Andreas Eleftheriades

Index

1 ANALYSIS

1.1 Introduction:

For my A level Computer science project, I have decided to do it to help my local barber/hair salon, because I feel it may bring a change to their business operation, that's if I am able to fully get it setup online, but if i can't it would theoretically be a fully functional web-based booking system for customers and the owner ,and employees, of "mila unisex hair salon".

"Since the beginning and rapid growth of the Internet in the past years more and more tasks and Functions are done online using computers and mobile devices. One of these tasks is making a reservation or booking for different services.
Many Booking systems exist offered by various software developers and businesses and the need for them are unlimited. Example are restaurants, hospitals barber shops and many more.
Therefore for my project I have decide to help my local Barber Shop by the name "Mila unisex Hair Salon" to integrate into this evolving technological age."[1]

I foresee the finished online booking system being an attachment to their main webpage where the user/customer gets the choice to book an appointment or view their appointments as well as the admin login to view their upcoming appointments and be given the choice to edit services
The website needs to be well designed and run smoothly, increasing the user engagement within the application, something which is very important considering it a booking system

An online booking system is a piece of software which allows a potential customer to book and pay (for a future development in my project) for an activity or service through your website.
It is stated (from bookinglive.com) that "The internet has fundamentally altered every aspect of running a business.The days are gone in which customers would pick up the phone, you pull out our diary and pick a date which worked for both parties…" To put it simply, we've entered an age of overwhelming simplicity for the customer in order to increase performance.

1.1.1 Description of Organisation and introduction to client:

Mila Unisex hair salon are a hairdresser and barber shop for both men and women, it is situated in Whitton high street (Location 111 Nelson Road, Twickenham TW2 7AZ, United Kingdom). Mila's unisex hair salon covers a wide range of hair grooming styling to fit the needs of both men and women. The salon opens between 9am to 7pm from Monday to Friday, 9am to 6pm on a Saturday and from 10 am to 6pm on a Sunday. The business has 3 employees one of them is the manager/owner of the business, Milano Nouwlski and her two employees Chafick Chaniba and Barbara Rys'. Due to it being a small business they accept walk-ins and phone calls.The business also has a website of its own in order for customers to look up information about the salon and the services it provides.

---

[1] https://www.theseus.fi/bitstream/handle/10024/97700/Juuso_Kujanpaa.pdf?sequence=1&isAllowed=y

1.1.2 Description of how the client wants the program to work:

Mila Nouwlski would like an online booking system in order to be more innovative and to keep up with this new age of online lifestyle, to supply good customer service and to minimize her workload.
Mila would like a system that will hopefully replace customer walk-ins or call-ins to the business phone. She would also like to eliminate her diary, as it becomes difficult to use and understand due to the constant editing, collecting data and adding of customer details. Mila would like a program that is an online booking system, which will allow the customers to enter their credit/debit card details to pay for the service (however i do believe is a bad idea as it may be hard to refund the money if they cancel). This system must be simple, and easy for her customers to understand and use. She would like the user to be able to fill in their names, phone number and to choose from a menu - which will contain a list of services - and the date that they want to book the appointment for. It must finally allow her and her employees to login and view and edit appointments as well as be able to change the list of services.

I foresee a system that will be easy and simple to use for both the employees and customers where customers can create a booking and view it. Where the employees get to login and view what appointments they have in that day and be to change the menu of services

1.2 Research

For my research I first, after introducing myself to the client, asked them what was the reason for having an online booking system for their customers and employees to use to create and view hairdressing appointments, in order for me to get a better view and ideas in the development of the code. Then I send a questionnaire to the owner of the business in order to ask ,some basic question, about how the business operates. I also question around how the booking system should be design as well as the current system(done through an email). I then googled about hair salons in order for me to get a better picture of how hair salons deal with their customers and operate, so I can see how the booking system should be designed and function. I then research about how a booking system works which then linked me with the use of a database ,which as usual, I google about how a database is constructed and functions within the booking system

1.2.1 Questionnaire:

1. How does the current system of booking customers in for a service work? (full detailed description)
2. What equipment do you use to help you book your customers in for a hair service?
3. Where do you record or store your bookings details for your customers?
4. What information do you collect from each customer when you book them in for a hair service?
5. How many people do the booking of customers at your shop?
6. What are the drawbacks of your system to booking in customers?
7. What are the advantages of your system to booking in customer?
8. What features would you like to see in the programme to help you with the bookings/webpage?
9. Which existing features do you find the most useful?

