Interactive Health Care System

Software Requirements Specification

Version 1.0

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The Development Team

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1.0 – Introduction

1.1 - Purpose

The purpose of this software will be for the everyday use of medical professionals and their patients. It will be designed with ease of use being at the forefront. This means that anyone will be able to use the software with little effort, thereby improving efficiency. The vast improvement that the ability to access and create records automatically, without having to manually copy out and file all given information, cannot be overstated. This software will also allow for the filing of other medical information such as prescriptions and also provides patients with a convenient way to add new ailments, change contact information, and request a different doctor. A database is stored of all critical information.

1.2 – Scope of Project

This software system is an Interactive Healthcare System designed to improve communication and scheduling between healthcare practitioners, with the goal of improving overall efficiency for the healthcare facility. The system allows for quick communication of the patient's symptoms, as well as quick treatment suggestion for non-emergency cases.

Specifically, the system allows patients to submit their healthcare concerns, which are evaluated by a healthcare provider, who then suggests treatment or notifies administrative staff to schedule an appointment with the patient. The system contains a relational database between symptom reports, treatments, patients, and practitioners.

1.3 – Glossary

Appointment	An appointment for a specific patient to meet with his doctor.
Client	The front-end portion of the system, which runs on individual devices.
Database	The back-end portion of the system, stored on a central server.
Doctor	A medical doctor in the system.
Healthcare practitioner	Any doctor or nurse in the system.
Nurse	A medical nurse in the system.
Receptionist	An administrative worker at the healthcare facility.
Patient	A patient of the healthcare facility in the system.
Suggested treatment	A course of treatment recommended by a healthcare practitioner through the system.
Symptom report	A report of symptoms submitted by a patient to his doctor through the system.
User	Any doctor, nurse, patient, or receptionist in the system.

1.4 – Overview of Document

The next section, Overall Description, contains a breakdown of use cases for users of the system. This is used to establish a basis for understanding the technical specifications provided in the following chapter.

The third chapter is Requirements. These sections break down the functional and database features of the system for the purpose of reference by the software's developers.

