

# Software Requirements Specification

Version 1.0

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Archiving and Enquiring system

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Submitted in partial fulfillment

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4<sup>th</sup> year project software Engineering

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# **1.0 Introduction**

## **1.1 purpose**

The purpose of this document is to present a detailed description of the Archiving and Enquiring system. It will explain the purpose and features of the system ,the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli. This document is intended for both the stakeholders and the developers of the system and will be proposed to the Ministry of Health for its approval.

## **1.2 Scope of Project**

This software system will be a website for archiving medical records by doctors in Homs,to facilitate the medical process by providing a tool on the internet to archive pathological diagnoses,which would otherwise have to be performed manually.

In detail, the system is designed for doctors in Homs to archive disease records ,and doctors review disease diagnoses and other doctors. The public can access their medical information through the android application, in addition to inquiring about hospital locations,details, and doctors working in them.

## 1.3 Glossary

Term	Definition
Doctor	The person who treats the sick and writes the diagnoses.
Patient	A person who have disease.
Diagnose	Disease that is prescribed by a doctor with medications, tests and radiographs.
Database	Collection of all the information monitored by this system.
Software Requirements Specification	A document that completely describes all of the functions Of a proposed system and the constraints under which it must operate. For example, this document.
Stakeholder	Any person with an interest in the project who is not a developer.

## 1.4 References

IEEE. *IEEE Std 830-1998 IEEE Recommended practice for software Requirements Specifications*. IEEE Computer Society. 1998.

## 1.5 Overview of Document

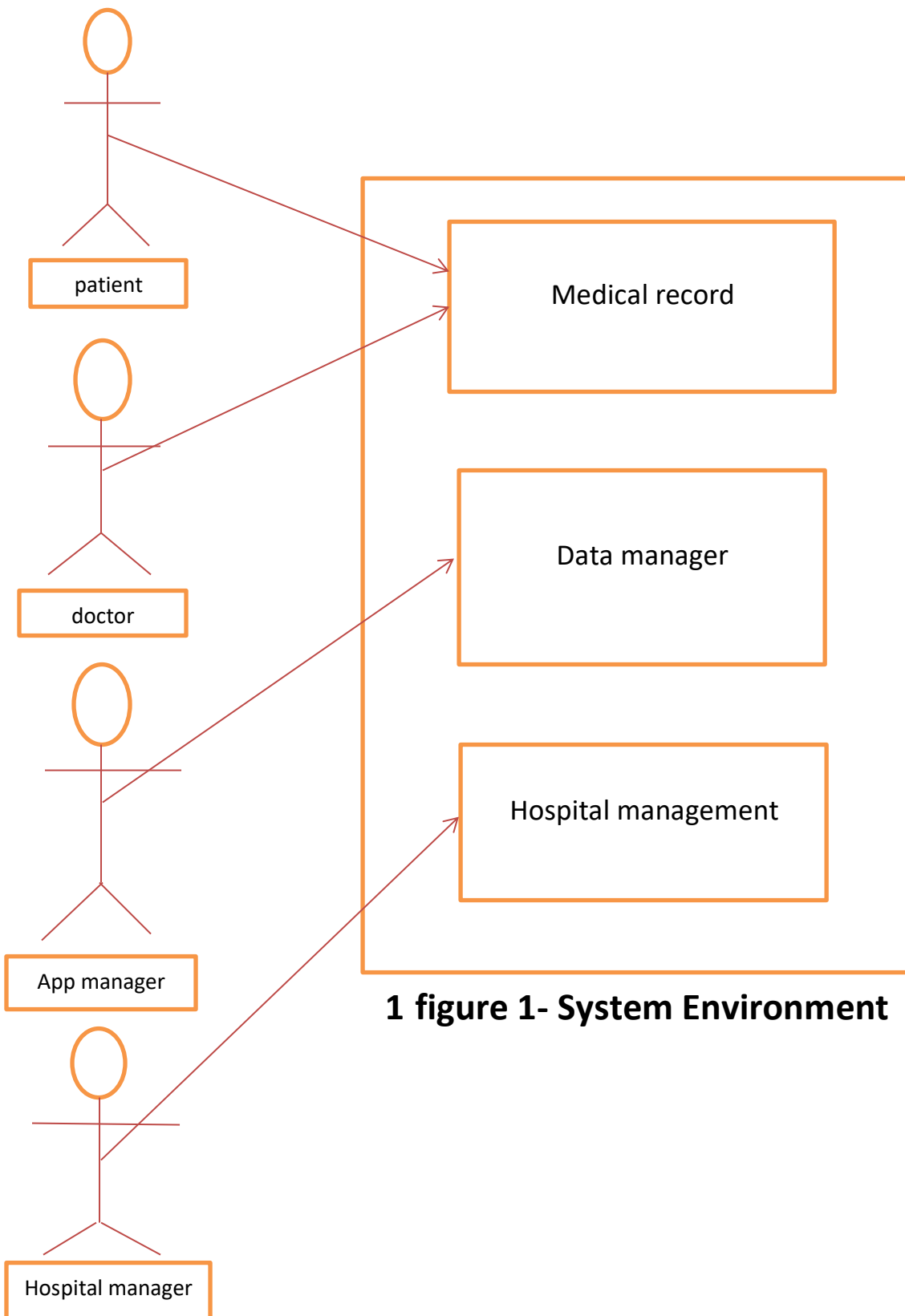
The next chapter, the Overall Description section., of this document gives an overview of the functionally of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the next chapter.

