

# **Software Requirements Specification For Hospital Management System**

**Version 1.0 approved**

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**10/02/2019**

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# **1. Introduction**

## **1.1. Purpose**

The main aim of the hospital management system is to provide online appointment system for the patients through the website called hospital management system. The patients who wants to check-in through online should be able to book appointment by this website. The admin is the central authority for all the activities that are done in the website. Front end user gets the request from patients regarding the scheduling of appointments with the respective doctors and approve or discard the request based on availability of doctors. The doctors can submit the days on which they are not available, and they can also cancel any meetings scheduled.

## **1.2. Document Conventions**

The document is prepared by using Microsoft Word 2010 and the font type used in the entire document is 'Times New Roman'. The font size that has been used for this document is 12pt with 1 line spacing. The headings of the document are set to the bold property. All pages except the cover page and index page are numbered. In Cover page the title font is set to 28pt and the remaining data's font is set to 14pt. The section heading font is set to 18pt and the sub headings are set to 14pt. The page numbers appear on the top right-hand corner of every page. The title of the document in on the top left-handed corner of every page.

## **1.3. Intended Audience and Reading Suggestions**

This project is basically for the management of patient visits in the hospital and managing the availability of the doctors. This project is restricted within the hospital premises. This project is useful for the hospital team i.e. the front desk workers, doctors as well as to the patients for easy access to the list of doctors and their availability.

## **1.4. Project Scope**

The proposed software project is the Hospital Management System. This can be used in any type of hospitals, getting the feedback from the patients and storing all the data for future use. This application mainly helps in booking the appointment for the patients. If the appointment system is paper based, then generating the updated list of the patient appointment is very slow and cannot be done within a reasonable timeframe. The main aim of the hospital management system is to reduce the overall time and help the front desk users as well as doctors in maintaining the records of the patient along with their history of diseases. Also, the updated list of patient's appointments will be generated very fast. It also holds the scope of online rescheduling and cancellation of appointments. Not only this, the doctor can upload an online prescription for that patient. Requirements statements in this document are both functional and non-functional.

## **1.5. Acronyms**

The document uses the following Abbreviations:

**UI**                      - User Interface

<b>SDK</b>	- Software Development Kit
<b>OS</b>	- Operating System
<b>SQL</b>	- Structured Query Language
<b>ASP</b>	- Active Server Page
<b>HTML</b>	- Hypertext Markup Language
<b>CSS</b>	- Cascading Style Sheets
<b>DB</b>	- Database
<b>FDU</b>	- Front-Desk User
<b>SSMS</b>	- SQL Server Management Studio
<b>IIS</b>	- Internet Information Services

## 1.6. References

- <https://www.slideshare.net/HimaniChopra/hospital-management-system-project>
- <https://www.slideshare.net/kataria55/srs-for-hospital-management-system>
- [https://www.academia.edu/34187955/SRS FOR HOSPITAL MANAGEMENT SYSTEM](https://www.academia.edu/34187955/SRS_FOR_HOSPITAL_MANAGEMENT_SYSTEM)
- <http://www.dotnetfunda.com/articles/show/1052/sample-software-requirements-specification-for-hospital-info-managemen>

## 2. Overall Description

### 2.1. Product Perspective

A distributed hospital database system stores the following information.

- **Doctor Details:**

It includes the list of Doctors and their details such as their specialty, address, phone number, etc. He can also update his working hours.

- **Patient Details:**

It includes the list of patients registered in the hospital and their details. It also includes the receipt and payment details of the patients.

- **Employee Details:**

It includes the List of employees working in the hospital and their details. It also includes the working hours of the employees.