2.0 – Overall Description

2.1 – System Envinronment

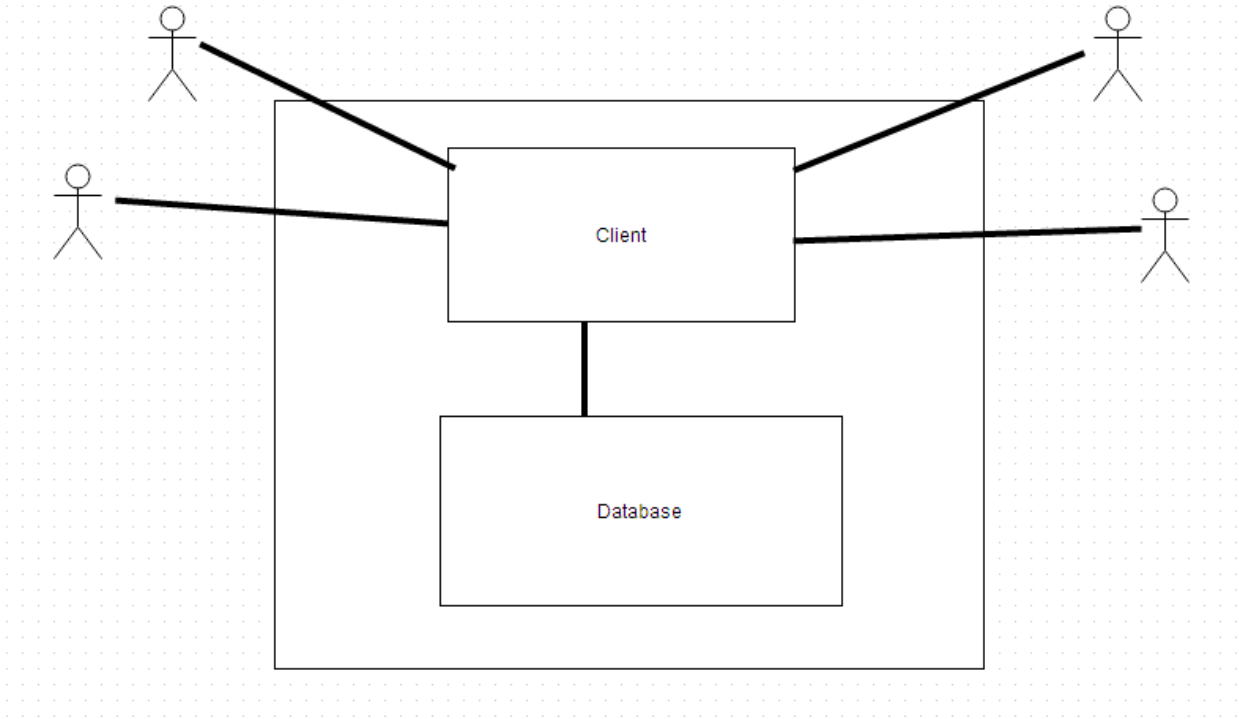


Fig. 2.1 - Interactive healthcare system

The symptom report system has four actors and one central system. The patient submits reports and views appointments through the client. The nurse and doctor view symptom reports, and the receptionist and doctor set and modify appointments through the client. The client also automatically schedules appointments for the patient if the situation is severe enough.

2.2 - Functional Requirement Specification

2.2.1 Log in

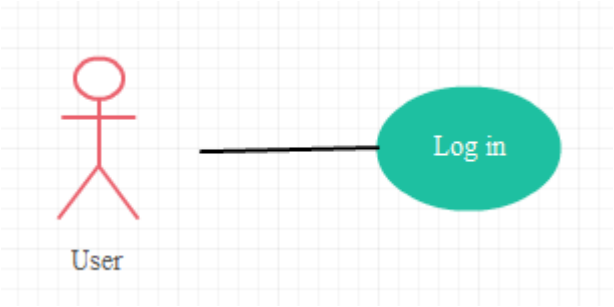


Fig 2.2 - Login Use Case

The User accesses the client by entering his user ID and password.

Initial step-by-step description

1. The User enters his user ID and password
2. He is able to view a 3-pane homepage window with one pane containing his report history and a button to create a new report, and another containing his appointments. The third pane contains any suggested treatments from their healthcare practitioners

2.2.2 View reports

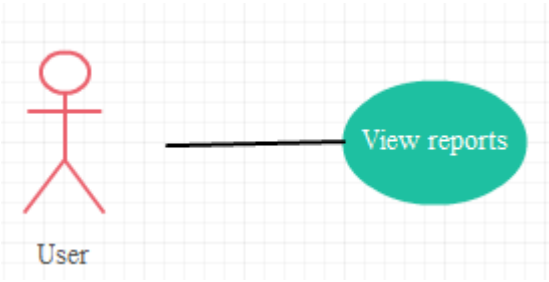


Fig 2.3 - View reports use case

The User is able to view his past reports.

Initial step-by-step description

Before this step has been initiated, the user has already loaded the client and logged in.

1. The User is shown a list of his past reports in descending chronological order.

2.2.3 Submit Report

Fig. 2.4 - Submit report use case

The patient submits a report of their current symptoms and severity for use by healthcare practitioners.

Initial step-by-step description:

Before this step has been initiated, the patient has already loaded the client and logged in.

1. the patient selects the symptoms that they are currently experiencing
2. the patient rates the severity of those symptoms
3. if the situation is severe, the patient is advised to seek emergency care
4. the patient chooses to request an appointment, sending an automated email to the receptionist and doctor

2.2.4 View appointments

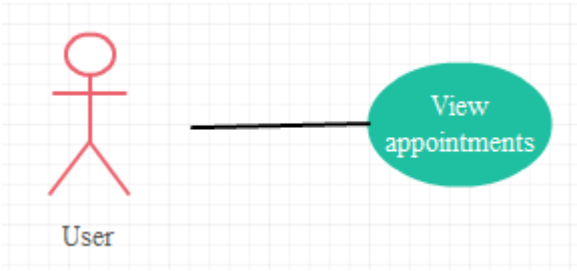


Fig 2.5 - View appointments use case

The patient views their past and upcoming appointments.

Initial step-by-step description:

Before this step has been initiated, the patient has already loaded the client and logged in.