The third chapter, Requirements Specification section, of this document is written primarily for the developers and describes in technical terms the details of the functionality of the product.

Both sections of the document describe the same software production in its entirety, but are intended for different audiences and thus use different language.

# 2.0 Overall Description

## 2.1 System Environment



The medical record system has four active actors and one cooperating system.

Everybody accesses the record through the Internet.

Any patient communication with the system is through android app.

The doctor and the hospital manager communication with the system is through web app.

Application manager accesses the entire system directly.

There is a link to the (existing) Ministry of Health.

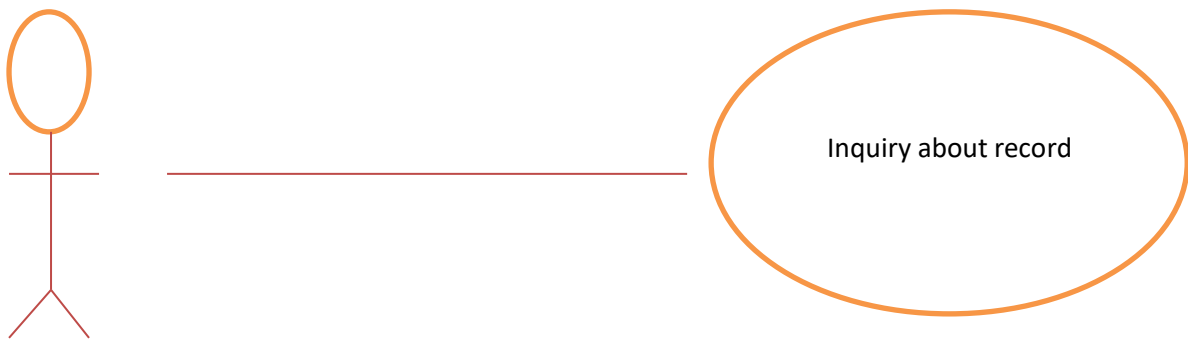
## 2.2 functional Requirements Specification

This section outlines the use cases for each of the active people separately. The patient, the doctor and the hospital manager have only one use case apiece while the application manager is the main actor in the system.

### 2.2.1 Patient Use Case

Use case: **inquiry about record**

**Diagram:**



**Patient**

### Brief Description

The patient accesses the android application and searches for the private medical record.

### Initial Step-By-Step Description

Before this use case can be initiated, the patient has already accessed the medical record website.



