

A MAJOR-PROJECT REPORT ON

“One Stop Solution for Medical Tourism”

Submitted to

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UNDER THE GUIDANCE OF TRAINER VASUNDHRA BAGDE

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CERTIFICATE

This is to certify that the project report entitled ***“One Stop Solution for Medical Tourism”*** by **Mehul Kohli (1502862)** of **Chandigarh Engineering College, 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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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 & BRADSTREET 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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Chapter 1

Introduction

1.1 Purpose of this Project

This Project is aimed at:

- Providing the necessary inputs to the detailed requirements gathering phase and further on for the SDLC processes.
- This Project 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.
- This Project is about providing facilities to patient by the user.
- This project include three roles admin, User, Hospital Management. There are login pages and the details about availability of doctors where patient will book their appointment.

The purpose of this project is to systematically capture requirements for the project and the system to be developed. Functional requirements are captured in this document. It also serves as the input for the project scoping.

1.2 Project Overview

1.2.1 Objectives

Below are the objectives that shall be fulfilled post the execution of this project:

- Super Admin Login Credential Authentication
- Hospital registration & credential authentication
- Hospital Specialties Updation and Releasing Schedules.
- User Registration
- User Booking Appointment
- Generating Treatment Report by Hospital

- Accessing Treatment Report by User

1.3 Business Case

- There are a lot of people who travel to different countries for medical treatment. They do not have any authentic platform where they can find good hospitals related to their ailments.
- The need for such a platform will work as an aggregation between hospitals and patients bringing together the Patient/Member need and the best of services that can be made available by the hospitals.
- To enable these on-the-go medical facilities, a solution will be developed that can register, different hospitals in the cities, the list of facilities available in the hospitals and the list of Doctors along with their specialization details. This will allow the users to search for the requirement facility and book online appointments.

1.4 Technologies Recommended

Front End	Java (HTML5, CSS3, JavaScript)
Middleware	Java (Spring, Spring MVC, Hibernate MVC, WEB API2)
Backend	Oracle/SQL Server

1.5 Hardware and Software Requirements

Technology	Hardware	Software
Java	Desktop PC with 8GB RAM	<ol style="list-style-type: none"> 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

1.6 Product Scope

This product is a powerful web aggregation engine is a core enabling technology of Cognizant solutions and is a fundamental tool for improving the management of collections and deductions. This product is a great start to an efficiency initiative.

1.7 Definition

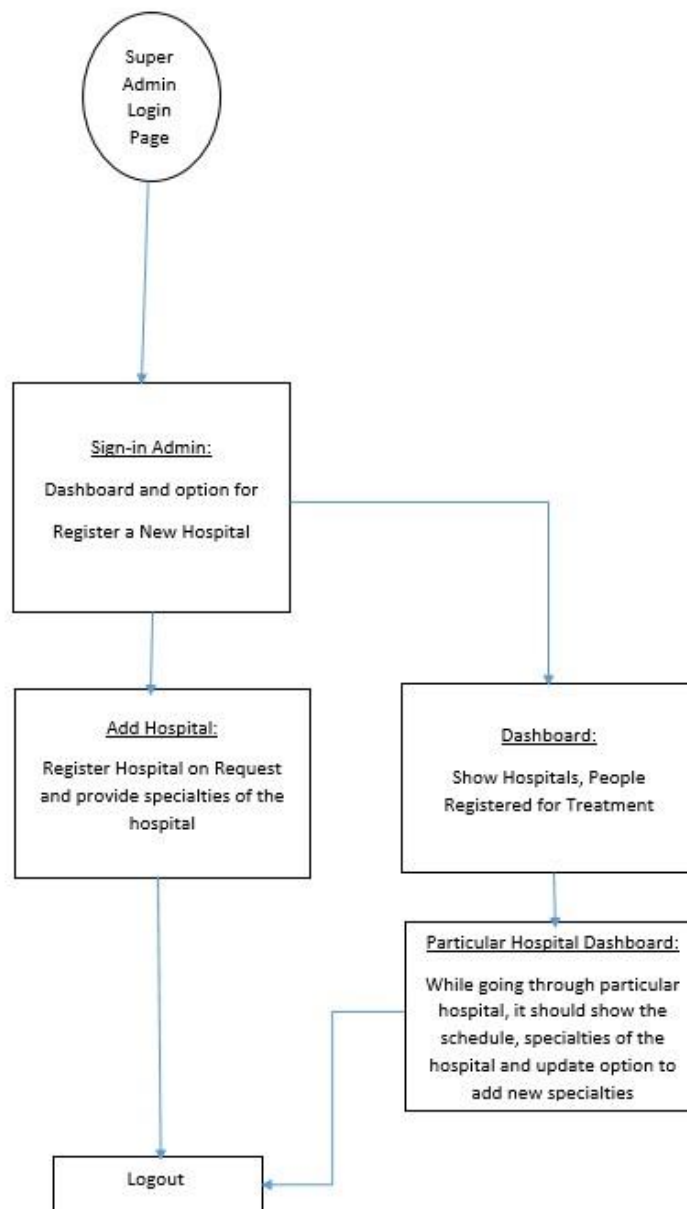
- Admin – Who is the owner of project and manage the whole process.
- Hospital Management – Management first register into the form by entering their details and admin validate the details than hospital can login by using their id and password.
- User - User is also a patient. First user enter their details into the registration form and than by using id and password they can access the task to book their appointment or to view their previous appointments.
- Client - Client is the user and user is the patient.

