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1. INTRODUCTION

1.1 About the Project

BookMyAppointment is an online booking tool to help you make appointments at any of our great registered service providers. It allows consumers to book appointments with ease, while allowing the service provider to maintain and manage their appointments professionally and effortlessly.

BookMyAppointments is easy-to-use appointment scheduling software that will take your business to the next level. You can manage your appointments, clients and other aspects of your business from home, the beach, or anywhere that has internet access. Clients can request appointments and get email approval. Days before a scheduled appointment, BookMyAppointments will automatically send a text or email reminding your client of their upcoming appointment.

1.2 What is an Appointment System?

The online scheduling systems are also known in many names such as online booking application, online scheduler, online scheduling software, and more. It is one of the most commonly used web-based applications and enables individuals to securely and conveniently book their reservations and requests online via a laptop, tablet, smartphone, computer, and other web-connected devices.

Anyone can access the online appointment management system via the URL provided by the healthcare or medical facility or through a “Book Now” button in the website. Once the time and date are selected, the system confirms the bookings automatically and also records it within the system instantly without any intervention from the staff.

The online appointment management system also comes with features like automated text and email message reminders, which is sent to the booked patients or individuals on the date booked before their scheduled time of booking.

1.3 What are the benefits of an Appointment System?

- Time Saving
- Monetary Savings.
- 24 hours’ convenience.
- Centralized Information System

1.4 Scope of Work

The proposed software product is the Book My Appointment System. In this project we are going to design and build a fully functional web based online book my appointment system.

It is an online booking tool to help customers make appointments at any of our great registered businesses. It allows customers to book appointments with ease, while allowing the business owner to maintain and manage their appointments professionally and effortlessly.

1.5 Glossary

OBMAS: Online Book My Appointment System

Appointment: An arrangement to meet someone at a particular time and place.

Web-based application: An application that runs on the Internet

SRS: 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.

GUI: Graphical User Interface. A visual way of interacting with a computer using items.

Portal: Personalized Website

Stakeholder: Any person with an interest in the project who is not a developer.

User: Customer or Business Owner.

UML: Software Engineering Notation for visualizing System in the form diagrams

SSL: Secure Socket Layer used for providing restricted access to application.

RDBMS: Relational Database Management System.

2. GENERAL DESCRIPTION

2.1 Product Perspective

This Book My Appointment System is a self-contained system that allows customers to book appointment and business owners to manage appointments. Various stakeholders are involved in this system.

2.2 User Characteristics

The system will be used in the service based shops and businesses where appointment system is the requirements. The customers and business owners will be the main users. Given the condition that not all the users are computer-literate. Some users may have to be trained on using the system. The system is also designed to be user-friendly. It uses a Graphical User Interface (GUI).

Business Owner:

- will able to manage availability
- will able to manage Appointments
- will able to manage customer's information

Customer:

- will able to search for all registered businesses
- will able to book appointments
- will able to manage booked appointments: cancel/modify
- will able to search past appointments

Developers:

- They are responsible for maintaining and overseeing the web application and database of the system.

2.3 Assumptions and Dependencies

It is assumed that modern computers with internet connectivity will be available. It is assumed that the shops and businesses will have by default only one service provider at a time.

2.4 Product Perspective

The major problem in this field is lengthy waiting time, customers would come to the shops to book an appointment and would have to wait a really long time before they can get the service. But with this system each customer has an allocated time to get the service from business.

3. REQUIREMENTS

3.1 Functional Requirements

3.1.1 The system should enable customers and service providers to log in.

- They shall enter their username and password.
- The information given shall be valid.
- Access shall be granted/denied.

3.1.2 The system should enable customers and service providers to register.

- In the case of customer collect user information (Names, Date of birth, address, telephone, email, password etc.).
- In the case of business collect (Names, email, password, Date of birth, gender, category, address, telephone etc.).
- Check if information is valid:
- Password is not empty.
- Password and confirm password is same.
- Email hasn't been used before.
- If information is valid save and add user to database

3.1.3 The system should enable customers and service providers to log out.

- Log user out when user clicks on log out button.

3.1.4 The system should allow customers to book an appointment.

- The system shall check if the customer is logged in or not.
- The customer shall select the city and category of business to his/her interest.
- The system shall display the list of available businesses to be booked.
- The system shall display the available time of the particular business to be booked.
- The system shall generate a unique booking ref for each appointment.
- The system shall send a confirmation email when appointment is made

3.1.5 The system should allow customers to modify or cancel their bookings.

- The system shall allow reservations to be modified.
- The patient just has to provide their booking reference.
- The system shall make the necessary updates after changes have been made.

3.1.6 The system should allow Customers and Service Providers to view and modify their profile.

- They shall enter the new information.
- This information then replaces the old information in database.

3.1.7 The system should allow Service Providers to set their available time.

- The service provider will enter the time he'll be available.
- This information is saved in the database.

3.1.8 The system should enable administrator to log in.

- The user shall enter their username and password.
- The information given shall be valid.
- Access shall be granted/denied.

3.1.9 The system should allow administrator to manage Users.

- The system enable administrator to access database and add new customers.
- The system enable administrator to delete any user due to some rules from database.
- The system enable administrator to change customer's or business's information.

3.1.10 The system should allow administrator to delete past appointments from system.

- After the date of an appointment passes the administrator should delete the appointment from database.

3.1.11 USECASE: Service Provider

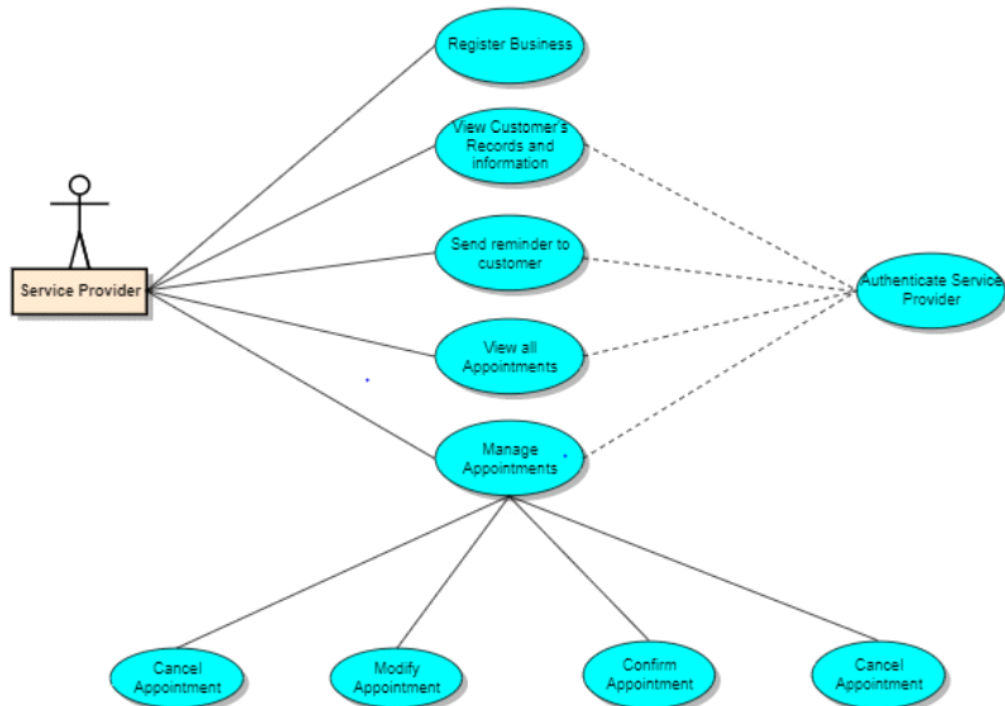


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3.1.12 USECASE: Service Provider

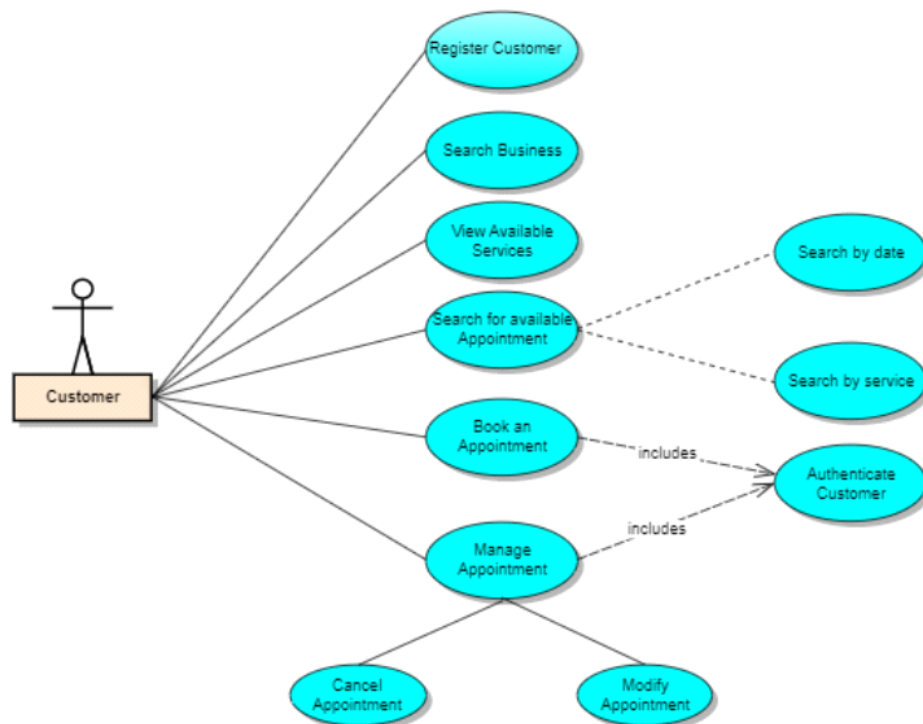


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3.1.13 USECASE: Service Provider

