text in Arabic: "الاسم الاول" (First name), "الاسم الاخير" (Last name), "الرقم القومي" (National ID number), "رقم الهاتف الخاص بالمريض" (Patient's phone number), "رقم الهاتف الخاص بامض افراد العائلة" (Phone number of other family members), "كلمة المرور" (Password), and "تاكيد كلمة المرور" (Confirm password). A large pink button at the bottom contains the text "سجل الدخول" (Register).

Figure 2.11: Sign up Page

-**Patient's Home Page:** when the patient log into the system successfully this page will appear that she can update her account or see messages and other functionalities.

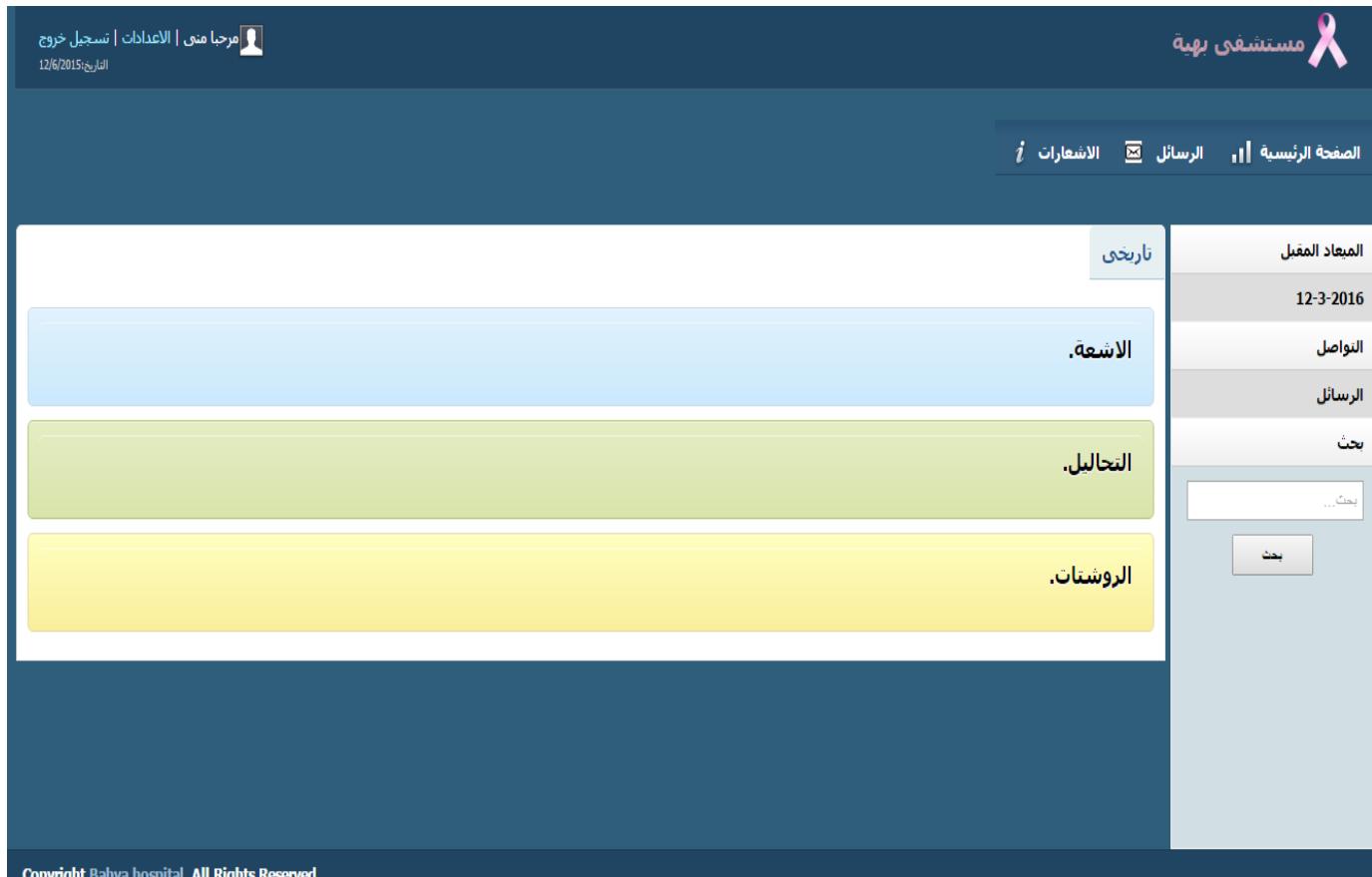


Figure 2.12: Patient's Home Page

-Messages Page: when the patient want to see all her messages.

مسنشفى بهية مستشفى بهية

الرجوع | الاعدادات | تسجيل خروج

12/6/2015

الصفحة الرئيسية | الرسائل | الاشعارات

الرسائل

المياد المفتوح

12-3-2016

التواصل

الرسائل

بحث

بحث...

بحث

الرسائل	العنوان	الرسالة	الوقت
	DR.Amal Mohammed	موعد الاستشارة القادمة	15/12/2015
	Bahya	مؤمن للتنوعيه بمرض سرطان الندى	9/12/2015
	DR.Tahany Mohammed	موعد الاستشارة القادمة	15/11/2015

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Figure 2.13: Patient's Messages Page

-Patient's Message content Page: when the patient open one message from her messages will appear like that.

The screenshot shows a web-based application interface for a patient's message content page. At the top, there is a dark blue header bar with the hospital logo (pink ribbon) and Arabic text "مستشفى بهية". Below the header, a navigation bar includes links for "الصفحة الرئيسية", "الرسائل", and "الاشعارات". On the left side, there is a large text input area with a placeholder "The message content is written here." In the center, there is a summary box containing message details: "من:", "Dr.TahanyFawzy", "تاريخ:", "10-12-2015", and "المحتوى". A "رد" (Reply) button is located at the bottom of this summary box. To the right of the message content, there is a sidebar with sections for "المياد المقابل", "12-3-2016", "التواصل", "الرسائل", and a search section with a "بحث..." input field and a "بحث" button. At the bottom of the page, there is a footer with the text "Copyright Bahya hospital All Rights Reserved".

Figure 2.14: Patient's Message content Page

-Patient's New Message Page: when the patient want to send new message to any doctor, she just choose the name of doctor and type the subject and content of the message then send it.

The screenshot shows the 'New Message' page of the system. At the top right, there is a logo for 'مستشفى بهية' (Baha Hospital) featuring a pink ribbon. The top navigation bar includes links for 'الصفحة الرئيسية' (Home), 'الرسائل' (Messages), and 'الاشعارات' (Notifications). On the left, there is a user profile icon and the date '12/6/2015'. The main form is titled 'إنشاء رسالة' (Create Message). It has fields for 'العنوان:' (Subject) and 'المحتوى' (Content), both of which are currently empty. Below these fields is a button labeled 'ارسل' (Send). To the right of the message form is a sidebar with the title 'المعاد المقابل' (Opposite Match) showing the date '12-3-2016'. The sidebar also contains links for 'التواصل' (Communication), 'الرسائل' (Messages), and a search function with the placeholder 'بحث...' (Search...).

Figure 2.15: Patient's New Message Page

-**Patient's Notifications Page:** the patient would be notified with next examination date, doses date, messages and any important changes that belong to her or anything the hospital want the patient to know it.

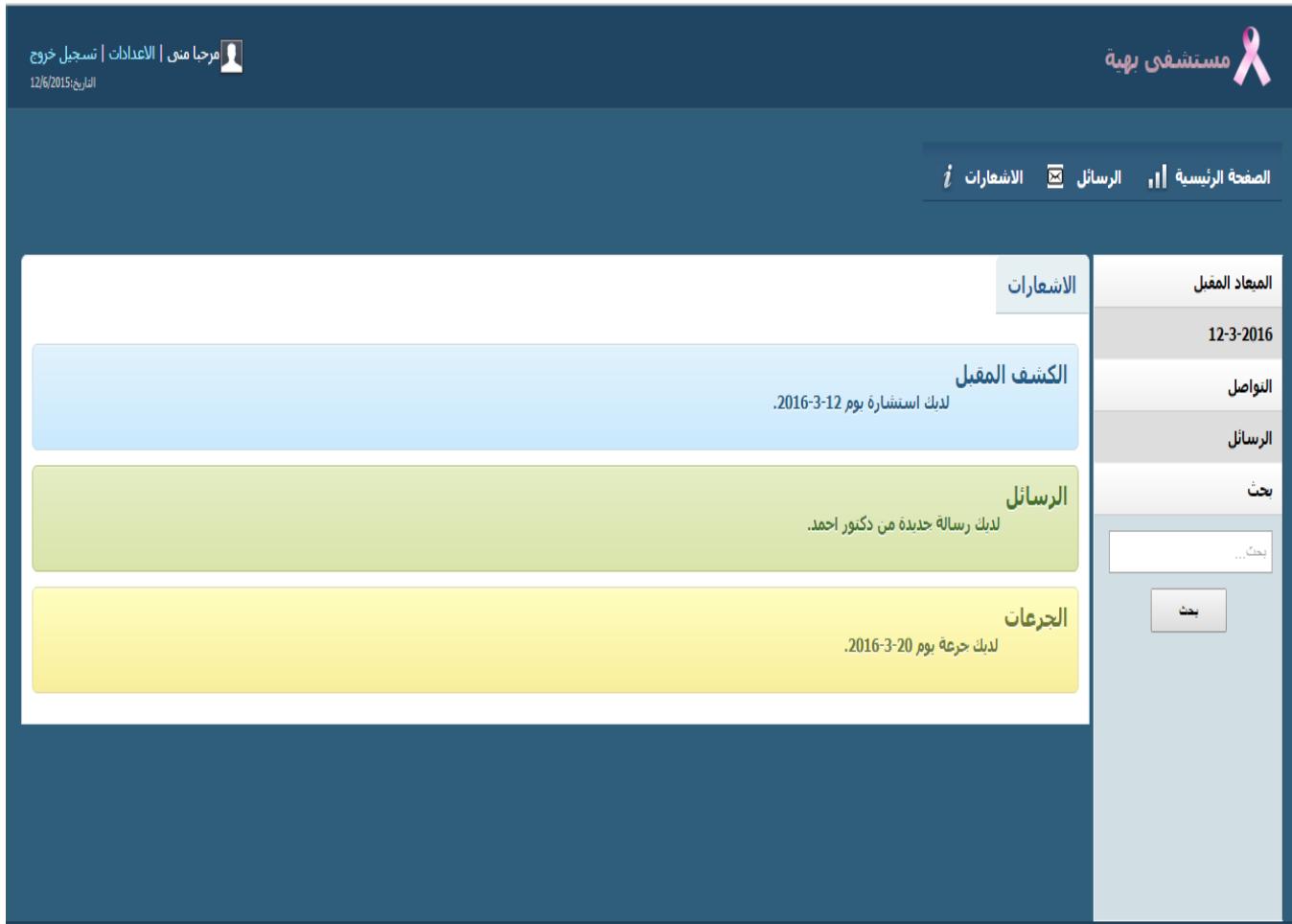


Figure 2.16: Patient's Notifications Page

-Patient's Medical History Page: the medical history for the patient consist of all her prescriptions, X-Rays that can be viewed /download and labs that is private to her only.

النتائج

النوع	التاريخ
انشعاع	12/6/2015
انشعاع	12/9/2014
انشعاع	1/1/2015
انشعاع	12/6/2014
انشعاع	24/4/2015
انشعاع	24/4/2015
انشعاع	12/5/2015
انشعاع	2/2/2015

الميغاد المعملي

12-3-2016

النواص

الرسائل

بحث

بحث ...

بحث

Figure 2.17: Patient's Medical History (X-Rays)

الناتج	المعاد الم قبل
12-3-2016	12-3-2016
النوع	التاريخ
تحميل	
أزيمات كبد	12/6/2015
فيصالة الدم	12/9/2014
أنيميا	1/1/2015
دم صورة كاملة	12/6/2014
سكر عشوائي	24/4/2015
سكر صائم	24/4/2015
دم صورة كاملة	12/5/2015

Figure 2.18: Patient's Medical History (labs)

الناتج	المعاد الم قبل
12-3-2016	12-3-2016
النوع	التاريخ
تحميل	
روشنه	12/6/2015
روشنه	12/9/2014
روشنه	1/1/2015
روشنه	12/6/2014
روشنه	24/4/2015
روشنه	24/4/2015
روشنه	12/5/2015
روشنه	2/2/2015

Figure 2.19: Patient's Medical History (prescriptions)

**-Doctor's Dashboard:** when the doctor log into the system successfully his/her dashboard will appear that contain today's list, tasks and dates. The doctor also can manage what s/he wants to see in his/her dashboard.

The screenshot shows the Doctor's Dashboard interface. At the top, there are navigation links: Dashboard (with a blue bar), Message (2 notifications), Patient History, Notifications (4 notifications), and Blank Space. On the left, a sidebar lists Appointments, Patients, and Search. The main area is divided into sections: Dr.Tasks, Dr.Dates, and Dr.Today List.

- Dr.Tasks:** Contains three buttons: APPOINTMENT MANAGER (clock icon), INVENTORY (green plus sign icon), and STATISTICS (chart icon).
- Dr.Dates:** A table showing daily appointment counts from Saturday to Thursday. All days show From 10 and To 3.

Day	From	To
Saturday	10	3
Sunday	10	3
Monday	10	3
Tuesday	10	3
Wednesday	10	3
Thursday	10	3

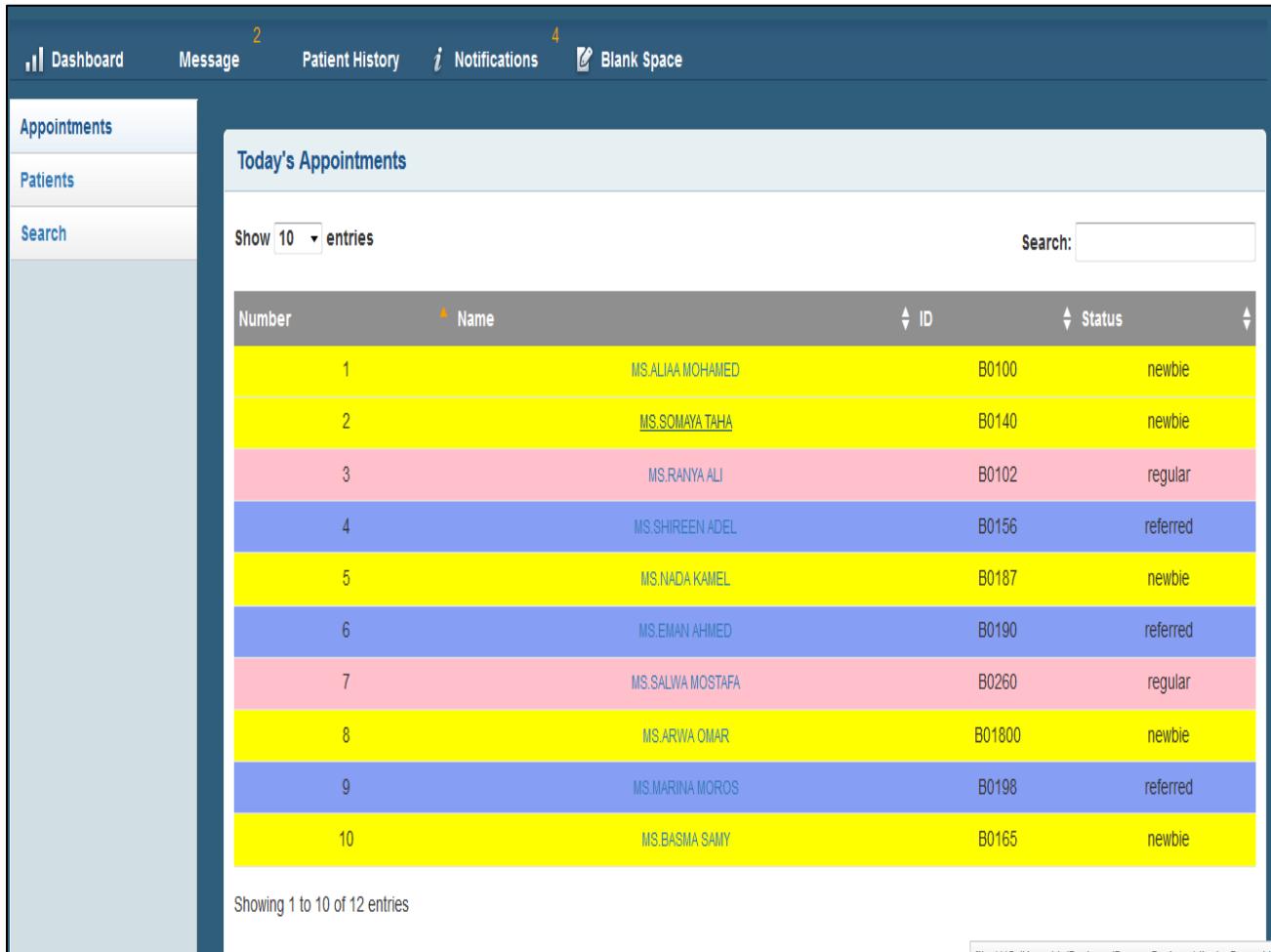
An **Edit** button is located at the bottom of this section.

- Dr.Today List:** A list of tasks for the day:
  - Patients to examin from 10am to 3.30pm
  - Meeting at 4pm with your stuff
  - Meeting with heads of departments at 6pm
  - Surgery at 9pm

An **Edit** button is located at the bottom of this section.

Figure 2.20: Doctor's Dashboard

-**Doctor's Appointments Page:** this page contains today's appointments for his/her with colored rows as yellow for new patients, pink for regular patients and blue for referred patients.



The screenshot shows a web-based application interface for managing patient appointments. At the top, there is a navigation bar with links: Dashboard (with a count of 2), Message (with a count of 2), Patient History, Notifications (with a count of 4), and Blank Space. On the left, a sidebar has three items: Appointments, Patients, and Search. The main content area is titled "Today's Appointments". It includes a search bar with a dropdown showing "Show 10 entries" and a search input field. Below this is a table with the following data:

Number	Name	ID	Status
1	MS.ALIAA MOHAMED	B0100	newbie
2	MS.SOMAYA TAHA	B0140	newbie
3	MS.RANYA ALI	B0102	regular
4	MS.SHIREEN ADEL	B0156	referred
5	MS.NADA KAMEL	B0187	newbie
6	MS.EMAN AHMED	B0190	referred
7	MS.SALWA MOSTAFA	B0260	regular
8	MS.ARWA OMAR	B01800	newbie
9	MS.MARINA MOROS	B0198	referred
10	MS.BASMA SAMY	B0165	newbie

At the bottom left, it says "Showing 1 to 10 of 12 entries".

Figure 2.21: Doctor's Appointments Page

-**View Patient Page:** during the examination, the doctor will open the patient record that contains the general information about this patient and her record, also the doctor will be able to add instruction and write prescription.

The screenshot shows a web-based application interface for managing female breast cancer tracking. At the top, there is a dark blue header bar with four tabs: "Message" (with a '2' notification), "Patient History" (with a '4' notification), "Notifications" (with a 'Blank Space'), and "Blank Space". Below the header are three blue buttons: "Medical Record" (with a clipboard icon), "Add-Instructions" (with a person icon), and "Prescribe" (with a prescription icon). The main content area is a white page divided into sections by light gray horizontal and vertical lines. The first section, titled "General Information", contains a table with four rows: "Patient Name" (Jane Plummer), "Date of birth" (6/17/1965), "Age at diagnosis" (47), and "Support contact" (Tom Plummer). Below this is a section titled "Background Information" which is currently collapsed. Underneath are three more collapsed sections: "Left breast", "Collapsible Group Item #4", and "Collapsible Group Item #5". At the bottom of the content area is another collapsed section titled "Collapsible Group Item #6".

Figure 2.22: View Patient Page

-**Doctor's Patients Page:** the doctor can view all his/her patients to view their record. The doctor can search for specific patient using her ID.

The screenshot shows a web page titled "Dr.Patients". At the top right is a search bar with a "Patient ID" input field and a "Search" button. Below the title, there is a list of patient names arranged in two columns of four. Each name is enclosed in a yellow rectangular box. A blue "Back" button is located at the bottom left of the page.

Amal Mohammed	Maha Ahmed
Maram Ahmed	Marem Omar
Heba Ahmed	Heba Mohammed
Fathyah Mahmoud	Samira Tarek
Mona Yousef	Manal Khaled

Back

Figure 2.23: Doctor's Patients Page

-**View Medical Record Page:** when the doctor open the patient's page during examination or any time, s/he can view the patient's medical record that contains labs results, X-Rays and all medical information for this patient.

Medical Record			
Name :			
Show	10	entries	Search:
Day	Report	Labs	Radiations
1/3/2015	report.pdf	labresult.pdf	radi.gif
1/4/2015	report.pdf	labresult.pdf	radi.gif
1/5/2015	report.pdf	labresult.pdf	radi.gif
1/6/2015	report.pdf	labresult.pdf	radi.gif
1/7/2015	report.pdf	labresult.pdf	radi.gif
1/8/2015	report.pdf	labresult.pdf	radi.gif
1/9/2015	report.pdf	labresult.pdf	radi.gif
1/10/2015	report.pdf	labresult.pdf	radi.gif
1/11/2015	report.pdf	labresult.pdf	radi.gif
1/12/2015	report.pdf	labresult.pdf	radi.gif

Showing 1 to 10 of 10 entries

[Back](#)

Figure 2.24: View Medical Record Page

-Doctor's Notifications Page: the notifications divided into different sections: activity log, reminder and timeline notifications.