Andreas Eleftheriades
to milanonouwlski
5:17 PM (0 minutes ago)

1 of 193

Hi, Mila

Its Andreas, WE talked the other day about the creation of an online booking system for your Business. I have a few questions that i need you to try and answer to help me get an idea around how i should build your booking system.

1. How does the current system of booking customers in for a service work? (full detailed description)
2. What equipment do you use to help you book your customers in for a hair service?
3. Where do you record or store your bookings details for your customers?
4. What information do you collect from each customer when you book them in for a hair service?
5. How many people do the booking of customers at your shop?
6. What are the drawbacks of your system to booking in customers?
7. What are the advantages of your system to booking in customer?
8. What features would you like to see in the programme to help you with the bookings/webpage?
9. Which existing features do you find the most useful?

Thank You

◄ Reply   ➡ Forward

1.2.2 Answer to Questionnaire:

Milano Nouwlski
to me

5:47 PM (4 minutes ago)

Dear Andreas

Thank you for writing to me, I do remember you and i would be more than happy to answer your questions.

1. There are two ways how a customer can book an hair appointment. One way is, a customer will either walk into the store, if they just want a simple hair cut this will be normal if they are kids or men. They will then have to sit and wait for as soon as me or a employee is available to cut their hair and it will normally take 45 minutes but I always book for an hour in case of a problem or we loose track of time. The other way is, a customer will make a phone call , or message me and then i will call, and they will ask what they want and i will ask what day and time is best. If they are having a simple cut, wash and cut or wash cut and blow, for the ladies then i will book them for a 60 minute hair appointment . But if they want a highlight and dyeing I will still book them in for 60 minutes but it will take up to two hours as it needs to dry. all booking is done in my dairy which can sometimes get messy because of cancellations.

2. I use my dairy, phone and computer

3. I record my in my diary and take pictures of it to store on my computer in case my diary goes missing and i cant remember what appointments I have.

4. First I ask for what service they would like e.g dry cut, highlighting. Then, what day and time they would like to come for their appointment and normally due to my business only having about 6 appointments a day, they can choose anytime as there are 3 main hairdressers (including me) and another 3 part time employees . Then i will ask for their names and phone number for conformation and to call and remind them . All this information will be stored in my diary.

5. Around 6 people a day

6. It can get really messy and isn't very effective

7. Its quick to do and easy to access

8. I like an online booking system in order to be more innovative and to keep up with this new age of online lifestyle, to supply good customer service and to minimise my workload. I would like a system that will hopefully replace customer walk-ins or call-ins to the business phone. I also would like to eliminate my diary and the system can take customers card details to pay for their service. This system must be simple, and easy for the customers to understand and use like a menu to choose from It must finally allow me and my employees to login and view and edit appointments as well as be able to change the list of services.

9. The ease with creating and reading appointments

Sincerely Mila

| That's great, thank you. | Thank you for the information. | What do you think? |

Dear Andreas
Thank you for writing to me, I do remember you and i would be more than happy to answer your questions.

1. There are two ways how a customer can book an hair appointment. One way is, a customer will either walk into the store, if they just want a simple hair cut this will be normal if they are kids or men. They will then have to sit and wait for as soon as me or a employee is available to cut their hair and it will normally take 45 minutes but I always book for an hour in case of a problem or we lose track of time. The other way is, a customer will make a phone call , or message me and then i will call, and they will ask what they want and i will ask what day and time is best. If they are having a simple cut, wash and cut or wash cut and blow, for the ladies then i will book them for a 60 minute hair appointment . But if they want a highlight and dyeing I will still book them in for 60 minutes but it will take up to two hours as it needs to dry. all booking is done in my dairy which can sometimes get messy because of cancellations.

2. I use my dairy, phone and computer

3. I record my in my diary and take pictures of it to store on my computer in case my diary goes missing and i can't remember what appointments I have.

4. First I ask for what service they would like e.g dry cut, highlighting. Then, what day and time they would like to come for their appointment and normally due to my business only having about 6 appointments a day, they can choose anytime as there are 3 main hairdressers (including me) and another 3 part time employees . Then i

will ask for their names and phone number for conformation and to call and remind them . All this information will be stored in my diary.

5. Around 6 people a day

6. It can get really messy and isn't very effective

7. Its quick to do and easy to access

8. I like an online booking system in order to be more innovative and to keep up with this new age of online lifestyle, to supply good customer service and to minimise my workload. I would like a system that will hopefully replace customer walk-ins or call-ins to the business phone. I also would like to eliminate my diary and the system can take customers card details to pay for their service. This system must be simple, and easy for the customers to understand and use like a menu to choose from It must finally allow me and my employees to login and view and edit appointments as well as be able to change the list of services.

