A MAJOR-PROJECT REPORT ON

"Health Inspector"

Submitted to
CGC College of Engineering
BY
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UNDER THE GUIDANCE OF PROF. **Jagbir Singh**
COMPUTER SCIENCE ENGINEERING

CERTIFICATE

This is to certify that the project report entitled *"Health Inspector"* by **Himanshu Goyal (1533118)** of **CGC College Of Engineering, Landran (Mohali)** affiliated to **Punjab Technical University** during the academic year 2019, in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology (Computer Science and Engineering) is a bonafide record of the work carried out under our guidance and supervision at **Cognizant Technology Solutions CDC, Pune.**

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(Project Manager)
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ACKNOWLEDGEMENT

ABSTRACT

Cognizant is an American multinational corporation that provides IT services, including digital, technology, consulting, and operations services. It is headquartered in Teaneck, New Jersey, United States of America. Cognizant is included in the NASDAQ-100 and the S&P 500 indices. It is also one of the fastest growing Fortune 500 companies. It was founded as an in-house technology unit of DUN & BRADSTREEIN in 1994, and started serving external clients in 1996.

Cognizant had a period of fast growth during the 2000s, becoming a Fortune 500 company in 2011. In 2015, the FORTUNE Magazine named it as the world's fourth most admired IT Services company. In 2017, Cognizant was named in Fortune's Future 50 list.

Cognizant provides information technology, information security, consulting, ITO and BPO services. These include business & technology consulting, system integration, application development & maintenance, IT infrastructure services, analytics, business intelligence data, warehousing, customer relationship management, supply chain management, engineering & manufacturing solutions, enterprise resource planning, research and development, outsourcing, and testing solutions.

Cognizant has three key practice areas that span its business — Digital Business, Digital Operations, and Digital Systems & Technology.

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1.0 Introduction

1.1 Purpose of this document

This document is aimed at:

- Providing the necessary inputs to the detailed requirements gathering phase and further on for the SDLC processes.

- This document also serves to establish the traceability between the Business Objectives and the requirements identified in the proposed solution and how they satisfy the stated objectives.

- Provide expectation traceability in terms of the requirements and the user expectation

- Serves as a formal template for documenting the Business Requirements which also includes statutory and regulatory requirements.

The purpose of this document is to systematically capture the requirements of the project and the system to be developed. The document also captures the Functional requirements and serves as an input for the scope of project.

1.2 Project Overview

Create an automated system to effectively track and manage the Patient's appointment scheduling and checkup reminders.

1.2.1   Objectives

1. Enables the Patients and Doctors to be connected on the go

2. Allows discovery, and retrieval of the available doctors along with their specialization.

3. Automated scheduling of appointments.

4. Reminder for followups/checks.

5. Online chat facility for Doctors and Patients.

1.3 Intended Audience

- Interns/Project Team

- Mentors and SME's

- Delivery assurance/excellence group

1.4 Business Case

• Supporting the Customers in their day to day health related activities and creating a full-fledged means for on-time health care assistance and reviews is imperative to maintain seamless customer experience.

• The Health Inspector aims at providing a complete range of Solutions - showcasing the facilities available in the clinic, scheduling appointments, sending reminders and tracking the same to closure, including follow-ups.

1.5 Hardware and Software Requirements

Technology	Hardware	Software
Java	Desktop PC with 8GB RAM	1. Node.js 10.15.1 2. Angular 5.0 3. Visual Studio Code 1.30 4. Eclipse IDE for Java EE Developers (Oxygen) 5. Maven 3.6.0 6. Tomcat 9 7. MySQL Community Server 8.0 8. MySQL Workbench 8.0.14 9. Putty 10. WinSCP 5.9.4 11. Oracle 11g express version