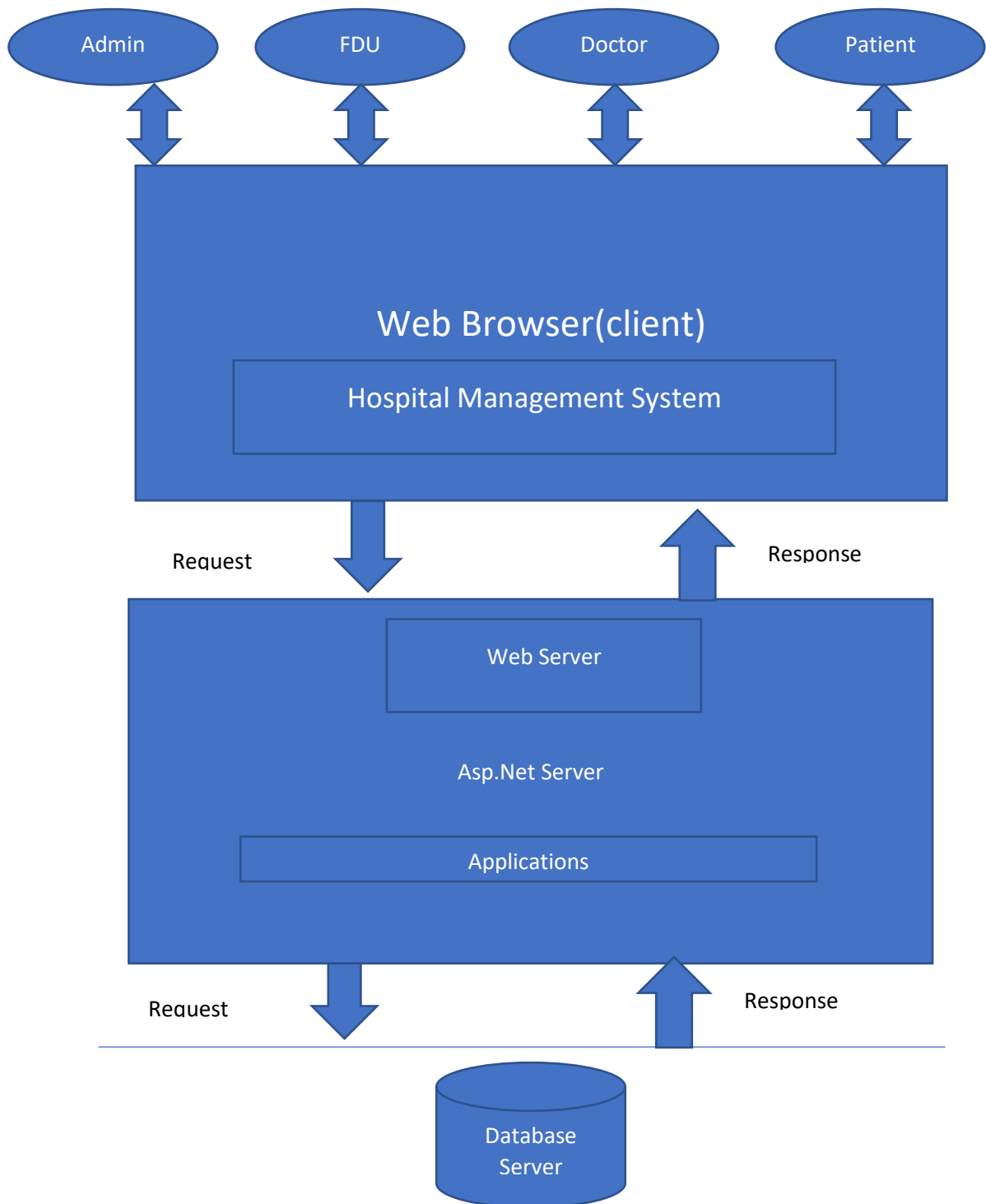
- **Appointment details:**

It includes the appointments requested by the patient, along with the time, reason of visit and doctor's name. It also includes the details whether the appointment has been approved or discarded.

- **Details of Availability:**

It includes the working hours of the doctors and the details of any planned leaves.

## 2.2. Overall Structure Diagram



## **2.3. Product features**

The web-application consists totally of 9 pages. The following are the major features in each page of the Hospital Management System:

### **Admin Page**

- Adds Doctors and employees in database.
- Generates UserID and password.

### **Home Page**

- List of Doctors
- Hospital Information
- Contains links to Login, Registration and Contact Us pages

### **Login Page**

- Takes UserID and Password as input
- Redirects patients to the patient page
- Redirects doctors to the doctor page
- Redirects front-desk user to the front-desk user page

### **Registration Page**

- Add details of the patients such as Name, Age, gender and address
- Creates account for the patient
- Generates UserID and Password for the patient

### **Doctor Page**

- Updates Availability
- Can cancel the upcoming appointments
- Uploads the Prescriptions
- Change password of his account

### **Front-Desk User page**

- Can view the availability of the doctor
- Updates the doctor's availability
- Can approve/cancel the requested appointments
- Uploads the Payment receipts

### **Patient Page**

- Sends request for the appointment
- Can view doctor's availability
- Can check his upcoming appointments

- Can view his receipts and prescription

### **Contact Us Page**

- Contact Details
- Email-ID
- Address of the Hospital

### **Feedback Page**

- Feedback of the doctors.
- Rating of Doctors.