9. The ease with creating and reading appointments

Sincerely Mila

1.2.3 A simplistic Table showing some services offered by the business with estimated times?:

Gents:

Service:	Estimated times(minutes):
Dry cut	20 - 45
Wet shave	25 - 45
Senior	25 - 45
Children's cut(up to 12 years)	25 - 45
Wash and cut	30 - 50
Beard trim	15 - 45

Ladies:

Service:	Estimated times(minutes)

Dry cut:
    short hair
    medium to long hair
    extra-long hair
	20 - 45
	25 - 45
	25 - 45

Wash cut:
    short hair
    medium to long hair
    extra-long hair
	25 - 45
	30 - 45
	30 - 45

Wash, cut & blow:
    short hair
    medium to long hair
    extra-long hair
	40 - 70
	50 - 80
	70 - 90

Colouring:
    short hair
    medium to long hair
    long hair
    Extra long
	110 - 130
	120 - 140
	120 - 180

Root highlights	180

Full head highlights:
        short hair
        medium to long hair
        long hair
        Extra long
	180 - 200
	180 - 200
	240 - 300

Half head highlights:
    short hair
    medium to long hair
    long hair
    Extra long
	120
	120
	130

However, The services like Colouring and highlights only take about 45 to apply to the customers and the remainder of the time is the customers sitting there and waiting for it to dry or sittel. The owner explained that she only books customers in intervals of 60 minutes in her diary.

1.2.4 The background to how a barber and hairdresser shop works? (sourced from google):

I believe that learning about the background of a barber shop will help me figure out how i should design the booking system for both the barbers and their customers, by not making it to difficult or too simplistic. But mainly it must give the sense of a booking system for a barber shop. Therefore i looked at a website giving me a basic understanding.

In a nutshell, a hairdressers or barbers job is to make customers look amazing by advising, cutting and styling their hair.Most hairdressers are based at a salon where the hours will vary but are usually between 9am and 6pm. Hairdresser jobs often require working six days a week;

1.2.5 Databases

I need to be able to store key data in a central accessible location. Therefore, the database software I will be using is *"SQL Server Management Studio (SSMS), an integrated environment to manage a SQL Server infrastructure. It provides a user interface and a group of tools with rich script editors that interact with SQL Server.""[2]* I will be using it to store all data for admin information to customer bookings.

A database is a systematic collection of data making it easy to handle large amounts of data. I will be using a relational database management system which enables the users to access the database, change data and add data. Additionally relational DBMS define database relationships in forms of tables known as relations it doesn't support many to many relationships it usually have predefined data types that it can support it is also the most popular DBMS. The Systems that use relational database management systems include mysql and microsoft sql server (which I have chosen) . It also helps control access to the database by certain users. .In the example of this project the database will store information about the company ,which i will be using to store the admins username, password and details. The database will also hold customer details and their appointment details like their names, phone number, email address, booking time , booking date , service choice and if it's active in order for the admin to deactivate the appointment in case the customer cancels. It will also hold passed and canceled appointments as well. Finally the database will hold data about the active and inactive services offered by the business to the customer and admins, it will hold data like;service choice, service name, gender to whom the service is for, created by, modified by, effective date, enabled, price, date created.

SQL or Structured Query language is the standard language for dealing with relational databases which will help me to update, insert and read database records from my database by querying it. The advantage of SQL is that it helps in optimising and maintenance of databases.

"SQL Server Management Studio (SSMS) is a software application that is used for configuring, managing, and administering all components within Microsoft SQL Server. These tools both includes script editors and graphical tools which work with objects and features of the server. A central feature of SSMS is the Object Explorer, which allows the user to browse, select, and act upon any of the objects within the server. It also

---

[2] https://searchsqlserver.techtarget.com/definition/Microsoft-SQL-Server-Management-Studio-SSMS

shipped a separate Express edition that could be freely downloaded, however recent versions of SSMS are fully capable of connecting to and manage any SQL Server Express instance. Microsoft also incorporated backwards compatibility for older versions of SQL Server thus allowing a newer version of SSMS to connect to older versions of SQL Server instances."[3]

"A database is a collection of information that is organized so that it can be easily accessed, managed and updated. Data is organized into rows, columns and tables, and it is indexed to make it easier to find relevant information. Data gets updated, expanded and deleted as new information is added. Databases process workloads to create and update themselves, querying the data they contain and running applications against it.Computer databases typically contain aggregations of data records or files, such as sales transactions, product catalogs and inventories, and customer profiles.[4] "

"Typically, a database manager provides users with the ability to control read/write access, specify report generation and analyze usage. Some databases offer ACID (atomicity, consistency, isolation and durability) compliance to guarantee that data is consistent and that transactions are complete.