2.0 Process Architecture

```
         ┌─────────────┐
         │  Sign-In /  │
         │  Register   │
         │    Page     │
         └─────────────┘
           │         \
           │          \
           │       ┌──────────────────────────┐
           │       │  Registration Page:      │
           │       │  Procure Patient Info &  │
           │       │         Logout           │
           │       └──────────────────────────┘
           ▼
  ┌──────────────────────┐
  │ Sign-In - Search Page:│
  │    Search for         │
  │  Doctor/Speciality    │
  └──────────────────────┘
      │            │
      ▼            ▼
┌──────────────┐  ┌────────────────────────┐
│ Search Page: │  │   Search Page:         │
│ Location based│  │ Search Existing Database│
│ search using │  │  of Doctors & lookup   │
│ Google Maps  │  │    Contact Info        │
└──────────────┘  └────────────────────────┘
      │                    │
      │                    ▼
      │           ┌────────────────────┐
      │           │   Search Page:     │
      │           │ Online Chat With Dr│
      │           └────────────────────┘
      │                    │
      ▼                    ▼
  ┌──────────────────────────────────────┐
  │               Log Out                │
  └──────────────────────────────────────┘
```
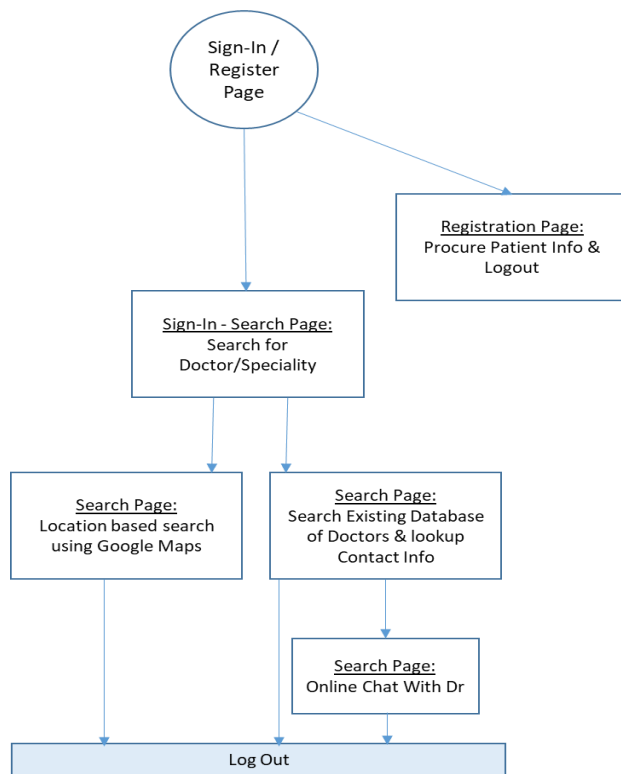
Patient Pathway

3.0 High Level Business Requirements

Note - Primary focus is to complete developing the critical requirements (highlighted in Yellow) and then to proceed with the remaining requirements.

S.No.	Business Requirement ID	Short Description	Description in detail	Interacting Business Processes
1	REQ-1	New User Registration	Ability of the portal to procure user data and create new user profiles	
2	REQ-2	User login	Ability of the portal to authenticate and authorize the registered user	
3	REQ-3	Search Page	User is able to search for a doctor or a clinic using the search text field in the embedded google maps search pane	
4	REQ-4	Advanced Search	Allows the user to search for specific doctor or search by specialization	
5	REQ-5	Appointment Booking	Allows the patients to book their appointments by looking at the Doctors availability	
6	REQ-6	Chat with Doctors	Allows the doctors to view the scheduled appointments and the pateints details	
7	REQ-7	Help	Page to assist the users to report technical issues	

4.0 Detailed Business Requirements

4.1 Functional Requirements

The functional requirements are projected below, for each of the high level requirements called out in the earlier section

Additionally, the following elements are captured for each business requirement in the table provided below:-

* Req. Type = (F Core Functionality, E Exception, UI User Interface, R Reporting)

** Priority of Requirement = (1=Base Functionality, 2=Advanced Functionality,

3=Additional Opportunities)

** Originator = (Name of the business process of the system/ department or function

name in the customer organization)

The Requirements in this document are prioritized as follows:

Value	Rating	Description
1	Critical	This requirement is critical to the success of the project. The project will not be possible without this requirement.
2	High	This requirement is high priority, but the project can be implemented at a bare minimum without this requirement.
3	Medium	This requirement is somewhat important, as it provides some value but the project can proceed without it.
4	Low	This is a low priority requirement, or a "nice to have" feature, if time and cost allow it.
5	Future	This requirement is out of scope for this project, and has been included here for a possible future release.