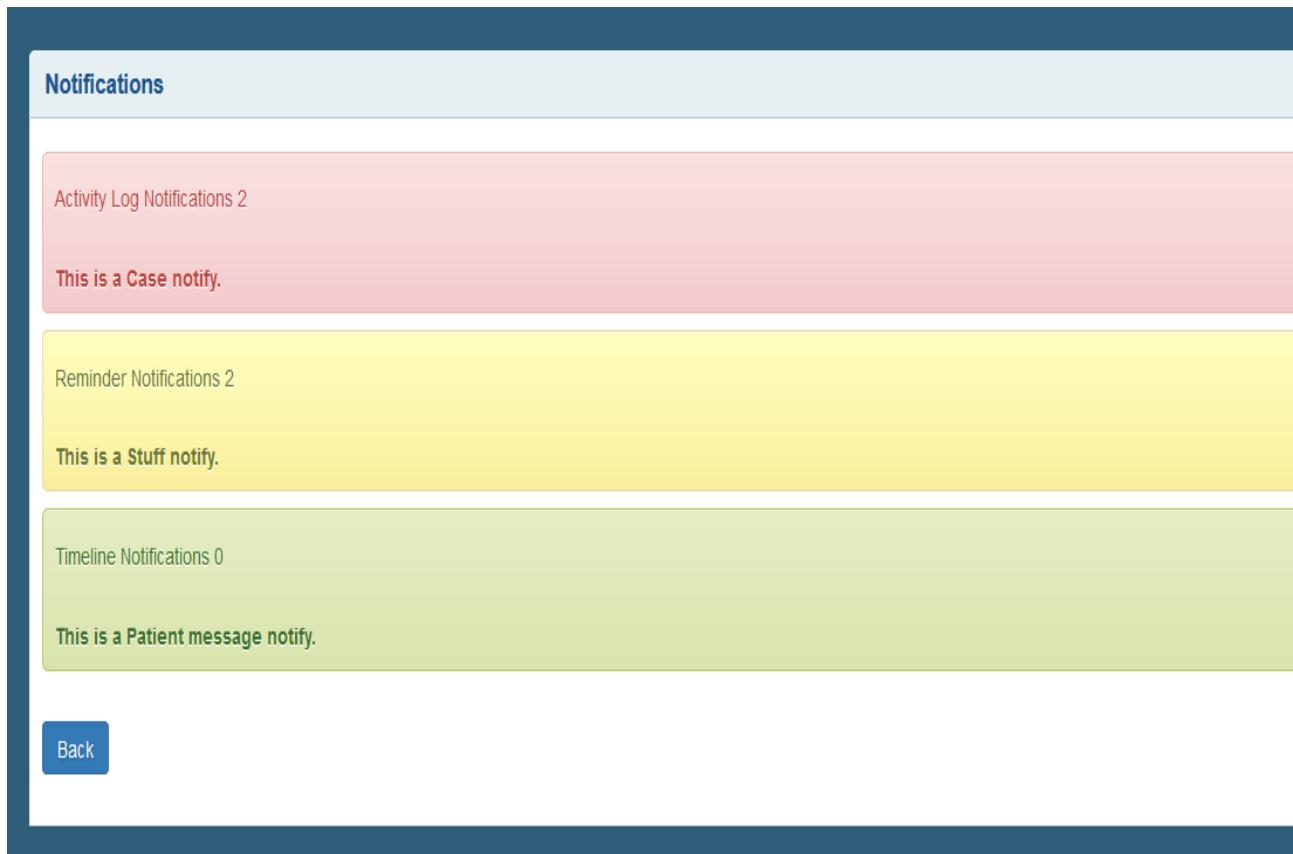


Figure 2.25: Doctor's Notifications Page

-**Activity log Notifications Page:** the doctor see notifications of any updates in the projects/ tasks that assigned to him/her.

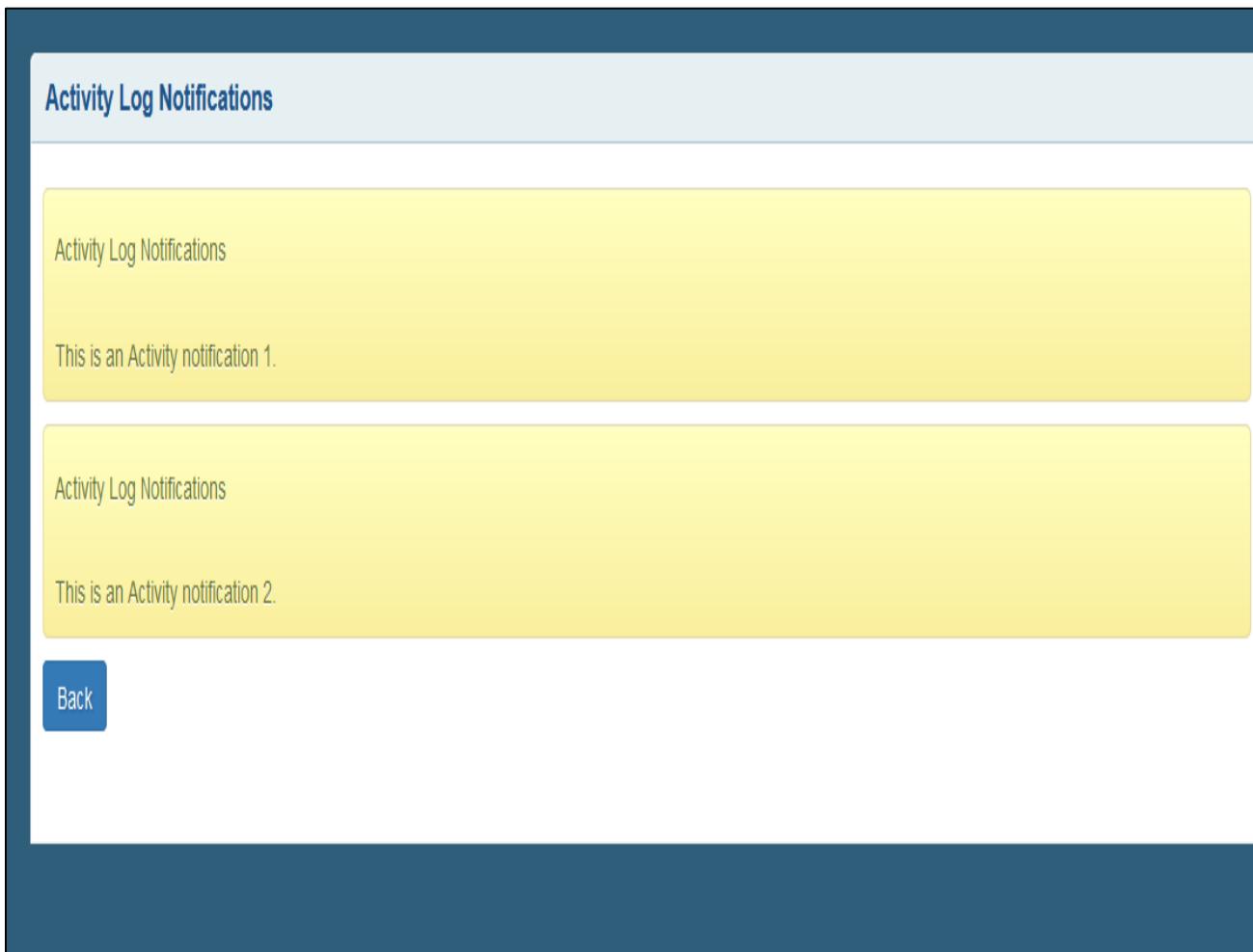


Figure 2.26: Activity log Notifications Page

-**Doctor's Messages:** when the doctor want to see all his/her messages from the patients.

The screenshot shows a list of patient messages on a page titled "Dr.Messages". Each message is displayed in a row with the patient's name and a timestamp. The rows alternate in color between light green and yellow. At the bottom of the list are two blue buttons: "Create New Message" and "Back".

Message Content	Date
Amal Mohammed 0	15/12/2015
Maha Ahmed 2	10/11/2015
Maram Ahmed 0	10/10/2015
Marem Omar 0	2/10/2015
Heba Ahmed 0	13/9/2015
Heba Mohammed 0	9/8/2015
Fathyah Mahmoud 3	12/6/2015
Samira Tarek 0	4/3/2015

Figure 2.27: Doctor's Messages Page

-**View Message Page:** the doctor choose any message to view it.

The screenshot shows a web-based application window titled "Message". On the left, there is a "From:" field containing "Maha Ahmed". Below it is a "Content:" field containing Arabic text: "أريد أن أسأل عن موعد وجودك بالمختلفي". At the bottom left of the main area is a blue "Back" button.

Figure 2.28: View Message Page

-**Reply Message Page:** after opening the message, the doctor then can reply to it.

The screenshot shows a web-based application window titled "Dr.New Message". It has a "To:" field with "Name" and a "Content:" field labeled "Message Content". At the bottom are two blue buttons: "Send" and "Back".

Figure 2.29: Reply Message Page

-[Doctor's space Page](#): this page contains two sections calendar and clipboard that help doctor to organize his/her work to divide according to degree of importance.

Calendar  Clipboard 

### Calendar Tab

Add Custom Event

Event Title

default  
 warning  
 success  
 info  
 danger

Draggable Events

## February 2016

[!\[\]\(d5b19e3eeb15a4a577d10d9648e38ef6\_img.jpg\)](#) [today](#) [month](#) [week](#) [day](#) [!\[\]\(6fc7c9da91f62be7ef3d5cb20b010fd0\_img.jpg\)](#)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	1	2	3	4	5

Figure 2.30: Doctor's space Page (Calendar)

The screenshot shows a rich text editor interface. At the top, there are two tabs: "Calendar" and "Clipboard". The "Clipboard" tab is currently selected, indicated by a blue background and white text. Below the tabs is a toolbar with various icons for text formatting, such as bold, italic, underline, and superscript. To the right of the toolbar, there is a large text area containing the placeholder text "Article Title" and "Here's some sample text". The overall layout is clean and modern, typical of a web-based content management system.

Figure 2.31: Doctor's space Page (Clipboard)

### **2.3-Planning Phase:**

This phase represents user stories for all Baheya's hospital's system actors (Patients-Consultants-Doctors-and Specialists). For Each user story described in this phase, there is a card describing its number, name, content, acceptance criteria/confirmation "if exists", priority level "decided by our clients in the hospital", Estimate time for the implementation phase "between 2-3 weeks" for each priority Group.

#### **CARD NO: 1**

##### **Name: Login**

- As A user I want to log into the system so that I can use my homepage

##### **Acceptance criteria /confirmation :**

- I Can log in using my ID that's given to me by the hospital and the password previously specified
- The system notifies me whenever the requested fields(name, Passwords) aren't valid

##### **Priority: 1**

##### **Estimate:**

#### **CARD NO: 2**

##### **Name: online reservation**

- As A guest to the website I want to reserve for an appointment so that I will save time for me and for the hospital.

##### **Acceptance criteria /confirmation :**

- I can reserve online using my basic information (name, national ID, age).
- The system will notify me by an email /SMS before my appointment so that I won't forget.

##### **Priority: 1**

##### **Estimate:**

**CARD NO: 3**

**Name:** send Message

- As A User I want to send messages to another user so that I can ask for an inquiry I have or replying to an inquiry.

**Acceptance criteria /confirmation :**

- I can send message by entering a valid name or email.
- I can send message by entering at least one character.
- The system displayed list of all possible receivers.
- The system notifies me if the content of the message is empty or the name or email is invalid.

**Priority: I**

**Estimate:**

**CARD NO: 4**

**Name:** receive Message

- As A User I want to receive messages sending to me by another user so that I can show the answering of my inquiry or replying to someone inquiry.

**Acceptance criteria /confirmation :**

- The system notifies me receiving a message.

**Priority: I**

**Estimate:**

**CARD NO: 5**

**Name:** see events/news

- As A User I want to see hospital's latest events or news so that I can join hospital's events.

**Acceptance criteria /confirmation :**

- The system displays all latest events or news of the hospital on the home page of the website.

**Priority: I**

**Estimate:**

**CARD NO: 6**

**Name:** *view history*

- As A patient I have my own medical history so that I can view its content.

**Acceptance criteria /confirmation :**

- The system displays the treating doctor and the doctors' notes for each prescription, X-ray, tests, doses, etc. sorted by date.

**Priority:** 2

**Estimate:**

**CARD NO: 7**

**Name:** *download file*

- As A patient I can download any of my medical history files.

**Acceptance criteria /confirmation :**

- I can request any of my medical history files to download it.
- The system allows patient to download any of his medical history files after requesting it for a period of time after that he can only view it.

**Priority:** 1

**Estimate:**

**CARD NO: 8**

**Name:** *search files by date*

- As A patient I can search for my medical history files by date

**Acceptance criteria /confirmation :**

- I can enter a specific date to view my medical history on it.
- The system displays all my medical history files stored on that date.

**Priority:** 1

**Estimate:**

**CARD NO: 9****Name:** receive notifications

- As A patient I can receive notification reminder me about my next examination date, doses date, received messages, cancelled reservation, And Anything the hospital wants me to know.

**Acceptance criteria /confirmation :**

- The system notifies me about next examination date, doses date, received messages, cancelled reservation, And Anything the hospital wants me to know.

**Priority:** 5**Estimate:****CARD NO: 10****Name:** Customize Dashboard

- As A doctor I want to customize my dashboard so that I can see a summery for all things that I should be aware of day by day.

**Acceptance criteria /confirmation :**

- I can customize my dashboard using drag-and-drop.
- I can see the progress of any case I have.
- The system notifies me whenever there is any argent report I must see today.

**Priority:** 3**Estimate:****CARD NO: 11****Name:** add project/tasks

- As A doctor I want to add cases to my dashboard or add tasks to any existing case easily so that I can follow its status whenever I open my account.

**Acceptance criteria /confirmation :**

- I can use drag-and-drop to add the projects/cases to my dashboard.
- I can use drag and drop to add tasks to a specific patient/case.

**Priority:** 3**Estimate:**

**CARD NO: 12****Name:** *rate progress*

- As a doctor I want to rate the progress of my patients' cases so that I can see if anyone needs a special attention.

**Acceptance criteria /confirmation :**

- I can rate the progress of any of my patients using three categories (stable, at risk, need attention).
- The system notifies me if there is any urgent case who need attention.

**Priority:** 3**Estimate:****CARD NO: 13****Name:** *archive patient/project*

- As A doctor I want to be able to archive any of my patients/cases so that I can only see patients who are still being treated.

**Acceptance criteria /confirmation :**

- I can archive any of my patients/cases who has cured completely.
- I can give permission to any specialist to archive any patient/case.

**Priority:** 3**Estimate:****CARD NO: 14****Name:** *search*

- As A doctor I want to search for anything I want (case, task,).

**Acceptance criteria /confirmation :**

- I can search for any task I have assigned or created.
- I can search for any of my conversations.
- I can search for any task which I follow.

**Priority:** 6**Estimate:**

**CARD NO: 15**

**Name:** sort

- As A doctor I want any results for my search to be sorted so that I can use it easily.

**Acceptance criteria /confirmation :**

- I can search anything and wants my results to be sorted.
- I can sort any results by :
  - Type (Project/task)
  - Recently modified
  - Due Dates
  - Statue(in progress-completed but not archived- archived)
  - Creation time
  - Completion time

**Priority:** 6

**Estimate:**

**CARD NO: 16**

**Name:** write post

- As A doctor I want to write post on my timeline so that others can see it.

**Acceptance criteria /confirmation :**

- I can write post for any meetings, conferences.
- I can identify my post with a subject.

**Priority:** 4

**Estimate:**

**CARD NO: 17**

**Name: confirm attending**

- As A doctor I want to have the ability to confirm attendance for meetings/conferences so that others who are following can know if I will come or not.

**Acceptance criteria /confirmation :**

- I can confirm attendance on any post which I wrote / followed or assigned to.
- Others who are following the same post will know if I confirmed as the system will notify them.

**Priority: 4**

**Estimate:**

**CARD NO: 18**

**Name: notify others**

- As a doctor I want to notify any other doctor to a post so that he will has notifications for this post confirmations/comments.

**Acceptance criteria /confirmation :**

- I can notify any doctor to my written post.
- I can notify others by :
  - Selecting names.
  - Selecting whole department
- Selecting doctors/specialists of patient/case "X"

**Priority: 4**

**Estimate:**

**CARD NO: 19**

**Name:** *Inbox*

- As A Doctor I want to answer patients' questions.

**Acceptance criteria /confirmation :**

- I Can open "Inbox" and all questions belongs to me appear on the screen.

**Priority:** 3

**Estimate:**

**CARD NO: 20**

**Name:** *Reply*

- As A Doctor I want to reply to patients' inquiries that are sent to them in inbox.

**Acceptance criteria /confirmation :**

- The system notifies me whenever the requested field (reply) is empty or not send.

**Priority:** 3

**Estimate:**

**CARD NO: 21**

**Name:** *View appointments*

- As A Doctor I want to view my appointments with patients.

**Acceptance criteria /confirmation :**

- I can distinguish between patients who come for first time or my patients or who are referred to me.

**Priority:** 2

**Estimate:**

**CARD NO: 22**

**Name:** Search patients

- As A Doctor I want to search for specific patient.

**Acceptance criteria /confirmation :**

- I can search using ID or Name of patient.
- The system notifies me whenever the requested field (ID or name) is not valid.

**Priority: 1**

**Estimate:**

**CARD NO: 23**

**Name:** Display records

- As A Doctor I want to view medical record for selected patient.

**Acceptance criteria /confirmation :**

- When viewing record patient, I can update it.

**Priority: 1**

**Estimate:**

**CARD NO: 24**

**Name:** Update Record

- As A Doctor I want to update patient's medical record after each examination.

**Acceptance criteria /confirmation :**

- The system save changes to the medical record.

**Priority: 2**

**Estimate:**

**CARD NO: 25**

**Name: Prescribe**

- As A Consultant I want to write prescriptions after each examination.

**Acceptance criteria /confirmation :**

- The system save the new prescription and allow to print it.

**Priority: 1**

**Estimate:**

**CARD NO: 26**

**Name: view labs results**

- As A consultant /specialist I want to view tests and labs' results of patients

**Acceptance criteria /confirmation :**

- I can view the history about labs results of patients.
- The system displays lab results and allow me to edit instructions.

**Priority: 2**

**Estimate:**

**CARD NO: 27**

**Name: Add instructions**

- As A consultant I can add some instructions like doing a certain type of X rays, or having Physiotherapy for a specific duration.

**Acceptance criteria /confirmation :**

- I will add these instructions as sequences of instructions.
- So that I can convert every sequence of instructions to project.

**Priority: 2**

**Estimate:**

**CARD NO: 28**

**Name:** Assign specialists

- As A consultant I can assign up to many specialists to carry out the sequence with the concerned patient.

**Acceptance criteria /confirmation :**

- The system displays list of specialists' names.
- The system allows me to assign the medical case to number of them.

**Priority:** 2

**Estimate:**

**CARD NO: 29**

**Name:** Mark Complete

- As A consultant I can mark on a project as it completed.

**Acceptance criteria /confirmation :**

- I can mark any task as it completed and also specialists if they are assigned previously to this task.

**Priority:** 2

**Estimate:**

**CARD NO: 30**

**Name:** Attach files

- As A consultant /specialist I can attach files to the task.

**Acceptance criteria /confirmation :**

- The system allows others to attach files in comment.

**Priority:** 2

**Estimate:**

**CARD NO: 31**

**Name:** Comment

- As A consultant /specialist I can adding comments and replying on the tasks that I assigned on it.

**Acceptance criteria /confirmation :**

- Also, System enables me to attach files while commenting.

**Priority:** 2

**Estimate:**

**CARD NO: 32**

**Name:** follow

- As a consultant /specialists I can choose to follow certain tasks or medical cases.

**Acceptance criteria /confirmation :** \_\_\_\_\_

**Priority:** 2

**Estimate:**

**CARD NO: 33**

**Name:** un follow projects/tasks

- As A Specialist I can choose to un follow tasks when I won't be related to this task anymore.

**Acceptance criteria /confirmation :** \_\_\_\_\_

**Priority:** 2

**Estimate:**

**CARD NO: 34**

**Name: Doctor Notifications**

- As a Doctor I can display all notifications of all changes in all my assigned medical cases and due dates of them.

**Acceptance criteria /confirmation :**

- The system notifies me with: task is assigned to me, posts I am following, new comments are added to task x, new files are attached to task x, new sub tasks are added to the task x, the task is marked complete, task is archived/ deleted ...etc.
- The system reminds me of tasks due dates.

**Priority: 5**

**Estimate:**

## **Chapter 3: Iterative Development Phase:**

This chapter shows that this phase is repeated to clarify every changes happened in extreme programming phases .This chapter includes iterative analysis which contains all changes made to the requirements that will be provided by the website sources, validations, use case diagrams (models, tables), class diagram, the business process models, and the final design which contains database design and website pages and

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### *3.1 Iterative Analysis:*

In this section the system will be identified into its functional requirements, use case model for patient, doctor specialist and doctor consultant, use case tables, class diagram and business process modeling. This phase will be revisited if any requirements change in next phases.