## **2.4. User Classes and Characteristics**

- **Admin**  
The Admin is the central authority for the entire website. He is responsible for managing the data available in the site. He is responsible for adding doctors and Front Desk Users. He is also responsible for generating UserID and passwords for the employees.
- **Front-Desk User**  
The Front-Desk user is responsible for approving/cancelling the appointment of the patients. She is also responsible for updating the doctor's availability, managing the patients account by helping them to create and generate the UserID and password. The Front-desk user is also responsible for updating the payment receipt into the patient's account.
- **Doctor**  
The doctor is responsible for updating his availability, working hours and any planned leaves. He is also responsible for uploading the prescriptions in the patient's account. He can be able to view his upcoming appointments.
- **Patient**  
The patient can view his upcoming appointments, doctor's availability, receipts and Prescriptions. He can send requests to the front desk user for scheduling of his appointment with the doctor.

## **2.5. Operating Environment**

As of now, the application is hosted on the local machine. It can also be deployed into other web servers. The are the software and hardware components used for this web-application.

- |                        |   |                     |
|------------------------|---|---------------------|
| • Front-End            | - | HTML, CSS           |
| • Programming Language | - | C#.NET              |
| • Web-Technology       | - | ASP.NET             |
| • Database             | - | SQL Server          |
| • Web Server           | - | IIS                 |
| • Operating System     | - | Windows 8 or above  |
| • Tools                | - | Visual Studio, SSMS |

- Processor - Intel i5 or latest
- RAM - 1 GB (Min.)

## 2.6. Design and Implementation Constraints

- Each user will have individual User ID's and passwords.
- User does not get to choose their user ids.
- The passwords are generated automatically by the system.
- The user can change their passwords after registration.
- Only one account can be created based for a single email id.
- The website is wirelessly networked.
- The system shall be web-based application.

## 2.7. User Documentation

The User documentation is provided to the patients that has the overview of the hospital management. It includes the full description about the working flow of the website. It includes all the steps and procedures that helps the patients or users in registration and creation of the account. If the user's have any issues related to this project, then the user documentation helps them. This helps the users to use the website without any trouble. The User documentation will be provided in Contact Us page and About Us page and these page links are provided in the Home page of the website. The Contact Us page contains the address, Contact details and E-mail ID of the Hospital. The About Us page contains the details of the doctors, procedure for the registration of the account, details of the trustees and the hospital details.

## 2.8. Assumptions and Dependencies

- Each user must have a valid user id and password
- Server must be running for the system to function.
- Users must log-in into the system to access any record.
- Only the Admin can delete records for doctor and employees.
- We assume that the user has basic knowledge about the computer, registration and creation of the account.

# 3. System Features

This web-application mainly focuses on four modules namely Admin, front-desk user, doctor and patient modules. Below are the major features implemented in this web-application.

## 3.1. Patient Registration

- PRIORITY: HIGH
- The patient registration page helps the patients to create an account.
- The account for the patient can be created online or by front-desk user in the hospital.
- The patient needs to provide their details such as Full Name, Phone Number, e-mail ID, Address and Date of Birth to create the account.



- Only one account can be created with one e-mail ID.
- The user ID and password will be automatically generated after the user registration.

### **3.2. Login Page**

- PRIORITY: HIGH
- The login page can be used by doctors, patients and employees.
- The users need to provide the login details so that the user will be redirected to their respective account.
- Based on the username, the user will be redirected to their respective portal e.g. The doctor ID starts with Doc, whereas the employee ID starts with Emp.

### **3.3. Adding Doctor**

- PRIORITY: HIGH
- The doctors will be added by the Admin.
- The Doctors needs to provide their details such as Full Name, Phone Number, e-mail ID, Address, Date of Birth and also the specialty such as Cardiologist to create their account.