1. the patient is shown a list of appointments in descending order, with upcoming appointments highlighted at the top

2.2.5 Suggest care

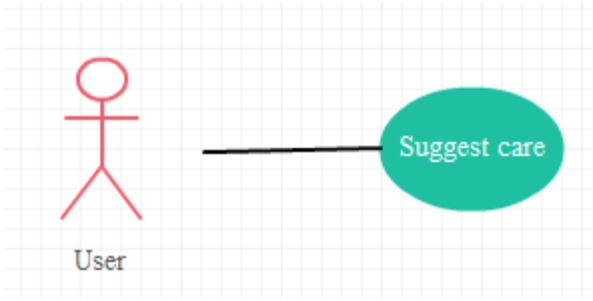


Fig. 2.4 - Suggest Case Use Case

The Authorized user suggests care for the patient's symptoms.

Initial step-by-step description:

Before this step has been initiated, the user must be viewing a patient's record.

1. The User may write a note to the patient suggesting care (ie ice, rest, schedule an appointment)
2. The User may check a box to submit an appointment request to the receptionist for the patient

2.2.6 New appointment

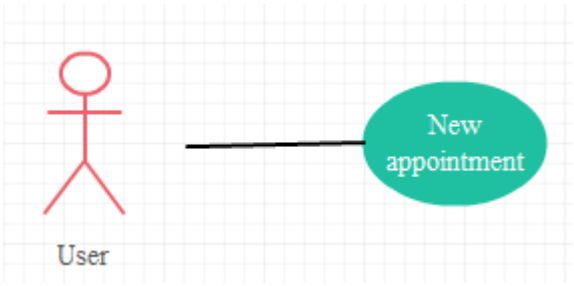


Fig. 2.7 - New Appointment use case

The authorized User can schedules an appointment.

Initial step-by-step description:

Before this step has been initiated, the receptionist has already loaded the client and logged in.

1. The user selects 'schedule new appointment' from their homepage
2. The user enters his name,ID , time and a date or for a different patient with proper authorization to visit their doctor. This must be more than 15 minutes after any existing appointment for that doctor
3. The User submits the new appointment and it is added to the schedule
4. any existing appointment request for that patient is marked fulfilled

2.2.7 Modify appointment

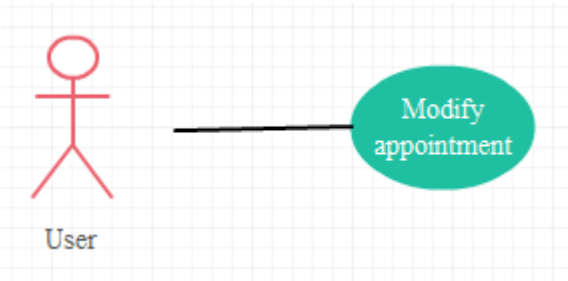


Fig. 2.8 - Modify Appointment use case

The User modifies an existing appointment for a patient.

Initial step-by-step description:

Before this step has been initiated, the receptionist has already loaded the client and logged in.

1. The User selects an appointment from the list
2. The User may modify the time or date of the visit
3. The User may cancel the appointment altogether
4. The User submits all changes

2.3 User characteristics

The doctor, nurse, receptionist, and patient are expected to be able to fill out forms on a computer. All are expected to be familiar with basic UI features like dropdown menus, checkboxes, and form submissions.

2.4 Non-functional requirements

The user software will run as an application or applet on user devices.

The SQL database must be hosted on a server with high-speed internet in order to synchronize efficiently.

3.0. Requirements Specification

3.1 External Interface Specification

We are not using any external interface at this moment. If we decide to add any external interface at a later stage of software development we will add it to the documents.