#### 2.1.1 Functional Requirements:

##### A: For Guests:

- View ads:
  - Anyone can see Baheya's events/news at the home page of the website.
  
- Reserve:
  - Anyone can reserve online :
    - If it is his first time to reserve in Baheya then he must fill form [name, age, gender, address, mobile phone].
    - If not, he must enter his hospital ID and then choose his suitable date.

##### B: For Patients:

- Login:
  - Once the patient go to the hospital for examination then he will has an ID which is his username and password for his account.
  - Any patient can login to his account using his hospital ID for the first time then as user name and password then he can change it.
  - In first time logging in patient should provide an e-mail and phone number to be easy to contact with him.

- **View medical history:**
  - Once the patient has an account he has a history which is private to him and the treating doctors, the history will contain the date, the treating doctor and the doctors' notes for each prescription, X-ray, tests, doses, etc.
  - Once the patient sees the history he can demand any of his files to be downloaded or view as a PDF (prescription, X-ray, analysis, doses, etc.) to be downloaded by searching only using its date.
- **Send\ Receive Messages:**
  - The patient can send/receive messages to/from any doctor he wants.
  - The doctors' emails will be available in a list so it will be easy for the patient to choose his doctor.
  - All chats between the patient and his doctors will appear in a list ordered by the date of send.
- **Notifications:**
  - The patient will receive notifications on his account. The notifications will be for
    - Reminding him with next examination date, doses date.
    - Any cancelled reservation.
    - The daily medicines with all medicine's times and instructions through the day according to his latest prescription.

## **C: For Doctors:**

- **Doctors' Login:**
  - Doctors will be able to login using their emails on the hospital's domain and a random code will be generated once they entered the user name correctly, then they can set the account's password.

- **View Appointments:**

- The system enables each doctor/specialist to view his/her appointments with patients who come for the first time or who are used to come for regular examination.
- In order to distinguish between the three kinds of patients in the appointments list they will be labeled using two colors; yellow for new patients, and pink for regular patients.
- Each case will be displayed to doctors as an entire project where the medical record for this case will be auto shared among all specialists who will be assigned by the doctor himself, and will be responsible for carrying out doctor's instructions.

- **Display Record:**

- The system allows doctors/specialists to access their patients' medical records.
- For both pink labeled patients, their medical record will be auto displayed to help the doctor/specialist memorize their situation, then they can update that record by adding his/her new notes.
- For yellow labeled patients, system will initiate patients' records using the information which patients has filled in the reservation application, then the system will display these information in the new patients' medical record which will be displayed to the doctor.

- **View Tests & labs' Results:**

- Doctors and specialists can view tests and labs' results of patients' last examinations and compare them as part of viewing patients' medical records.

- **Prescribe:**

- The doctor will write prescriptions for patient's right after their examination, the prescription then will be sent directly to the concerned patient so that she can view it any time.
- Doctor can only write medicines which are saved in the database.
- Consequently, the prescription system will be turned into an online one as doctors will immediately write prescriptions online.
- Doctors also can edit the prescription any time through the examination day by deleting /add medicines.

- **Update Record:**

- After examination, doctors can updated certain updatable fields in patients' medical records.

- **View patients' board:**

- The system retrieves list of all patients that doctor/specialist pursuing their records.

- **Search:**

- Doctors/specialists can search for a specific patient by his ID or Name.

- **Add instructions:**

- After examination, doctors will add some instructions like doing a certain type of x rays, or having Physiotherapy for a specific duration, all these instructions is to be written using certain template for instance, it may be entered as:

DATE: NOV,3	INSTRUCTIONS
RADIATION	A sequence of instructions .....
THERAPY	
PHYSIOTHERAPY SESSIONS	A sequence of instructions .....

- Each instruction's row will be transformed automatically into a task in the patient's project/case.
- Doctor can edit any instruction by deleting it.
- Doctor must assign a specialist for each instruction as he will perform it.
- The due date for the task will be generated automatically from the system according to the title/type of the instruction and the available dates for the assigned specialist.

- **Archive projects:**

- Once, consultant decides that a patients has cured completely, they can archive this patient's case.

- **Choose Critical projects:**

- Doctors can choose patients whose case are critical to more focus on them and see their progress more frequent

- **Assign Specialists**

- The doctor then can assign up to many specialists to carry out the sequence he wrote with the concerned patient.

- **Comment:**
  - Doctors/specialists who are assigned to the same tasks can track their progress by adding comments and replying to each other and also they can attach files to their comments.
- **Archive projects/tasks:**
  - Consultants only have the permission to delete tasks from their workspace.
  - Only Administration has the permission to delete an entire patient's case.
- **Delete Projects/tasks:**
  - Doctors only have the permission to delete tasks from their workspace.
  - Only Administration has the permission to delete an entire patient's case.
- **Un follow tasks:**
  - Doctors can choose to un follow tasks whenever s/he won't be related to this task anymore.
- **Answering Questions:**
  - Every doctor/specialist has a specific time to answer the questions that the patients leave them at any time or ask at the time specified by the doctor.
  - The doctor opens tab "Inbox" then all questions that belong to him appear in the screen then he comment in every question by using button comment.
- **Notifications:**
  - Notifications are displayed into 2 boxes:
  - **Activity log:** where users will be notified if any updates or changes are added to the projects/ tasks to which they are assigned.

- **Types of activity log notifications:**
  - A task is assigned to you.
  - New comments are added to task x.
  - You have been added to new project.
  - The task is marked complete.
  - Task is archived/ deleted.
  - .....
- **Reminder:**
  - Where users will be notified of tasks' due dates, and can view their tasks in terms of:
    - Due soon: a task is due in less than twenty four hours.
    - Due later: a task is due in more than twenty four hours.
    - Recently past due: a task is recently overdue.
    - Past due: a task is past due.
- **Dashboard:**
  - Both doctors and specialists have their own dashboard where they can have a day to day summarized list/ report of all the items they should be aware of, it may contain the following items:
    - **Today's List:**
      - A Meeting at 9 AM with X department
      - A surgery at 4 PM.
    - **DR Dates:**
      - Monday from 10 AM to 3 PM.
      - Tuesday from 10 AM to 3 PM.
    - **Appointment Manager:**
      - Monday :
        - Patient examination from 10 AM to 3 PM.
        - Meeting with ray department at 4 PM.

- Tuesday :
  - Patient examination from 10 AM to 3 PM.
  - Meeting with all departments at 5 PM.
  
- Rate Progress:
  - Doctor can see the progress of his patients whose status are critical as a chart according to the number of tasks added before and its due dates.
  
- Patient Record Management:
  - Doctors can view the critical patients that he chose before
  - He can also make the project uncritical again.
  
- Inventory:
  - This is where doctors can save preferred links:
    - Google.
    - Facebook.

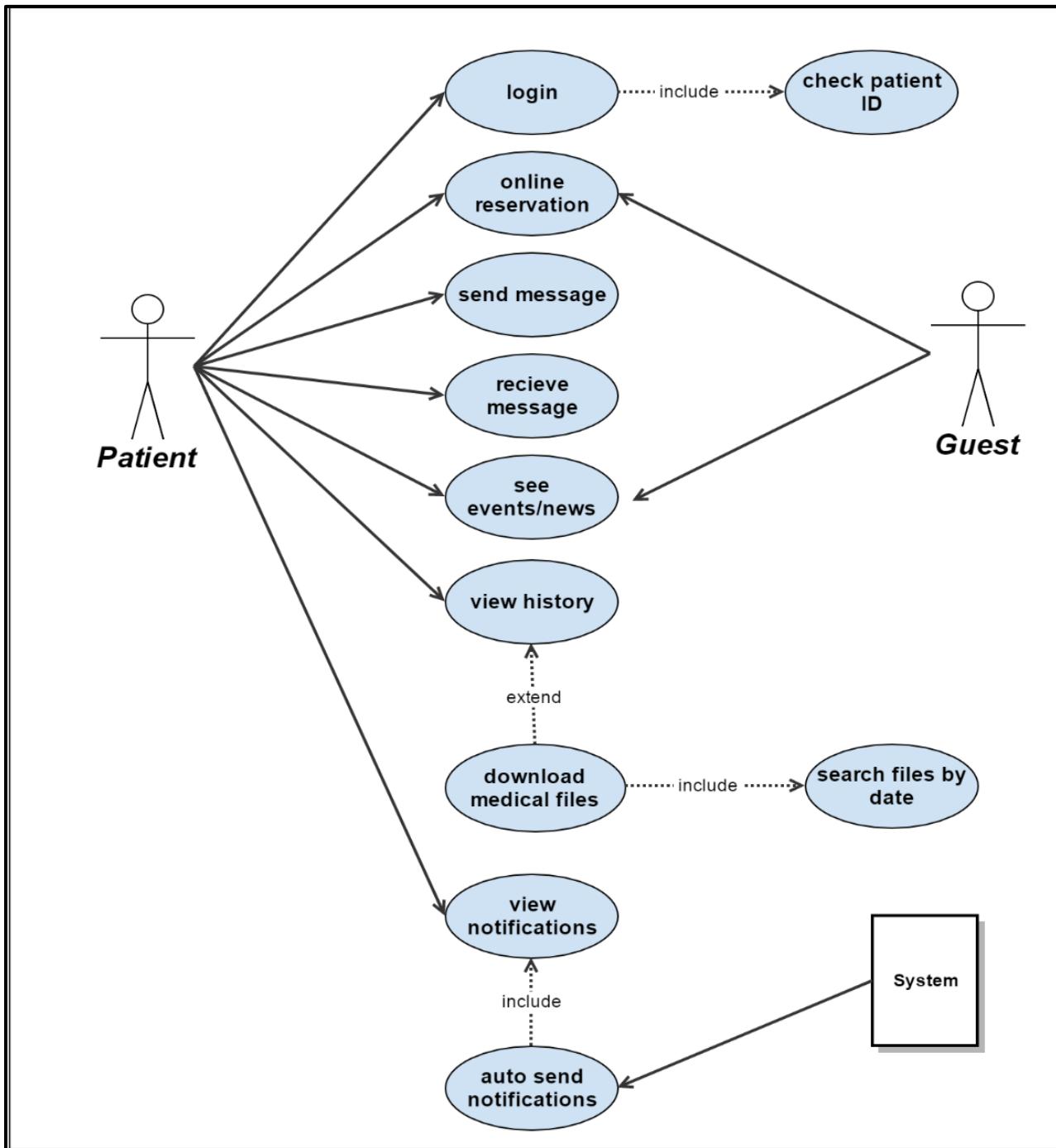
3.1.2 Final Use Case Models:**A. Patient and Guest:**

Figure 3.1: patient/guest use case

## **B. Doctor Consultant :**

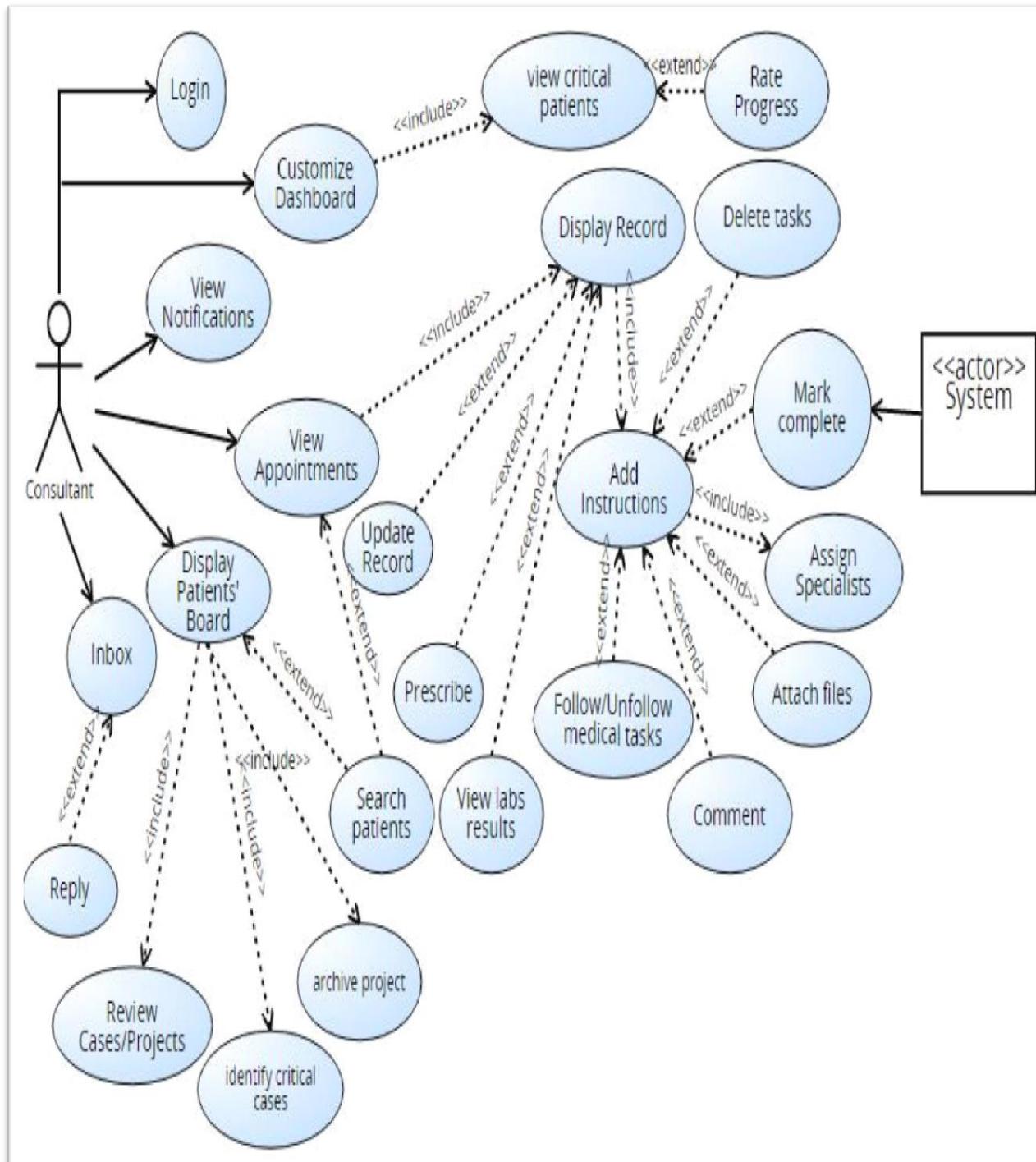


Figure 3.2: consultant use case model

### C. Doctor Specialist :

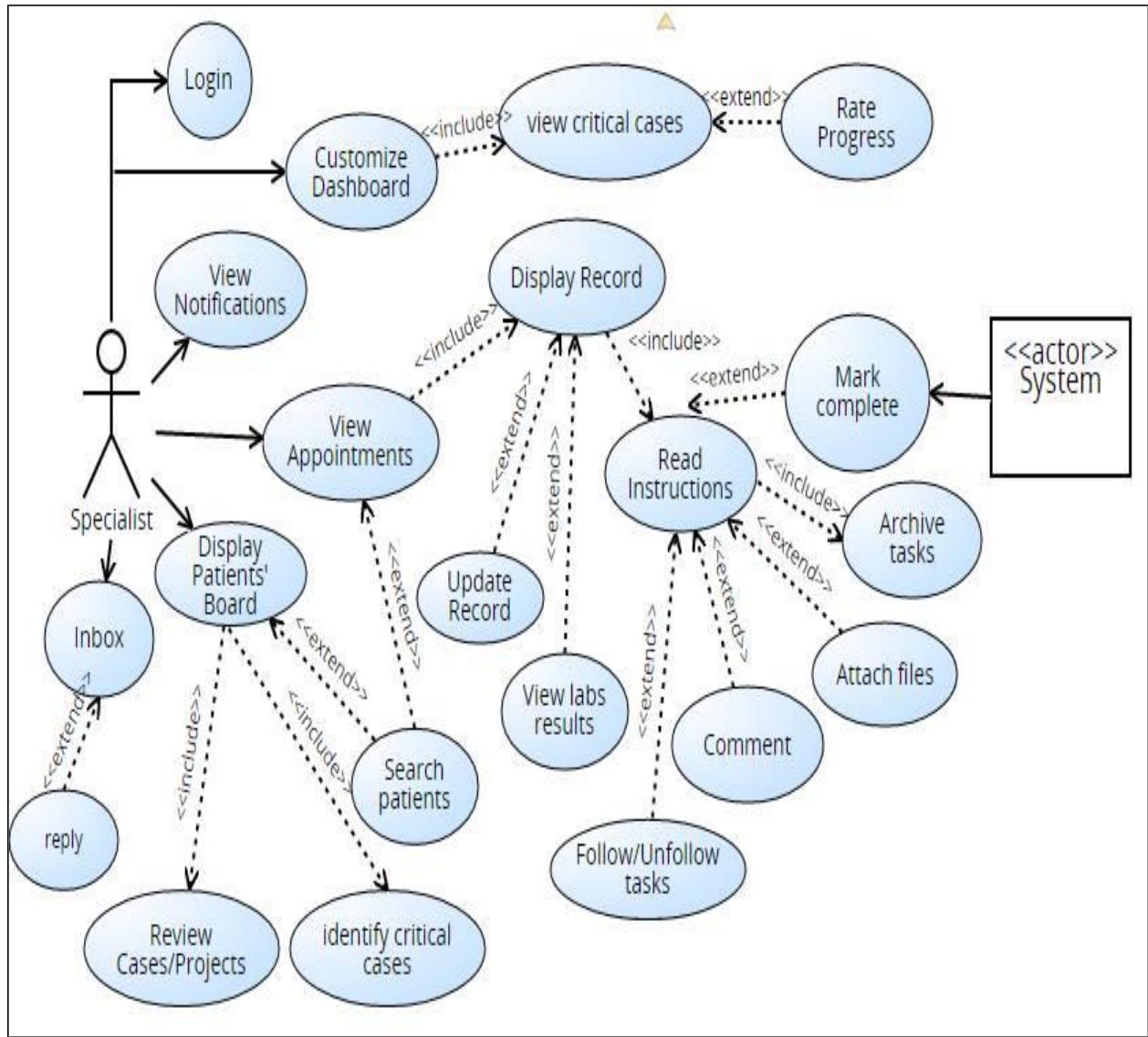


Figure 3.3: specialist use case model

### 3.1.4- Final Business Process Modeling:

#### A. Patient BPMN :

- The Design below is for describing the flow of activities of the patient and guest users of the system.
- first in sequence if user choose to see events about the site or not and If the user is a guest only he can reserve an appointment, else if he is a patient, first of all he must login successfully to the system using his ID and then he can do the following activities. Send/ receive messages to/from his doctors or the hospital's Admin, view his medical history, download any file of his medical record. And view the received notifications that are sent to remind him with the doses, examinations' dates, and/or notify him if any appointment is cancelled

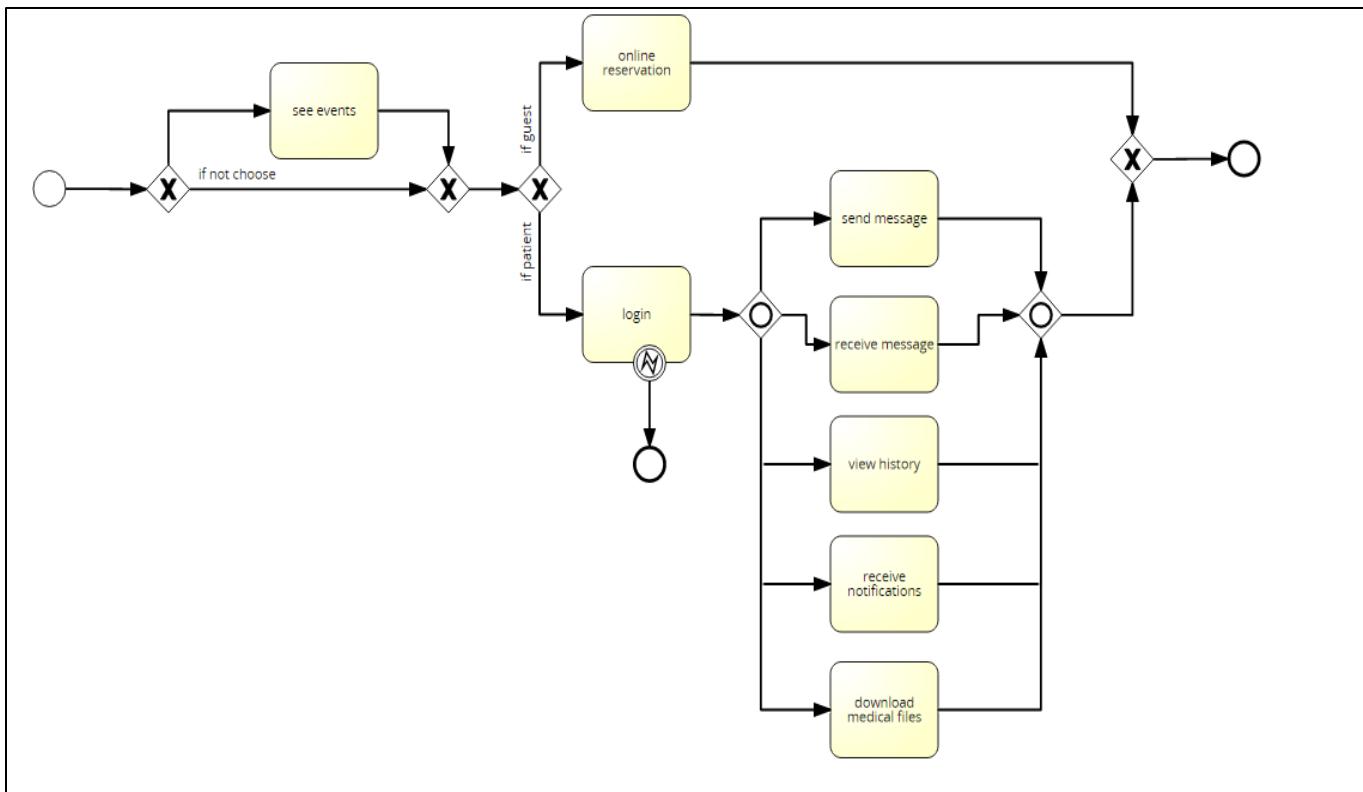


Figure 3.4: patient business process model

## B. Doctor BPMN :

The Design below is to describe the flow of activities of the Doctor with its 2 types (specialist and consultant). When the doctor enters the home page of the web site, he can choose to see events on the site or not, and after the successful login of the doctor. He can view the received notifications, receive and reply to his patients' messages, view his critical cases where he choose before, and view his appointments. In view appointments and displaying patients' records the doctor can do many activities after searching and displaying the wanted record, both of the doctor types can update that record or view the labs' /rays' / prescriptions' results, view the instructions and do some activities like following/un following projects, attaching files, commenting, but only the consultant can write prescriptions to patients, add instructions and he can also assign specialists to tasks, mark tasks as completed and archive projects/tasks