Chapter 2

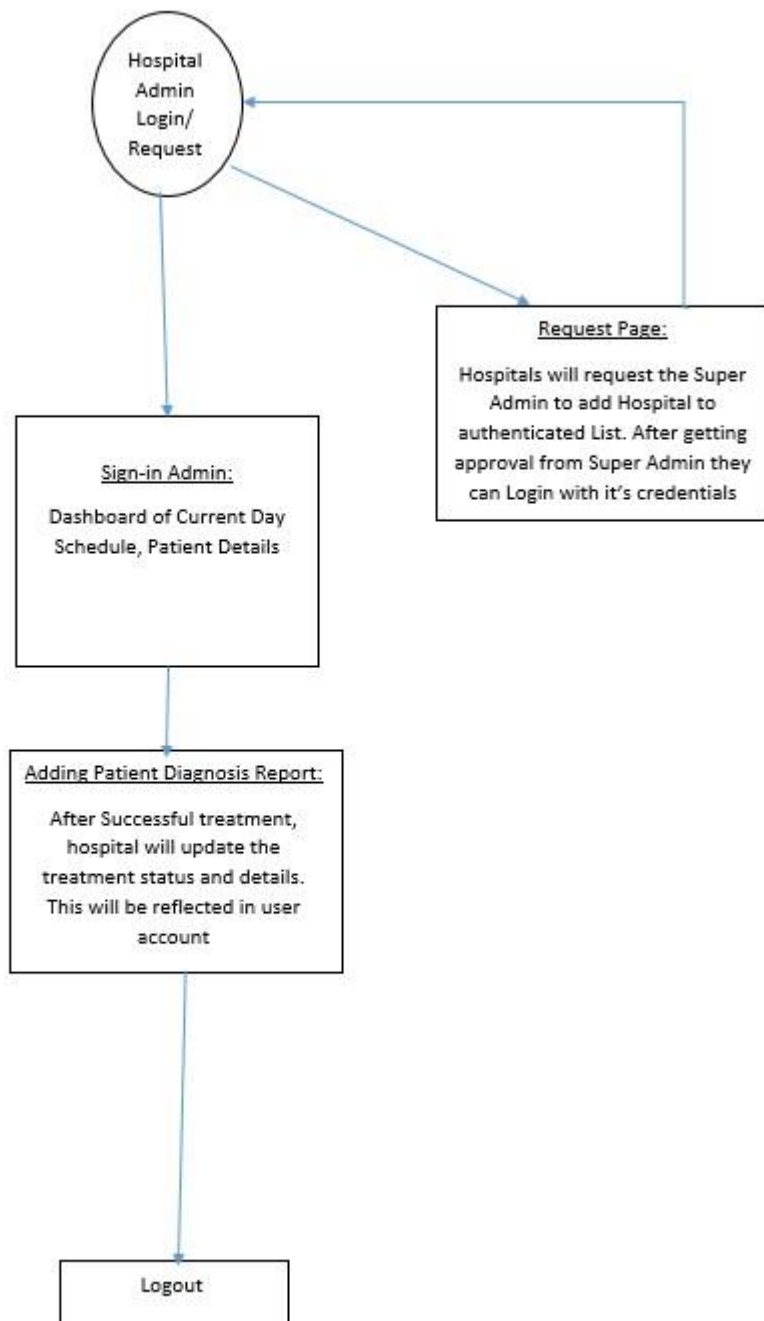
2.0 Process Architecture

Below is the overall functional flow of the project including the components of interaction