1. The patient open the android app
2. The patient enters the national number
3. The system shows the results.

### **Xref: Section 3.2.1 inquiry about record**

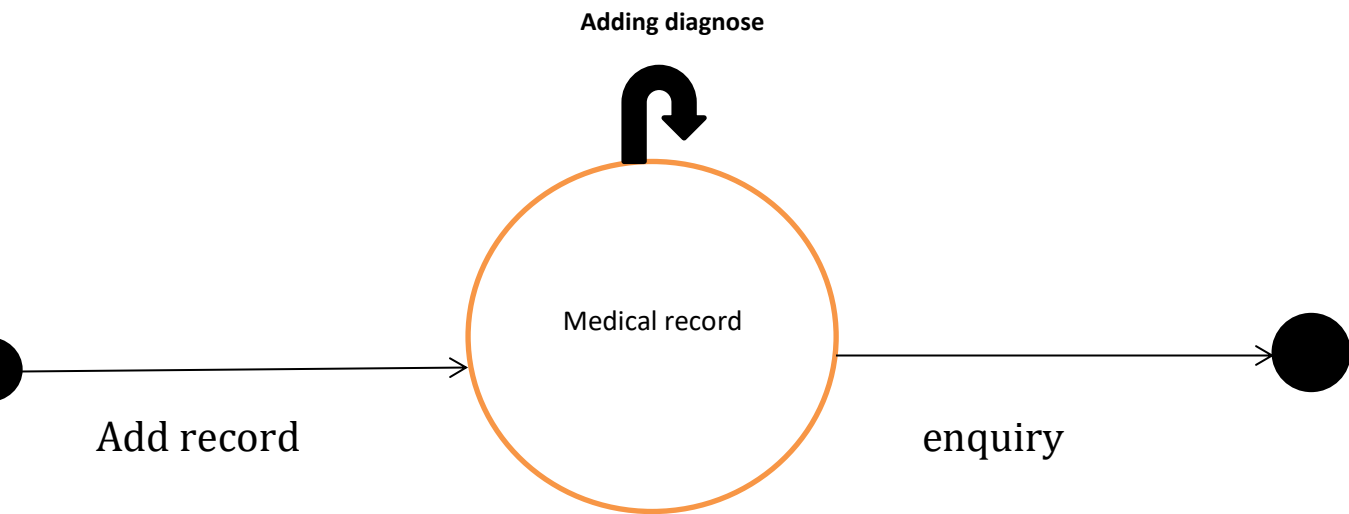


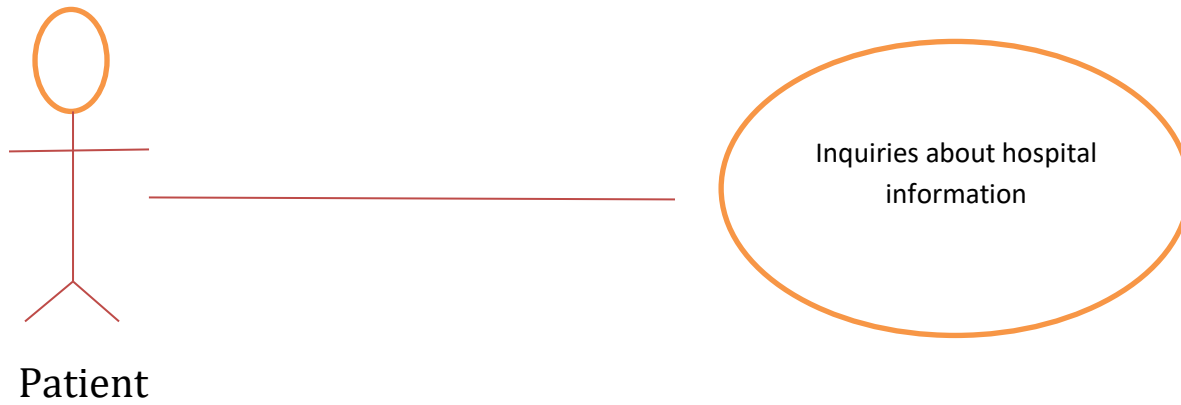
figure 2- adding record process

### **2.2.2 patient use case**

In case of multiple patients, this term refers to the principle patient, with whom all communication is made.

Use case: Inquiries about hospital information.

**Diagram:**



## Brief Description

The patient accesses the android application and searches for hospital information.

## Initial Step-By-Step Description

Before this use case can be initiated, the patient has already accessed the medical record website.