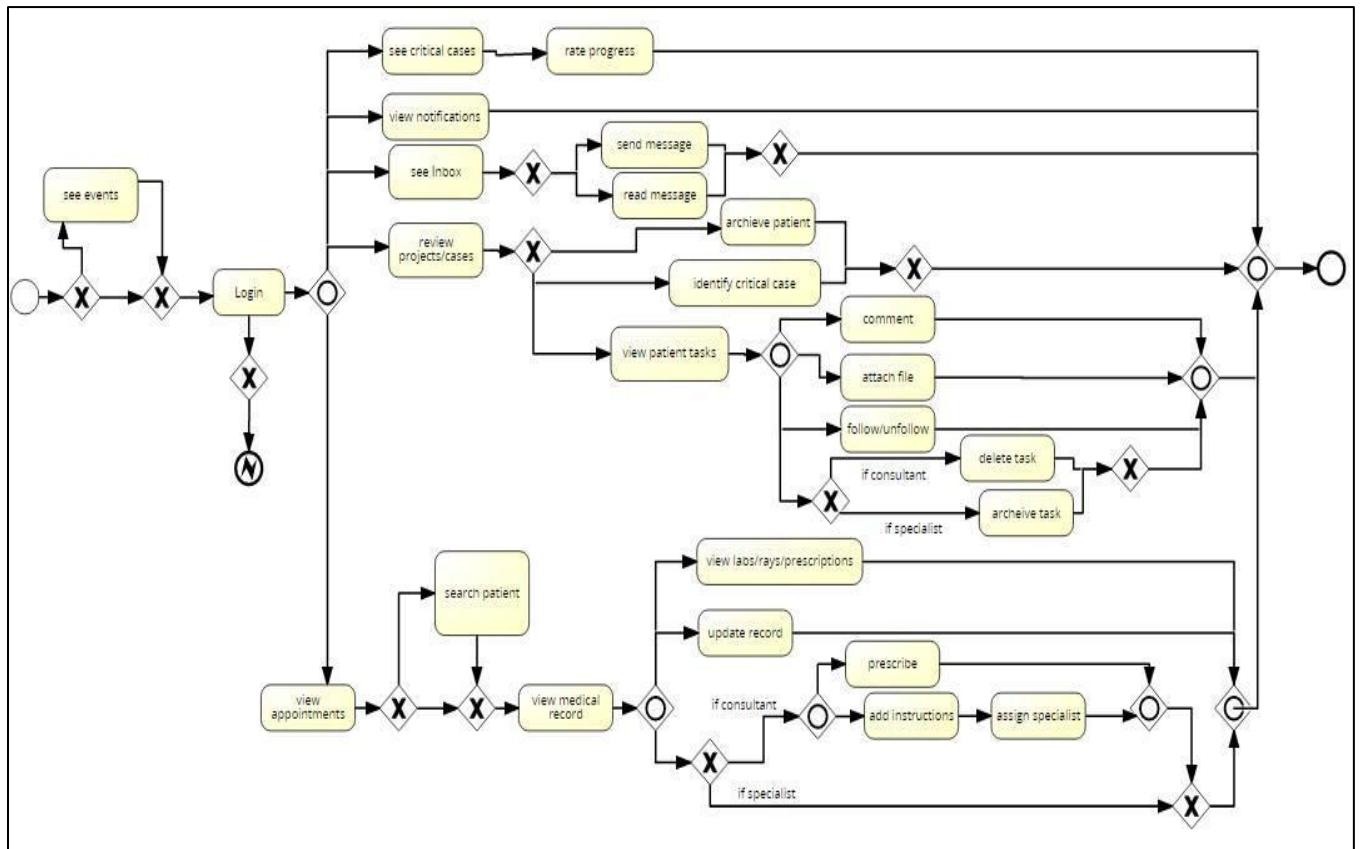


Figure 3.5: doctor business process model

### 2.1.5 Gantt Chart:

Overview about summary of work, team roles and distribution of work by using Gantt chart because it more productive, enhance their communications, forecast over the long term and track results ,avoid completion confusion ,understand task relationships , effectively allocate resources and get a handle on the future .

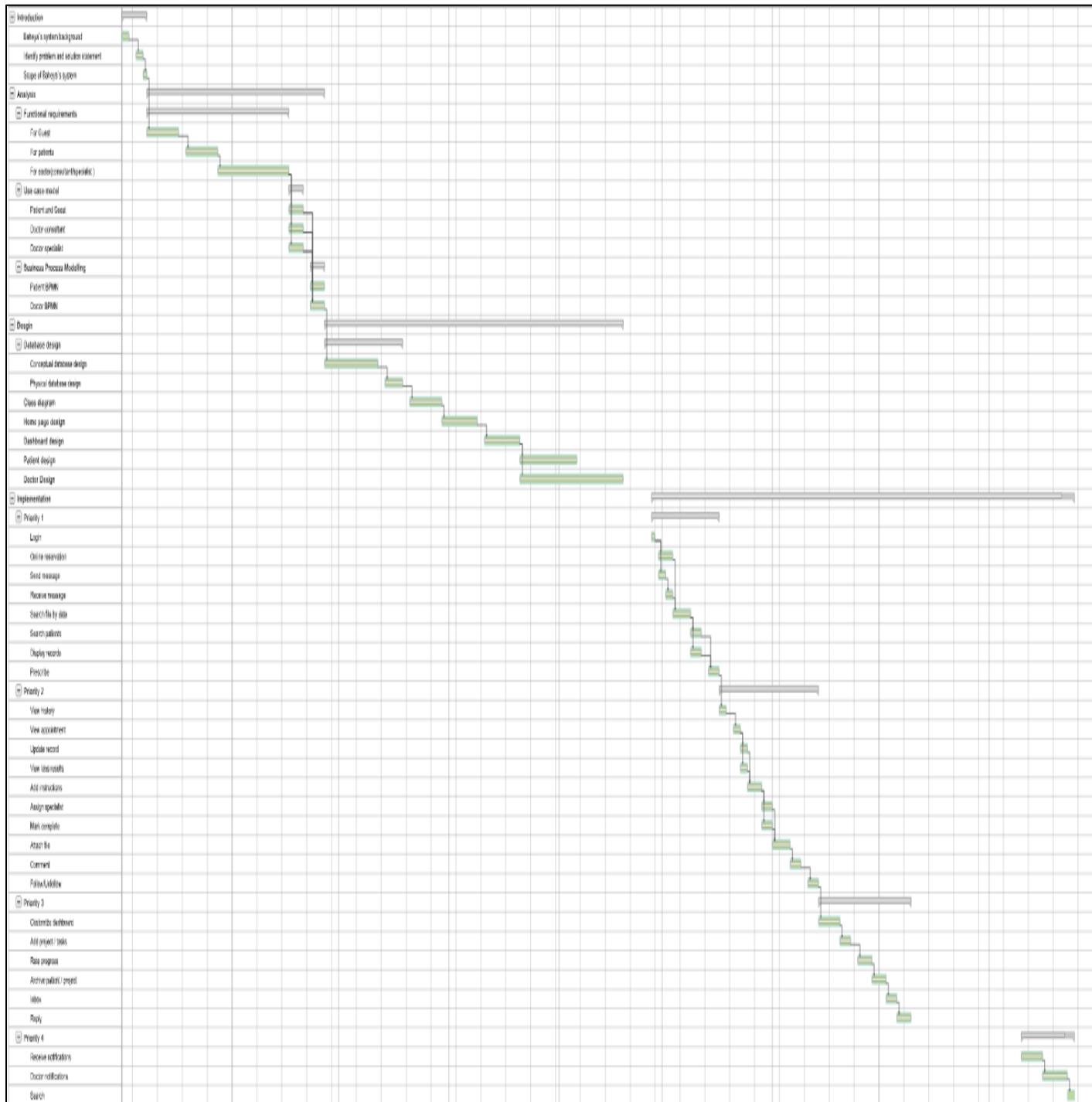


Figure 3.6: Gantt chart

### 3.2- Iterative Design:

This phase presents every change in the physical view of the system and clarifies changes that happened in database design and user interfaces of the system. The output of this phase used as an input to the iterative development phase.

#### 3.2.1: Final Database design:

It is the process of producing data model of database to meet the changes in system requirements.

A.

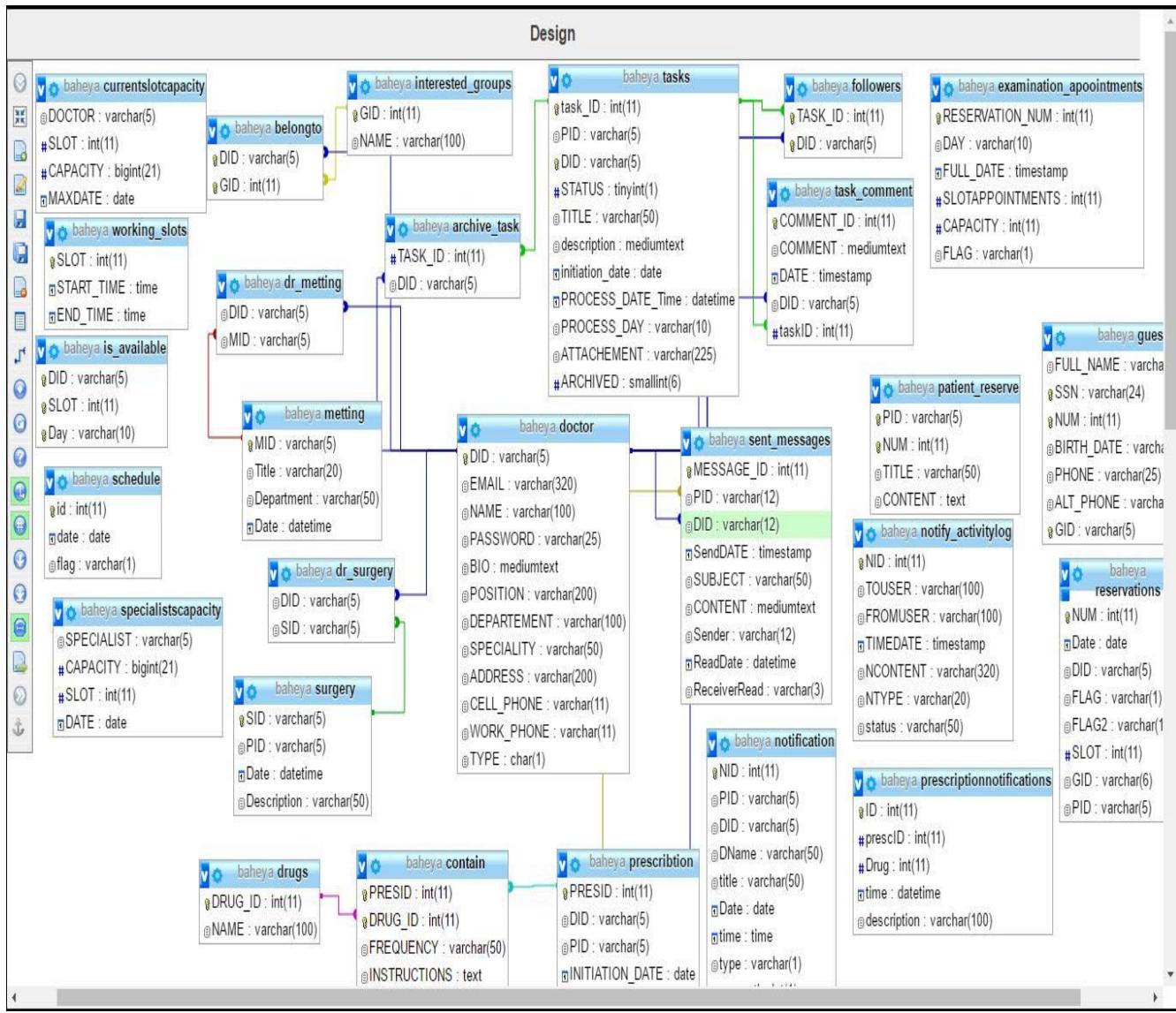


Figure 3.7: Database Design

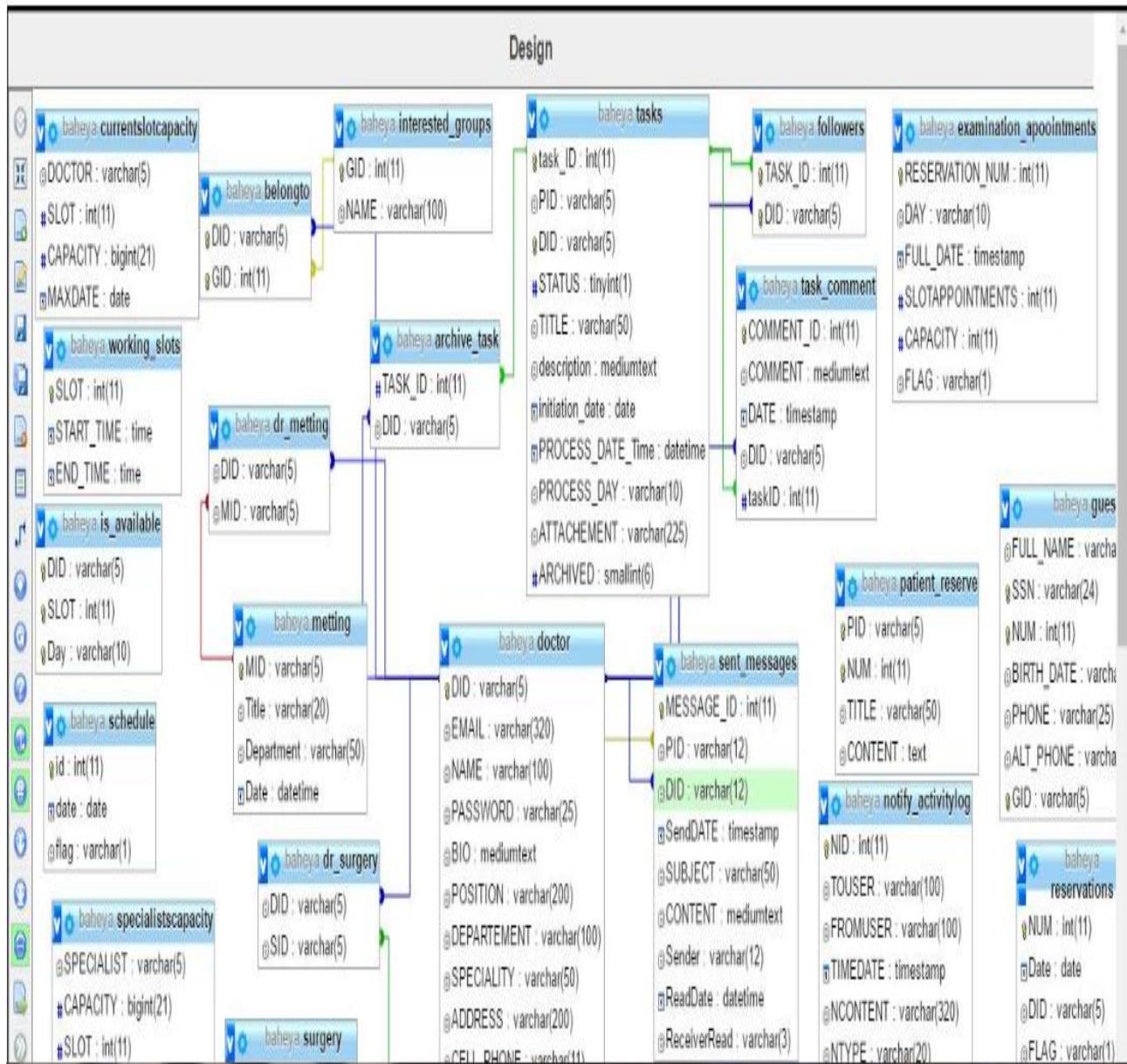


Figure 3.8: Database Design

baheya record	
REC_ID	: int(11)
PID	: varchar(5)
DID	: varchar(5)
HEALTH_CONCERNS	: mediumtext
ECHOCARDIOGRAM_	: mediumtext
COMMENTS	: mediumtext
SURGERY	: mediumtext
SENTINEL_NODE_BIOPSY	: mediumtext
AXILLARY_DISSECTION	: date
LYMPH_NODES	: mediumtext
TUMOR_TYPE	: mediumtext
PATHOLOGIC_STAGE	: mediumtext
ER_STATUS	: varchar(8)
PR_STATUS	: varchar(8)
HER2_STATUS	: varchar(8)
PRE_HEIGHT	: varchar(10)
PRE_WEIGHT	: varchar(10)
POST_HEIGHT	: varchar(10)
POST_WEIGHT	: varchar(10)
PRE_BSA	: varchar(10)
POST_BSA	: varchar(10)
PRE_BMI	: varchar(10)
POST_BMI	: varchar(10)
LAST_MENSTRUAL_PERIOD	: date
PRE_COMMENTS	: mediumtext
POST_COMMENTS	: mediumtext
_REGIMEN	: mediumtext
EJECTION_FRACTION	: mediumtext
BIOLOGIC_THERAPY_TREATMENT_DATES	: mediumtext
PRE_OPERATIVE_CHEMO_ADMINISTERED	: mediumtext
CHEMOTHERAPY_TREATMENT_PERIOD	: mediumtext
REGIMEN	: mediumtext

Figure 3.9: Database Design

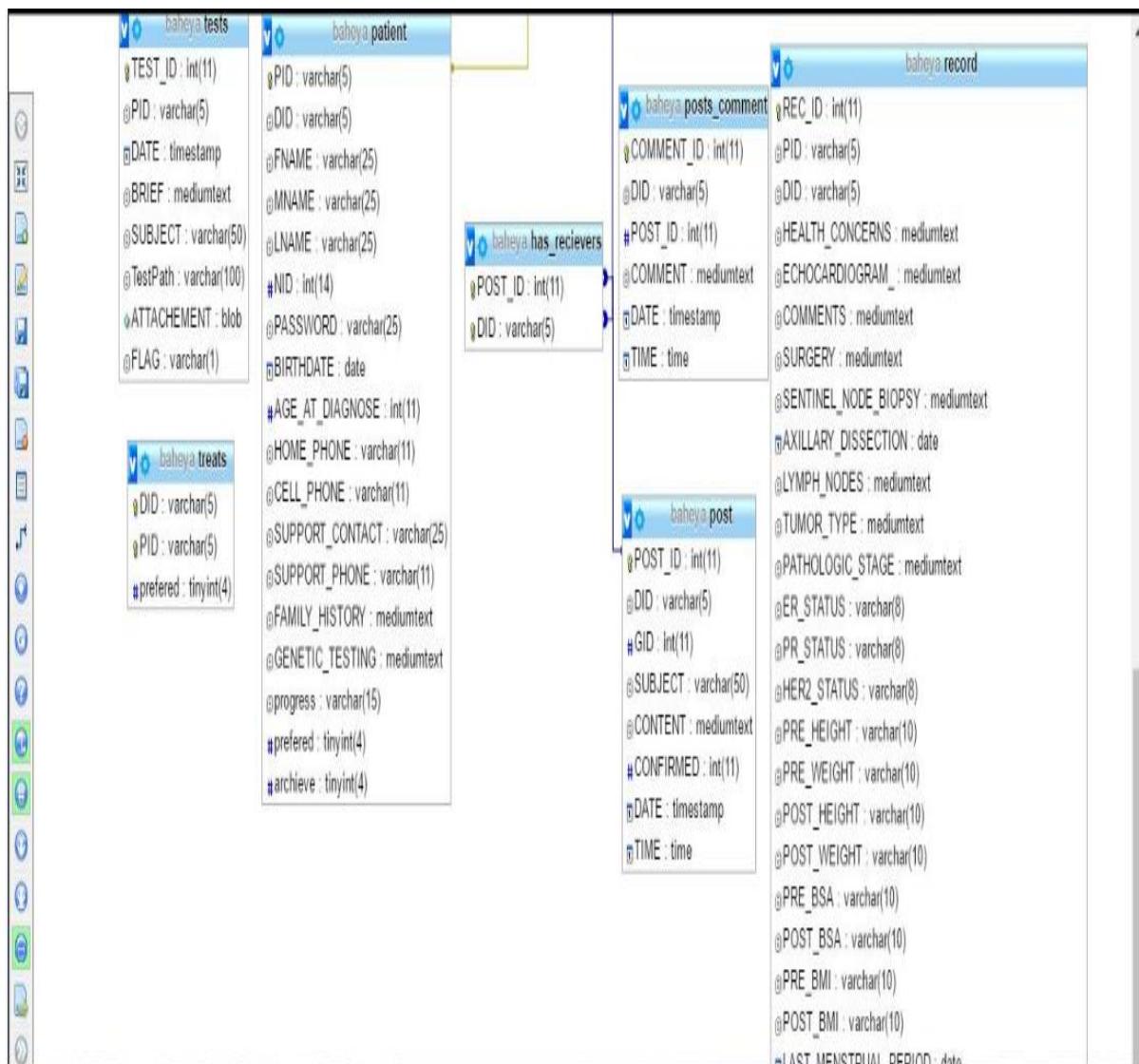


Figure 3.10: Database Design

***B. Database Table Summary:******1. Archive task:***

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
TASK_ID	int(11)		No			-> tasks.task_ID ON UPDATE RESTRICT ON DELETE RESTRICT		
DID	varchar(5)		No			-> doctor.DID ON UPDATE RESTRICT ON DELETE RESTRICT		