Req. #	Rationale Categorization	Business Requirement	Req. Type *	Priority **	Originator ***	BR Traced to Business Requirement / Use case ID	Remarks
1.01	New User Registration	When the user clicks on the registration link, system should re-direct to registration form and provide two options: Register as Patient Register as Doctor	UI	Critical	NA	REQ-1	
1.02	New User Registration	User to fill the basic attributes: First Name Last Name Age Gender Contact Number User Id Password	UI	Critical	NA	REQ-1	Please refer Table 1.0 under References section
1.03	New User Registration	Clicking 'Submit' button should validate the datatype constraints for each field.	F	Critical	NA	REQ-1	
1.04	New User Registration	User failing to provide information for the mandatory fields be presented with an alert message – 'Please update the highlighted mandatory field(s).' Also, highlight the missed out field in red	E	Critical	NA	REQ-1	
1.05	New User Registration	Post-successful field validation, save the information in the database	F	Critical	NA	REQ-1	
1.06	New User Registration	Upon saving the information in the database, display the message "New user created successfully"	E	Medium	NA	REQ-1	
2.01	User login	A registered user – is able click 'Login' link, after keying in 'UserID' & 'Password' field and get his credentials authenticated with the existing database entry.	F	Critical	NA	REQ-2	

Req. #	Rationale Categorization	Business Requirement	Req. Type *	Priority **	Originator ***	BR Traced to Business Requirement / Use case ID	Remarks
2.02	User login	If a registered user – is unable to login and get his credentials authenticated, The user is presented with relevant error messages: Invalid User ID (or) Incorrect Password	F	Critical	NA	REQ-2	
3.01	Search Page	Once the user is successfully logged in, gets the Search page displayed	F	Critical	NA	REQ-3	
3.02	Search Page	User is able to search for a doctor or a clinic using the search text field in the embedded google maps search pane and the Search results should be displayed in the maps	UI	Critical	NA	REQ-3	
3.03	Search Page	Clicking on a search entity in the maps should display the preregistered information with Google	F	Critical	NA	REQ-3	
4.01	Advanced Search	Clicking "Advanced Search" should display a form with below fields: Keyword Search Name Specialization City	UI	Critical	NA	REQ-4	The search criteria should have logical operators like "AND" / "OR" Please refer Table 2.0 under References section
4.02	Advanced Search	The display form should have buttons to "Submit Search" or "Reset" the fields	UI	Critical	NA	REQ-4	
4.03	Advanced Search	Clicking on "Submit Search" button should display the results as per the search criteria	UI	Critical	NA	REQ-4	
4.04	Advanced Search	Clicking on profile should display the details as: Doctor Name, Specialization, City, Availability	F	Critical	NA	REQ-4	Please refer Table 3.0 under References section

Req. #	Rationale Categorization	Business Requirement	Req. Type *	Priority **	Originator ***	BR Traced to Business Requirement / Use case ID	Remarks
5.01	Appointment Booking	User to choose the Doctor's availability and click "Schedule Appointment" Patient Name Age Gender Contact Number Hospital Name City Facility Required Medical Records	UI	Critical	NA	REQ-5	Please refer Table 4.0 under References section
5.02	Appointment Booking	The display form should have buttons to click "Submit" and "Set Reminder"	UI	Critical	NA	REQ-5	
5.03	Appointment Booking	Post successfully booking appointment, display message "Scheduling Appointment Successful"	UI	Critical	NA	REQ-5	
5.04	Appointment Booking	If user clicks on Set Reminder, display an option for frequency of reminder message to be sent to the Contact number	UI	Critical	NA	REQ-5	Same Day Previous Day 3 days Prior
6.01	Online Chat	Ability of the portal to allow the users to chat with the Doctors based on their availability to solve any queries	F	Critical	NA	REQ-6	
7.01	Help	Portal to display a form that allows user to report the technical issues through Email: Issue Description Send Button	F	Low	NA	REQ-6	Please refer Table 5.0 under References section
7.02	Help	Portal to display the Contact number to report issues	F	Low	NA	REQ-6	

5.0 References

5.1 Table 1.0

Field Name	Field Type	Data Type	Mandatory	Possible Values
First Name	Text(50)	Alphabetic	Yes	
Last Name	Text(50)	Alphabetic	Yes	
Age	Numeric(2)	Numeric	Yes	
Gender	Drop Down	NA		Male, Female
Contact Number	Text(10)	Numeric	No	
UserId	Text(15)	Alphanumeric	Yes	UserId
Password	Text(15)	Alphanumeric	Yes	Password

5.2 Table 2.0

Field Name	Field Type	Data Type	Mandatory	Possible Values
Keyword Search	Text(50)	Alphabetic	No	
Name	Text(50)	Alphabetic	No	
Specialization	Drop Down	NA	No	
City	Drop Down	NA		

5.3 Table 3.0

Field Name	Field Type	Data Type	Mandatory	Possible Values
Doctor Name	Text(50)	Alphabetic	Yes	
Specialization	Text(50)	Alphabetic	Yes	
City	Drop Down	NA	Yes	
Availability	Drop Down	NA	Yes	