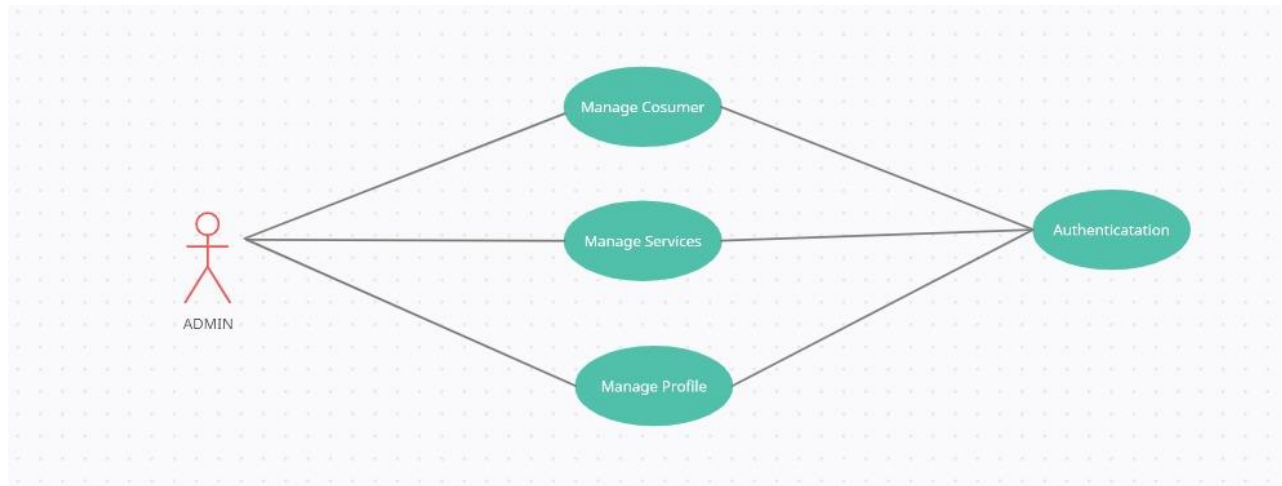


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3.2 Non Functional Requirements

3.2.1 Security

The System use SSL (Secure Socket Layer) in all transactions that include any confidential customer information. The system must automatically log out all customers after a period of inactivity. The system should not leave any cookies on the customer's computer containing user's password. The system's back-end servers shall only be accessible to authenticated administrators. Sensitive data will be encrypted before being sent over insecure connections like internet. The proper firewalls should be developed to avoid intrusions from the internal or external sources.

3.2.2 Reliability

The system provides storage of all databases on redundant computers with automatic switchover. The main pillar of reliability of the system is the backup of the database which is continuously maintained and update to reflect the most recent changes.

3.2.3 Availability

The system should be available at all time, meaning the user can access it using web browser, only restricted by the down time of the server on which the system runs. In case of a hardware failure or database corruption, a replacement page will be shown.

uptime: It mean 24 * 7 availability.

3.2.4 Maintainability

A commercial database is used for maintaining the database and application server takes care of the site. The maintainability can be done efficiently.

3.2.5 Portability

The application is HTML and scripting language based (JavaScript). So the end user part is fully portable and any system using any web browser should be able to use the features of the system, including any hardware platform that is available or will be available in the future. An end-user is used this system on an OS, either it is Windows or Linux. The System shall run on PC, Laptops etc. The technology should be transferable to different environments easily.

3.2.6 Accessibility

Only registered users should be allowed to process the orders after authentications. Only GUI access of the system should be permitted to end users.

3.2.7 Policies

The system should adhere to all the legal formalities of the particular countries. The system should maintain security related to sensitive data.

3.2.8 Efficiency

The system should provide good throughput and response to multiple users without burdening the system by using appropriate number of servers.

3.2.9 Safety

Software should not harm ethical and environmental conditions of the end users machine.

3.2.10 Modularity

The system should have user friendly interface. It should be easily updated, modified and reused.

3.3 Usability Requirement

3.3.1 Hardware Requirement

- Processor : Intel Core Duo 2.0 GHz or more
- RAM : 2 GB or More
- Hard disk : 80GB or more
- Monitor : 15” CRT, or LCD monitor
- Keyboard : Normal or Multimedia
- Mouse : Compatible mouse

3.3.2 Software Requirement

- WINDOWS OS (2007 and above)
- Browser

4. SYSTEM DESIGN

Design is a process to transform user requirements into some suitable form, which helps the programmer in software coding and implementation.

For assessing user requirements, an SRS (Software Requirement Specification) document is created whereas for coding and implementation, there is a need of more specific and detailed requirements in software terms. The output of this process can directly be used into implementation in programming languages.

Software design is the first step in SDLC (Software Design Life Cycle), which moves the concentration from problem domain to solution domain. It tries to specify how to fulfil the requirements mentioned in SRS.

4.1 Wireframes and Site Architecture

In this phase we create our application architecture includes the sitemap and wireframes of pages. Creating the sitemap ensures that we considered all the key pages in the site, showing their relationship to each other and defining how the sties overall navigation should be structured. Wireframes provide a detailed view of the content that will appear on each page. Although they do not show any actual design elements, the wireframes provide a guide for defining content hierarchy on the page.

4.2 Visual Design

Once we done with the blueprint for our CRM through the creation of the sitemap and wireframes, the next step is to create a visual style. The overall visual style will most likely be determined by the visual brand of the enterprise; the goal being to connect the Web with all other forms of the organization's communications. As designers, we want to visually convey key brand perceptual ideas within the design.

4.3 Site Development

After Designing of our application Blueprint we approved all the designs by our clients, it's time to flesh out the design of the pages, develop new content and refine old content, create videos, slideshows, podcasts and other media that will appear on the site as well as start to build out the HTML and CSS of our application site, during this phase we choose responsive and user-friendly user interface for our application.

4.4 Design Verification

In this stage, we verify our all the output of our design process is design documentation, pseudo codes, detailed logic diagrams, process diagrams, and detailed description of all functional or non-functional requirements.

The next phase, which is the implementation of software, depends on all outputs mentioned above.

It is then becoming necessary to verify the output before proceeding to the next phase. The early any mistake is detected, the better it is or it might not be detected until testing of the product. If the outputs of design phase are in formal notation form, then their associated tools for verification should be used otherwise a thorough design review can be used for verification and validation.

4.5 Backend Design (Database Design)

Why Database Design is Important?

Database designing is crucial to high performance database system. Apart from improving the performance, properly designed databases are easy to maintain, improve data consistency and are cost effective in terms of disk storage space.

Database development life cycle

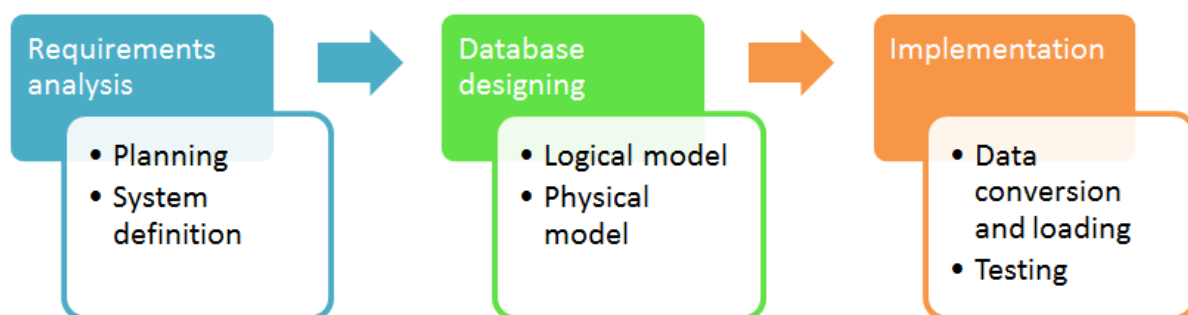


Fig 4.5.1 Database development lifecycle

The database development life cycle has a number of stages that are followed when developing database systems.

The steps in the development life cycle do not necessary have to be followed religiously in a sequential manner.

On small database systems, the database system development life cycle is usually very simple and does not involve many steps.

In order to fully appreciate the above diagram, let us look at the individual components listed in each step.

Implementation of Database

During this stage, we study all the data base concepts that is explained below, which is necessary for our project, and after that, we start designing a normalized database for our CRM.

Data conversion and loading - this stage is concerned with importing and converting data from the old system into the new database.

Testing - this stage is concerned with the identification of errors in the newly implemented system. It checks the database against requirement specifications.