Table 3.1: Database Table

***2. belongto:***

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
DID	varchar(5)		No			-> doctor.DID ON UPDATE RESTRICT ON DELETE RESTRICT		
GID	int(11)		No			-> interested_grou ps.GID ON UPDATE RESTRICT ON DELETE RESTRICT		

**3. contain :**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
PRESID	int(11)		No			-> prescription.PRESID ON UPDATE RESTRICT ON DELETE RESTRICT		
DRUG_ID	int(11)		No			-> drugs.DRUG_ID ON UPDATE RESTRICT ON DELETE RESTRICT		
FREQUENCY	varchar(50)		No					
INSTRUCTIONS	Text		No					

Table 3.3: Database Table

**4. currentslotcapacity:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
DOCTOR	varchar(5)		No					
SLOT	int(11)		No					
CAPACITY	bigint(21)		No	0				
MAXDATE	date		No					

Table 3.4: Database Table

**5. Doctor:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
DID	varchar(5)		No					
EMAIL	varchar(320)	)	No					
NAME	varchar(100)	)	No					
PASSWORD	varchar(25)		No					
BIO	mediumtext		No					
POSITION	varchar(200)	)	No					
DEPARTEME	varchar(100)	NT	No					
SPECIALITY	varchar(50)		No					
ADDRESS	varchar(200)	)	Yes	NULL				
CELL_PHON	varchar(11)	E	No					
WORK_PHO	varchar(11)	NE	No					
TYPE	char(1)		No					

Table 3.5: Database Table

**6. Drugs:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
DRUG_ID	int(11)		No		auto_increment			
NAME	varchar(100)	)	No					

Table 3.6: Database Table

**7. dr metting:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
DID	varchar(5)		No			-> doctor.DID ON UPDATE RESTRICT ON DELETE RESTRICT		
MID	varchar(5)		No			-> metting.MID ON UPDATE RESTRICT ON DELETE RESTRICT		

Table 3.7: Database Table

**8. dr surgery:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
DID	varchar(5)		No			-> doctor.DID ON UPDATE RESTRICT ON DELETE RESTRICT		
SID	varchar(5)		No			-> surgery.SID ON UPDATE RESTRICT ON DELETE RESTRICT		

Table 3.8: Database Table

**9. examination apointments:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
RESERVATIO N_NUM	int(11)		No		auto_in rement			
DAY	varchar(10)		No					
FULL_DATE	timestamp		No	CURREN T_TIMES TAMP	on update C URRENT _TIMEST AMP			
SLOTAPPOIN TMENTS	int(11)		No					
CAPACITY	int(11)		No					
FLAG	varchar(1)		No					

Table 3.9: Database Table

**10. Followers:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
TASK_ID	int(11)		No			-> tasks.task_ID ON UPDATE RESTRICT ON DELETE RESTRICT		
DID	varchar(5)		No			-> doctor.DID ON UPDATE RESTRICT ON DELETE RESTRICT		

Table 3.10: Database Table

**11. Guest:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
FULL_NAME	varchar(100) )		No					
SSN	varchar(24)		No					
NUM	int(11)		No		auto_increment			
BIRTH_DATE	varchar(50)		Yes	NULL				
PHONE	varchar(25)		No					
ALT_PHONE	varchar(11)		Yes	NULL				
GID	varchar(5)		No					

Table 3.11: Database Table

**12. has\_recievers:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
POST_ID	int(11)		No			-> post.POST_ID ON UPDATE RESTRICT ON DELETE RESTRICT		
DID	varchar(5)		No			-> doctor.DID ON UPDATE RESTRICT ON DELETE RESTRICT		

Table 3.12: Database Table

**13. interested\_groups:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
GID	int(11)		No		auto_increment			
NAME	varchar(100)	)	No					

Table 3.13: Database Table

**14. is\_available**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
DID	varchar(5)		No					
SLOT	int(11)		No					
Day	varchar(10)		No					

Table 3.14: Database Table

**15. Metting:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
MID	varchar(5)		No					
Title	varchar(20)		No					
Department	varchar(50)		No					
Date	datetime		No					

Table 3.15: Database Table

**16. Notification:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
NID	int(11)		No		auto_increment			
PID	varchar(5)		No					
DID	varchar(5)		No					
DName	varchar(50)		No					
title	varchar(50)		No					
Date	date		No					
time	time		No					
type	varchar(1)		No					
seen	tinyint(1)		No					

Table 3.16: Database Table

**17. notify\_activitylog:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
NID	int(11)		No		auto_increment			
TOUSER	varchar(100)		No					
FROMUSER	varchar(100)		Yes	NULL				
TIMEDATE	timestamp		No	CURRENT_TIMESTAMP	on update CURRENT_TIMESTAMP			
NCONTENT	varchar(320)		No					
NTYPE	varchar(20)		No					
status	varchar(50)		No					

Table 3.17: Database Table

**18. Patient:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
PID	varchar(5)		No					
DID	varchar(5)		No					
FNAME	varchar(25)		No					
MNAME	varchar(25)		No					
LNAME	varchar(25)		No					
NID	int(14)		No					
PASSWORD	varchar(25)		No					
BIRTHDATE	date		No					
AGE_AT_DIA	int(11)		No					
GNOSE								
HOME_PHO	varchar(11)		No					
NE								
CELL_PHON	varchar(11)		No					
E								
SUPPORT_C	varchar(25)		No					
ONTACT								
SUPPORT_P	varchar(11)		No					
HONE								
FAMILY_HIS	mediumtext		No					
TORY								
GENETIC_TE	mediumtext		No					
STING								
progress	varchar(15)		Yes	NULL				
prefered	tinyint(4)		No					
achieve	tinyint(4)		No					

Table 3.18: Database Table

**19. patient\_reserve:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
PID	varchar(5)		No					
NUM	int(11)		No					
TITLE	varchar(50)		No					
CONTENT	text		No					

Table 3.19: Database Table

**20. Post:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
POST_ID	int(11)		No		auto_increment			
DID	varchar(5)		No					
GID	int(11)		No					
SUBJECT	varchar(50)		No					
CONTENT	mediumtext		No					
CONFIRMED	int(11)		No					
DATE	timestamp		No	CURRENT_TIMESTAMP	on update CURRENT_TIMESTAMP			
TIME	time		No					

Table 3.20: Database Table

**21. posts comment:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
COMMENT_ID	int(11)		No		auto_increment			
DID	varchar(5)		No					
POST_ID	int(11)		No					
COMMENT	mediumtext		No					
DATE	timestamp		No	CURRENT_TIMESTAMP	on update CURRENT_TIMESTAMP			
TIME	time		No					

Table 3.21: Database Table

**22. Prescription:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
PRESID	int(11)		No		auto_increment			
DID	varchar(5)		No					
PID	varchar(5)		No					
INITIATION_DATE	date		Yes	NULL				

Table 3.22: Database Table

**23. Prescriptionnotifications:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
ID	int(11)		No		auto_increment			
prescID	int(11)		No					
Drug	int(11)		No					
time	datetime		No					
description	varchar(100)	)	No					

Table 3.23: Database Table

**24. Record:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
REC_ID	int(11)		No		auto_increment			
PID	varchar(5)		No					
DID	varchar(5)		Yes	NULL				
HEALTH_CO NCERNS	mediumtext		Yes	NULL				
ECHOCARDI OGRAM_	mediumtext		Yes	NULL				
COMMENTS	mediumtext		Yes	NULL				
SURGERY	mediumtext		Yes	NULL				
SENTINEL_N ODE_BIOPSY	mediumtext		Yes	NULL				
AXILLARY_D I SSECTION	date		Yes	NULL				
LYMPH_NOD ES	mediumtext		Yes	NULL				
TUMOR_TYP E	mediumtext		Yes	NULL				
PATHOLOGI C_STAGE	mediumtext		Yes	NULL				
ER_STATUS	varchar(8)		Yes	NULL				
PR_STATUS	varchar(8)		Yes	NULL				
HER2_STAT US	varchar(8)		Yes	NULL				
PRE_HEIGHT	varchar(10)		Yes	NULL				
PRE_WEIGHT	varchar(10)		Yes	NULL				
POST_HEIGHT	varchar(10)		Yes	NULL				
POST_WEIGHT	varchar(10)		Yes	NULL				

PRE_BSA	varchar(10)		Yes	NULL				
POST_BSA	varchar(10)		Yes	NULL				
PRE_BMI	varchar(10)		Yes	NULL				
POST_BMI	varchar(10)		Yes	NULL				
LAST_MENS TRUAL_PERI OD	date		Yes	NULL				
PRE_COMM ENTS	mediumtext		Yes	NULL				
POST_COMM ENTS	mediumtext		Yes	NULL				
REGIMEN	mediumtext		Yes	NULL				
EJECTION_F RACTION	mediumtext		Yes	NULL				
BIOLOGIC_T HERAPY_TR EATMENT_D ATES	mediumtext		Yes	NULL				
PRE_OPERA TIVE_CHEM O_ADMINIST ERED	mediumtext		Yes	NULL				
CHEMOTHE RAPY_TREAT MENT_PERIO D	mediumtext		Yes	NULL				
REGIMEN	mediumtext		Yes	NULL				
SIDE_EFFEC TS_	mediumtext		Yes	NULL				
RECONSTRU CTION	mediumtext		Yes	NULL				

Table 3.24: Database Table

**25. Reservations:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
NUM	int(11)		No		auto_increment			
Date	date		No					
DID	varchar(5)		No					
FLAG	varchar(1)		No					
FLAG2	varchar(1)		No					
SLOT	int(11)		No					
GID	varchar(6)		Yes	NA				
PID	varchar(5)		Yes	NULL				

Table 3.25: Database Table

**26. Schedule:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
id	int(11)		No					
date	date		No					
flag	varchar(1)		No					

Table 3.26: Database Table

**27. sent messages:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
MESSAGE_ID	int(11)		No		auto_increment			
PID	varchar(12)		No			-> patient.PID ON UPDATE RESTRICT ON DELETE RESTRICT		
DID	varchar(12)		No			-> doctor.DID ON UPDATE RESTRICT ON DELETE RESTRICT		
SendDATE	timestamp		No	CURRENT_TIMESTAMP	on update CURRENT_TIMESTAMP			
SUBJECT	varchar(50)		No					
CONTENT	mediumtext		No					
Sender	varchar(12)		No					
ReadDate	datetime		Yes	NULL				
ReceiverRead	varchar(3)		Yes	NULL				

Table 3.27: Database Table

**28. Specialistscapacity:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
SPECIALIST	varchar(5)		No					
CAPACITY	bigint(21)		No	0				
SLOT	int(11)		No					
DATE	date		No					

Table 3.28: Database Table

**29. Surgery:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
SID	varchar(5)		No					
PID	varchar(5)		Yes	NULL				
Date	datetime		No					
Description	varchar(50)		No					

Table 3.29: Database Table

**30. Treats:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
DID	varchar(5)		No					
PID	varchar(5)		No					
prefered	tinyint(4)		No					

Table 3.30: Database Table

**31. working slots:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
SLOT	int(11)		No					
START_TIME	time		No					
END_TIME	time		Yes	NULL				

Table 3.31: Database Table

**32. task comment:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
COMMENT_ID	int(11)		No		auto_increment			
COMMENT	mediumtext		No					
DATE	timestamp		No	CURRENT_TIMESTAMP	on update CURRENT_TIMESTAMP			
DID	varchar(5)		No			-> doctor.DID ON UPDATE RESTRICT ON DELETE RESTRICT		
taskID	int(11)		No			-> tasks.task_ID ON UPDATE RESTRICT ON DELETE RESTRICT		

Table 3.32: Database Table

**33. Tasks:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
task_ID	int(11)		No		auto_increment			
PID	varchar(5)		No					
DID	varchar(5)		No					
STATUS	tinyint(1)		Yes	NULL				
TITLE	varchar(50)		No					
description	mediumtext		No					
initiation_date	date		No					
PROCESS_DATE	datetime		Yes	NULL				
PROCESS_DAY	varchar(10)		Yes	NULL				
ATTACHEMENT	varchar(225)		Yes	NULL				
ARCHIVED	smallint(6)		Yes	NULL				

Table 3.33: Database Table

**34. Tests:**

Column	Type	Attributes	Null	Default	Extra	Links to	Comments	MIME
TEST_ID	int(11)		No		auto_increment			
PID	varchar(5)		No					
DATE	timestamp		Yes	NULL				
BRIEF	mediumtext		Yes	NULL				
SUBJECT	varchar(50)		No					
TestPath	varchar(100)		No					
ATTACHEMENT	blob		Yes	NULL				
FLAG	varchar(1)		No					

Table 3.34: Database Table

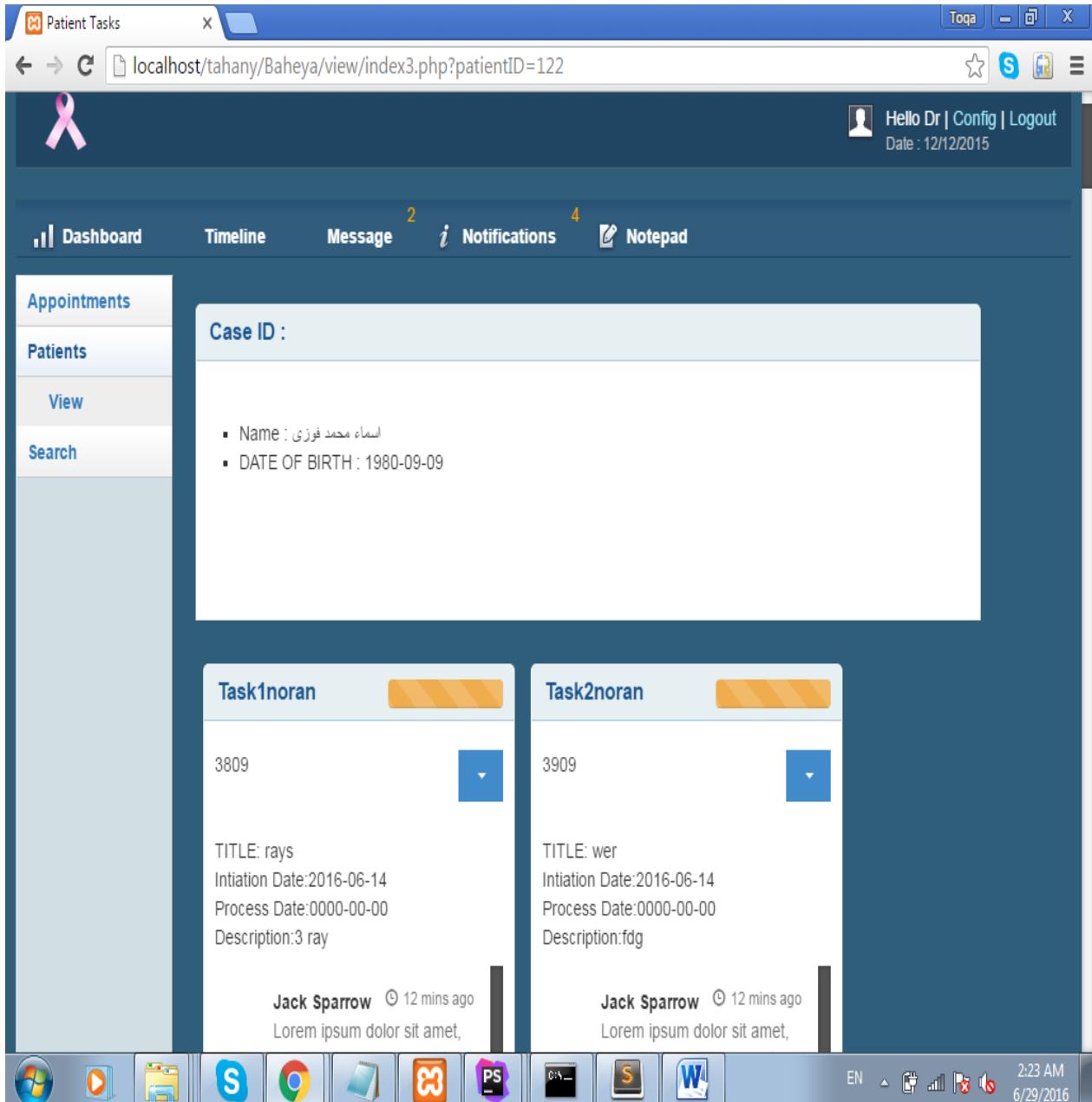
**3.2.2 Final Graphical User Interface:**