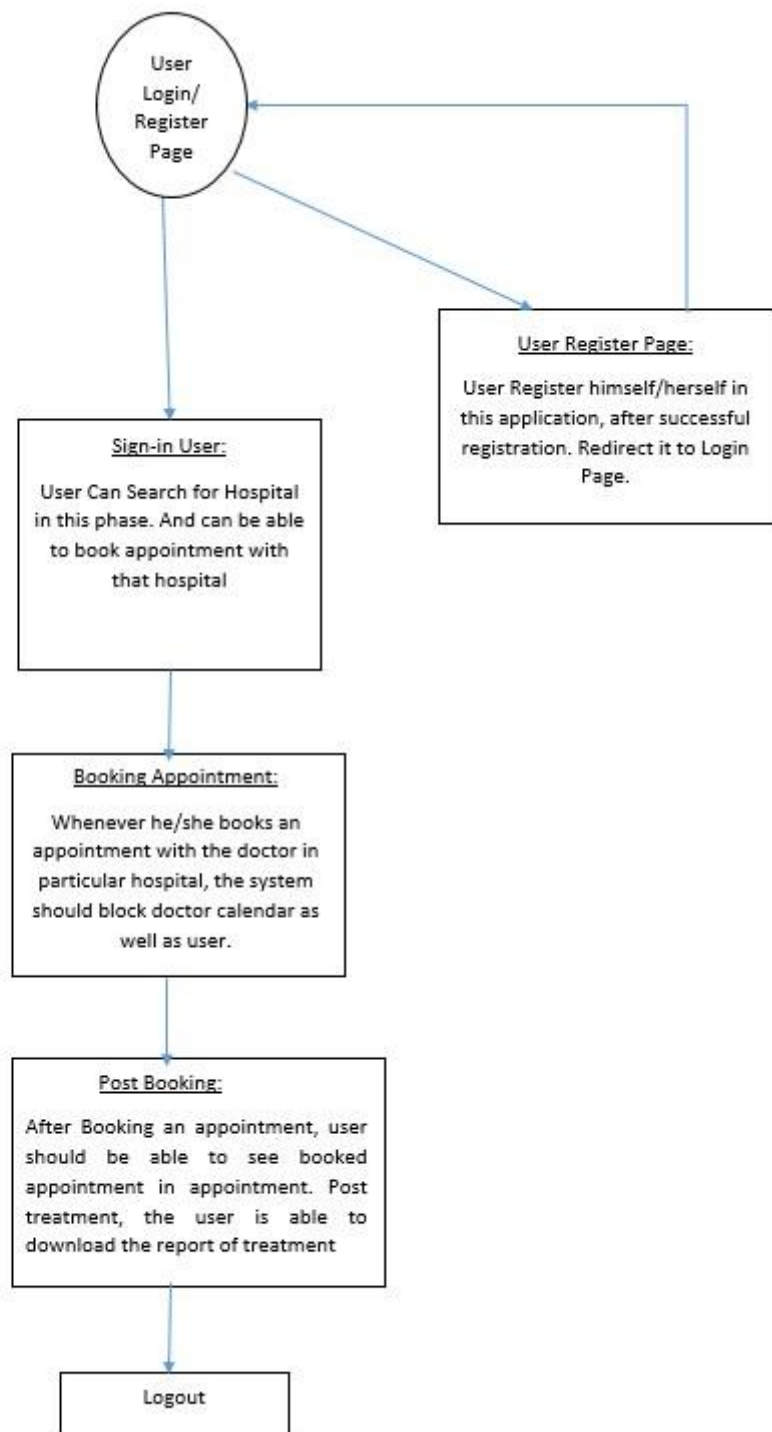
For Super Admin:



For Hospital Admin:



For User:



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	Super Admin Authentication	Ability of the system to Authenticate Super Admin and then giving rights to access Dashboard	
2	Req_2	Hospitals Requesting Admin	Ability of the system to send the request by hospitals to Super Admin to Register	
3	Req_3	Hospital Registration by Super Admin	Ability of the system to Register the requested Hospital by Super Admin and its specialties	
4	Req_4	User Registration	Ability of the system to allow the user to register himself/herself	
5	Req_5	User Authentication	Ability of the system to Authenticate the user to login to the system	
6	Req_6	Hospital Releasing Schedule	Ability of the system to Release the Doctors' Schedules	
7	Req_7	User Searching Hospital	Ability of the system to search the hospital as per the requirements given by user	
8	Req_8	Booking an Appointment with Hospital	Ability of the system to allow the user to book the appointment with the particular Doctor in the hospital, If the user wish to book. And Block the Calendar of the Doctor	
9	Req_9	Generating Treatment Report Particular User Report	After Having Successful Treatment. Hospital is able and Mapping to Generate the Treatment Particular User Report and map the same to user to download it for reference..	
10	Req_10	Log off	Ability of the system to allow Admin / Hospital / User to log off.	