Databases are prevalent in large mainframe systems, but are also present in smaller distributed workstations and midrange systems, such as IBM's AS/400 and personal computers. [5]"

The IDE used for programming the database is SQL Server Management Studio as it is an integrated environment for managing any SQL infrastructure, from SQL Server to Azure SQL Database. SSMS provides tools to configure, monitor, and administer instances of SQL. I used SSMS to deploy, monitor, and upgrade the data-tier components for future events. as well as build queries and scripts.

1.2.6 Web pages design:

For the web page design and development of the Booking system I have research and decided to use Bootstrap 4 and the use of a master page to keep a constant and simplistic look for the page's frames.

Bootstrap is a framework that helps you make responsive websites. Responsive means that when the size of the window or screen changes the layout of the website still looks good. To incorporate bootstrap there are two things that one can do. One is to import the bootstrap into my code or download a simple project
To import bootstrap I can either download it and link it locally to my code or just link it from the internet
The thing that makes bootstrap responsive is it's 12 column grid.

Basically bootstrap divides a web page into rows and columns each row is divide into 12 columns and an element can take up any number of these columns, also one can have multiple elements in one row, an element can take up all 12 or just some. No matter the screen size it will be broken up into 12 columns. Therefore i can specify how many columns i want for each element on a small, medium etc. screen. I can also just take up six columns on a middle screen and bootstrap will resize itself appropriately for the smaller and larger screens. E.g. Within a <div> class = "col-md-6">.

Finally bootstrap has many classes built into it like forms and Jumbotrons so I don't have to create everything from scratch, which I will be using throughout the development of the front-end design page

---

[3] https://en.wikipedia.org/wiki/SQL_Server_Management_Studio
[4] https://en.wikipedia.org/wiki/SQL_Server_Management_Studio
[5] https://searchsqlserver.techtarget.com/definition/database

Information about Bootstrap

"Bootstrap's layout and theming framework, created by Twitter, uses CSS3 to provide responsive design, which means layouts can dynamically adapt to different browser window sizes.

Bootstrap is a free front-end framework for faster and easier web development. Bootstrap includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins. Bootstrap also gives you the ability to easily create responsive designs. So in future development of the booking system will be easier and more effective to make quick changers and improvements especially in the design field."[6]

Why Use Bootstrap?

The advantages of Bootstrap is:

● **Easy to use:** Anybody with just basic knowledge of HTML and CSS can start using Bootstrap
● **Responsive features:** Bootstrap's responsive CSS adjusts to phones, tablets, and desktops
● **Mobile-first approach:** In Bootstrap, mobile-first styles are part of the core framework
● **Browser compatibility:** Bootstrap 4 is compatible with all modern browsers (Chrome, Firefox, Internet Explorer 10+, Edge, Safari, and Opera)

Creating website With Bootstrap 4

1. Add the HTML5 doctype
Bootstrap 4 uses HTML elements and CSS properties that require the HTML5 doctype.
Always include the HTML5 doctype at the beginning of the page, along with the lang attribute and the correct character set:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
  </head>
</html>
```

2. Bootstrap 4 is mobile-first
Bootstrap 4 is designed to be responsive to mobile devices. Mobile-first styles are part of the core framework.
To ensure proper rendering and touch zooming, add the following <meta> tag inside the <head> element:

```
<meta name="viewport" content="width=device-width, initial-scale=1">
```

The width=device-width part sets the width of the page to follow the screen-width of the device (which will vary depending on the device).
The initial-scale=1 part sets the initial zoom level when the page is first loaded by the browser.

3. Containers
Bootstrap 4 also requires a containing element to wrap site contents.
There are two container classes to choose from:
1. The .container class provides a responsive **fixed width container**
2. The .container-fluid class provides a **full width container**, spanning the entire width of the viewport[7]

---

[6]https://www.w3schools.com/bootstrap4/bootstrap_get_started.asp
[7] https://www.w3schools.com/bootstrap4/bootstrap_get_started.asp

Header Region
Home | Get Started | Learn | Etc.

Page-Specific Content
(Implemented in the master page as a ContentPlaceHolder control)

Advertisement

Recommended Books

Footer Region
Advertise | About | Privacy
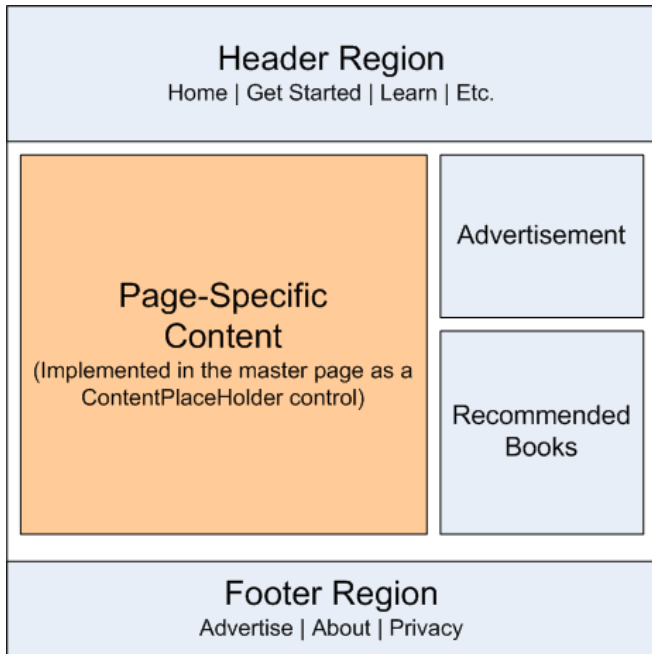
This is the my desired blueprint design of the booking system

1.2.7 The site masters of the program:

In programming and designing the Front end of the the booking system, as i was using ASP.Net, I learned about site masters/master pages which allowed me to create a persistent look and condition for each of my pagers. [8]

Master page is defined as the markup that is common among all content pages as well as regions that are customizable on a content page-by-content page basis.[9]

So that the users and admin(s) can more from page to page quicker.

Some of the advantages of have a master page is to:

1. Create a consistent side-wide page layout
2. Ease with which the sites design can be changed thus the site becomes faster and simplers for editing

By having a site master/page master it really help me keep the design and flow from one page to the next, constant and clean. Further it allows me to reuse code
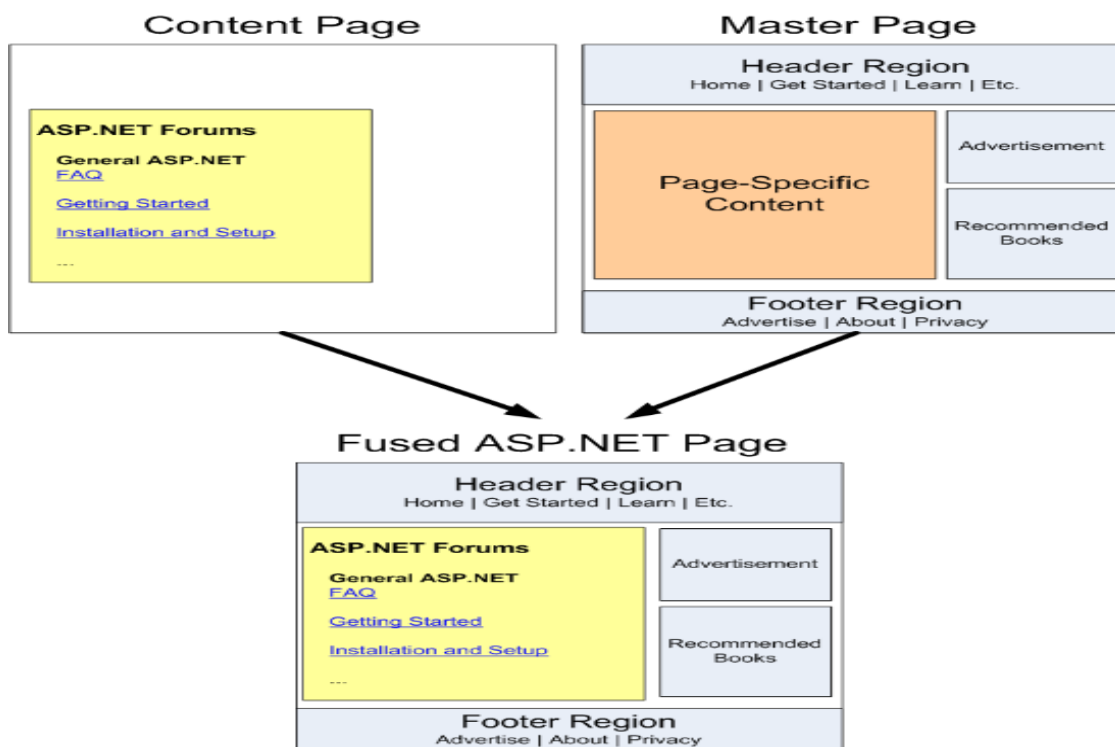
This is how I intend to design my webpages for the booking system in order to maintain simplicity and make it easier for future improvements

1.3 Booking System Information:

The booking system information section will looks at the current booking system of the Business, Problems in the current system and what the new booking system should be designed and functions.

---

[8] http://www-db.deis.unibo.it/courses/TW/DOCS/w3schools/aspnet/aspnet_masterpages.asp.html

[9] https://docs.microsoft.com/en-us/aspnet/web-forms/overview/older-versions-getting-started/master-pages/creating-a-site-wide-layout-using-master-pages-cs

1.3.1 Booking in current system:

Currently the booking system that Milano Nouwlski uses, works as follows: A customer will walk into the shop for a simple hair cut or call to book for a specific time., but if they want to have a dyeing or a few hours long hair appointment to fully fit their needs they will have to book by calling the business landline and get a quote, the owner will then check her diary book and ask which date that they want to come in for their hair service. Then she will ask what hair service they would like so she can figure out how long it will take her to edit their hair and fine the best time slot to put them in. Then the owner will then tell them, if any, the available times in which the customer can choose. Finally the customer will choose the time slot in which they would arrive for their service and the owner will then save their slot in her diary - this obviously can take a while for the worker or Milano Nouwlski to fully sort out and the diary itself can be a problem whether there is not enough space to fill out or the details or more.