3.2 Functional Requirements

3.2.1 User Login

Use Case Name	User Login
Xref	Section 2.2.1
Trigger	The user a health care professional or an patient wants to login
Precondition	The user has valid username and password
Basic Path	1. User Navigates to the login page. 2. Selects Health care professional or patient from user type. 3. User enters username and password. 4. User clicks on submit button. 5. User navigates to his homepage
Alternate Path	
Post Condition	Navigate to Home page.
Exception Path	Gets an invalid credentials error for improper credentials

Other	

3.2.2 Submit Report

Use Case Name	Submit Report
Xref	Section 2.2.3
Trigger	Patient clicks a link on a homepage(Submit Report)
Precondition	The Patient is able to login
Basic Path	1. User Logs into his home page. 2. User Clicks on Submit Report Button. 3. User Describes his conditions 4. User rates his symptoms on a scale of 1 to 10. 5. User clicks submit button. 6. System prompts the User to make an appointment based his symptoms.
Alternate Path	
Post Condition	Patient is able to submit his form
Exception Path	If patient doesn't rate any of the symptom he gets an error prompt
Other	

3.2.3 New Appointment

Use Case Name	View Reports
Xref	Section 2.2.2
Trigger	User clicks views report history on homepage.
Precondition	The user is able to login
Basic Path	1. User Logs into his home page. 2. User views report history of himself if a patient, or his patients if a healthcare practitioner.

	3. User has the option to interact with past reports in different ways depending on his user profile.
Alternate Path	
Post Condition	
Exception Path	
Other	

3.2.4 View Appointments

Use Case Name	View Appointments
Xref	Section 2.2.4
Trigger	Patient Logs into his Homepage.
Precondition	The Patient has at least one scheduled Appointments
Basic Path	1. User Logs into his home page. 2. His Appointments are displayed on chronological order 3. The Appointment Date, Time ,doctor and hospital are shown in a table.
Alternate Path	1. User Makes a new Appointment. 2. After Successful creation all the appointments are shown.
Post Condition	User is able to submit his form
Exception Path	
Other	

3.2.5 New Appointment

Use Case Name	New Appointment
Xref	Section 2.2.6

Trigger	User Logs into his Homepage.
Precondition	The user has authorization to create an appointment and is able to login.
Basic Path	1. The Receptionist selects 'schedule new appointment' from their homepage 2. The Receptionist selects a patient as well as a time and a date for the patient to visit their doctor. This must be more than 15 minutes after any existing appointment for that doctor 3. The Receptionist submits the new appointment and it is added to the schedule 4. Any existing appointment request for that patient is marked fulfilled
Alternate Path	
Post Condition	Receptionist is successful in submitting the Request.
Exception Path	
Other	

3.2.6 Modify Appointment

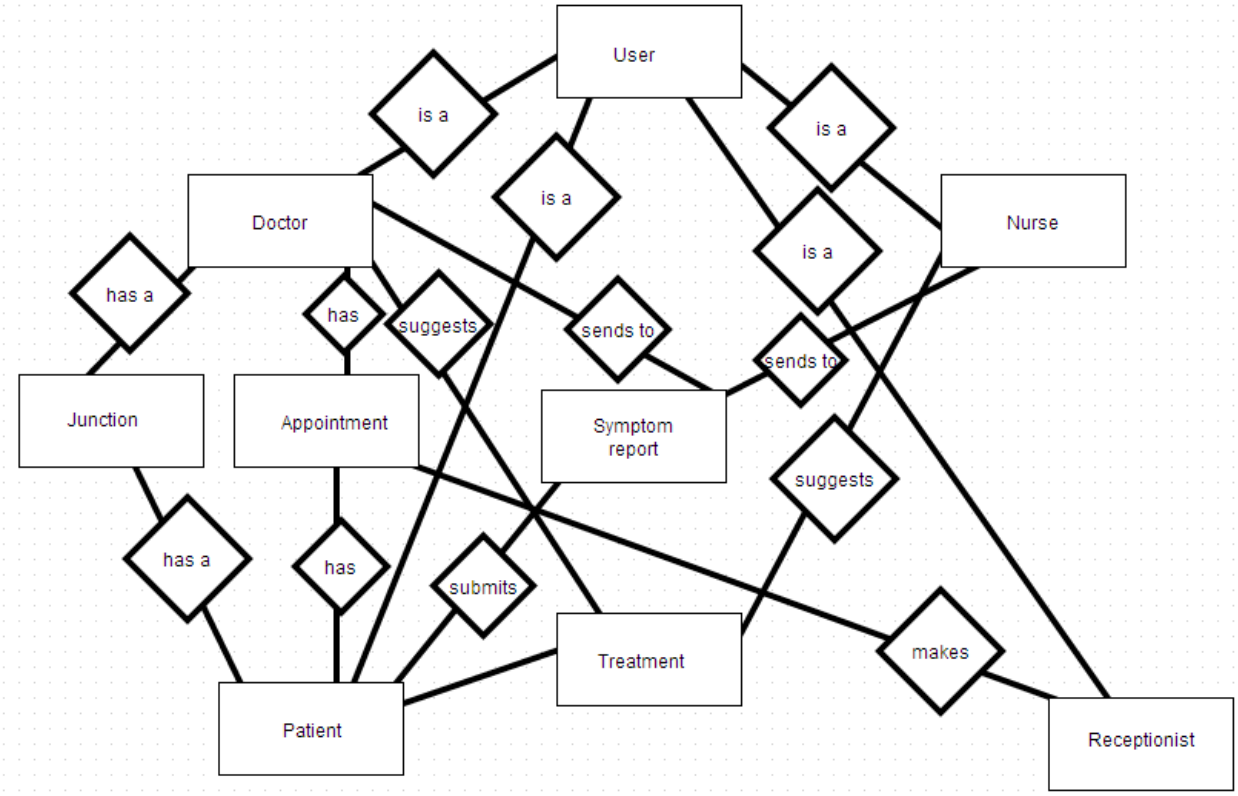
Use Case Name	Modify Appointment
Xref	Section 2.2.7
Trigger	User Logs into their Homepage.
Precondition	The Patient has at least one scheduled Appointments
Basic Path	1. The receptionist selects an appointment from the list. 2. the receptionist may modify the time or date of the visit 3. the receptionist may cancel the appointment altogether 4. the receptionist submits all changes