4.0 Detailed Business Requirements

4.1 Functional Requirements

The functional requirements are charted 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

Req_1.1	Super Admin Authentication	When the Super admin clicks on the admin login link, it should re-direct to admin login form.	UI	Critical	NA	Req_1	
Req_1.2	Super Admin Authentication	Super Admin needs fill following fields : ID, Password to get authenticated	UI	Critical	NA	Req_1	Please refer to Table 1.0 under References
Req_1.3	Super Admin Authentication	Clicking 'Login' should validate the datatype constraints for each field	F	Critical	NA	Req_1	
Req_1.4	Super Admin Authentication	User failing to provide information on the mandatory fields be provided with an alert message – 'Please update the highlighted mandatory field(s).' Also, highlight the missed out field in red	E	Medium	NA	Req_1	
Req_1.5	Super Admin Authentication	Post-successful field level validation, authenticate credential from the database	F	Critical	NA	Req_1	
Req_1.6	Super Admin Authentication	Upon Successful Authentication Super Admin Dashboard should be displayed	UI	Critical	NA	Req_1	
Req_2.1	Hospital Addition Request	When Hospital click on Register Hospital it should redirect to Hospital Registration Form	UI	Critical	NA	Req_2	

Req. #	Rationale Categorization	Business Requirement	Req. Type *	Priority **	Originator ***	BR Traced to Business Requirement / Use case ID	Remarks
Req_2.2	Hospital Addition Request	Hospital Admin need to fill following fields in form : Hospital name, Hospital Address,Certification,Successfull operations,Achivements	UI	Critical	NA	Req_2	Please refer to Table 2.0 under References
Req_2.3	Hospital Addition Request	Clicking 'Submit' should validate the datatype constraints for each field	F	Critical	NA	Req_2	
Req_2.4	Hospital Addition Request	User failing to provide information on the mandatory fields be provided with an alert message – 'Please update the highlighted mandatory field(s).' Also, highlight the missed out field in red	E	Medium	NA	Req_2	
Req_2.5	Hospital Addition Request	Post-successful field level validation, save the information in the database and send approval request to Super Admin	F	Critical	NA	Req_2	
Req_2.6	Hospital Addition Request	Upon saving the information in the database, display the message 'Your details are submitted successfully'.	E	Medium	NA	Req_2	
Req_3.1	User Registration	When the user clicks on the registration link, it should re-direct to registration form	UI	Critical	NA	Req_3	
Req_3.2	User Registration	User needs to fill some basic field mentioned below: First Name, Last Name,gender,username,Email,Phone no,Password,address	UI	Critical	NA	Req_3	Please refer to Table 3.0 under References
Req_3.3	User Registration	User able to register for the pass based on his route requirement and schedule and type of pass	F	Critical	NA	Req_3	
Req_3.4	User Registration	Clicking "Submit" button should validate the data constraints for inserted data	F	Critical	NA	Req_3	
Req_3.5	User Registration	If any mandatory field left blank , an alert should be shown highlighting the required field	E	Medium	NA	Req_3	
Req_3.6	User Registration	After successful validation save information into database	F	Critical	NA	Req_3	

Req_3.7	User Registration	In case any database error , a message should be displayed stating the same	E	Medium	NA	Req_3	
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Req. #	Rationale Categorization	Business Requirement	Req. Type *	Priority **	Originator ***	BR Traced to Business Requirement / Use case ID	Remarks
Req_4.1	User Authentication	Registered User should be redirected to login form on clicking login bottom	F	Critical	NA	Req_4	
Req_4.2	User Authentication	Registered user needs to fill following fields: use rid / email and Password	F	Critical	NA	Req_4	Please refer to Table 1.0 under References
Req_4.3	User Authentication	On Clicking Login user credentials should be authenticated and home page should be displayed	F	Critical	NA	Req_4	
Req_5.1	Hospital Registration by Super Admin	After super Admin click on notification List of all hospital request should be displayed and super admin can accept or decline it	F	Critical	NA	Req_5	
Req_6.1	Hospital Releasing Schedule	Hospital Admin Should Release weekly schedule of doctors	F	High	NA	Req_6	
Req_7.1	User Searching Hospital	On Clicking search bar User Should be able to search for hospital and after clicking on hospital name Appointment Booking page should open	F	Critical	NA	Req_7	
Req_7.2	User Searching Hospital	Filter Should be provided for searching of hospital like filter on basis of : specialty, location	F	Future	NA	Req_7	
Req_8.1	Booking an Appointment with Hospital	User Should be able to book an appointment with particular doctor	F	Critical	NA	Req_8	
Req_8.2	Booking an Appointment with Hospital	After appointment doctor's Calendar Should be Blocked for that particular schedule	F	Critical	NA	Req_8	