### **3.4. Adding Employee**

- PRIORITY: HIGH
- The admin will add the employee such as front-desk user.
- The employees need to provide their details such as Full Name, Phone Number, e-mail ID, Address and Date of Birth to create their account by the admin.

### **3.5. Request for an Appointment**

- PRIORITY: HIGH
- The patient will select the specialty so that the list of doctors of that particular specialty will be displayed.
- The patient can select the doctor from the list of doctors.
- The patient then needs to select the date, time and the reason of the visit.

### **3.6. Approve or Cancel the Request for an Appointment**

- PRIORITY: HIGH
- Once the patient completes requesting for an appointment, the front-desk user can view the list of appointment requests.
- The front-desk user checks the availability of the doctor for the requested date and time.
- The Front-desk user approves or cancels the requested appointment based on doctor's availability.

### **3.7. Upload Prescription**

- PRIORITY: MEDIUM
- Only doctor have the permissions to upload the prescription.

- Once the doctor finishes the patient's appointment, he can upload the prescription for that particular patient in the web-application.
- The patient can see the uploaded prescription in his account with the help of a grid view.
- The prescription also includes the timestamp of the uploaded prescription.

### **3.8. Upload Receipt**

- PRIORITY: MEDIUM
- The front-desk user can upload the receipt of the payment done by patient.
- Only Front-desk user can upload the payment receipt.
- The patient can see the uploaded payment receipt in his account with the help of a grid view.

### **3.9. Password Reset**

- PRIORITY: LOW
- Passwords are automatically generated by the system for all the users except Admin.
- If the user wants to change the password, they have an option to reset the password.
- If the user forgets the password, then the user can reset the password by selecting the forgot password option in the login page.

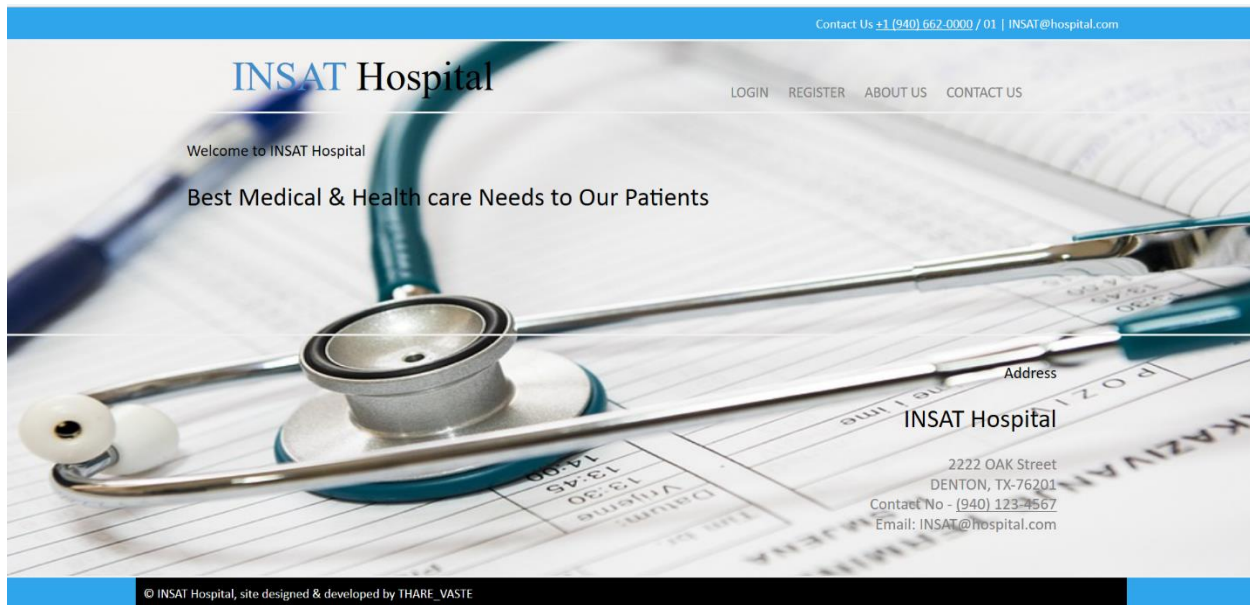
### **3.10. Uploading Availability**

- PRIORITY: HIGH
- The doctor can upload the date and time when he is not available.