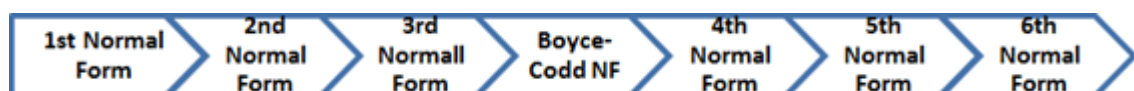
Types of Database Techniques

1. Normalization
2. ER Modelling

1. What is Normalization?

Normalization is a database design technique, which organizes tables in a manner that reduces redundancy and dependency of data.

It divides larger tables to smaller tables and links them using relationships.



Database Normal Forms:

1NF (First Normal Form) Rules

1. Each table cell should contain a single value.
2. Each record needs to be unique.

What is a KEY?

A KEY is a value used to identify a record in a table uniquely. A KEY could be a single column or combination of multiple columns

What is a Primary Key?

A primary is a single column value used to identify a database record uniquely.

It has following attributes

- A primary key cannot be NULL
- A primary key value must be unique
- The primary key values cannot be changed
- The primary key must be given a value when a new record is inserted.

What is Composite Key?

A composite key is a primary key composed of multiple columns used to identify a record uniquely

In our database, we may have two people with the same name, but they are different. Therefore, in this case we need composite key.

2NF (Second Normal Form) Rules

- Rule 1- Be in 1NF
- Rule 2- Single Column Primary Key

What is Foreign Key?

Foreign Key references the primary key of another Table! It helps connect your Tables

A foreign key can have a different name from its primary key

It ensures rows in one table have corresponding rows in another

Unlike the Primary key, they do not have to be unique. Most often they aren't

Foreign keys can be null even though primary keys can not

What are transitive functional dependencies?

A transitive functional dependency is when changing a non-key column, might cause any of the other non-key columns to change

In our project, we design our database, which is based on our Second Normal Form.

What is ER Modelling?

Entity Relationship Modelling (ER Modelling) is a graphical approach to database design. It uses Entity/Relationship to represent real world objects.

An Entity is a thing or object in real world that is distinguishable from surrounding environment. For example, each employee of an organization is a separate entity. Following are some of major characteristics of entities.

An entity has a set of properties.

Entity properties can have values.

Enhanced Entity Relationship (EER) Model

Enhanced Entity Relationship (EER) Model is a high-level data model, which provides extensions to original Entity Relationship (ER) model. EER Models supports more details design. EER Modelling emerged as a solution for modelling highly complex databases.

EER uses UML notation. UML is the acronym for Unified Modelling Language; it is a general-purpose modelling language used when designing object-oriented systems. Entities are represented as class diagrams. Relationships are represented as associations between entities. The diagram shown below illustrates an ER diagram using the UML notation.

Why use ER Model?

Now we may think why use ER modelling when we can simply create the database and all of its objects without ER modelling? One of the challenges faced when designing database is the fact that designers, developers and end-users tend to view data and its usage differently. If this situation is left unchecked, we can end up producing a database system that does not meet the requirements of the users.

Communication tools understood by all stakeholders (technical as well non-technical users) are critical in producing database systems that meet the requirements of the users. ER models are examples of such tools. ER diagrams also increase user productivity as they can be easily translated into relational tables.

Case Study of "Book My Appointment" ER diagram

Let us now work with the Book My Appointment database system to help understand the concept of ER diagrams.

Let us look at the steps to develop EER diagram for this database-

Identify the entities and determine the relationships that exist among them. Each entity, attribute and relationship, should have appropriate names that can be easily understood by the non-technical people as well. Relationships should not be connected directly to each other. Relationships should connect entities. Each attribute in a given entity should have a unique name.

Entities in the " Book My Appointment ":

1. txn_authentication
2. txn_service_providers
3. txn_consumers
4. txn_appointments
5. txn_services
6. txn_business_hours
7. txn_service_categories
8. txn_cities

ER Diagram of “Book My Appointment” Database:

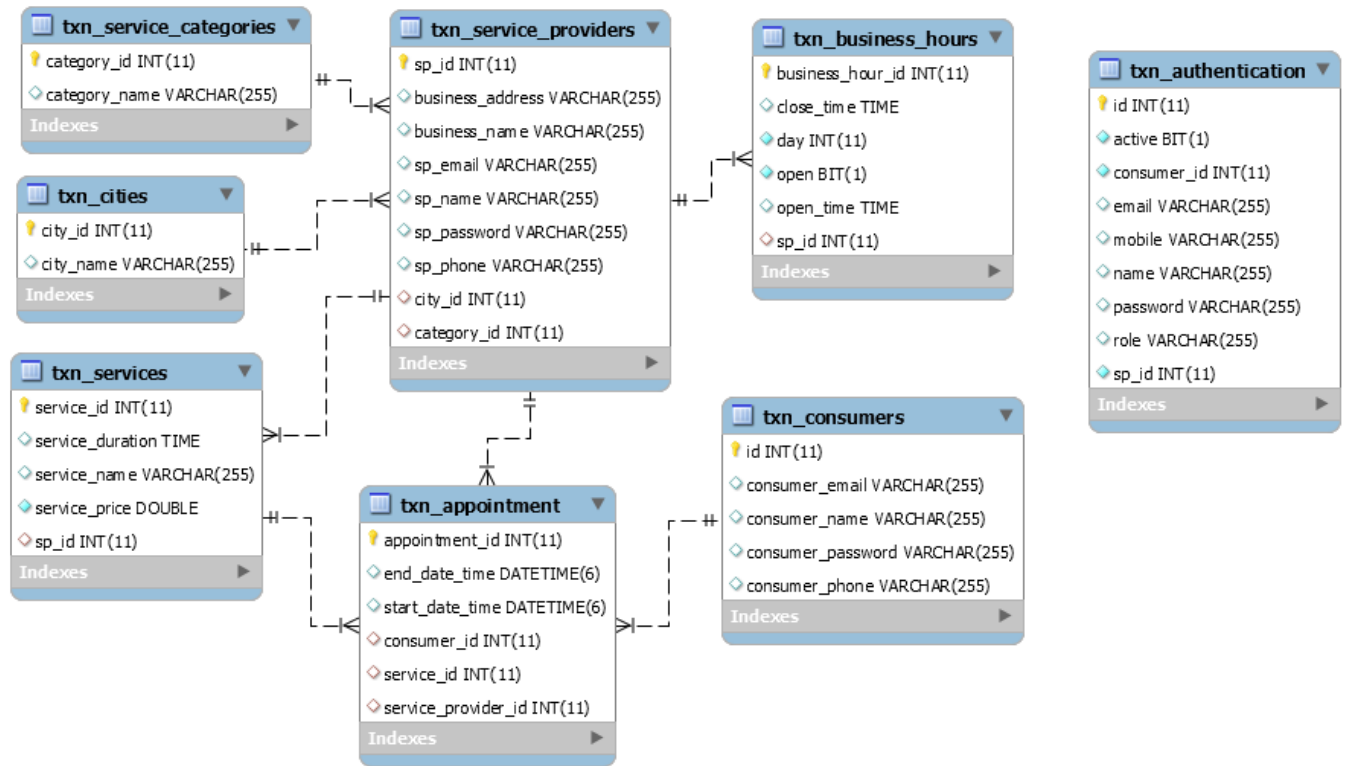


Fig 4.5.2 ER Diagram for Book My Appointment

Class Diagram of “Book My Appointment”:

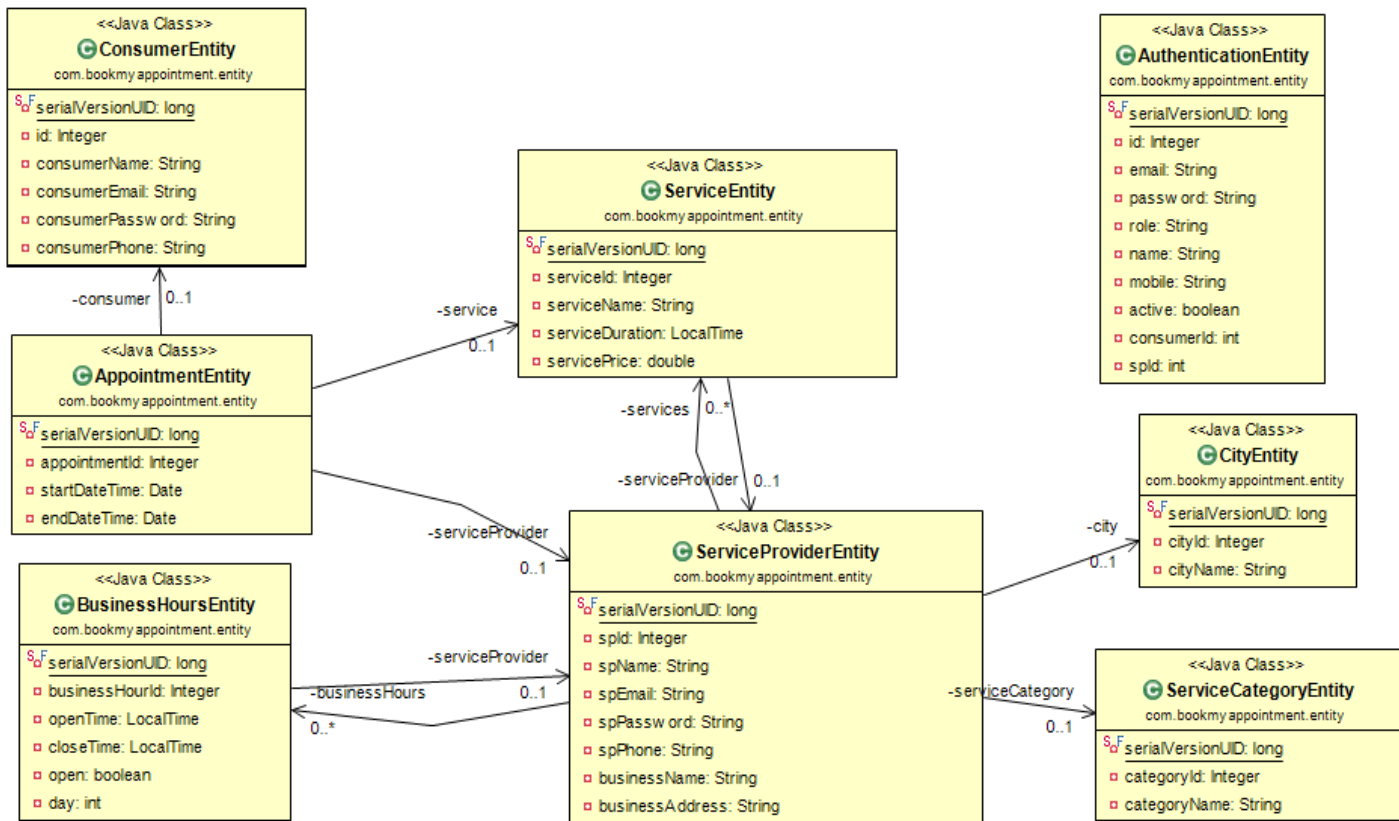


Fig 4.5.3 Class Diagram of “Book My Appointment”

4.6 Data Flow Diagrams

Context Level DFD

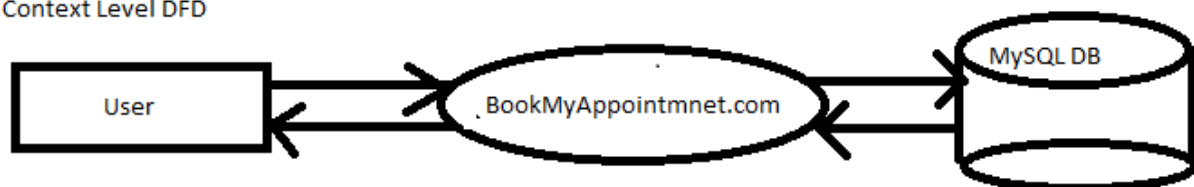


Fig 4.6.1 Context Level DFD of “Book My Appointment”

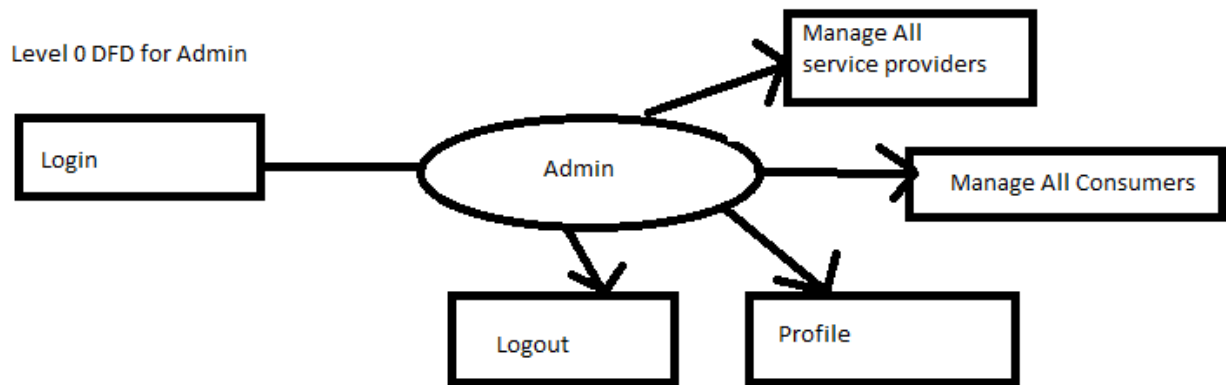


Fig 4.6.2 Level 0 DFD for Admin

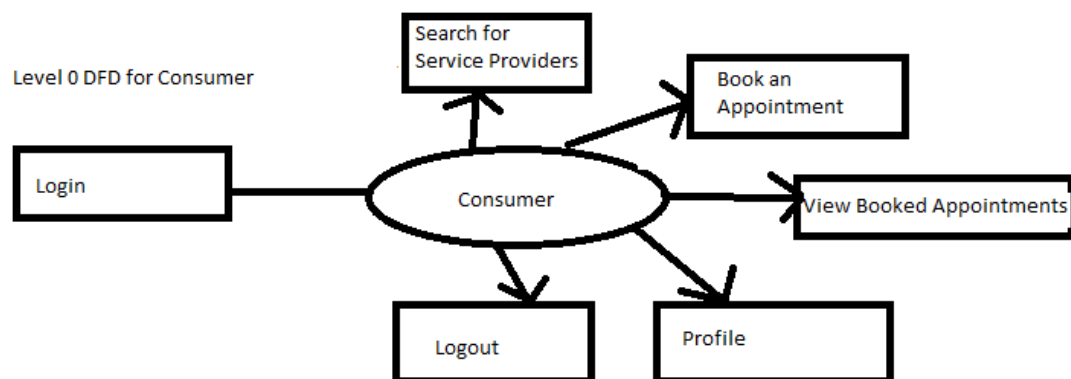


Fig 4.6.2 Level 0 DFD for Consumer

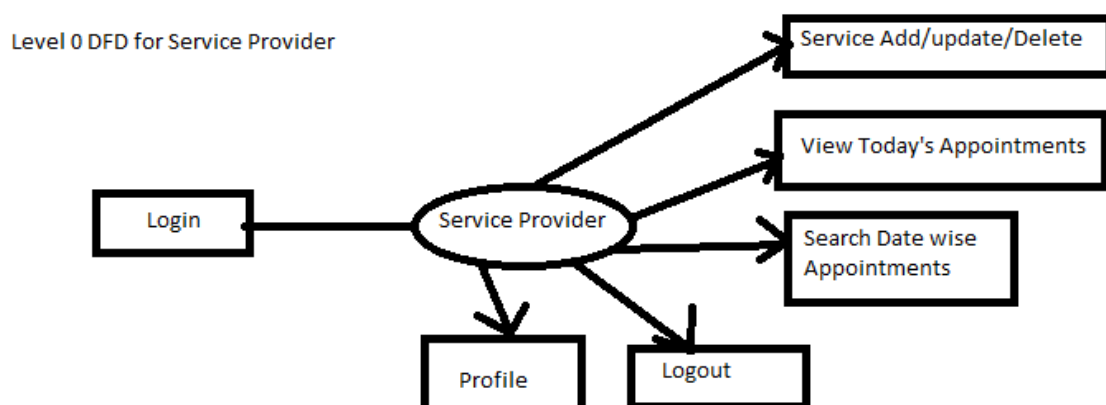


Fig 4.6.3 Level 0 DFD for Service Provider

4.7 Front End (User Interface) Design

In User Interface (UI) Development we focus on anticipating what users might need to do and ensuring that the interface has elements that are easy to access, understand, and use to facilitate those actions. UI brings together concepts from interaction design, visual design, and information architecture.

Interface Elements that we chose for our application

Users have become familiar with interface elements acting in a certain way, so try to be consistent and predictable in your choices and their layout. Doing so will help with task completion, efficiency, and satisfaction.

Interface elements include but are not limited to:

- **Input Controls:** buttons, text fields, checkboxes, radio buttons, dropdown lists, list boxes, toggles, date field
- **Navigational Components:** breadcrumb, search field, pagination, slider, tags, icons
- **Informational Components:** tooltips, icons, notifications, message boxes, modal windows
- **Containers:** accordion

We focused on following aspects for designing an Interface

Everything stems from knowing your users, including understanding their goals, skills, preferences, and tendencies. Once you know about your user, make sure to consider the following when designing your interface:

- **Keep the interface simple**

The best interfaces are almost invisible to the user. They avoid unnecessary elements and are clear in the language they use on labels and in messaging.

- **Create consistency and use common UI elements**

By using common elements in your UI, users feel more comfortable and are able to get things done more quickly. It is also important to create patterns in language, layout and design throughout the site to help facilitate efficiency. Once a user learns how to do something, they should be able to transfer that skill to other parts of the site.

- **Be purposeful in page layout**

Consider the spatial relationships between items on the page and structure the page based on importance. Careful placement of items can help draw attention to the most important pieces of information and can aid scanning and readability.

- **Strategically use color and texture**

You can direct attention toward or redirect attention away from items using colour, light, contrast, and texture to your advantage.