1.3.2 Problems in current booking system:

In aspects of usability and simplicity, there are multiple issues in the way that booking is done in the current offline booking system. The issues are the general problems with offline booking systems that barbers have to deal with:

1. Shuffling bookings around is time consuming
"It's normal to have customers change their booking around last minute or cancel.
Without an online booking system, one has to adjust one's resources to accommodate the change (for example, shuffle staff schedules), and can't apply a cancellation policy to make sure there is compensated for that loss of business.
Also, if that needs to change your availability, an online booking system will allow you to update it immediately, so that people will know that they can't book during that time. Things happen, and bookings need to be rescheduled. An online booking system just makes it that much easier."[10]

2. Overbooking is a constant risk
"Since a hair salon relies on resources to run the business, it is easy to accidentally overbook a particular resource. A resource is something with limited availability, and is required to run a activity. It can be a person or a equipment. Without an online booking system, the business runs the risk of overbooking without the resources to deliver. It can be difficult to adjust availability every time a appointment is booked. The risk is the booking out of one resource at the same time – and then stuck with the admin worrying of adjusting it all. With an online booking system that allows the management of resources, it's done automatically, so that if your resource is scheduled for a particular session, availability is blocked for the other sessions during that time period."[11]

3. Owner can't oversee the business when they are out
"If someone makes a booking while you're out, you can't immediately see everything you need to know about that booking. Either you wait it out, or someone back at the office needs to alert you to it and pass on all the details. This is especially tough if you have to do a lot of work on the go. With an online booking system that allows access on mobile devices, you can check availabilities and bookings wherever you are – as long as you have internet access."[12]

---

[10] https://www.rezdy.com/blog/how-to-solve-your-biggest-problems-with-an-online-booking-system/
[11] https://www.rezdy.com/blog/how-to-solve-your-biggest-problems-with-an-online-booking-system/
[12] https://www.rezdy.com/blog/how-to-solve-your-biggest-problems-with-an-online-booking-system/

4. Customers can't self-serve

"Without an online booking system, reserving a booking is a manual process. This means that while the business in closed for the day, customers can't self-serve.But if there is an automated booking system, customers can book (and hopefully pay) at their own convenience. This maximises your potential revenue and also reduces the human intervention needed.

The process for accepting online bookings is central to the ability to run and control a business. If the process is a good one, then the owner can be confident that they are as efficient as can be. If not, then it can cause more problems than it's worth.

1.4 The new booking system

1.4.1 Why build a new booking system