Figure 3.11: Tasks

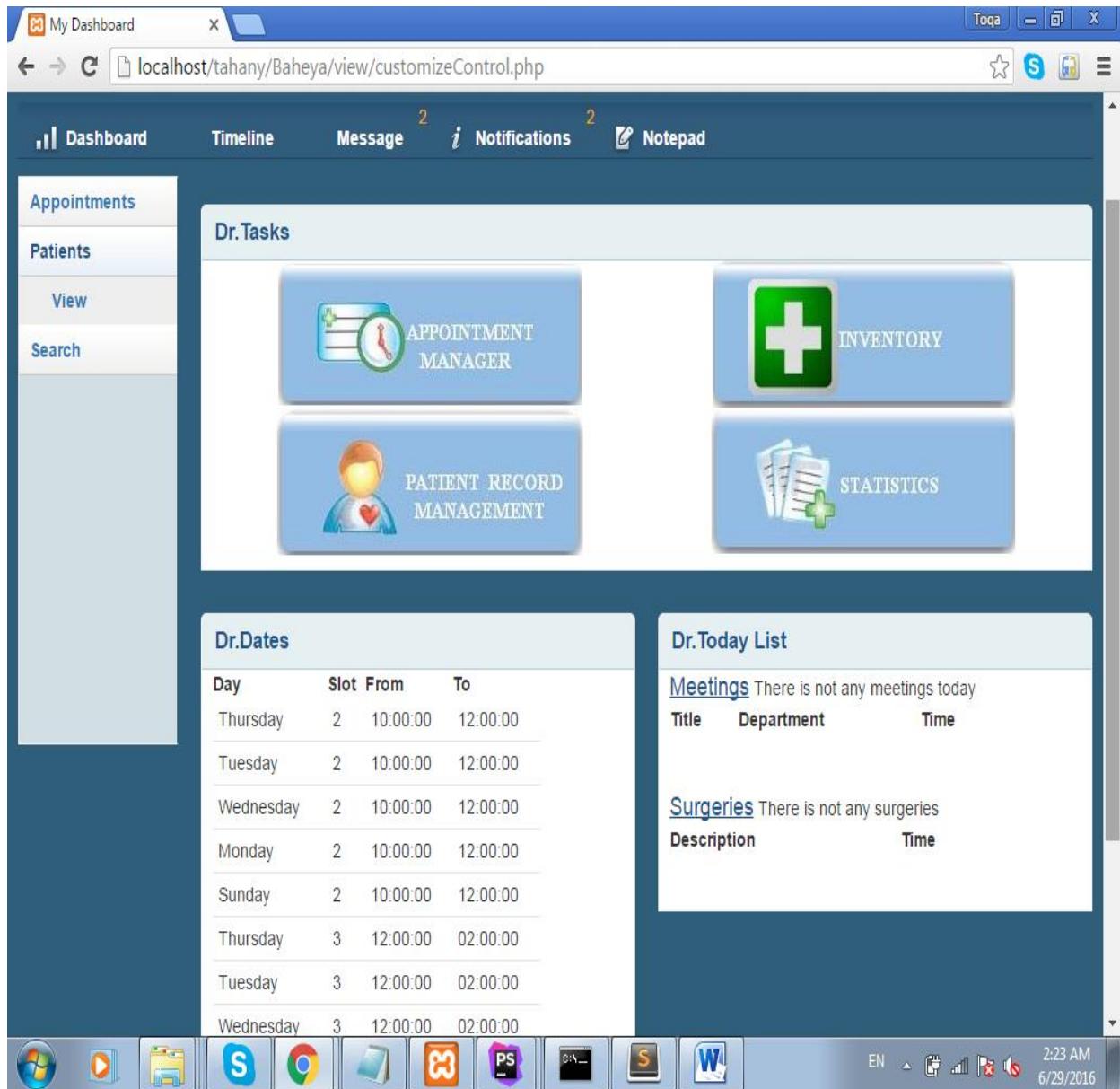


Figure 3.12: Dashboard

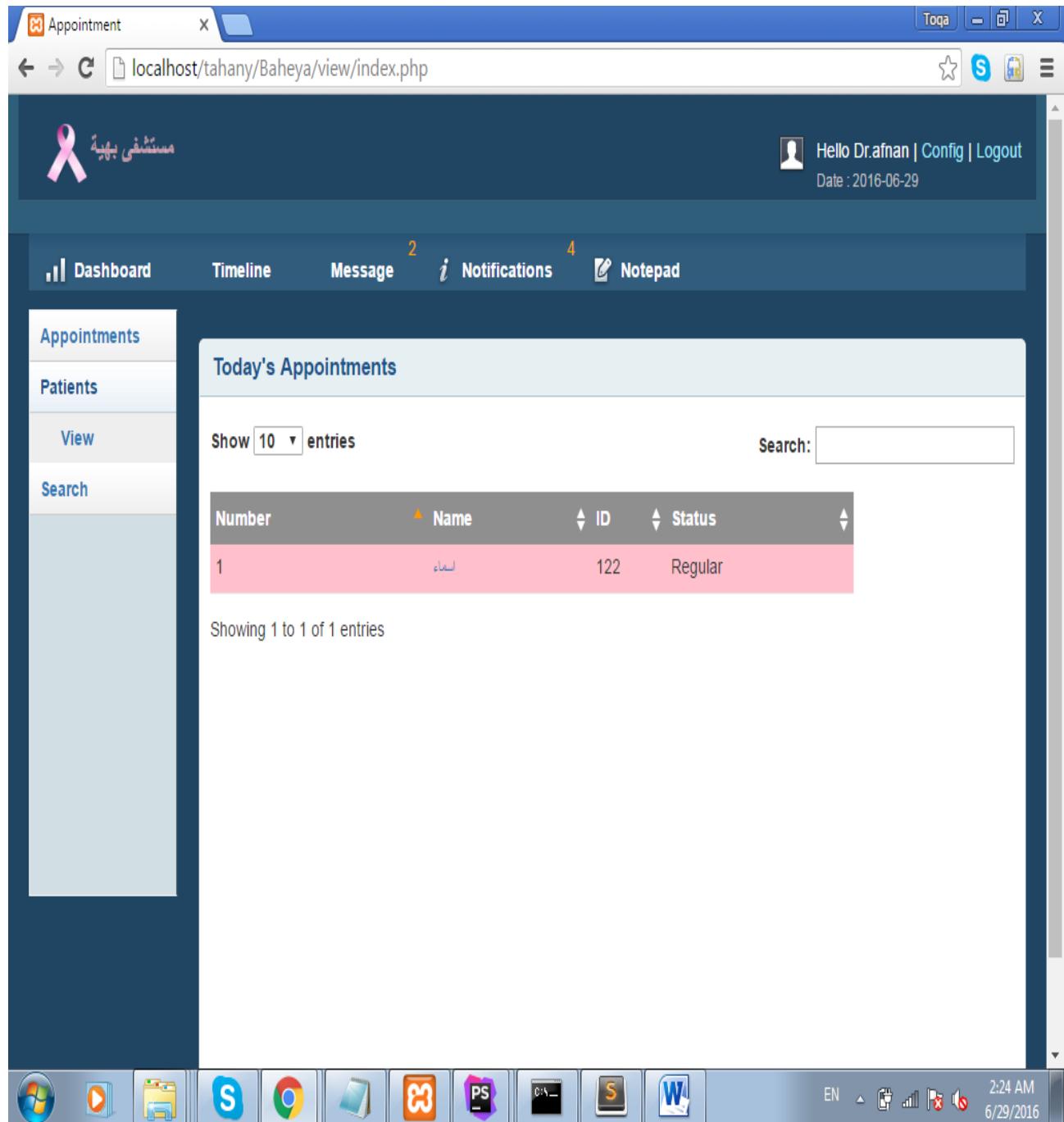


Figure 3.13: Doctor Appointment

The screenshot shows a web-based application interface for a Female Breast Cancer Tracking System. The top navigation bar includes links for 'Display Record' (with a Toqa icon), 'Dashboard', 'Timeline', 'Message' (with 2 notifications), 'Notifications' (with 4 notifications), and 'Notepad'. The main content area is titled 'Medical Record' and contains sections for 'General Information', 'Labs And Rays', 'Prescriptions', 'Background Information', 'Left breast', and three collapsed sections labeled 'Collapsible Group Item #4'. On the left, a sidebar lists 'Appointments', 'Patients', 'View', and 'Search'. The bottom of the screen shows a taskbar with various icons and system status information.

General Information

Patient Name	اسماء فرزی
Date of birth	1980-09-09
Age at diagnosis	34
Support contact	????
Family history	no history
Genetic testing	

Labs And Rays

Prescriptions

Background Information

Left breast

Collapsible Group Item #4

Collapsible Group Item #4

Collapsible Group Item #4

EN 2:24 AM  
6/29/2016

Figure 3.14: Patient Record

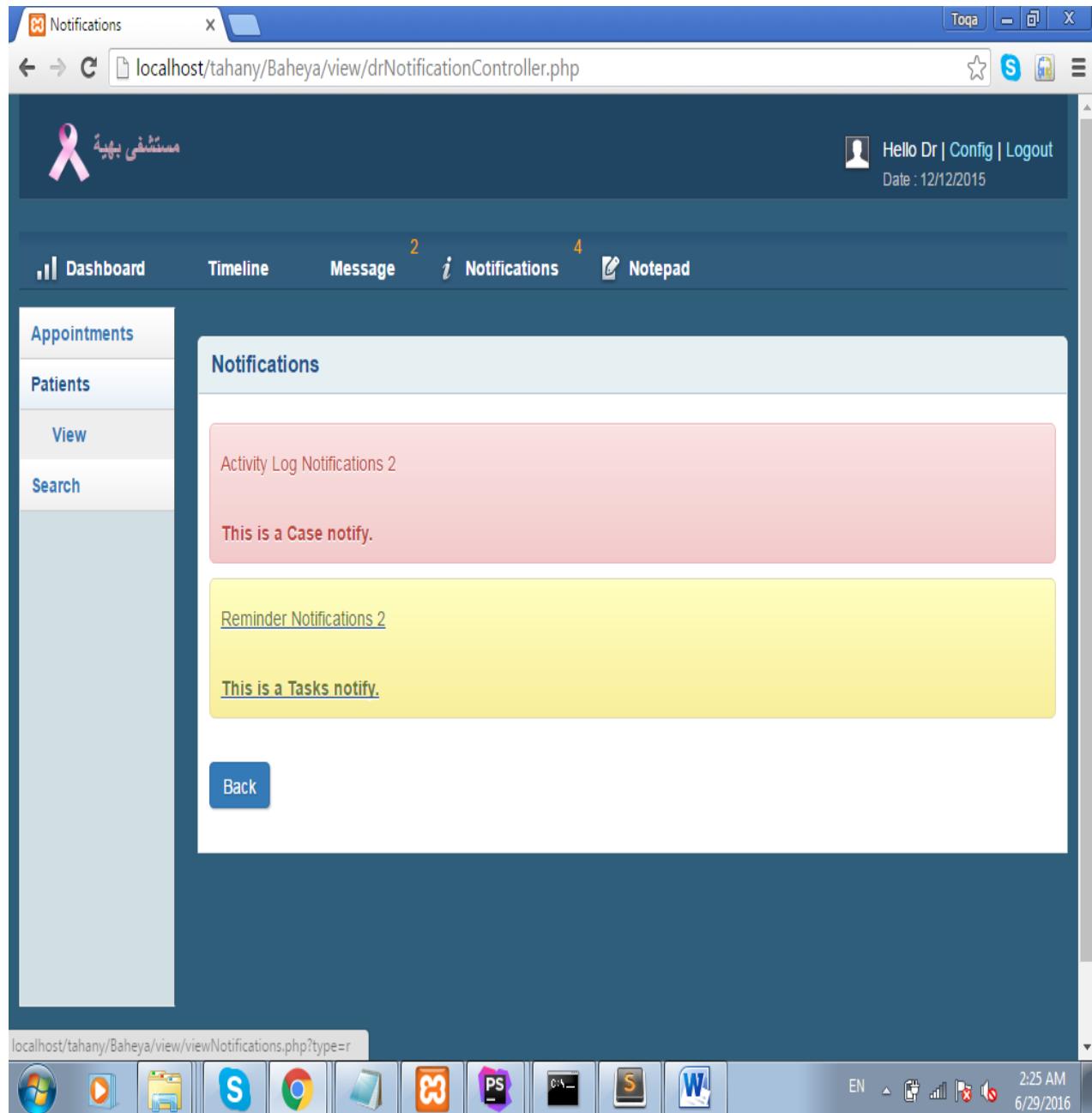


Figure 3.15: Notifications

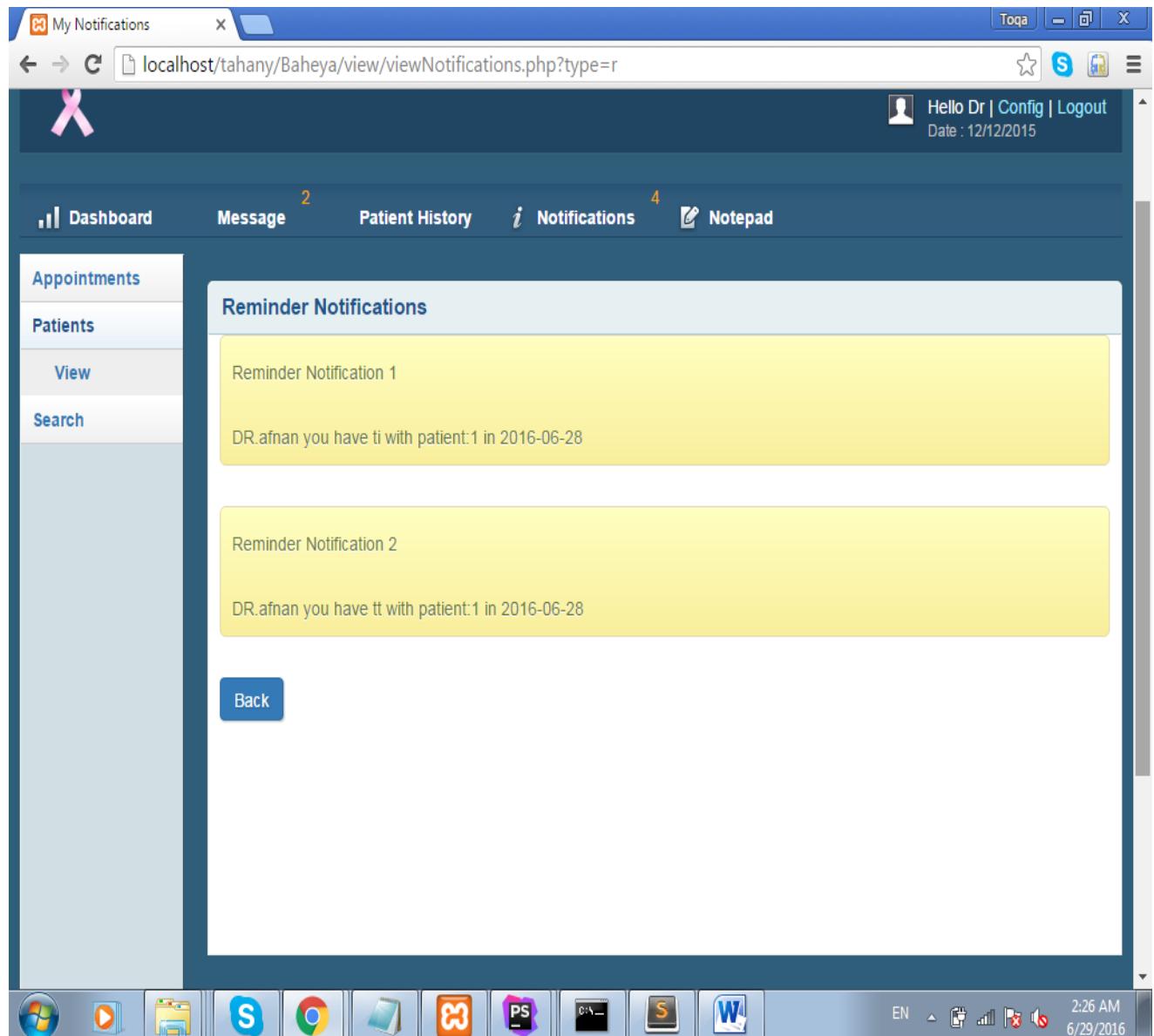


Figure 3.16: Notifications

The screenshot shows the 'Dr.Cases' section of the system. At the top, there is a navigation bar with icons for Dashboard, Timeline, Message (2 notifications), Notifications (4 notifications), and Notepad. On the left, a sidebar menu includes 'Appointments', 'Patients' (selected), 'View', and 'Search'. The main content area displays a table titled 'Patients' with one row. The row contains the name 'بسمة رمضان' (Basma Ramadan) and an ID '2'. A 'Back' button is located at the top left of the content area, and a search bar for patients is at the top right.

Figure 3.17: Archived cases

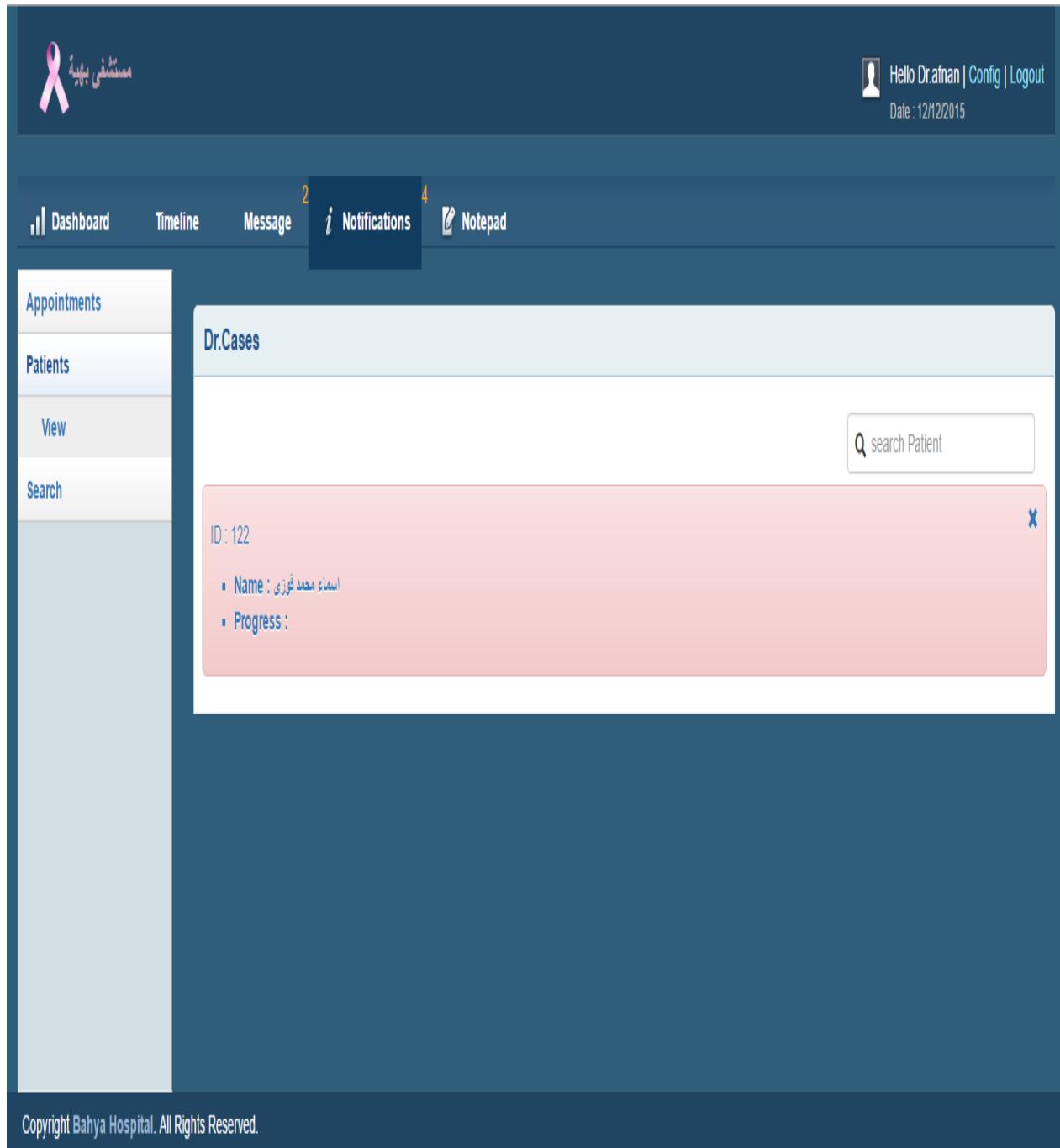


Figure 3.18: Critical cases

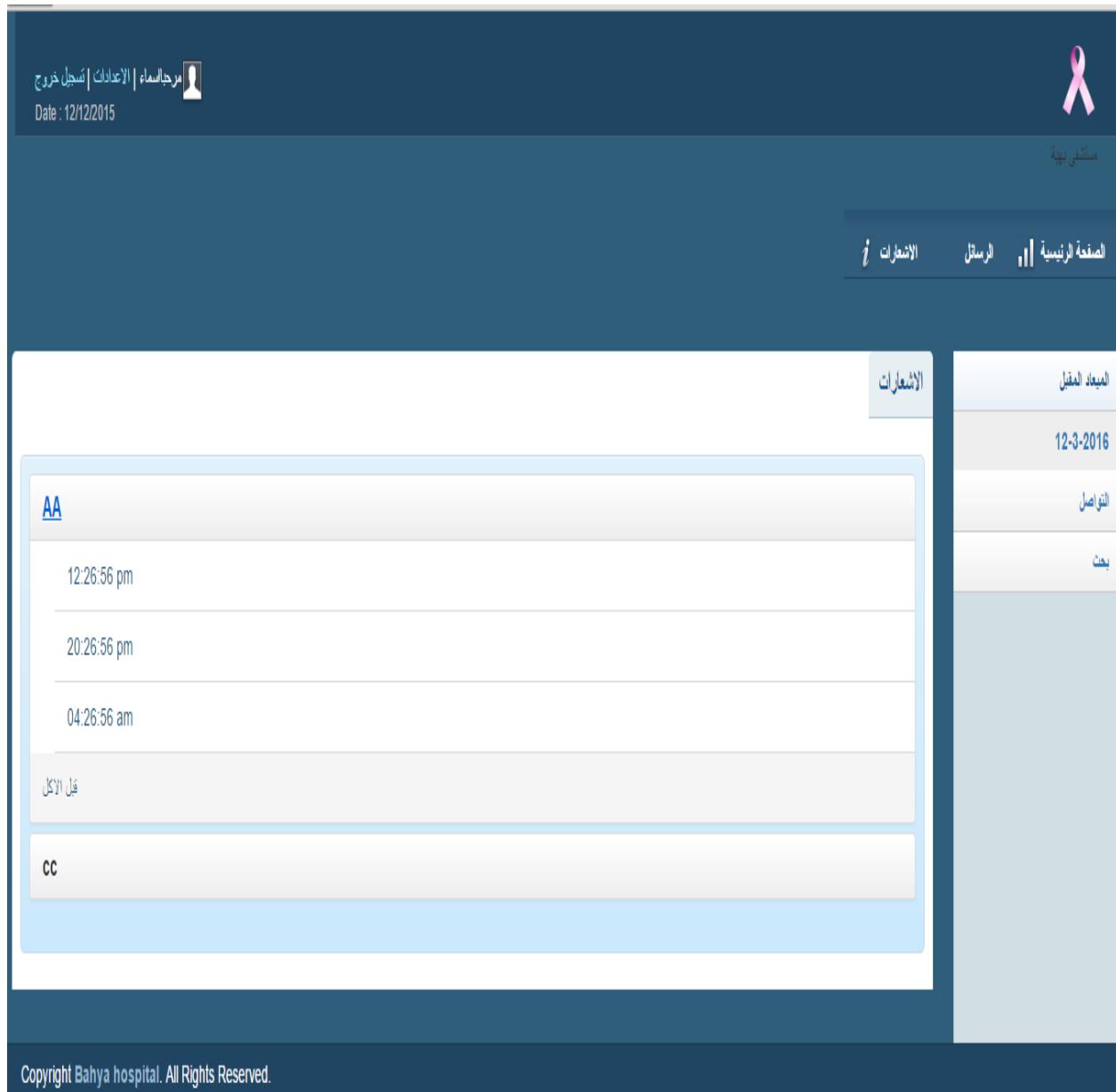


Figure 3.19: Daily medicines

The screenshot shows the 'Dr.Cases' section of the system. On the left, a sidebar menu includes 'Appointments', 'Patients', 'View', and 'Search'. The main area displays a table titled 'Patients' with two entries:

	Patients	ID	
X	اماني محمد المصطفى	1	★
X	سمية فتحي محمود	3	★

A search bar labeled 'search Patient' is located at the top right of the main content area. The top navigation bar includes icons for Dashboard, Timeline, Message (2), Notifications (4), and Notepad, along with a user profile icon and the text 'Hello Dr.rahmed | Config | Logout'.