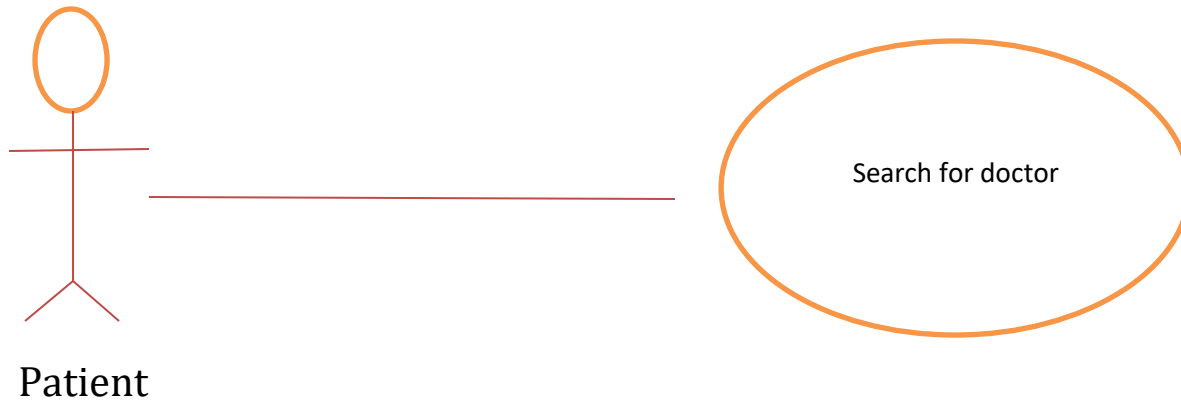
1. The system displays all the hospitals in home
2. The patient is given the choice to search by name, hospital name, equipment, or available room.
3. The system shows the results.

**Xref:** section 3.2.2 Inquiries about hospital information

### 2.2.3 patient use case

Use case: search for doctor

**Diagram:**



#### **Brief Description:**

the patient accesses the android applicaton and searches for a specific doctor.

#### **Initial Step-By-Step Description:**

Before this use case can be initiated, the patient has already accessed the medical record website.

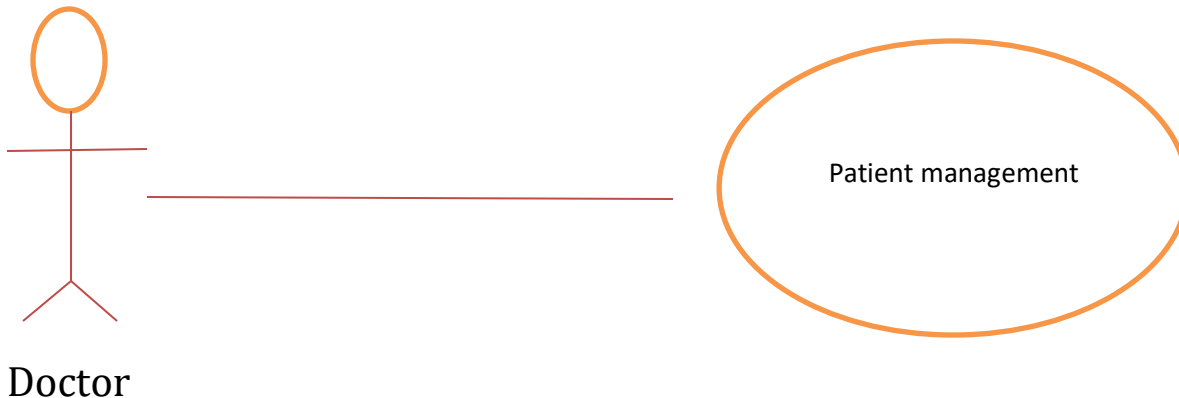
1. The patient has the option to search for a doctor through his specialty or the hospital he works in.
2. The system shows the results.

**Xref:** section 3.2.2 search for doctor

## 2.2.4 doctor use case

Use Case: patient management.

**Diagram:**



### **Brief Description:**

Add patient, modify patient information.

### **Initial Step-By-Step Description:**

Before this use case can be initiated, the doctor has already accessed the medical record website.

1. the doctor logs onto the website and searches for the patient by the national number.
2. The system offers it two options, either searching for an existing patient or adding a patient.
3. The system shows the results.
4. The system allows the doctor to modify a patient.

**Xref:** section 3.2.3 add patient.

## 2.2.5 doctor use case

Use Case: record management.