Req_9.1	Generating Treatment Report and Mapping to Particular User	Doctor Should be able create an report for the patient and save it in database which include: Disease, Prescription Provided, Date and time, Patient Name , Unique Id, Doctor Id , Doctor Name, Department	F	Critical	NA	Req_9	Please refer to Table 4.0 under References
Req_9.2	Generating Treatment Report and Mapping to Particular User	User Should be able to download his/her treatment reports for further reference	F	Critical	NA	Req_9	
Req. #	Rationale Categorization	Business Requirement	Req. Type *	Priority **	Originator ***	BR Traced to Business Requirement / Use case ID	Remarks
Req_9.3	Generating Treatment Report and Mapping to Particular User	Different downloading formats should be provided for reports	R	Future	NA	Req_9	

5.0 References

5.1 Table 1.0

Field Name	Field Type	Data Type	Mandatory	Possible Values
User ID	Text(15)	Alphanumeric	Yes	
Password	Text(20)	Alphanumeric	Yes	
Email	Text(50)	Alphanumeric	Yes	
Contact Number	Text(10)	Numeric	No	

5.2 Table 2.0

Field Name	Field Type	Data Type	Mandatory	Possible Values
Hospital_Id	Autogenerated(5)	Numeric	Yes	Non-editable text
Hospital Name	Text(50)	Alphanumeric	Yes	
Addr line 2	Text(50)	Alphanumeric	Yes	
Addr line 2	Text(50)	Alphanumeric	No	
City	Text(50)	Alphabetic	Yes	Drop down based on the Pin
State	Text(50)	Alphabetic	Yes	Auto populate based on the state
Pin	Numeric(6)	Numeric	Yes	
Certifications	Drop Down	NA	Yes	6-120
Successful Operations	Drop Down	NA		Male, Female
Achievements	Text(10)	Numeric	No	

5.3 Table 3.0

Field Name	Field Type	Data Type	Mandatory	Possible Values
User Id	Autogenerated(5)	Numeric	Yes	Non-editable text
First Name	Text(50)	Alphabetic	Yes	
Last Name	Text(50)	Alphabetic	Yes	
Age	Drop Down	NA	Yes	6-120
Gender	Drop Down	NA		Male, Female
Contact Number	Text(10)	Numeric	No	
Address	Scrolling text box(100)	Alphanumeric	No	
City	Text(50)	Alphabetic	Yes	
Zip Code	Text(10)	Numeric	Yes	

5.4 Table 4.0

Field Name	Field Type	Data Type	Mandatory	Possible Values
Patient_Id	Foreign key from user table	Numeric	Yes	Non-editable text
Disease	Text(50)	Alphabetic	Yes	
Prescription Provided	Text(500)	Alphabetic	Yes	
Doctor Id	Foreign key from Doctor Hospital table	Integer	Yes	
Date & Time	Text(50)	Alphanumeric	Yes	

5.5 Table 5.0

Field Name	Field Type	Data Type	Mandatory	Possible Values
City	Text(50)	Alphabetic	Yes	
State	Text(50)	Alphabetic	Yes	
Zip	Numeric(6)	Numeric	Yes	

6.Use Cases

6.1 Use case 'User 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 user details.

Scope:

- User registration

Actors:

- User – the operator

Trigger:

Click 'Register' button in the 'User Registration' page

Pre-Condition:

User being able to access the homepage & get redirected to the 'User Registration' page upon click of 'Sign Up' link on the login page.

Post Condition:

User is in the registration page & submit details

Flow of Events:

User at homepage → User at login page → Click 'Sign Up' link → User is in the registration page → User details are submitted and added onto the database.

Primary Scenario:

A new user – is able to click 'Sign Up' link and able to provide his details and get registered in the system.