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Figure 3.20: Dr Patients

The screenshot shows a web-based application interface for tracking female breast cancer. At the top, there is a dark blue header bar with the following elements from left to right: a user profile icon, the text "مرجامي | الاعداد | تسجيل خروج" (My Profile | Statistics | Logout), the date "Date: 12/12/2015", and a logo for "مسنونى بهبة" (Masaonni Bihba) featuring a pink ribbon.

Below the header is a navigation bar with links: "الصفحة الرئيسية" (Home Page), "الانشطة" (Activities), "الرسائل" (Messages), and "البعاد المقابل" (Opposite Side). On the far right of the navigation bar, there is a date "12-3-2016".

The main content area contains a table titled "نتائج" (Results) with two entries. The columns are "النوع" (Type), "ال تاريخ" (Date), and "تحميل" (Download). The first entry is for type "bb" on 2015-12-14 at 20:13:28, and the second is for type "aa" on 2015-11-15 at 16:31:04. Each row has a "تحميل" button. A search bar labeled "Search:" is located above the table.

At the bottom of the main content area, there is a large blue button labeled "عودة" (Return). The footer of the page is a solid dark blue color.

Figure 3.21: Patient labs

The screenshot shows a web-based application interface for tracking female breast cancer patients. At the top, there is a header with the logo of 'Breast Cancer Hospital' (مُستشفى بَرْسَنْسْ), a date 'Date: 12/12/2015', and a pink ribbon icon. The main content area displays a list of prescriptions for a patient. The list is titled 'النتائج' (Results) and includes a search bar. The results are sorted by date ('التاريخ') from most recent to oldest. Each result row contains a 'عرض' (View) button and a date ('التاريخ'). The dates listed are 2016-04-21, 2016-04-20, 2016-04-18, 2016-04-17, 2016-04-16, 2016-04-05, and 2015-11-09.

عرض	التاريخ
عرض	2016-04-21
عرض	2016-04-20
عرض	2016-04-18
عرض	2016-04-17
عرض	2016-04-16
عرض	2016-04-05
عرض	2015-11-09

Figure 3.22: Patient's prescriptions

The screenshot shows a web-based application for tracking female breast cancer. At the top right, there is a logo for "مستشفى بيروت" (Beirut Hospital) featuring a pink ribbon. The top left displays the text "مرجانية | تسجيل خارج" and the date "Date : 12/12/2015". The top navigation bar includes links for "الصفحة الرئيسية" (Home Page), "الرسائل" (Messages), "الاسعافات" (First Aid), and "النتائج" (Results). On the right side, there is a sidebar with sections for "الميداد المقابل" (Opposite Side), showing the date "12-3-2016" and the word "التواصل" (Communication); and "بحث" (Search). The main content area features a table with columns: "الناتج" (Result), "النوع" (Type), and "التاريخ" (Date). The table contains one entry: "تحمیل" (Download) under "الناتج", "left Breast" under "النوع", and "2015-10-13 18:00:00" under "التاريخ". Below the table, it says "Showing 1 to 1 of 1 entries". At the bottom center is a button labeled "عودة" (Return).

Figure 3.23: Patient's rays

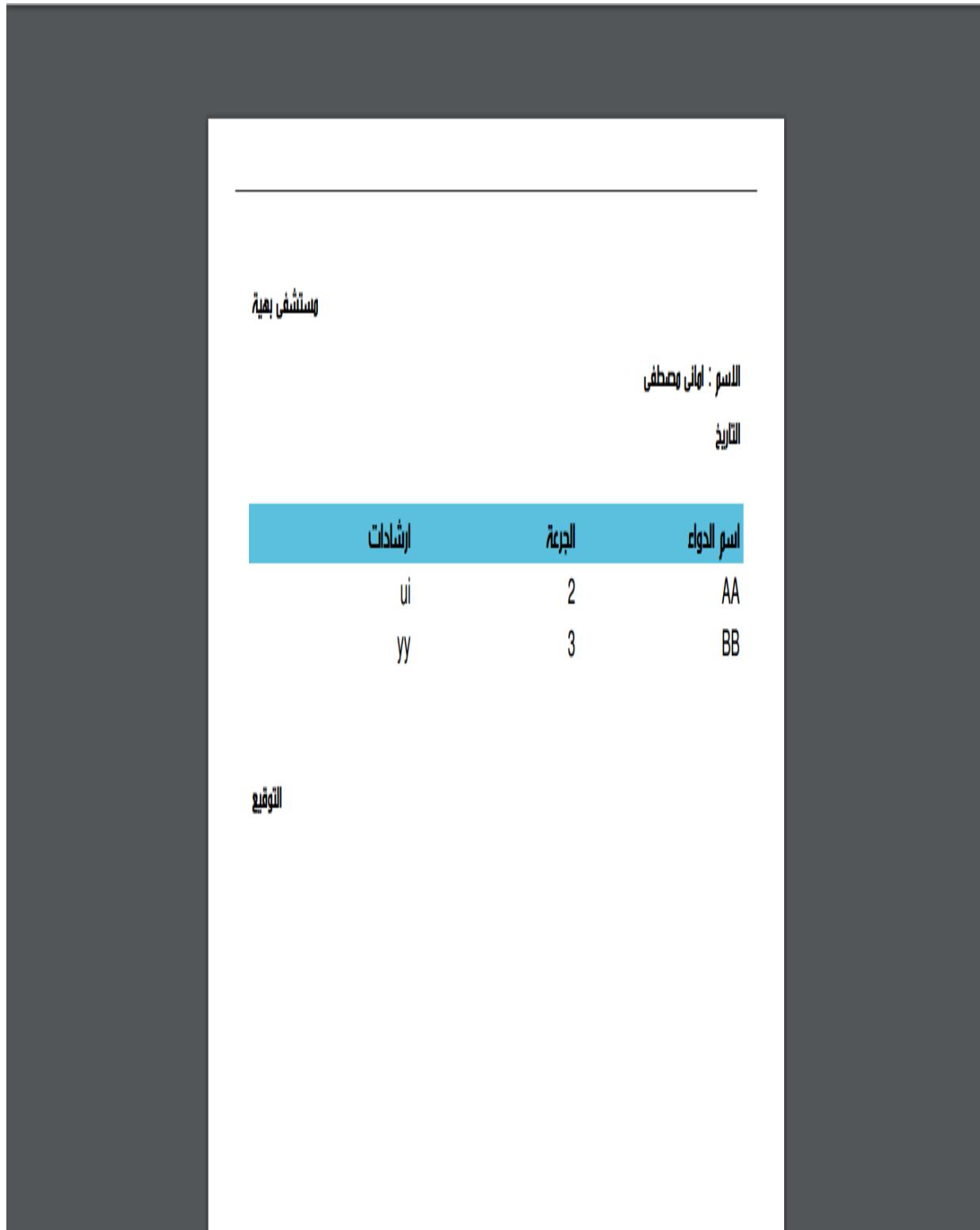


Figure 3.24: View prescription

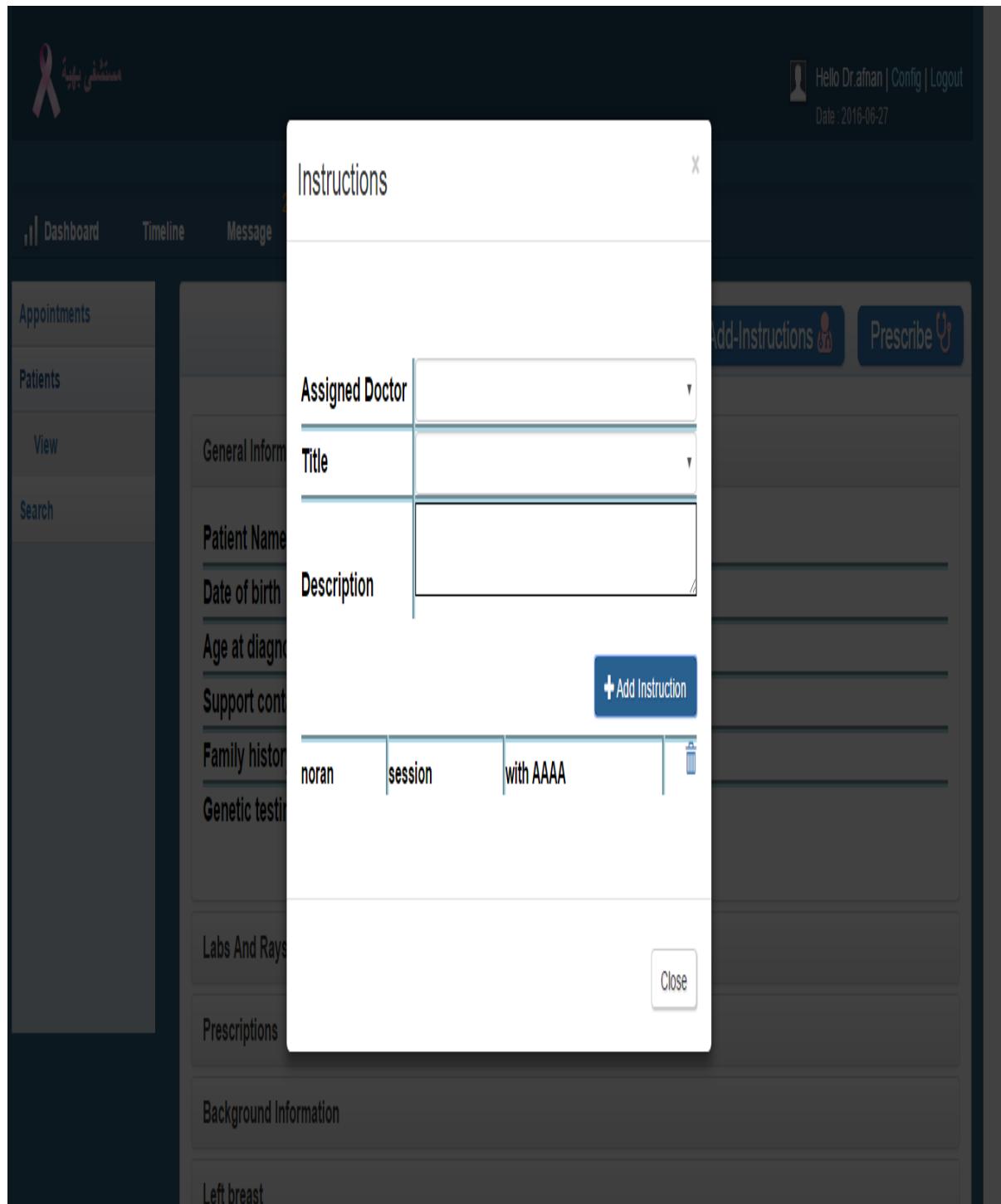


Figure 3.25: Write instructions

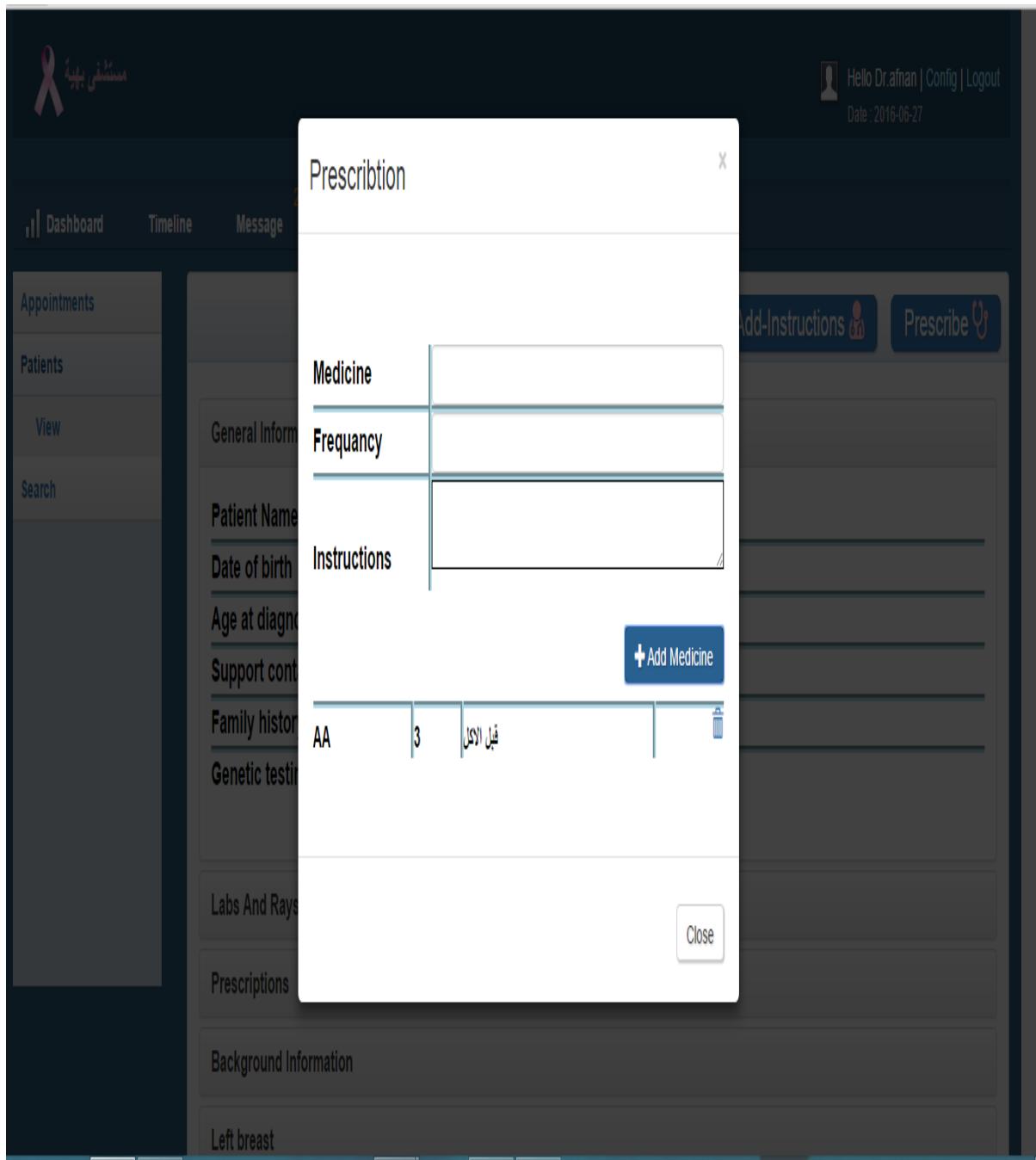


Figure 3.26: Write prescription

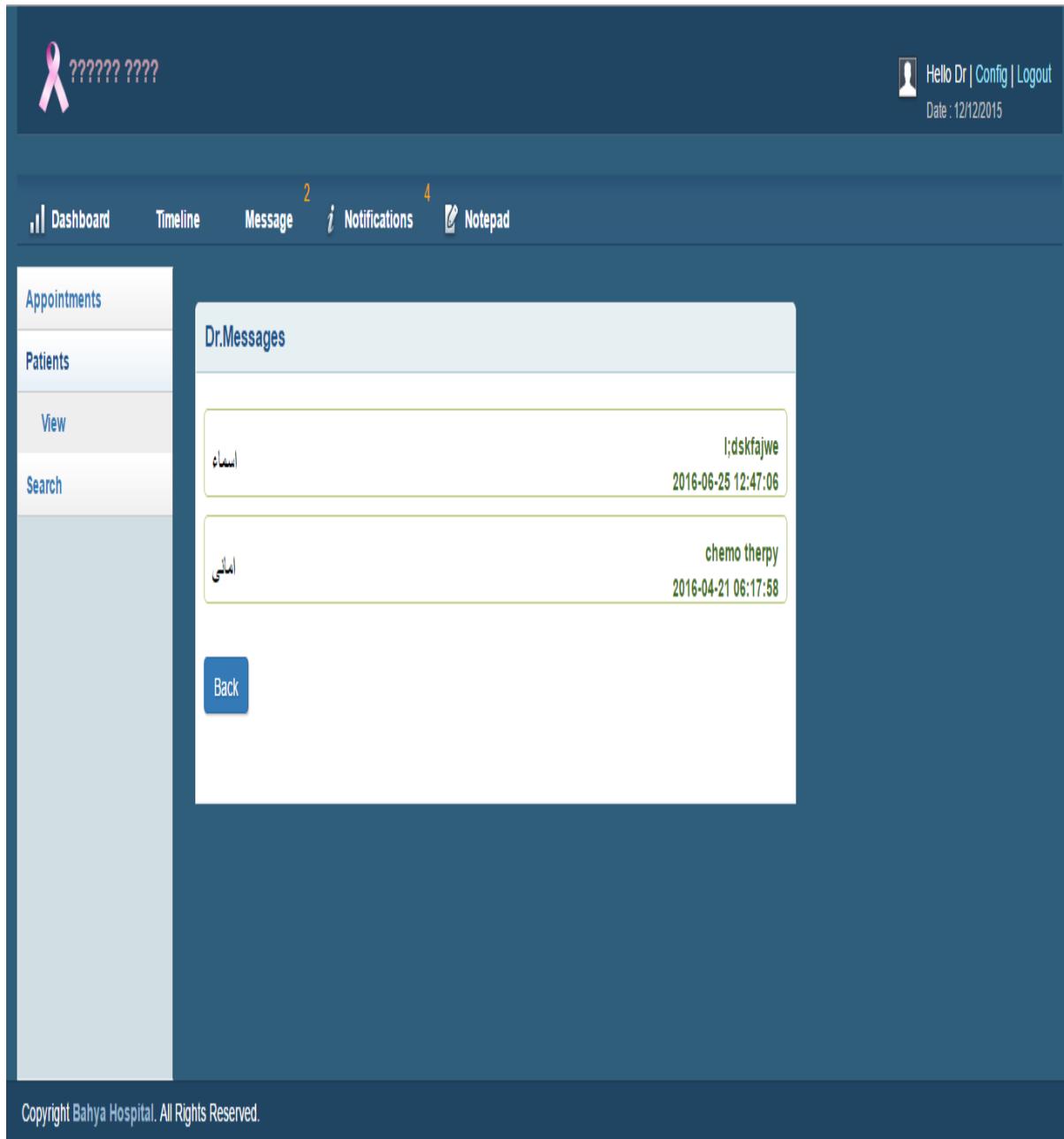


Figure 3.27: DR (All messages)

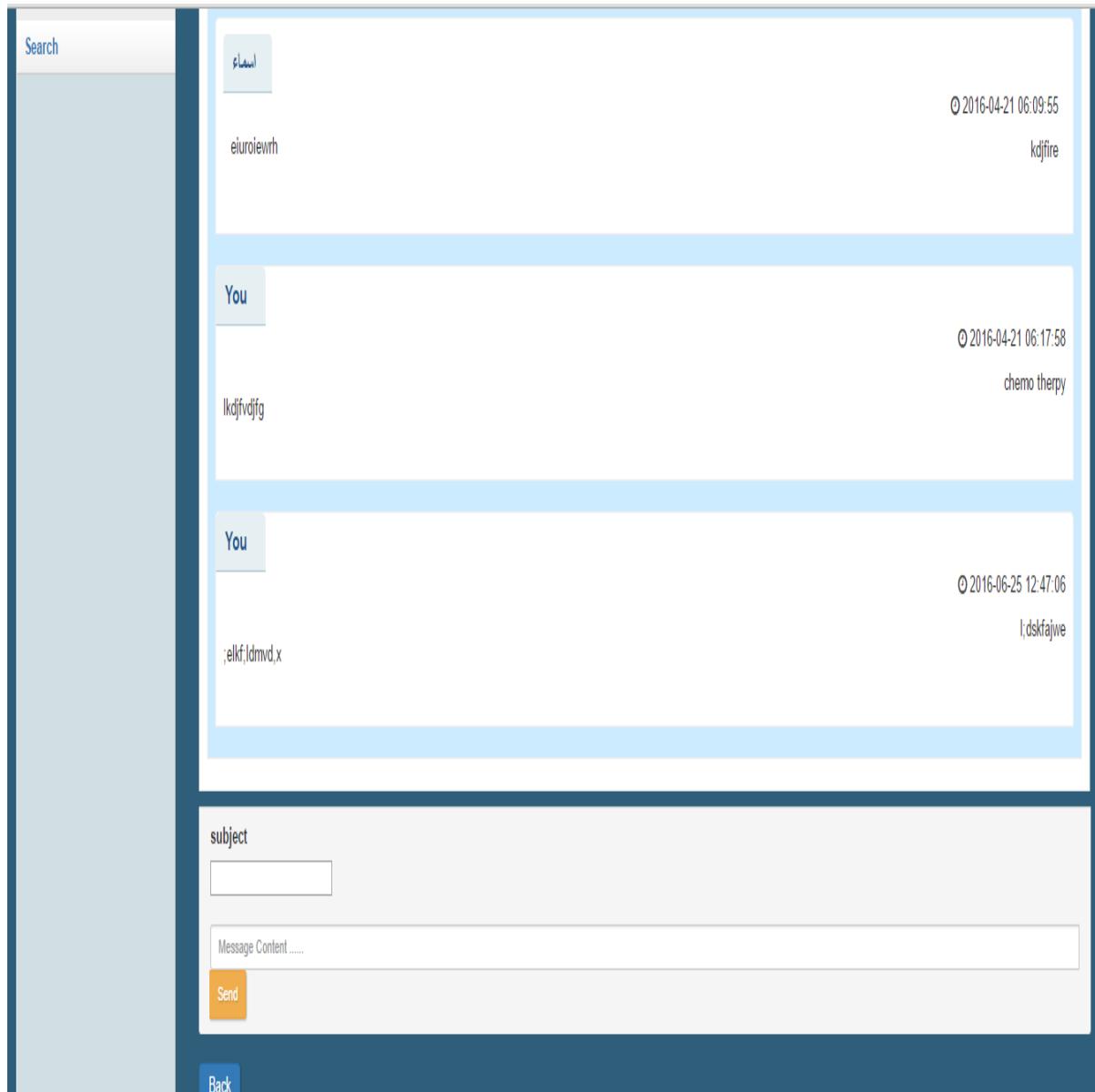


Figure 3.28: DR (consultant messages)