**Diagram:**



### **Brief Description:**

Add diagnose, modify diagnose information.

### **Initial Step-By-Step Description:**

Before this use case can be initiated, the doctor has already accessed the medical record website.

1. the doctor logs onto the website and searches for the patient by the national number.
2. The system shows the results.
3. The system allows the doctor to modify a record or adding a record.

**Xref:** section 3.2.4 add diagnose.

## 2.2.6 hospital manager use case

Use Case: hospital resource management.

**Diagram:**



Hospital manager

### **Brief Description:**

Organizing rooms, equipment and doctors.

### **Initial Step-By-Step Description:**

Before this use case can be initiated, the hospital manager has already accessed the medical record website.

1. The hospital manager logs into the website, and all the information about the hospital is shown to him.
2. The system allows him to modify the equipment, rooms and doctors.

**Xref:** section 3.2.5 Update the hospital status.

## 2.2.7 application manager use case

Use Case: hospital and doctors management.

**Diagram:**



App manager

### **Brief Description:**

Organizing rooms, equipment and doctors.

### **Initial Step-By-Step Description:**

Before this use case can be initiated, the hospital manager has already accessed the medical record website.

1. The application manager logs into the website.
2. The system allows him modify the information of all hospitals and doctors.
3. The system shows it a list of hospitals and doctors in the system.

**Xref:** section 3.2.5 Update hospital and doctor status.

## 2.3 User Characteristics

The doctor should be familiar with dealing with internet browsers ,logins , and scheduling programs. The doctor is expected to be Internet literate and be able to use search engine.

The patient should be familiar with dealing with the Android application and expected to be Internet literate and be able to use search engine.

The application manager and the hospital manager should be familiar with dealing with internet browser , dealing with data ,

And expected to be Internet literate and be able to use search engine.

## **2.4 Non-Functional Requirements**

The medical records will be on a server with high speed Internet capability .the physical machine to be used will be determined by the Ministry of health. the software developed here assumes the use of a tool such as entity framework for connection between the web pages and the database. The speed of the patient's connection will depend on the hardware used rather than characteristics of the system.

The application manager works on a computer that has access to the SQL Server database and the windows system.



## 3.0 Requirements Specification

### 3.1 External Interface Requirements

## 3.2 Functional Requirement

The logical structure of the data is contained in section 3.3.1

### 3.2.1 Inquiry about record

<b>Use Case Name</b>	Inquiry about record
<b>Xref</b>	Section 3.2.1 Inquiry about record SDD,section 7.1
<b>Trigger</b>	The patient accesses the medical record app
<b>precondition</b>	The web displayed with grid of search.
<b>Basic Path</b>	<ol style="list-style-type: none"><li>1. The patient open the android app</li><li>2. The patient enters the national number</li><li>3. The system shows the results.</li></ol>
<b>Alternative Path</b>	NON
<b>Exception Path</b>	The patient may abandon the search at any time.

### 3.2.2 Inquiries about hospital information.

<b>Use Case Name</b>	Inquiries about hospital information
<b>Xref</b>	section 3.2.2 Inquiries about hospital information
<b>Trigger</b>	The patient accesses the medical record app
<b>Precondition</b>	The web displayed with grid of search.
<b>Basic Path</b>	<ol style="list-style-type: none"><li>1. The system displays all the hospitals in homes</li><li>2. The patient is given the choice to search by name, hospital name, equipment, or available room.</li><li>3. The system shows the results.</li></ol>
<b>Alternative Path</b>	<p>If the user decides to search by equipment 3- a list of equipment for each hospital appears.</p> <p>If the user decides to search by rooms, a list of available room appears.</p>
<b>Exception Path</b>	The patient may abandon the search at any time.

### 3.2.3 search for doctor

<b>Use Case Name</b>	search for doctor
<b>Xref</b>	section 3.2.2 search for doctor
<b>Trigger</b>	The patient accesses the medical record app
<b>Precondition</b>	The web displayed with grid of search.
<b>Basic Path</b>	<ol style="list-style-type: none"><li>1.The patient has the option to search for a doctor through his specialty or the hospital he works in.</li><li>2.The system shows the results.</li></ol>
<b>Alternative Path</b>	<p>If the user decides to search by hospital 3- a list of hospitals appears.</p> <p>If the user decides to search by specialization 3- a list of reference appears.</p>
<b>Exception Path</b>	The patient may abandon the search at any time.