## **4. External Interface Requirements**

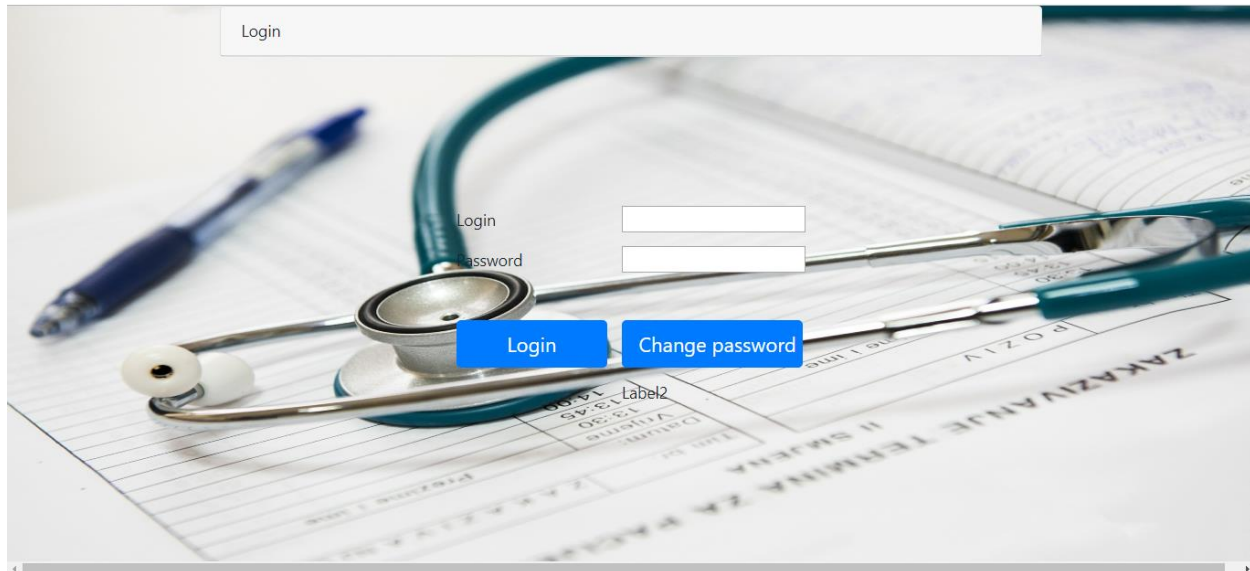
### **4.1. User Interface**

The user interface which we are using in this web-application has many web pages. It helps the users in understanding this web-application easily. First, the home page will be displayed when we open the web-application. The home page screen look of the website is given below and this can be changed later if any additional requirements are added.