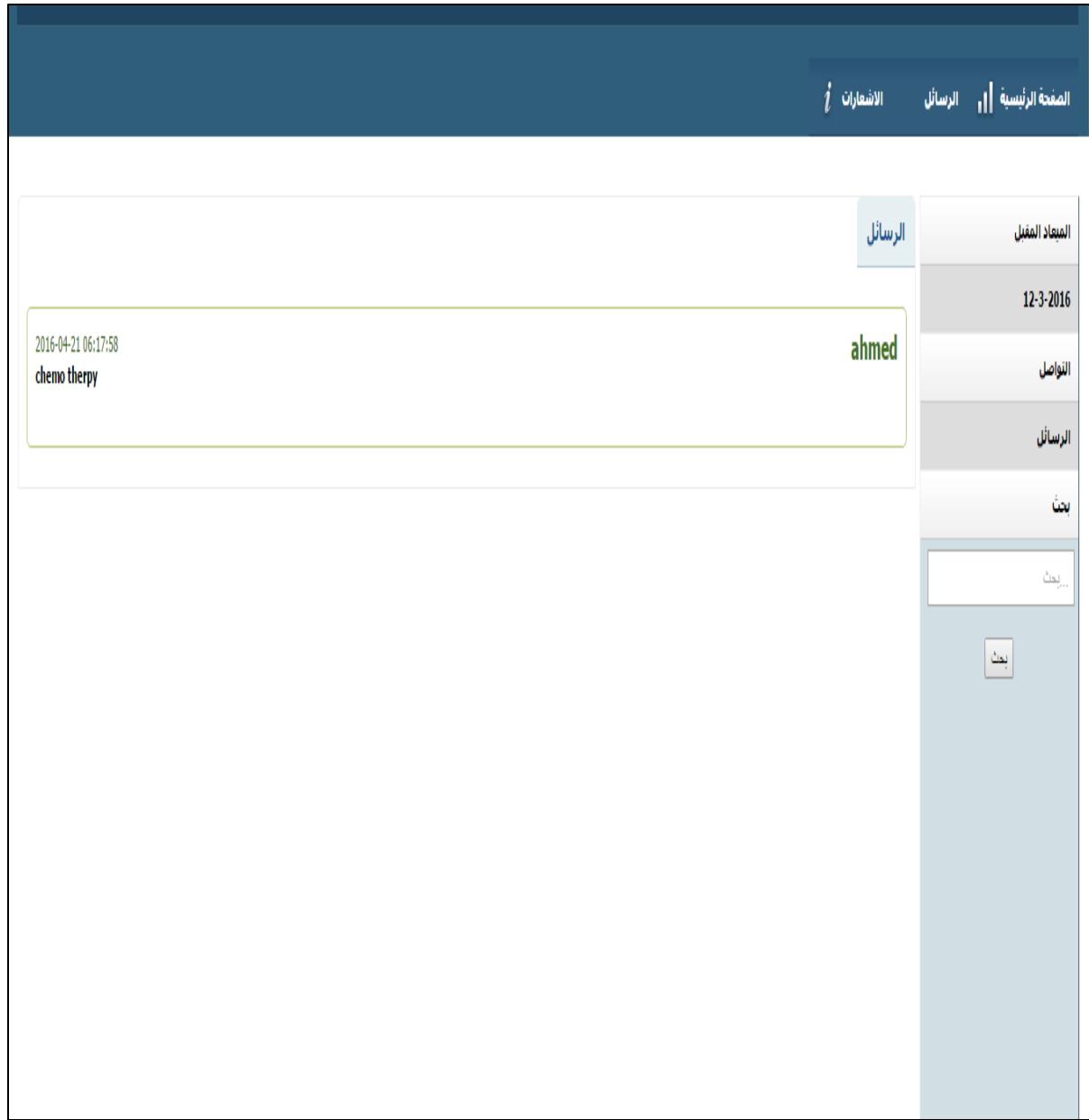


Figure 3.29: Patient (all messages)

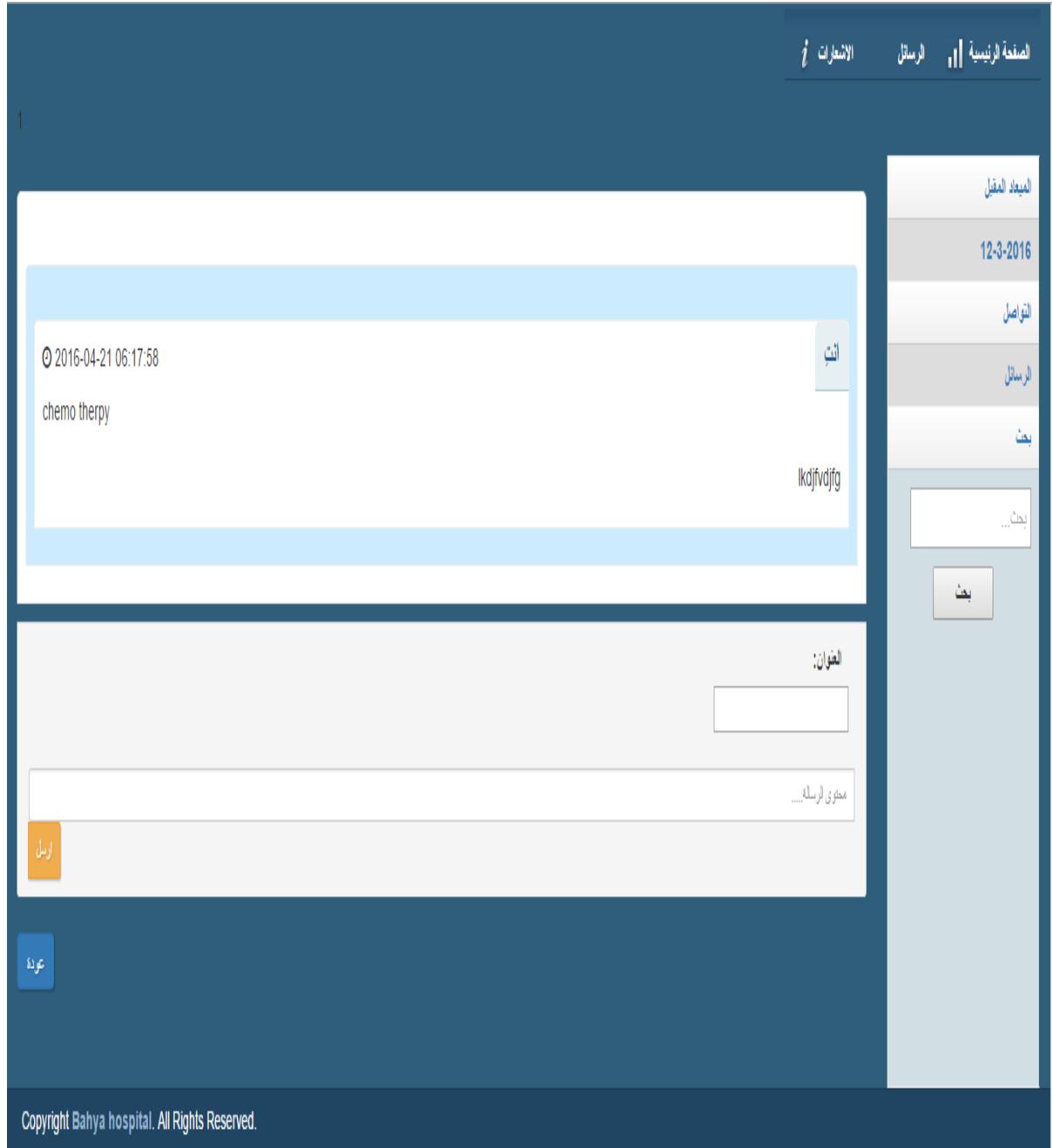


Figure 3.30: Patient chat messages

The screenshot shows a web-based application interface for tracking female breast cancer cases. At the top, there is a dark blue header bar with several navigation links: 'Dashboard' (with a blue icon), 'Timeline' (with a grey icon), 'Message' (with a blue icon and a '2' notification badge), 'Notifications' (with a grey icon and an orange '0' notification badge), and 'Notepad' (with a grey icon). On the left side, there is a vertical sidebar with a light blue background containing the following menu items: 'Appointments' (blue link), 'Patients' (blue link), 'View' (blue link), and 'Search' (blue link). The main content area is titled 'Notifications' in bold blue text. It contains three distinct colored sections: a pink section labeled 'Activity Log Notifications' with the sub-instruction 'This is a Case notify.', a yellow section labeled 'Reminder Notifications 2' with the sub-instruction 'This is a Staff notify.', and a green section labeled 'Timeline Notifications 0' with the sub-instruction 'This is a Patient message notify.'. At the bottom of the main content area, there is a blue rectangular button with the word 'Back' in white text.

Figure 3.31: Activity log notifications

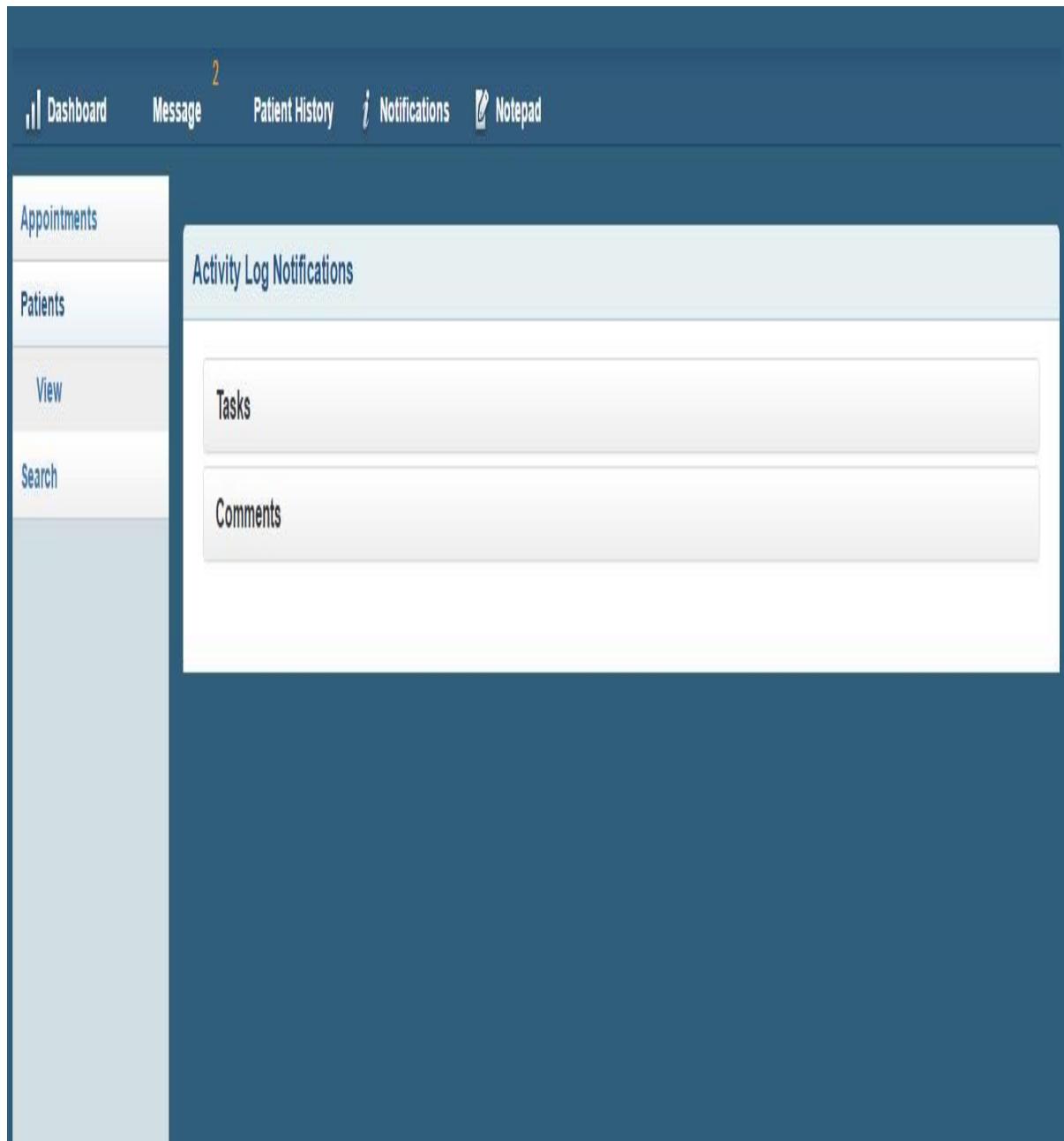


Figure 3.32: Notifications

### ***2.2.3: Site Map:***

Benefits of using site map saving time, user friendly and clarify all pages in site and their sequence

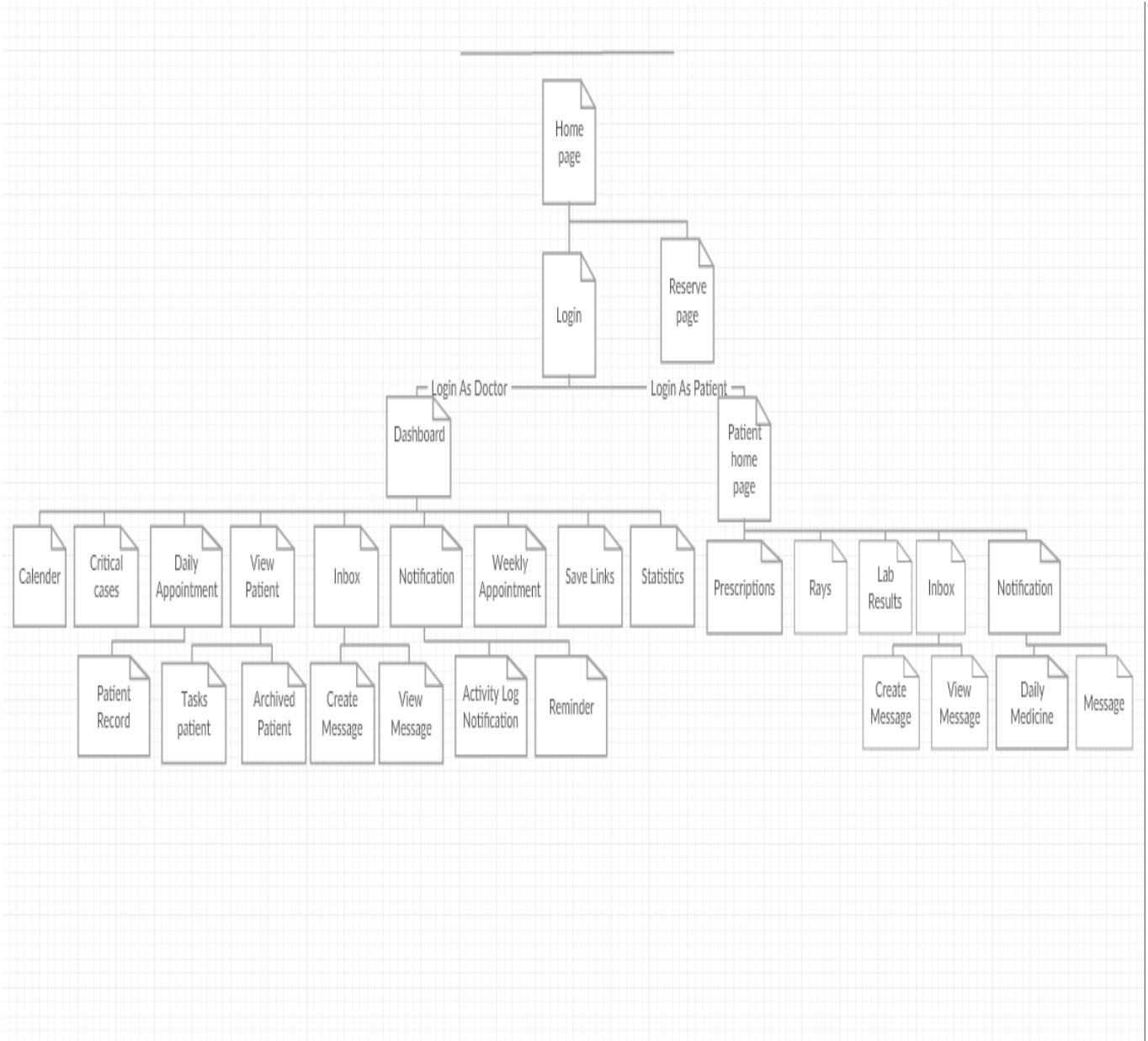


Figure 3.33: Site map

### *3.3- Implementation Design:*

In this phase choose extra methodologies to satisfy client needs and make it user friendly for them by using:

#### A. Angular JS:

- Is a complete JavaScript-based open-source client and server-side web application framework mainly maintained by Google and by a community of individuals and corporations to address many of the challenges encountered in developing single-page applications. The framework used for developing cross-platform mobile apps . It aims to simplify both the development and the testing of such applications by providing a framework for client-side model–view–controller (MVC) and model–view–view model (MVVM) architectures.
- The AngularJS framework works by first reading the HTML page, which has embedded into it additional custom tag attributes. Angular interprets those attributes as directives to bind input or output parts of the page to a model that is represented by standard JavaScript variables.
- AngularJS lets you extend HTML vocabulary for your application. The resulting environment is extraordinarily expressive, readable, and quick to develop.

#### Alternatives that using AngularJS :

- Other frameworks deal with HTML's shortcomings by either abstracting away HTML, CSS, and/or JavaScript or by providing an imperative way for manipulating the DOM. Neither of these address the root problem that HTML was not designed for dynamic views.
- AngularJS is a toolset for building the framework most suited to your application development. It is fully extensible and works well with other libraries. Every feature can be modified or replaced to suit your unique development workflow and feature needs. Read on to find out how.

***B. API:***

You use SMS API to send and receive a high volume of SMS anywhere in the world.

The workflow for sending outbound messages using SMS API is:

1. Create a request to send an SMS.
2. Check the response codes and ensure that you sent the request correctly.
3. Your message is delivered to the handset. The user's handset returns a delivery receipt.

Resources: <https://docs.nexmo.com/messaging/sms-api>

## Chapter 4: Maintenance Phase:

This chapter is to be resumed after conducting multiple visits to the hospital to test the current working requirements with the in charge team in order to apply the maintenance phase on the requirements they may request to edit or update, also to recognize the feature work that can be added or modified on the system as an improvement to its functionalities. Thus Far, what was suggested during the last meeting with the hospital can be summed up by the following:

### 4.1.-Future work:

In future can enhance Bhaiya's site by adding these features:

#### **A. Timeline:**

- All doctors and specialists have a timeline on their accounts where they can:
- **write posts:** identify the subject of each post such as “meeting calls”, “hosting conference”.
- **Notify others:** select other doctors/ specialists to be notified or tagged in their posts, selection can be added by category, for instance, doctors of department X only, or specialists who are pursuing case X with doctor Y, and so on.
- **Confirm:** As the timeline is designed mainly for official announcements between administration and stuff or between the departments or the stuff themselves, there will be a confirmation button where anyone that's selected to be notified of a certain post can confirm attending or seeing this post.

#### **B. Reminder:**

Where users will be notified of tasks' due dates, and can view their tasks in terms of:

- Due soon: a task is due in less than twenty four hours.
- Due later: a task is due in more than twenty four hours.
- Recently past due: a task is recently overdue.
- Past due: a task is past due.

**C. Sort :**

- Doctors and specialists can sort the search Results by:
  - Assignee (Assigned/ un assigned)
  - Type (Project/task)
  - Recently modified
  - Due Dates
  - Statue(in progress-completed but not archived- archived)
  - Creation time
  - Completion time

**D. Main Search :**

- Doctors and specialists can search using the preset keywords which are (Tasks they are assigned- tasks and conversations they have created – tasks and conversation they are following) or the can search for person “x” to display the recent posts of person “x”.

**E. Attach files :**

- The task owner (doctors/specialists) can attach files to the task itself, while the others can also attach files in a comment.

**F. Notification for patient:**

- Bhaiya’s events
- Anything the hospital wants the patient to know.

**G. Notification for doctor:**

- Posts you are following.
- New files are attached to task x.

**H. Add events that increase fundraising for Bhaiya hospital**