### 3.2.4 patient management

<b>Use Case Name</b>	patient management
<b>Xref</b>	section 3.2.3 add patient.
<b>Trigger</b>	The doctor accesses the medical record website
<b>Precondition</b>	The web displayed with grid of search.
<b>Basic Path</b>	<ol style="list-style-type: none"><li>1. the doctor logs onto the website and searches for the patient by the national number.</li><li>2. The system offers it two options, either searching for an existing patient or adding a patient.</li><li>3. The system shows the results.</li><li>4. The system allows the doctor to modify a patient.</li></ol>
<b>Alternative Path</b>	NON
<b>Exception Path</b>	The doctor may abandon the search at any time.

### 3.2.5 record management.

<b>Use Case Name</b>	record management.
<b>Xref</b>	section 3.2.4 add diagnose.
<b>Trigger</b>	The doctor accesses the medical record website
<b>Precondition</b>	The web displayed with grid of search.
<b>Basic Path</b>	<ol style="list-style-type: none"><li>1. the doctor logs onto the website and searches for the patient by the national number.</li><li>2. The system shows the results.</li><li>3. The system allows the doctor to modify a record or adding a record.</li></ol>
<b>Alternative Path</b>	NON
<b>Exception Path</b>	The doctor may abandon the search at any time.

### 3.2.6 hospital resource management.

<b>Use Case Name</b>	hospital resource management.
<b>Xref</b>	section 3.2.5 Update the hospital status.
<b>Trigger</b>	The hospital manager accesses the medical record website
<b>Precondition</b>	The web displayed with grid of search.
<b>Basic Path</b>	<ol style="list-style-type: none"><li>1. The hospital manager logs into the website, and all the information about the hospital is shown to him.</li><li>2. The system allows him to modify the equipment, rooms and doctors.</li></ol>
<b>Alternative Path</b>	If the hospital manager decides to modify on the equipment 3- a list of mods appears.
<b>Exception Path</b>	The hospital manager may abandon the search at any time.

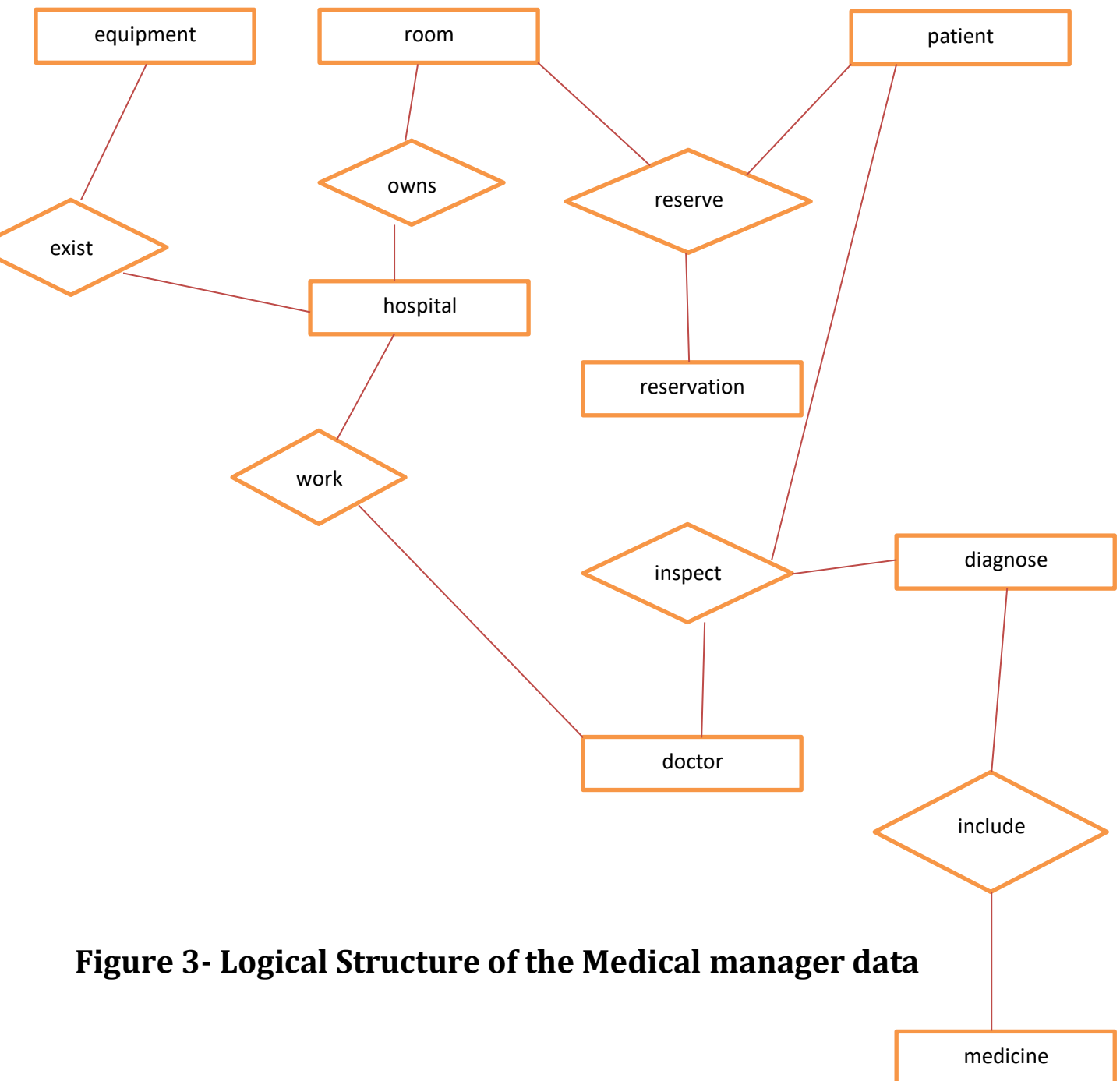
### 3.2.7 : hospital and doctors management.