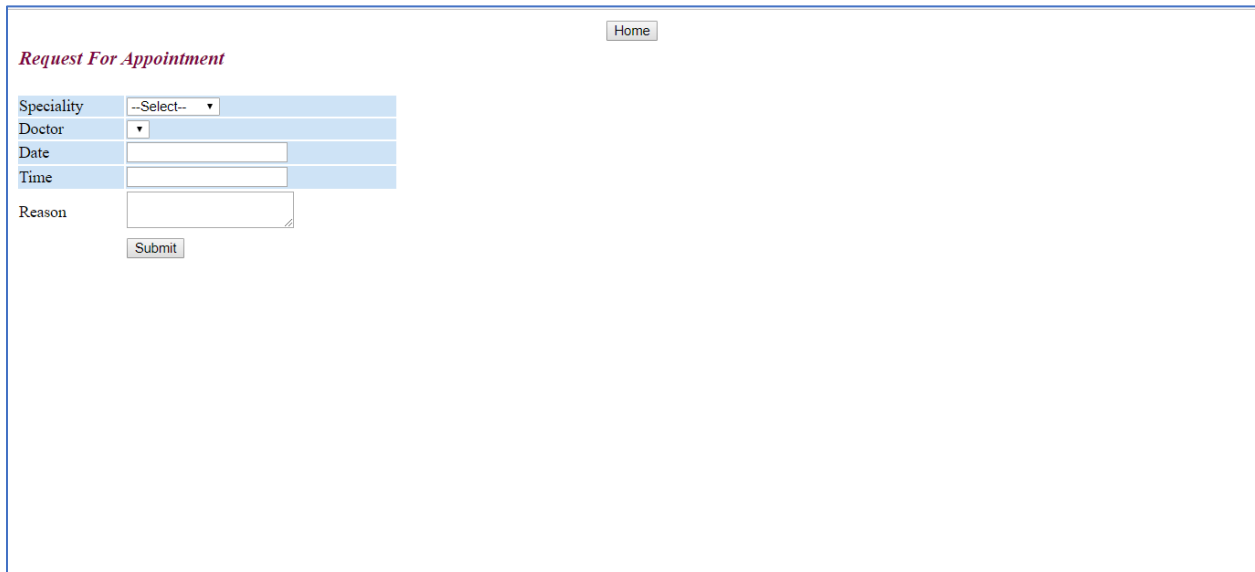


From the home page there are links to contact us page, about us page, login page and registration page. The login page and registration page have been successfully implemented. The contact page and about us page need to be added.

The UI for the login page is attached below. The user should have an account to give the login details.

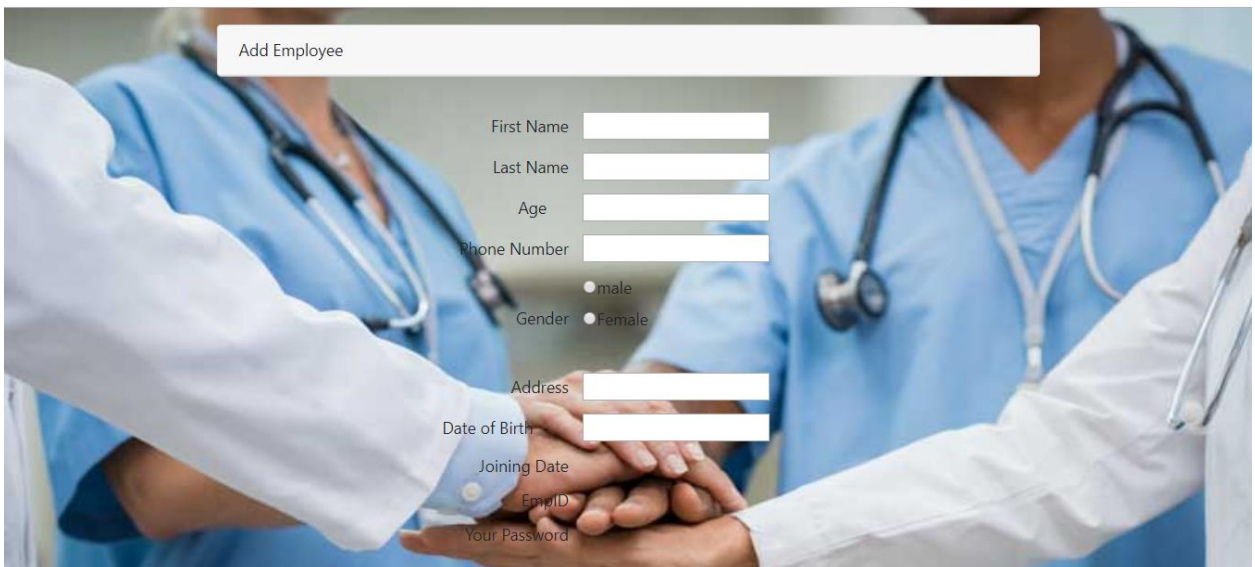


Once the user logs into the account then he can request for the appointment. The Request for the appointment UI looks as follows.



The screenshot shows a web form titled "Request For Appointment" in red text. In the top right corner, there is a "Home" button. The form contains the following fields: "Speciality" with a dropdown menu showing "--Select--", "Doctor" with a dropdown arrow, "Date" with a text input field, "Time" with a text input field, and "Reason" with a larger text input field. A "Submit" button is located below the "Reason" field.

The admin can add the employees of the hospital and the UI looks as follows.



The screenshot displays a web form titled "Add Employee" in a white box at the top. The form is overlaid on a background image of three medical professionals in blue scrubs with stethoscopes. The form fields include: "First Name" (text input), "Last Name" (text input), "Age" (text input), "Phone Number" (text input), "Gender" (radio buttons for "male" and "Female"), "Address" (text input), "Date of Birth" (text input), "Joining Date" (text input), "EmpID" (text input), and "Your Password" (text input).