- **Use typography to create hierarchy and clarity**

Carefully consider how you use typeface. Different sizes, fonts, and arrangement of the text to help increase scan ability, legibility and readability.

- **Make sure that the system communicates what is happening**

Always inform your users of location, actions, changes in state, or errors. The use of various UI elements to communicate status and, if necessary, next steps can reduce frustration for your user.

- **Think about the defaults**

By carefully thinking about and anticipating the goals people bring to your site, you can create defaults that reduce the burden on the user. This becomes particularly important when it comes to form design where you might have an opportunity to have some fields pre-chosen or filled out.

5. IMPLEMENTATION

During the implementation or development phase, we arranged everything that will be needed to implement the project like resources technology that we used to implement project and other necessary stuff. Potential suppliers or subcontractors are brought in, a schedule is made, materials and tools are ordered, and instructions are given to the personnel and so forth. The development phase is complete when implementation is ready to start. All matters must be clear for the parties that will carry out the implementation.

In this phase we work on actual development of our project, the project takes shape during the implementation phase. This phase involves the construction of the actual project result. We are occupied with coding, developing graphic material,

It is during this phase that the project becomes visible to outsiders, to whom it may appear that the project has just begun. The implementation phase is the doing phase, and it is important to maintain the momentum.

In this phase, we used all the data, which is gathered from our client like their requirements. And we work to fulfil their requirements by using some development technologies as mentioned below.

5.1 IMPLEMENTATION REQUIREMENTS

Software Requirements

- Operating System : Windows, Linux (Any Desktop or Mobile Operating System)
- Browser Front End : Any HTTP Browser
- Database Layer : MySQL
- Web Server : Apache Tomcat
- Server Side : Spring boot
- Client Side : Angular
- Connection Protocol : HTTP, SMTP, POP3, WAP

Hardware Requirements

- Processor : Intel core i3 (or Higher)
- Clock Speed : ~2 Ghz
- Ram : ~8 GByte (Minimum)
- HDD : ~1.5 Gbyte for Public Web Directory & Resources and Website
- FTP account for Maintenance of a website

5.2 Technology Used

1. Front End (Client Side)

- Angular
- Typescript
- HTML / HTML 5
- CSS3
- Java Script
- JQuery, Bootstrap (Responsive)
- Ajax

2. Back End

- Spring Boot
- MySQL
- Json
- XML

5.3 ADAPTED METHODOLOGY

The web site designing is the process of placing information in forms of text, images, pictures, photos, animation etc. of relative organization or company or firm and displaying it on internet. The web hosting is the process of publishing web site on web server so that, it will available throughout in the world. Various methods are used for designing web sites. In present paper researcher found that if web site designed by following spiral model directions then it will be more suitable, easy to maintain, flexibility, agile, cost effective.

While designing web site basically there are different ways. The site design process is divided up into following steps:

- Identifying problem: The first step is defining the problem and its definition. The site design and site planning process begins with the initial problem to be solved. This is started from client contact.

- Analysis: The next step involves programming the site as well as site and end user requirements, which is focused on in-depth below. There are numerous site elements related to the analysis during this phase. This is part of the analysis phase in site planning.
- Design phase: After the analysis, a program is developed, which is part of the design phase. The third step deals with schematic design of a site as well as a preliminary cost estimate for the site.

5.4 Development Model

Spiral Model for Web Development

Boehm has proposed this recent model. As the name suggests, the activities in this model can be organized like a spiral. The spiral has many cycles. The radial dimension represents the cumulative cost incurred in accomplishing the steps come so far and the angular dimension represents the progress made in completing each cycle of the spiral.

The structure of the spiral model is shown in the figure given below. Each cycle in the spiral begins with the identification of objectives for that cycle and the different alternatives are possible for achieving the objectives and the imposed constraints.

The next step in the spiral life cycle model is to evaluate these different alternatives based on the objectives and constraints. This will also involve identifying uncertainties and risks involved. The next step is to develop strategies that resolve the uncertainties and risks. This step may involve activities such as benchmarking, simulation and prototyping. Next, the software is developed by keeping in mind the risks. Finally, the next stage is planned.

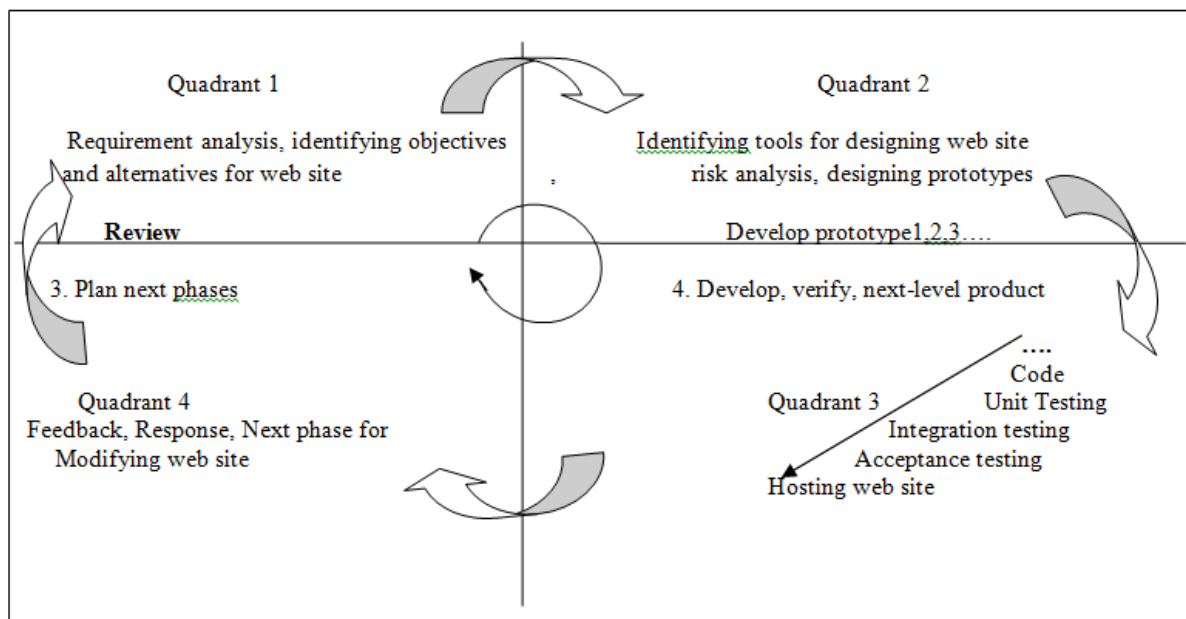


Fig.5.4 Conceptual Spiral Model

The next step is determined by remaining risks. For example, its performance or user-interface risks are considered more important than the program development risks. The next step may be evolutionary development that involves developing a more detailed prototype for resolving the risks. On the other hand, if the program development risks dominate and previous prototypes have resolved all the user interface and performance risks; the next step will follow

SPIRAL MODEL DESCRIPTION

The development spiral consists of four quadrants as shown in the figure above

Quadrant 1: Requirement analysis, identifying objectives and alternatives for web site.

Quadrant 2: Identifying tools for designing web site risk analysis, designing prototypes.

Quadrant 3: Coding, testing-unit, integration, acceptance and hosting web site.

Quadrant 4: Feedback, Response, Next phase for modifying web site.

Description

Quadrant 1: Requirement analysis, identifying objectives and alternatives for web site

Activities performed in this quadrant include:

- 1 Establish an understanding of the web site objectives—namely performance, functionality, and ability to accommodate change.
- 2 Investigate implementation alternatives—namely design, reuse, procure, and modify
- 3 Investigate constraints imposed on the alternatives—namely technology, cost, schedule, support, and risk.

Once the web sites objectives, alternatives, and constraints are understood.

Quadrant 2: Identifying tools for designing web site risk analysis, designing prototypes

Engineering activities performed in this quadrant select an alternative approach that best satisfies technical, technology, cost, schedule, support, and risk constraints. The focus here is on risk mitigation. Each alternative is investigated and prototyped to reduce the risk associated with the development decisions. Boehm describes these activities as follows:

This may involve prototyping, simulation, benchmarking, reference checking, administering user questionnaires, analytic modelling, or combinations of these and other risk resolution techniques. The option of writing specifications would be addressed but not exercised.” This brings us to Quadrant 3.

Quadrant 3: Coding, testing-unit, integration, acceptance and hosting web site

If a determination is made that, the previous prototyping efforts have resolved the activities to develop, verify, next-level product are performed. As a result, the basic “waterfall” approach may

be employed meaning concept of operations, design, development, integration, and test of the next system or product iteration. If appropriate, incremental development approaches may also be applicable.

Quadrant 4: Feedback, Response, Next phase for modifying web site

The spiral development model has one characteristic that is common to all models the need for advanced technical planning and multidisciplinary reviews at critical staging or control points. Each cycle of the model culminates with a technical review that assesses the status, progress, maturity, merits, risk, of development efforts to date.