6.1.2 Business Rules

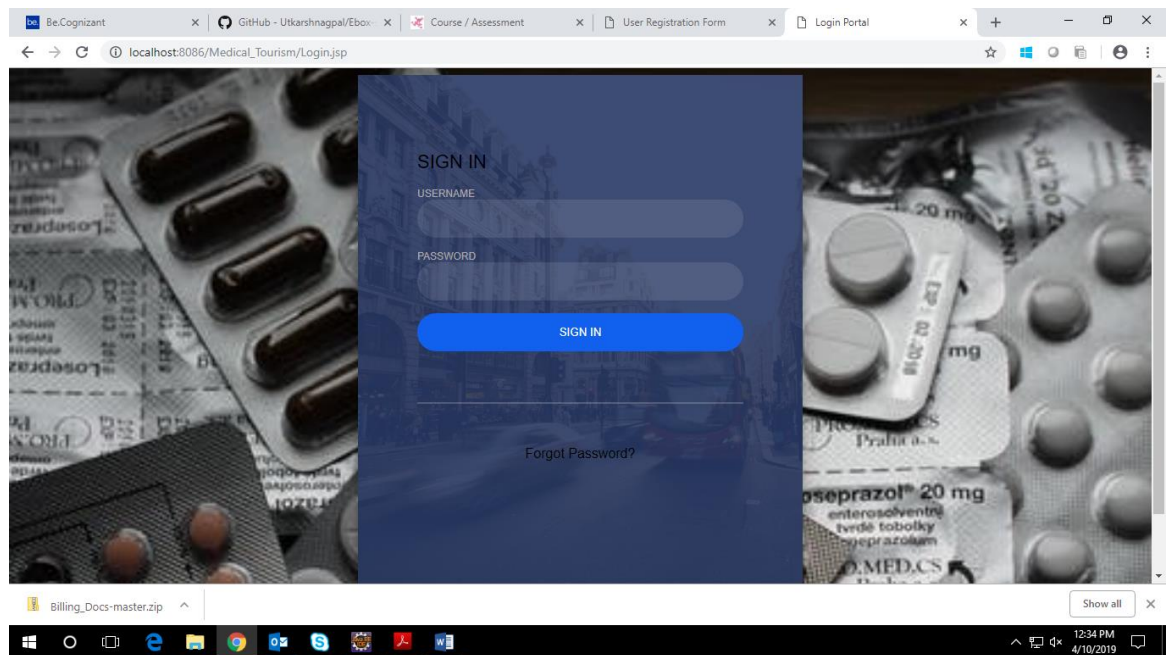
Business rules should be defined using the following attributes: -

- When the user clicks on the Sign Up 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, Set Password, Address, City,ZipCode.
- Clicking 'Sign Up' 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 have successfully registered'.

6.1.3 UI Requirements

Here is a prototype on how the login page should look like.



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

The screenshot shows a web browser window with multiple tabs. The active tab is titled 'User Registration Form' and displays a registration form at the URL 'localhost:8086/Medical_Tourism/addUser1.jsp'. The form contains the following fields: 'First Name' (text input), 'Last Name' (text input), 'Age' (text input), 'Set Password' (text input), 'Gender' (dropdown menu with 'Male' selected), 'Contact' (text input), 'Address' (text input), 'City' (text input), and 'ZipCode' (text input). The form is overlaid on a background image of hands clasped together. The browser's taskbar at the bottom shows various application icons and the system clock indicating 12:35 PM on 4/10/2019.

6.1.4 UI Field Validations

Please refer to the below requirements for field level validations:

- All fields are mandatory.
Password should have maximum 15 alphanumeric, space & can contain special characters (ex.!,@,#,%,*,& etc.).
- Contact must be of 10 digits length.
- Age should be 2 digit numeric value.
- First Name, Last Name should contain only alphabets.
- Gender should be chosen from the dropdown options.
- Address, City should be alphanumeric maximum.
- ZipCode should be numeric type.

6.2 Use case 'Admin Credential Authentication'

6.2.1 Use case attributes

Use Case Description:

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

Scope:

- Admin credentials authentication

Actors:

Admin – the operator

Trigger:

Click 'Sign In' link, after keying in 'Username' & 'Password' field.

Pre-Condition:

Admin being able to access the login page

Post Condition:

Admin is in the Medical Tourism Home Page.

Flow of Events:

Admin at homepage → Click 'Sign In' link → Admin at login page → Key in 'Username' & 'Password' field → User credentials are validated → Successfully Logged in.