We also have other web pages on which we are currently working and will be provided in the future deliverables.

## 4.2. Hardware Interfaces

The hardware interfaces include a PC\Laptop, 256 MB RAM(Min.), Wi-Fi support and Memory.

<b>Processor</b>	-	intel i5 1.5Hz or latest
<b>RAM</b>	-	1 GB (Min.)
<b>Hard Disk Memory</b>	-	10 GB Minimum`
<b>Network Requirements</b>	-	Internet Supported Device

## 4.3. Software Interfaces

<b>Operating System</b>	-	Windows 8 or above
<b>Web Browser</b>	-	Google Chrome/Firefox/Internet Explorer
<b>Front-End</b>	-	HTML, CSS
<b>Programming Language</b>	-	C#.NET
<b>Web-Technology</b>	-	ASP.NET
<b>Database</b>	-	SQL Server
<b>Web Server</b>	-	IIS
<b>Tools</b>	-	Visual Studio, SSMS
<b>Version Control</b>	-	GitHub

## 4.4. Communications Interfaces

For communication interfaces, we use the NIC (Network Interface Card), a computer hardware component that allows a computer to connect to a network and used for both wired and wireless connections. For accessing and sharing the information over the internet TCP/IP is used. Also, we use Ethernet Communication Interface for local area networks (LANs).

# 5. Other Nonfunctional Requirements

## 5.1. Performance Requirements

- **Quick Processing of Requests** - The system will process the requests made front-desk user or patient and retrieve the data within 1 second of time.
- **Multi-user accessibility** – Many users can login into the website at the same time.
- **Navigation Time** – Navigation time between page is less than 5 seconds.

## 5.2. Safety Requirements

Periodic backups of the database will be performed such that if there is any damage to the database of the website such as disk crash, then these backups can be used to recover the lost data till the date of last backup.

## 5.3. Security Requirements

- Passwords will be automatically generated, and the password can be changed only by the respective user of the account.
- Only admin has the access to UPDATE, MODIFY and DELETE the tables.
- All the passwords will be hashed and then stored into the database for security reasons.

## 5.4. Software Quality Attribute

- **AVAILABILITY** – The web-application can be used by all the users and it is very easy to understand the functionality of the web-application.
- **INTEGRITY** – Only the admin can ADD/MODIFY the data of the web-application and user.
- **MAINTAINABILITY** – The web-application is easy to maintain. It is also easy to modify the UI of the web-application.
- **ACCURACY** – The data updated or retrieved from the database will be accurate and will be specific for that user.
- **RELIABILITY** – The application has been created keeping in mind the requirements of the patients, doctors and front-desk users. The Users can update their details and rely on the web-application for keeping the data safe and confidential.

# 6. Development Phases

## 6.1. Development Phase I

**Phase 1 (September 1-September 30):** In the first phase of development we have developed the below pages and functionalities:

- Home Page (homepage.aspx): The home page of the website has been created successfully. The home page includes links to pages such as Login Page, Registration Page, Contact Us.
- Login Page
- Registration Page
- Admin Module:
  - Add Doctor (AddDoc.aspx) Page
  - Add Employee (AddEmp.aspx) Page

## 6.2. Development Phase II

**Phase 2 (October 1- October 30):** In the second phase of development the below web pages have been developed

- Doctor's Module:
  - Doctor's Profile Page (WelcomeDoc.aspx)
  - Upload Availability Page (UploadLeave.aspx)
  - Upload Prescription Page (Prescription.aspx)
  - Schedule next appointment (appointmentdoc.aspx)
- Front Desk User Module:
  - Front Desk User's Welcome Page (Welcomeemp.aspx): This page contains list of received requests for appointments from patients, availability of doctors, etc.
  - Upload Receipt (receipt.aspx)

## 6.3. Development Phase III

**Phase 3 (November 1-November 15):** In the third phase of development we implement the below functionalities and perform integration testing:

- Patient Module:
  - Patient welcome page(welcomehome.aspx): contains functionalities like current scheduled appointments, view receipts, view prescription, etc.
  - Request for appointment (requestforappointment.aspx)
  - Send Feedback (feedback.aspx)
- Contact Us Page (Contactus.aspx)