Model features:

- Iterative development(prototyping) – with systematic controlled waterfall model
- Incremental model- covers risk management
- Helps for documentation preparation
- Easily identify risks occurred while designing web site
- Changes takes place by studying feedback, suggestions or opinion from end users

Tasks in Spiral model

- Determine the objectives, alternatives, and constraints on the new iteration
- Evaluate alternatives and identify to resolve risk issues
- Develop and verify the product for each iteration
- Plan the next iteration

Advantages

- It is incremental model
- It covers risk and helps for risk analysis

Disadvantages

- Restricts to certain projects
- It is complex model
- It requires skilled and knowledgeable experts.

Features of Spiral Model for Web Applications:

- Interaction with end user
- Accepting end user's response and reply

- Updating at application side for changing application e.g. colour, font, font, picture etc.
- Identification of end user (via user name, password etc.) for avoiding risk and keeping security
- Flexibility in web site by updating content, layout, colour, font, images frequently
- Achieves delight satisfaction because of applying spiral/repetitive process.

Requirements analysis is not the most exciting endeavour. However, it can help you to avoid having to redesign a site that is not meeting the expectations of a client and that is not meeting their business goals.

Generating a solid requirements document is a lot less costly and time consuming than going through repeated design and development iterations. In addition, you will also develop a deep understanding of the business your client is engaged in, which will pay dividends in the end.

Division of Work

- We took a modular approach while thinking about the project. It means that we broke our project into several modules or parts (which can be done independently) and then divide each part among team members.
- On a broad level, one distinction is - “front-end of all Operations”
- One important point is done while designing multiple pages by different members is that – the standard webpages module is provided to members to keep the basic theme for all page same.
- Because of that, the time and efforts are reduced while designing the webpages and uniformity also maintained.

6. TESTING

Our Project is based on web platform, so that we need to test it with the help of web testing. During the testing phase of our project, we perform flowing testing methods to verify that our system is operating correctly or not as mentioned in SRS document is at the initial phase of project requirement gathering also according to our client requirements

Each unit has been separately tested by the development team itself and all the input have been validated.

6.1 What is Web Testing?

Web Testing in simple terms is checking your web application for potential bugs before it has made live or before code is moved into the production environment.

During this stage issues such as that of web application security, the functioning of the site, its access to handicapped as well as regular users and its ability to handle traffic is checked.

Web Application Testing Checklist:

Some or all of the following testing types may be performed depending on your web testing requirements.

1. Functionality Testing:

This is used to check if your product is as per the specifications you intended for it as well as the functional requirements you charted out for it in your developmental documentation. Testing Activities Included:

Test all links in your webpages are working correctly and make sure there are no broken links. Links to be checked will include -

- Outgoing links
- Internal links
- Anchor Links

Test Forms are working as expected. This will include-

- Scripting checks on the form are working as expected. For example- if a user does not fill a mandatory field in a form an error message is shown.
- Check default values are being populated
- Once submitted, the data in the forms is submitted to a live database or is linked to a working email address
- Forms are optimally formatted for better readability

2. Usability testing:

Usability Testing has test vital part of our project. In which we test following part of our project

- **Application Navigation:** Menus, buttons or Links to different pages on your site should be easily visible and consistent on all webpages
- **Test the Content:** Content should be legible with no spelling or grammatical errors.
- **Images if present** should contain an "alt" text

1. Interface Testing:

We tested three areas of application here are - Application, Web and Database Server

- **Application:** Test requests are sent correctly to the Database and output at the client side is displayed correctly. Errors if any must be caught by the application and must be only shown to the administrator and not the end user.
- **Web Server:** Test Web server is handling all application requests without any service denial.
- **Database Server:** Make sure queries sent to the database give expected results.

Test system response when connection between the three layers (Application, Web and Database) cannot be established and appropriate message is shown to the end user.

2. Database Testing:

The backbone of our project is Database. Database is one critical component of any web application and stress must be laid to test it thoroughly.

We tested activities will include-

- Test if any errors are shown while executing queries
- Data Integrity is maintained while creating, updating or deleting data in database.
- Check response time of queries and fine-tune them if necessary.
- Test data retrieved from your database is shown accurately in your web application.

3. Compatibility testing

We developed our application, which is based on bootstrap framework.

Therefore, we need to test its compatibility.

Compatibility tests ensures that your web application displays correctly across different devices. In which we tested that whether our application is compatible or not-

- **Browser Compatibility Test:** Same website in different browsers will display differently. You need to test if your web application is being displayed correctly across browsers, JavaScript, AJAX and authentication is working fine. You may also check for Mobile Browser Compatibility.
- The rendering of web elements like buttons, text fields etc. changes with change in Operating System. Make sure your website works fine for various combination of **Operating systems** such as Windows, Linux, Mac and Browsers such as Firefox, Internet Explorer, Safari etc.

4. Security testing:

We test security of our application whether the entire users are secured or not and whether the security of these account is compromised. Security Testing is vital for our system that store sensitive customer information like credit cards. Testing Activities will include-

- Test unauthorized access to secure pages should not be permitted
- Restricted files should not be downloadable without appropriate access
- Check sessions are automatically killed after prolonged user inactivity
- On use of SSL certificates, website should re-direct to encrypted SSL pages.

Check whether User Security credentials are encrypted with MD5 Encryption or not

7. CONCLUSION

BookMyAppointment application is a web-based application designs to help in consumer scheduling with practices in their area. Based on the developed application, some of the advantages has been identified.

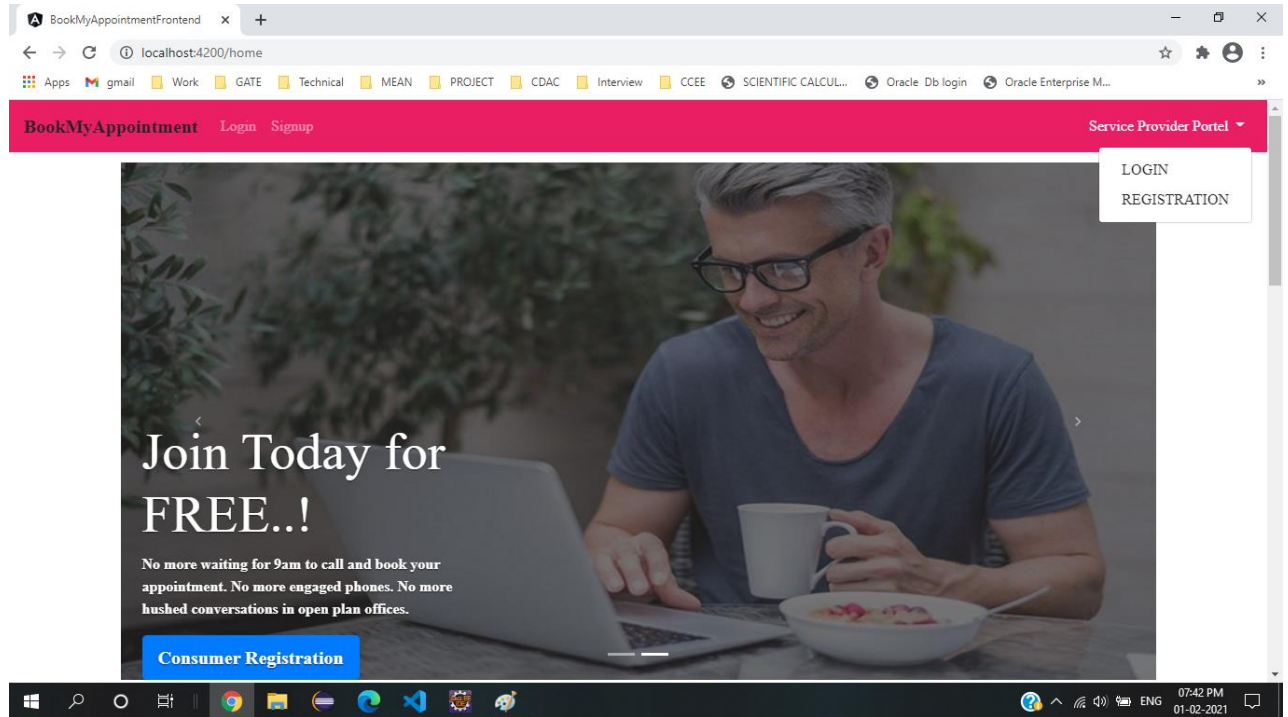
Consumers can easily book their appointment with the system they wanted avoiding a long queue at the particular Location like clinic.