Primary Scenario:

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

Alternative Scenario:

A registered user – is able click 'Sign In' link, after keying in 'Username' & 'Password' field and unable to get his credentials authenticated. The user is presented with relevant error messages: Invalid username or password.

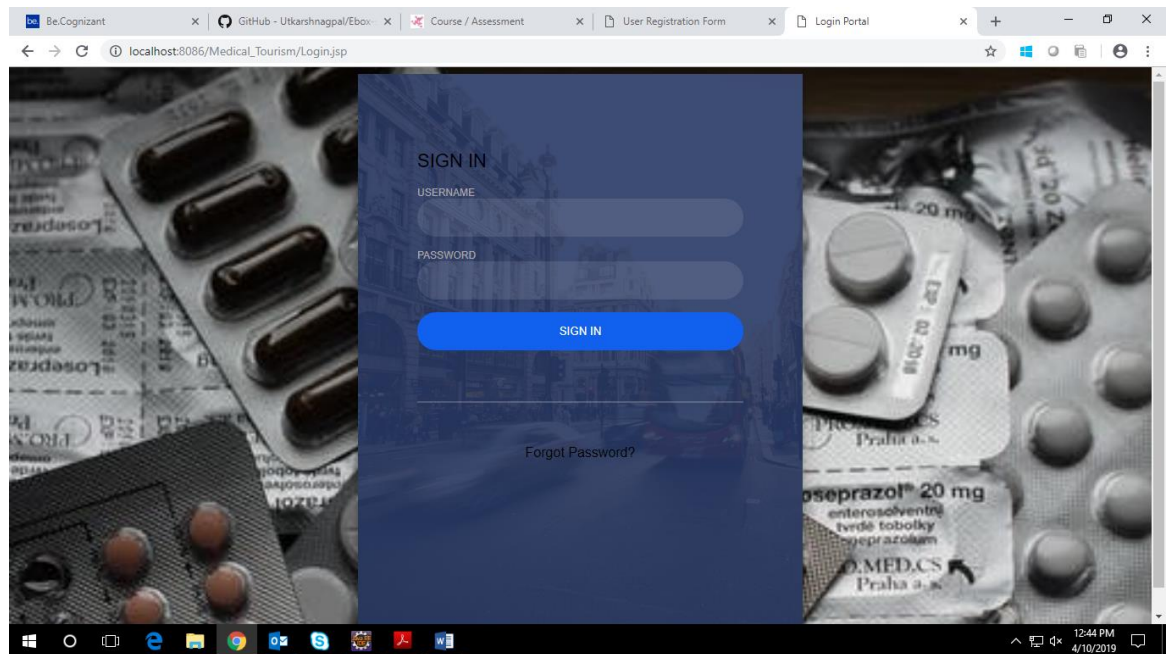
6.2.2 Business Rules

Business rules should be defined using the following attributes:-

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

6.2.3 UI Requirements

Here is a prototype on how the Medical Tourism Admin Login should look like.



6.3 Use case 'Hospital Registration'

6.3.1 Use case attributes

Use Case Description:

This use case deals with the capture of hospital details. The 'admin' here shall be the operator of the system and will be keying in the hospital details.

Scope:

- Hospital Registration

Actors:

- User – the operator

Trigger:

User should get redirected to the 'Hospital Registration' page upon clicking on the 'Hospital Registration' link.

Pre-Condition:

User should be able to get redirected to the 'Hospital Registration' page upon clicking the 'Hospital Registration' link on the page.

Post Condition:

New User is in the registration page & submit Hospital details.

Flow of Events:

User at homepage → Click 'Sign Up' link → User at page → Click 'Hospital Registration' link → Hospital details are submitted and added onto the database.

Primary Scenario:

User – is able to click 'Hospital Registration' link and able to provide hospital details and get hospital registered into the system.

Here is a prototype on how the Hospital Registration should look like.

The screenshot displays a web browser window with multiple tabs. The active tab is titled 'Hospital Registration Form'. The address bar shows the URL 'localhost:8086/Medical_Tourism/addhospital.jsp'. The form itself is a vertical stack of input fields with labels: 'Hospital Name', 'Set Password', 'Address Line 1', 'Address Line 2', 'City', 'State', 'ZipCode', and 'Certifications'. The 'Certifications' field is a dropdown menu currently showing 'NABH'. The form is set against a background image of a stethoscope. The Windows taskbar at the bottom indicates the system time is 12:50 PM on 4/10/2019.