The idea for the new booking system was brought in mainly because of the in-efficiency issues that the current system was having. The most important issue was that users were able to make bookings outside the allowed timeframe. In addition, the idea behind the current system was considered outdated and needed more resources. Teachers also wanted more features automated. From the users' point of view, the user interface needed to be updated to match the standards of modern web design.

1.4.2 Design principles

The development for the new booking system needs to be simplistic from the beginning but still keeping in mind the basic functionalities of other booking systems and keeping in mind that the problems of the current system will not be repeated. The key characteristics for the new system were considered as efficiency, usability and automation. To accomplish a modern design which satisfies the requirements and functionalities what is expected at the moment, mobile-first and minimalist design principles were considered.

1.4.3 Improved System:

- Due to the availability of the internet this service can be reach by more customers.
- IT saves both the user and the shop time when creating bookings.
- It is easier and more efficient for storing and choosing service.
- It's more secure and easier to trace back for the admin in case the admin is in need of proof or validation of past data stored.

1.5 Barber and Customers needs(user requirements):

Mila will use the program to view her upcoming appointments, for example once she has log in she chooses the view bookings and there will e a list and details of all her customers that have booked. She will also be able to edit her services menu which her customers can see and select the services they want. Customers once they entered the online booking page/ website the will be able to create a booking or view their bookings. This will be beneficial aiding the visualisation of looking a messy diary which should help the business increase customers.

Mila would like the program to:
1. Allow her customers to create the bookings themselves
2. Allow the users to know about the business
3. Make it easiest for her to seeher existing bookings
4. Make it easier for her to change her menu and prices for her customers to choose from

Acceptable limitations:
1. Customers will not create accounts
2. Customers cannot view or alter bookings once made
3. Admin users cannot manage admin users themselves

1.6 Objectives of New Booking System:

1. The loading screen must be a simple and well developed page giving images of the business and buttons to move user to specific locations
2. One button should take the user to the "make a booking" page and the other button called "view Location" should take the user to a google map image of the business location
3. The customer should be able to book an appointment for a future date
4. Customer information should be validated to ensure accuracy
5. A simple confirmation page to show information about the appointment made by the customer and to show some details about the customer.
6. A button on the home page should take admin/s to a login page
7. Once the admin/s have correctly login, they will be taken to an admin home page where there will be a "view appointments" button and a "view services" button.
8. The admin/s can click on "View appointments" to view upcoming appointments
9. Once in "view appointments" admin/s can update upcoming appointments in case customers want to cancel or edit information. This is done using the "make a booking" form.