<b>Use Case Name</b>	hospital and doctors management.
<b>Xref</b>	section 3.2.5 Update hospital and doctor status.
<b>Trigger</b>	The application manager accesses the medical record website
<b>Precondition</b>	The web displayed with grid of search.
<b>Basic Path</b>	<ol style="list-style-type: none"><li>1. The application manager logs into the website.</li><li>2. The system allows him modify the information of all hospitals and doctors.</li><li>3. The system shows it a lits of hospitals and doctors in the system.</li></ol>
<b>Alternative Path</b>	If the application manager decides to modify on the rooms and doctors 3- a list of mods appears.
<b>Exception Path</b>	The application manager may abandon the search at any time.

## 3.3 Detailed Non-Functional Requirements

### 3.3.1 Logical Structure of the Data

The logical structure of the data to be stored in the internal medical record database is given below



**Figure 3- Logical Structure of the Medical manager data**



The data descriptions of each of these data entities is as follows:

### **Patient Data Entity**

<b>Data Item</b>	<b>Type</b>	<b>Description</b>	<b>Comment</b>
Id-p	Integer	The national number	Used as foreign key in hospital
First name	Text	First name of patient	
Last name	Text	Last name of patient	
Age	Integer	The age of patient	
sex	Text	Gender of patient	
birthday	Integer	Birthday of patient	

### **Hospital Manger Data Entity**

<b>Data Item</b>	<b>Type</b>	<b>Description</b>	<b>Comment</b>
Id-h	Integer	The special number of hospital	Used as foreign key
name	Text	Name of hospital	
address	Text	Address of hospital	
phone	Integer	Phone of hospital	

## Docotr Data Entity

Data Item	Type	Description	Comment
Id-d	Integer	The special number of doctor	Used as foreign key
First name	Text	First name of patient	
Last name	Text	Last name of patient	
phone	Integer	Phone number of doctor	
c-address	Text	The clinic address of the doctor	When the doctor works in hospital and has his own clinic
specialization	Text	The specialization of the doctor	

### 3.3.2 Security

The system is on a server that has its own protection , there are powers for the hospital administrator to modify his hospital and he cannot modify or delete anything related to the rest of the hospitals.

A doctor cannot change the records with other doctors.

All accounts in the system are protected with an encrypted password , in addition to the protection it provides windows Defender.