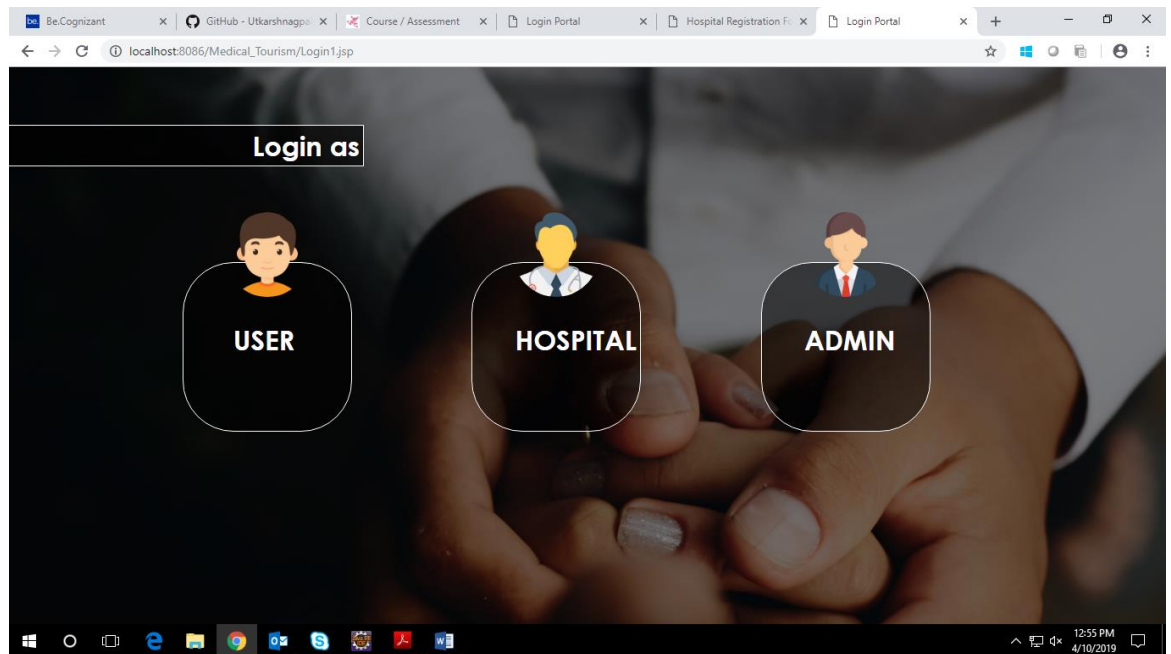
6.3.2 Business Rules

Business rules should be defined using the following attributes: -

- When the admin clicks on the hospital registration link, it should re-direct to hospital registration form.
- User needs to fill some of the basic attributes/fields as mentioned below in requirement: Hospital name, Set Password, Address Line 1, Address Line 2, City, State, ZipCode, Certifications.
- Clicking 'Sign Up' 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 have successfully registered'.

6.3.3 UI Requirements

Here is a prototype on how the page should look like.



6.3.4 UI Field Validations

Please refer to the below requirements for field level validations:

- All fields are mandatory.
Hospital Name should have maximum length of 50 input characters.
- The Set Password format must be checked.
- Address Line 1, Address Line 2, City, State, ZipCode fields should be chosen from the options.
- Certifications should be chosen from the dropdown date value.

7.0 Database Design

Tables Structure

7.1 Admin Details:

Column Name	Data Type	Length	Nulls
User Id	nvarchar	50	N
Password	nvarchar	50	N

7.2 User Details:

Column Name	Data Type	Length	Nulls
User Id	nvarchar	10	N
First Name	nvarchar	50	N
Last Name	nvarchar	50	N
Age	int	5	N
Gender	nvarchar	10	N
Contact Number	varchar	10	N
Address	varchar	10	N

Zipcode	nvarchar	50	N
City	nvarchar	50	N

7.3 Hospital Details:

Column Name	Data Type	Length	Nulls
Hospital Id	nvarchar	10	N
Hospital Name	nvarchar	50	N
Address	varchar	10	N
City	nvarchar	50	N
State	nvarchar	50	N

7.4 Patient Details:

Column Name	Data Type	Length	Nulls
Patient Id	varchar	10	N
Disease	nvarchar	50	N
Prescription Provided	nvarchar	50	N
Doctor Id	date	10	N
Date & Time	nvarchar	50	Y

8.0 Data Flow Diagram