5.4 Table 4.0

Field Name	Field Type	Data Type	Mandatory	Possible Values
Patient Name	Text(50)	Alphabetic	Yes	
Age	Numeric(2)	Numeric	Yes	
Gender	Drop Down	NA		Male, Female
Contact Number	Text(10)	Numeric	Yes	
Hospital Name	Text(15)	Alphanumeric	Yes	
City	Text(15)	Alphanumeric	Yes	
Facility Required	Drop Down	NA		Scanning Blood Test Urine Test Thyroid Test (etc)
Medical Records	Button	Gif,png,pdf	No	

5.5 Table 5.0

Field Name	Field Type	Data Type	Mandatory	Possible Values
Issue	Text(100)	Alphabetic	Yes	
Description	Text(300)	Alphabetic	Yes	

6.0 Use Cases

6.1 Use case 'Registration'

6.1.1 Use case attributes

Use Case Description:

This use case deals with the capture of user details. The 'user' here shall be the operator of the system and will be keying in the patient information into the system.

Scope:

- Registration

Actors:

- User – the operator

- Patient
- Doctor

Trigger:

Click 'Submit' button in the 'Registration' page

Pre-Condition:

User being able to access the homepage & get redirected to the 'Registration' page upon click of 'Register if new' link.

Post Condition:

User is in the enrollment page & submit details

Flow of Events:

User at homepage → Click 'Register if new' link → User is in the enrollment page → User details are submitted and added onto the database

Primary Scenario:

A new user – is able to click 'Register if new' link and able to provide his details and get enrolled in the system.

6.1.2 Business Rules

Business rules should be defined using the following attributes: -

- When the user clicks on the registration link, it should re-direct to registration form.
- User needs to fill some of the basic attributes/fields as mentioned below in requirement: First Name, Last Name, Age, Gender, Contact Number, User Id, Password, User Type.
- Clicking 'Submit' should validate the datatype constraints for each field
- Post-successful field level validation, save the information in the database
- Upon saving the information in the database, display the message 'Your details are submitted successfully'.