8. REFERENCES

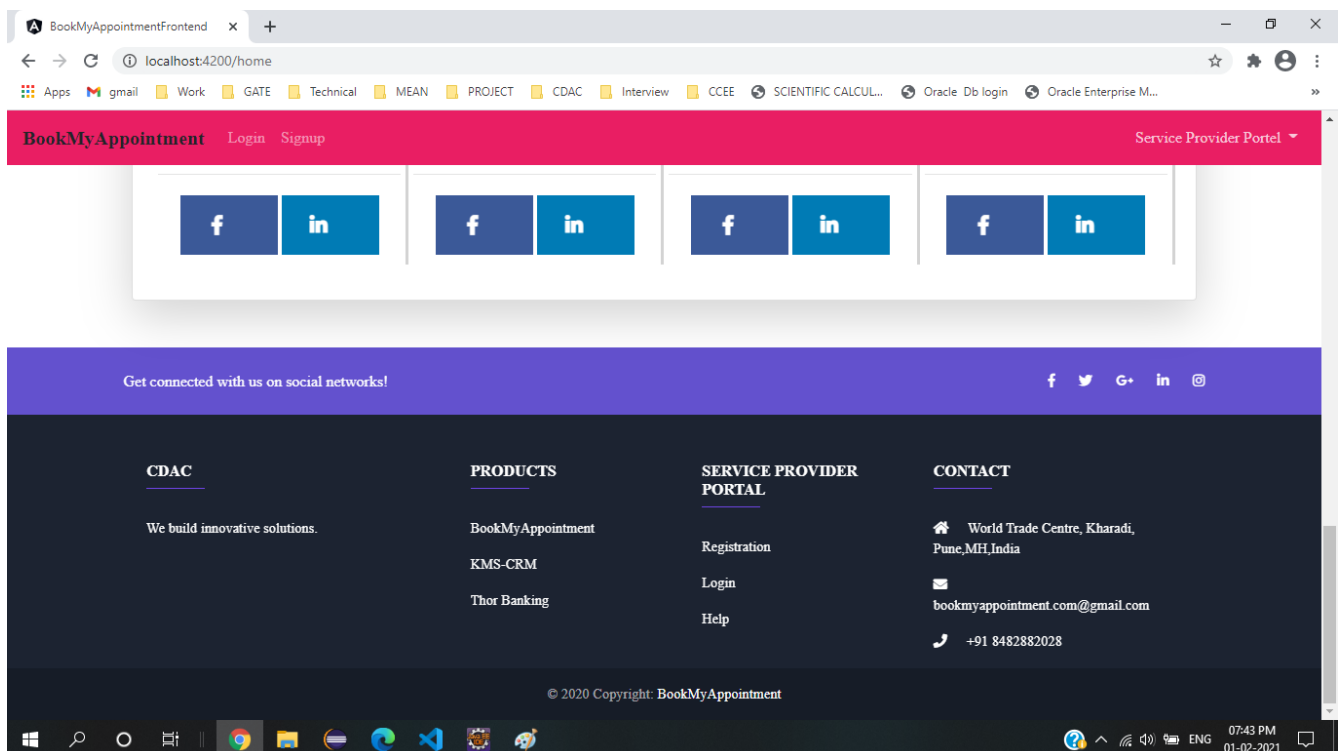
- [1] <https://www.myappointments.com/>
- [2] <https://www.myappointment.co.za/>
- [3] <https://nodejs.org/en/docs/>
- [4] <https://getbootstrap.com/docs/4.1/getting-started/introduction/>
- [5] <https://angular.io/docs>
- [6] <https://docs.spring.io/spring-framework/docs/current/reference/html/>

9. PROJECT SCREENSHOTS

- Home page



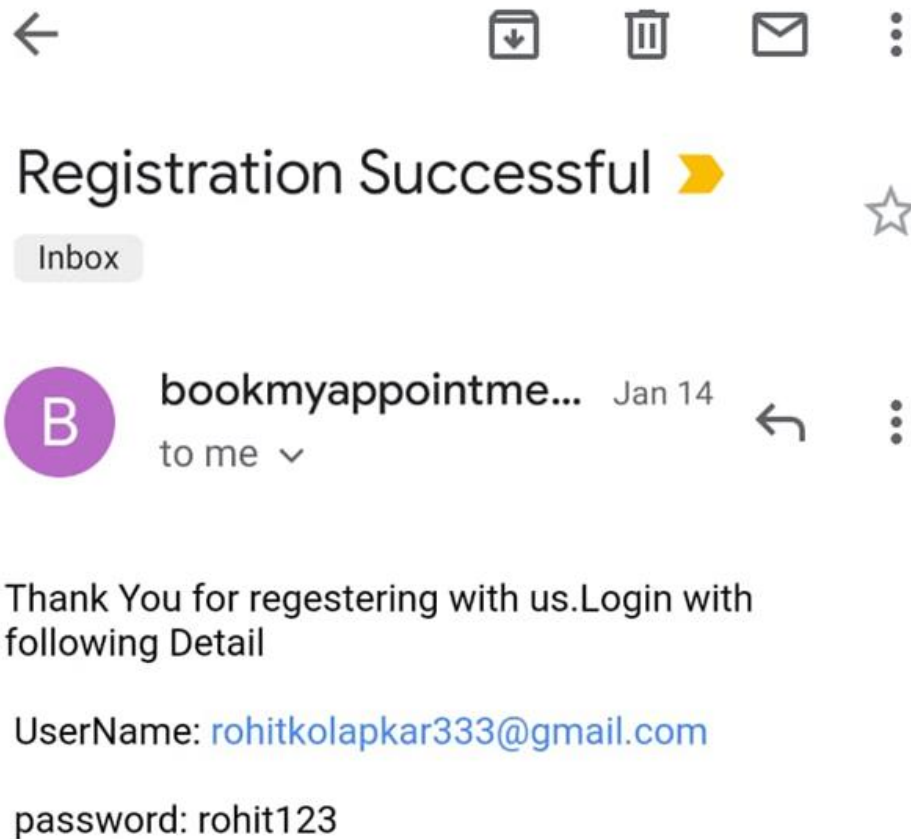
- Footer



- Consumer Registration Page

The screenshot shows a web browser window with the address bar displaying 'localhost:4200/c/signup'. The page has a pink header with 'BookMyAppointment' and links for 'Login' and 'Signup'. A 'Service Provider Portal' dropdown is on the right. The main content area is titled 'Consumer Sign Up' and contains a registration form. The form fields are: 'Name' (filled with 'Rohit Kolapkar'), 'Password' (filled with '*****'), 'Phone No' (filled with '9175421375'), and 'Email' (filled with 'rohitkolapkar333@gmail.com'). Below the password field is a note: 'Add another word or two. Uncommon words are better.' A green 'Register' button is at the bottom of the form. The browser's taskbar at the bottom shows various application icons and the system clock indicating 07:45 PM on 01-02-2021.

- Consumer Registration Successful Email



- Service Provider Registration Page

BookMyAppointmentFrontend x +

localhost:4200/sp/signup

Apps gmail Work GATE Technical MEAN PROJECT CDAC Interview CCEE SCIENTIFIC CALCUL... Oracle Db login Oracle Enterprise M...