Alternate Path	
Post Condition	Receptionist is successful in submitting the Request.
Exception Path	
Other	

3.2.7 Suggest Care

Use Case Name	Suggest Care
Xref	Section 2.2.5
Trigger	User Logs into their Homepage.
Precondition	The User is able to log into the System.
Basic Path	1. The User may write a note to the patient suggesting care (ie ice, rest, schedule an appointment) 2. The User may check a box to submit an appointment request to the receptionist for the patient
Alternate Path	The User can click on Submitted report and write care.
Post Condition	The User is able to Complete the session successfully.
Exception Path	
Other	

3.3 - Logical structure of the data



User data entity

Data Item	Type	Description	Comment
Username	Text	First letter of first time and last name, plus a number if needed	Primary key - unique
Password	Text	The user's password	Hashed
Last Name	Text	The user's last name	
First Name	Text	The user's first name	
Email	Text	The user's email	
Phone number	Int	The user's phone number	

Type	Text	The type of user	Patient, Doctor, Receptionist, Nurse

Symptom report data entity

Data Item	Type	Description	Comment
Primary key	Int	For indexing	No functional use
Symptoms	Text	A list of symptoms being experienced	Symptoms separated by commas
Severity	Text	A list of the severity of those symptoms	Ints separated by commas
Score	Int	Used for determining whether to recommend an ER visit.	
Date	Datetime	The time and date of the report submission	

Patient-Doctor Junction data entity

Data Item	Type	Description	Comment
Primary key	Int	For indexing	No functional use
Patient	Text	The patient	Corresponds to patient username
Doctor	Text	The doctor	Corresponds to doctor username

Appointment data entity

Data Item	Type	Description	Comment
Primary key	Int	For indexing	No functional use
Patient	Text	The patient	Corresponds to a patient username
Doctor	Text	The doctor	Corresponds to a doctor username
Date and time	Datetime	The date and time of the appointment	
Date made	Datetime	The date and time the appointment was made	

Suggested treatment data entity

Data Item	Type	Description	Comment
Primary key	Int	For indexing	No functional use
Patient	Text	The patient for whom the treatment is suggested	Corresponds to a patient username
Symptom report	Int	The symptom report the suggestion is in response to	Corresponds to primary key of a symptom report
Date	Datetime	The date and time the suggestion was made	
Recommendation	Text	The doctor or nurse's recommended course of action for the patient	

3.3.2 Security

The central database is stored on a secured server at or leased by the healthcare facility. The server will have its own security to prevent unauthorized access of any type.

The software will run on individuals' computers, and thus will use a hashed password to protect the confidential information accessed. Different user profile types will have different levels of read, write, and delete access to the server data.