6.1.3 UI Requirements

Here is a prototype on how the homepage should look like.
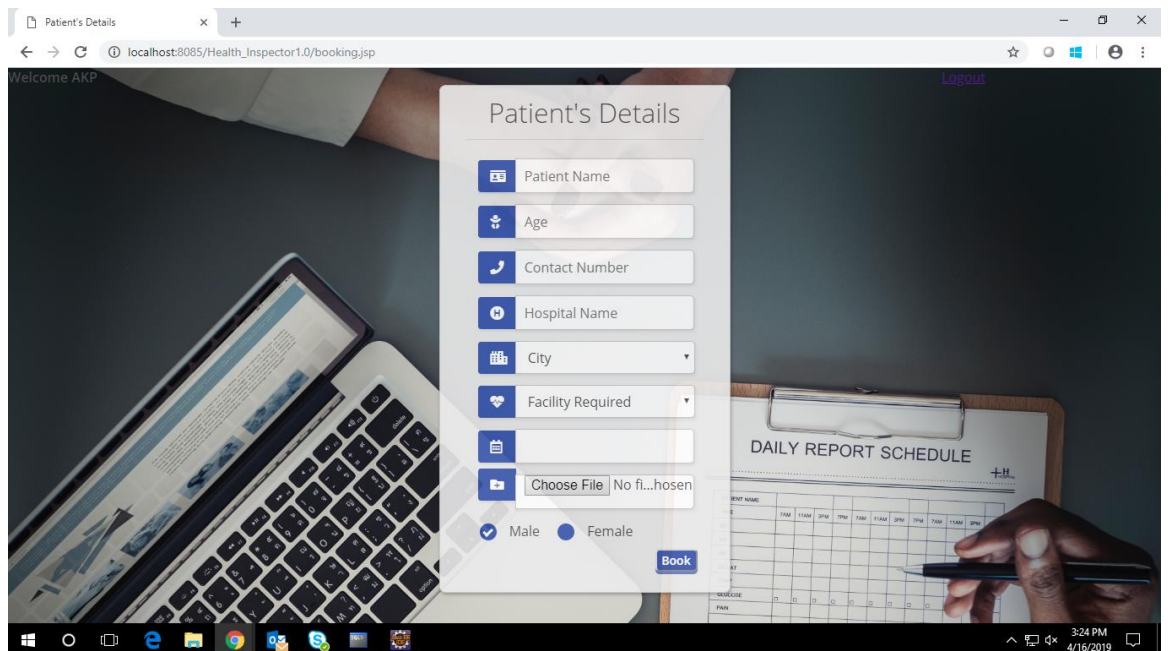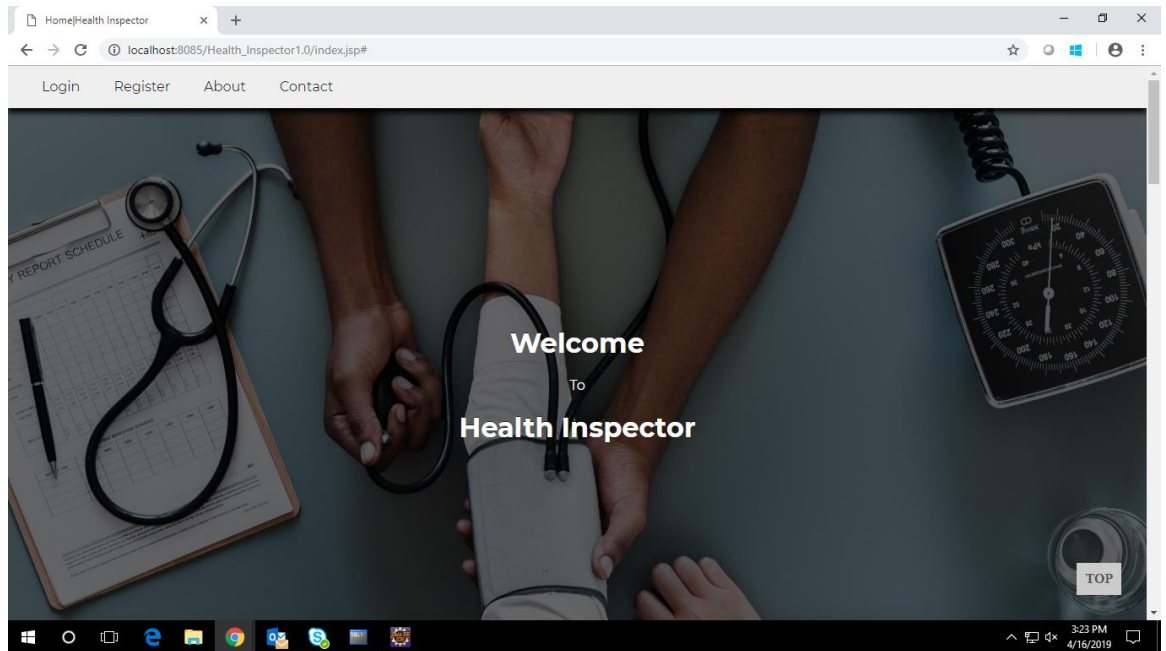
Here is a prototype on how the 'User Registration' page should look like.

6.1.4 UI Field Validations

Please refer to the below requirements for field level validations:

- All fields are mandatory.
- Username should be less than 50 chars. Password should have minimum 8 chars, no space & can contain special characters (ex.!,@,#,%,*,& etc.)
- Phone Number must be of 10 digits' length

6.2 Use case 'User Credential Authentication'

6.2.1 Use case attributes

Use Case Description:

This use case deals with the authentication of the user credentials. The 'user' here shall be the operator of the system and will be keying in the patient information into the system.

Scope:

- User credentials authentication

Actors:

Patient

Trigger:

Click 'Login' link, after keying in 'UserId' & 'Password' field.

Pre-Condition:

User being able to access the homepage

Post Condition:

User is in the Patient Registration page

Flow of Events:

User at homepage → Key in 'UserId' & 'Password' field → User credentials are validated → Doctor Search page is displayed

Primary Scenario:

A registered user – is able click 'Login' link, after keying in 'UserId' & 'Password' field and get his credentials authenticated with the existing database entry.