BookMyAppointment Login Signup Service Provider Portal

Service Provider Registration

Business Name *

Ayush Clinic

Name *

Dr. Sachin Gore

Business Email *

ayushclinic@gmail.com

Phone Number *

8800880088

Password *

Business Category *

HEALTH

City *

Aurangabad

Business Address *

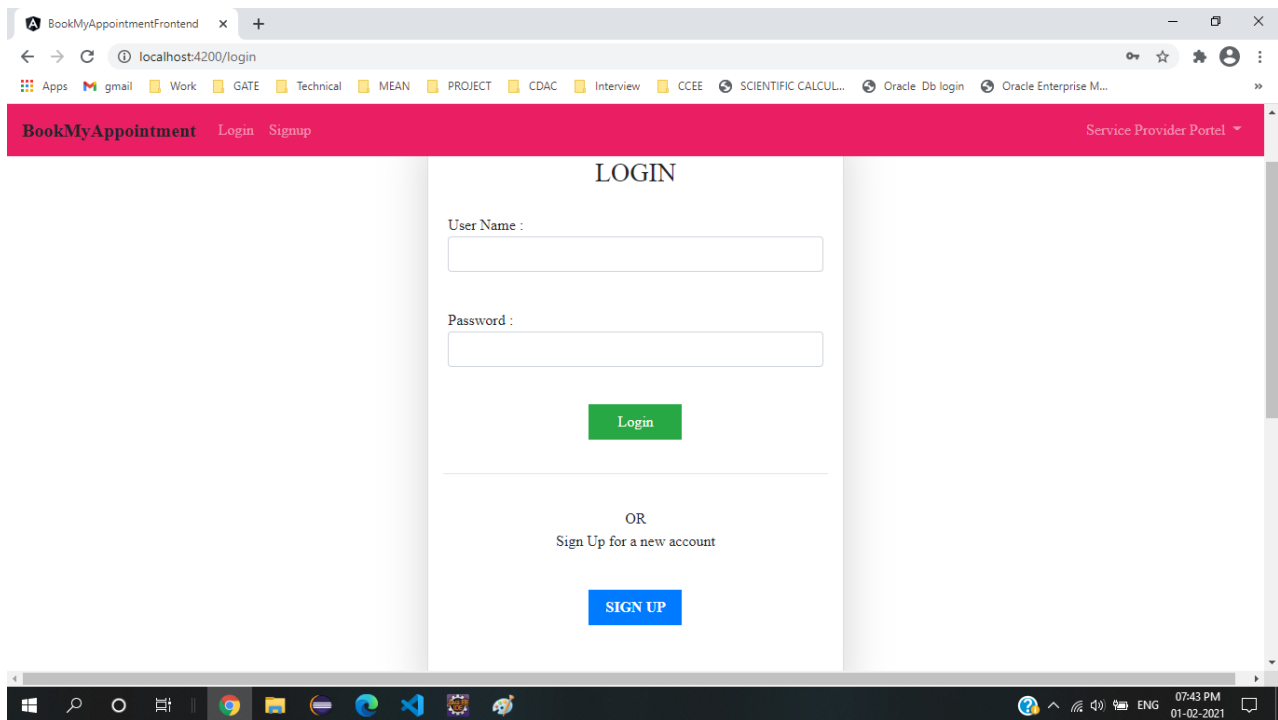
Samarth Nagar, Aurangabad. 431001

REGISTER

- Service Provider Registration Successful Email

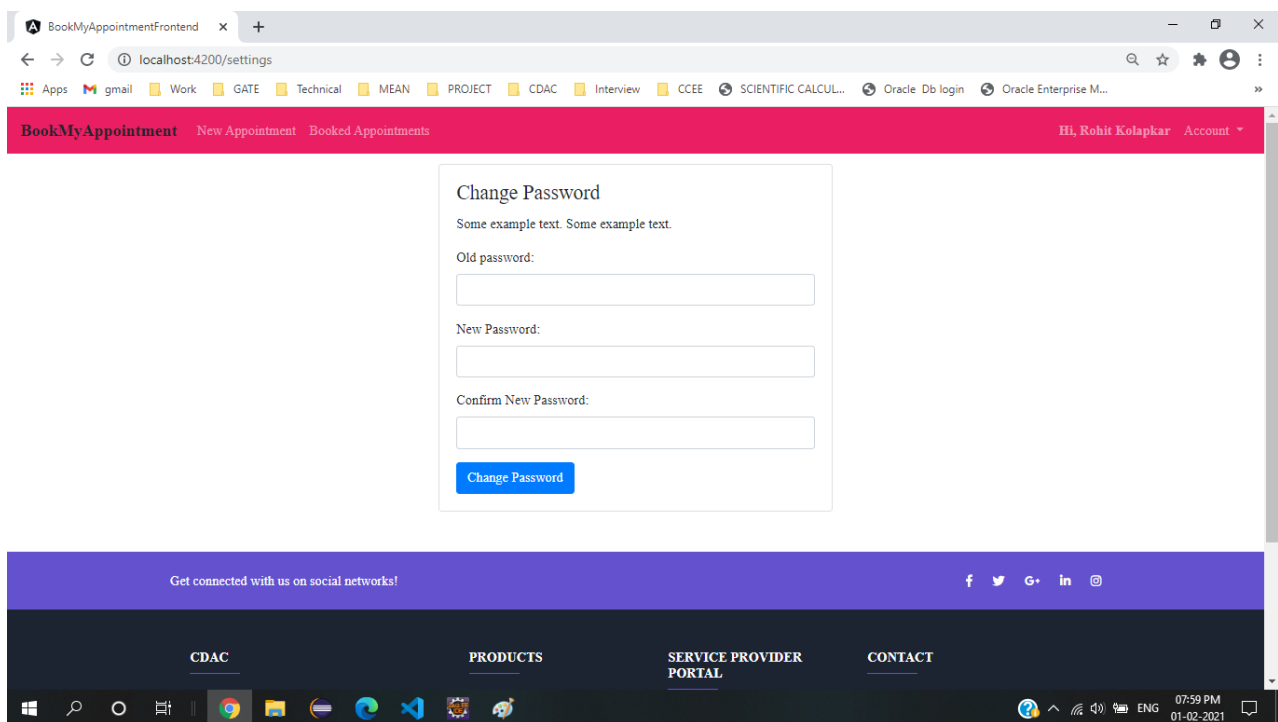


- Login Page



The screenshot shows a web browser window with the address bar displaying 'localhost:4200/login'. The page has a pink header with 'BookMyAppointment' on the left, 'Login Signup' in the center, and 'Service Provider Portal' on the right. The main content area is titled 'LOGIN' and contains a form with 'User Name' and 'Password' fields, a green 'Login' button, and a 'SIGN UP' button below an 'OR Sign Up for a new account' section. The browser's taskbar at the bottom shows various application icons and the system clock indicating 07:43 PM on 01-02-2021.

- Forgot Password



The screenshot shows a web browser window with the address bar displaying 'localhost:4200/settings'. The page has a pink header with 'BookMyAppointment' on the left, 'New Appointment Booked Appointments' in the center, and 'Hi, Rohit Kolapkar Account' on the right. The main content area is titled 'Change Password' and contains a form with 'Old password:', 'New Password:', and 'Confirm New Password:' fields, and a blue 'Change Password' button. Below the form is a purple banner with 'Get connected with us on social networks!' and social media icons. The footer has links for 'CDAC', 'PRODUCTS', 'SERVICE PROVIDER PORTAL', and 'CONTACT'. The browser's taskbar at the bottom shows various application icons and the system clock indicating 07:59 PM on 01-02-2021.

- Consumer searching for Service Provider

BookMyAppointment Frontend

localhost4200/c/home

Apps gmail Work GATE Technical MEAN PROJECT CDAC Interview CCE SCIENTIFIC CALCUL... Oracle Db login Oracle Enterprise M...

BookMyAppointment New Appointment Booked Appointments Hi, Rohit Kolapkar Account

Book an Appointment

Select City * --Select City--

Select Category * --Select Category--

BEAUTY
HEALTH
FITNESS
TUTORS
HOME
OTHERS

Search

Get connected with us on social networks!

f t G+ in @

CDAC
We build innovative solutions.

PRODUCTS
BookMyAppointment
KMS-CRM
Thor Banking

SERVICE PROVIDER PORTAL
Registration
Login
Help

CONTACT
World Trade Centre, Kharadi, Pune,MH,India
bookmyappointment.com@gmail.com
+91 8482882028

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- Search Result

BookMyAppointment Frontend

localhost4200/c/home

Apps gmail Work GATE Technical MEAN PROJECT CDAC Interview CCE SCIENTIFIC CALCUL... Oracle Db login Oracle Enterprise M...

BookMyAppointment New Appointment Booked Appointments Hi, Rohit Kolapkar Account

Book an Appointment

Select City * Beed

Select Category * HEALTH

Search

Ayush Ayurvedic Clinic Nexa Complex, Shunagar, Beed 431122 7709293123 [Book an Appointment](#)

Mauli Dental Clinic Sai Complex, Beed 431122 8888888887 [Book an Appointment](#)

NutiToo Diet Neha Complex Beed 431122 8888888888 [Book an Appointment](#)

- Appointment Booking

The screenshot shows a web browser window with the URL `localhost:4200/c/book?spid=4`. The page has a pink header with the text "BookMyAppointment" and navigation links "New Appointment" and "Booked Appointments". The user is logged in as "Hi, Rohit Kolapkar" with an "Account" dropdown. The main content area is titled "Book an Appointment" and contains the following fields:

- Pick a date***: 01-02-2021
- Pick a time***: 10:30 AM
- Select a Service ***: Root Canal
- Service Duration ***: 01:30:00
- Service Price ***: 4000

There are two buttons: "Check Availability" and "Confirm Booking". A green message box states: "Chosen Date-Time slot is available. Proceed for Booking". The footer includes social media links and a navigation bar with "CDAC", "PRODUCTS", "SERVICE PROVIDER", and "CONTACT".

- Time Slot is not available

The screenshot shows the same web browser window with the URL `localhost:4200/c/book?spid=1`. The page layout is identical to the previous screenshot. The form fields are:

- Pick a date***: 16-01-2021
- Pick a time***: 01:00 PM
- Select a Service ***: Hair cut
- Service Duration ***: 00:30:00
- Service Price ***: 200

The "Check Availability" button is visible. A yellow message box states: "Chosen Date-Time slot is not available. Select different Date-Time slot". The footer and navigation bar are the same as in the previous screenshot.

- Booked Appointment List (Consumer)

BookMyAppointment New Appointment Booked Appointments Hi, Rohit Kolapkar Account

Your Appointments

#	With Whom	Where	For What	Date-Time
1	Mauli Dental Clinic	Sai Complex, Beed 431122	Root Canal	01/02/2021 10:30:00
2	Sai Mens Parlour	Javeri Galli, Dhondipura, Beed	Hair cut	16/01/2021 01:30:00
3	Sai Mens Parlour	Javeri Galli, Dhondipura, Beed	Hair cut	16/01/2021 10:00:00
4	Glamorous Beauty Parlour	Shahu nagar, canol road, beed	Full Body Wax	16/01/2021 01:00:00
5	Sai Mens Parlour	Javeri Galli, Dhondipura, Beed	Body Massage	15/01/2021 02:00:00

« Previous **1** 2 Next »

Get connected with us on social networks! [f](#) [t](#) [G+](#) [in](#) [@](#)

[CDAC](#) [PRODUCTS](#) [SERVICE PROVIDER PORTAL](#) [CONTACT](#)

- Add a Service (Service Provider)

BookMyAppointment Today's Appointments All Appointments Services Hi, Sai Shinde Account

Add a Service

Service Name* Service Duration* Service Price*

List of Services

#	Service Name	Service Duration	Service Price
1	Hair cut	00:30:00	200
2	Body Massage	01:00:00	500
3	Hair wash	00:30:00	200

« Previous **1** Next »