Alternative Scenario:

A registered user – is able click 'Login' link, after keying in 'UserId' & 'Password' field and unable to get his credentials authenticated. The user is presented with relevant error messages:

- Invalid User ID – 'The UserId provided does not exist in our records'
- Incorrect Password – 'Password provided is incorrect. Please reach out to your system admin.'
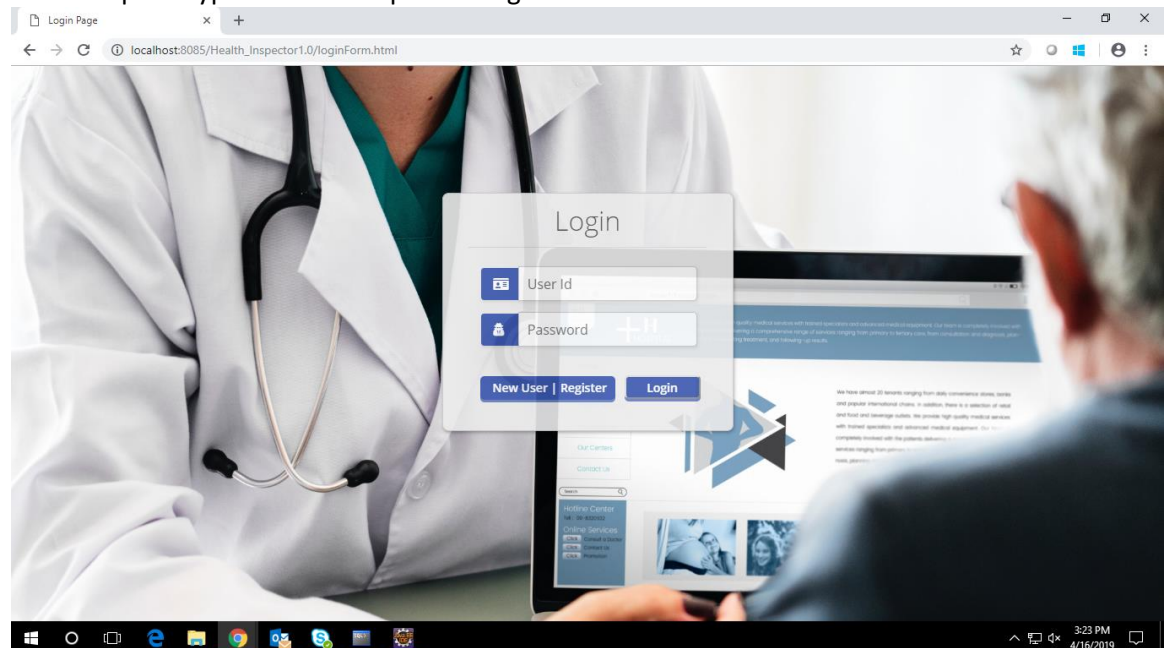
6.2.2 Business Rules

Business rules should be defined using the following attributes:

- A registered user – is able click 'Login' link, after keying in 'UserId' & 'Password' field and get his credentials authenticated with the existing database entry.

6.2.3 UI Requirements

Here is a prototype on how the patient registration should look like.

6.2.4 UI Field Validations

Please refer to the below requirements for field level validations:

- User Id and Password fields are mandatory.

- Invalid User Id and / or password should not allow the user to get into the system

6.3 Use case 'Search the Doctor'

6.3.1 Use case attributes

Use Case Description:

This use case deals with the doctor searching. The 'Patient' here shall be Search Doctor by Doctor Name or by Google map.

Scope:

- Information about the doctors

Actors:

Patient

Trigger:

Click 'AvancedSearch' link and 'GoogleMap'.

Pre-Condition:

User being able to access the LoginPage.

Post Condition:

User is in the Doctor Information page

Flow of Events:

User at homepage → Key in 'UserId' & 'Password' field → User credentials are validated → Doctor Searching page is displayed → Multiple Doctors are shown

Primary Scenario:

A registered Patient – is able click 'AdvancedSearch' link or 'GoogleMap' link.
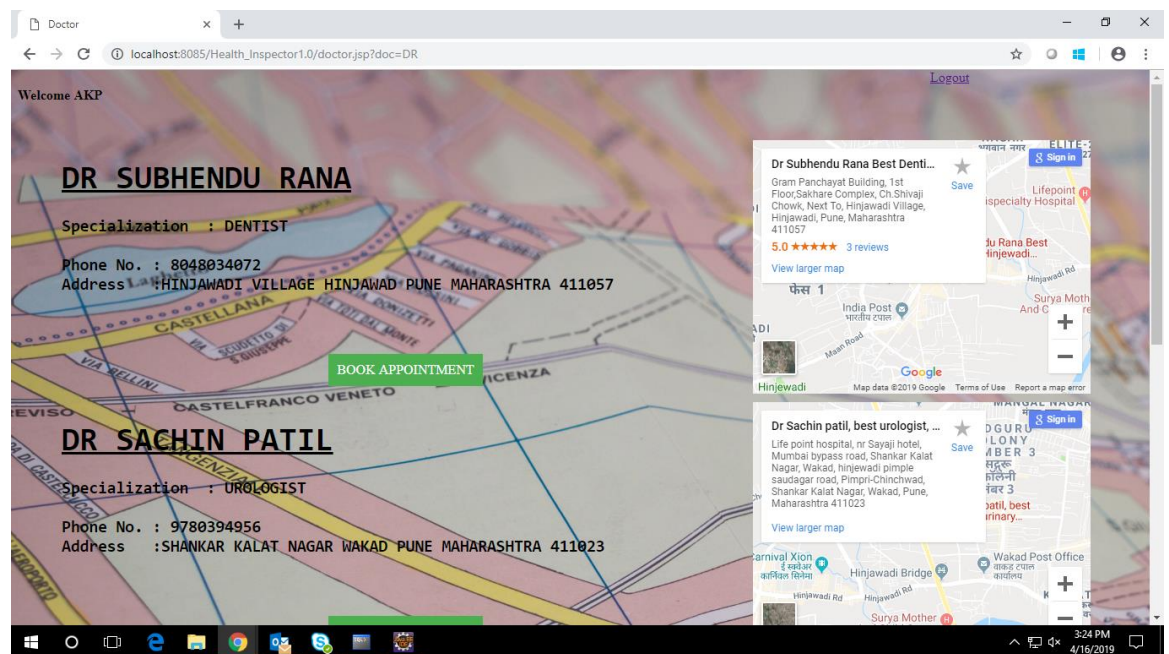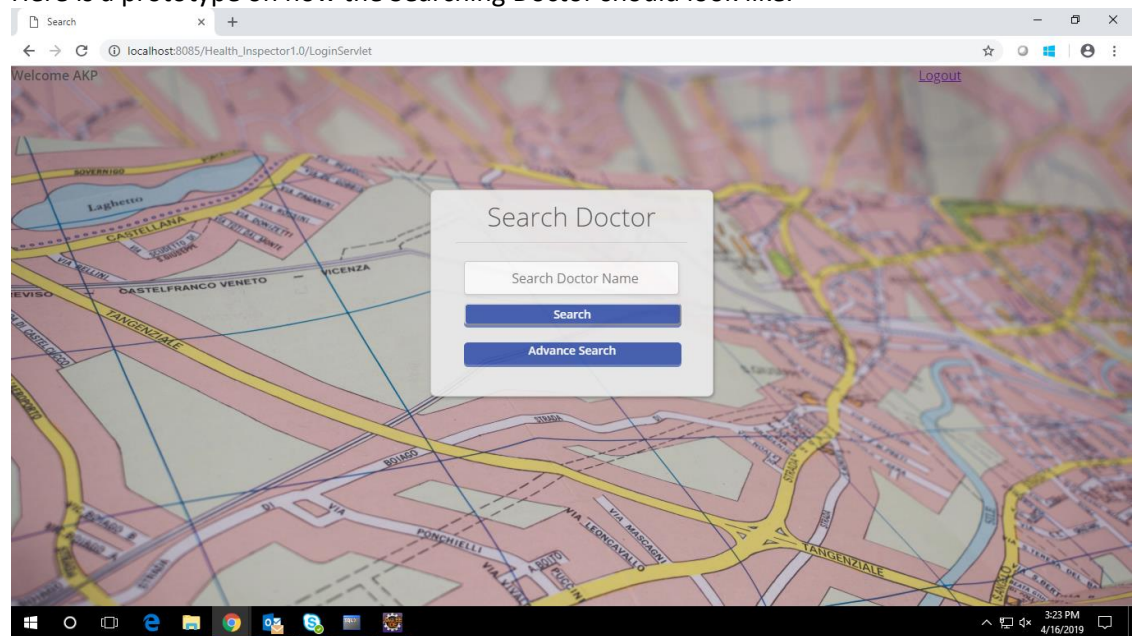
6.3.2 Business Rules

Business rules should be defined using the following attributes:

- A registered Patient – is able click 'AdvancedSearch' link or 'GoogleMap' link, whether the patient want to search doctor by name or by google map.

6.3.3 UI Requirements

Here is a prototype on how the Searching Doctor should look like.

6.3.4 UI Field Validations

Please refer to the below requirements for field level validations:

- Selecting fields is mandatory.
- If patient Selects the Advanced Search than, all the fields in advanced search are also mandatory.

6.4 Use case 'Appointment Booking'

6.4.1 Use case attributes

Use Case Description:

This use case deals with the booking the Appointment of Doctor. The 'patient' here shall be Book appointment according to their requirements.

Scope:

- Book the Appointment

Actors:

- Patient

Trigger:

Click 'Appointment Booking' link, after keying in 'Searching the doctor' field.

Pre-Condition:

User being able to access the Searching Page.

Post Condition:

User is in the Logout Page

Flow of Events:

User at Searching the doctor page → Key in 'Appointment booking details' field → Availability time are validated → Logout page is displayed

Primary Scenario:

A registered Patient – is able click 'AppointmentBooking' link, after keying in 'Availability details' field and get his credentials authenticated with the existing database entry.
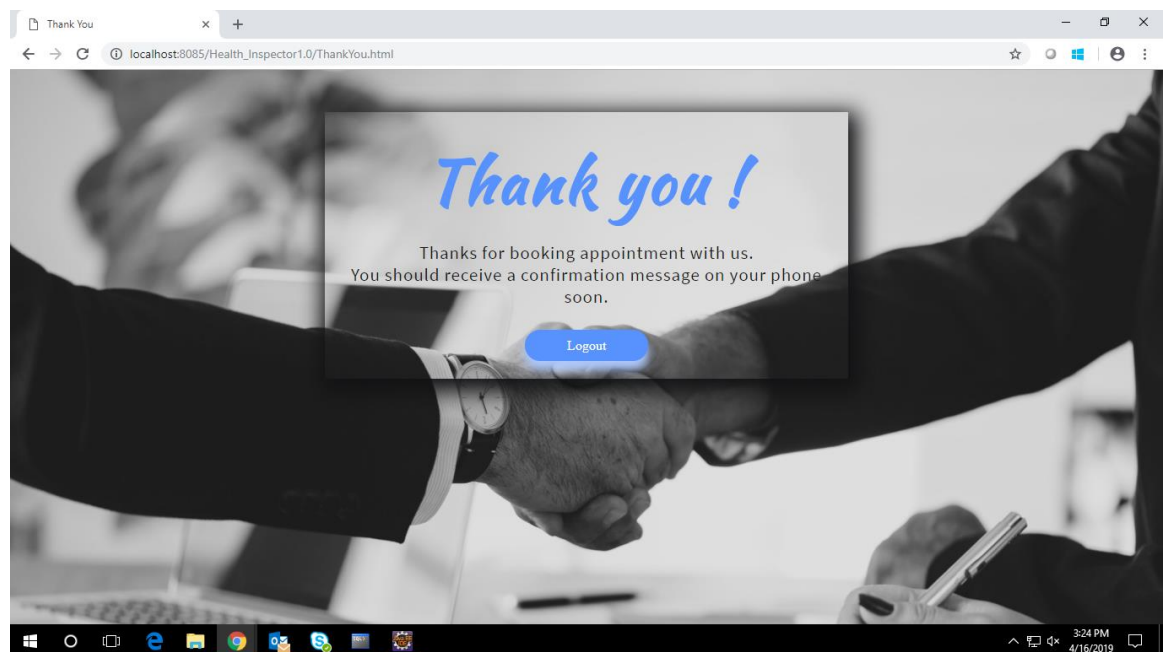
6.4.2 Business Rules

Business rules should be defined using the following attributes:

- A registered Patient – is able click 'AppointmentBooking' after entering details and availability status of doctor.

6.4.3 UI Requirements

Here is a prototype on how the 'AppointmentBooking' should look like.

6.4.5 UI Field Validations

Please refer to the below requirements for field level validations:

- All fields are mandatory.
- Upload particular report file.

7.0 Database Design

Tables Structure

7.1 Registration:

Column Name	Data Type	Length	Nulls
UserType	Varchar2	10	N
FirstName	Varchar2	50	N
LastName	Varchar2	50	N
UserId	Varchar2	15	N
Age	number	2	N
Gender	Varchar2	8	N
ContactNumber	number	10	N
Password	Varchar2	15	N

7.2 Appointment:

Column Name	Data Type	Length	Nulls
PatientName	varchar2	50	N
Age	number	2	N
Gender	Varchar2	8	N
ContactNumber	number	10	N
HospitalName	varchar2	15	N
City	varchar2	15	N
FacilityRequired	varchar2	50	N
MedicalRecords	blob		N

7.3 Advanced Search:

Column Name	Data Type	Length	Nulls
DoctorName	varchar2	50	N
City	varchar2	50	N
Specialization	varchar2	50	N