10. Admin/s can click on "View services" to see all active services and all inactive services. Once in "view services" admin/s can update all services or add a service.
11. Admin/s can fill out a service form to create a service or use the service form to update an existing service.
12. Admin can log out of the admin page.

1.7 Research methods used:

To research this System I used the Internet, the webpages I used can be seen in the footnotes. I also used previous notes from school which help me better improve and exceed my initial strategy for this project

2 DOCUMENT DESIGN

2.1 System overview

The system will first be accessed through the barbers website where the customer and employee/owners can access. The customer will be asked if they want to book an appointment or view bookings. If the users chooses "book an appointment" then they will be given a form to fill out and book an the appointment. In filling out the form the form will have a dynamic automation twist to it as when the have chosen the day the program will only give them the available times in which they can choose as well as the menu where they can chose their service. The menu will be the latest menu of the barbershop which the admin can edit and add the services in the admin page . For a further development of the booking system, once the user has booked their appointment they would receive an email verifying that they have booked the appointment with details about it and checking if its a valid email and then the baber can call their number to confirm. If the customer chooses "view appointments" then they will be asked to enter their first name/username, second name and phone number in order to verify and view appointments and get the choice to update or delete appointment.

There will be a site master which will have the name of the business with a home button to allow users to move between pages easily and there will be footnote giving creation date of the business and giving the "privacy", "terms" and "support" details

2.2 The Front-end design of the booking system:

Throughout this project I decide to reuse a lot of the code like the admin(s) use the same page as the customers, booking page, when the admin wants to edit the customers information or when the admin is updating a service in their menu , the admin will be taken the same page where a service is created. Which will result in few lines of code for processing and increase the rate of flow from one page to the next.

### 2.2.1 The Homepage/default page of the program for the customer:

Flow chart for the website homepage of the booking system site

Andreas Eleftheriades
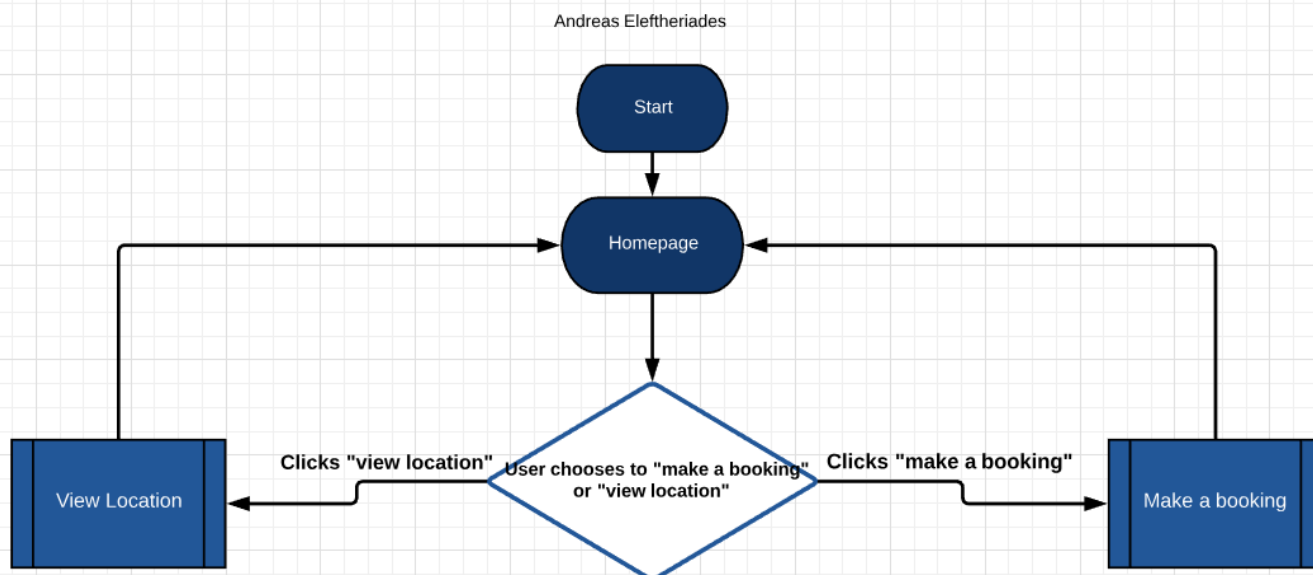
The homepage will have a pictures of the interior of the business and will give the users the option whether they want to book or view the location of the store, which will take the user to a page that shows the google image of the business.In the pagemaster, there will also be a button for the admin(s) to click on which will take them to their login page.

2.2.2 The site masters of the program:

Flow chart of the site master page from the booking system site

Andreas Eleftheriades
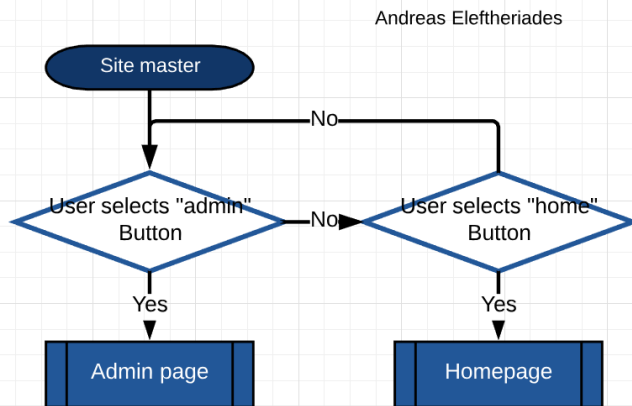
Flow chart of the booking master page from the booking system site
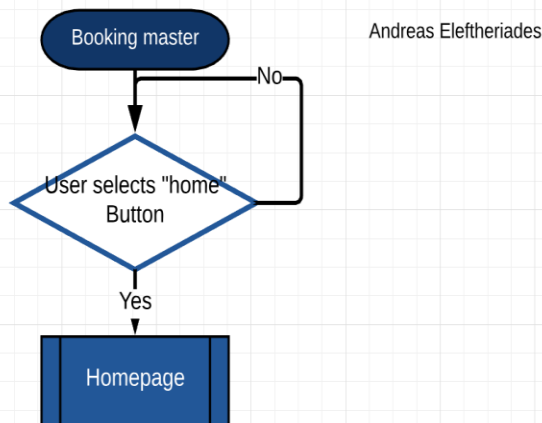
Andreas Eleftheriades

Flow chart of the site master page from the booking system site
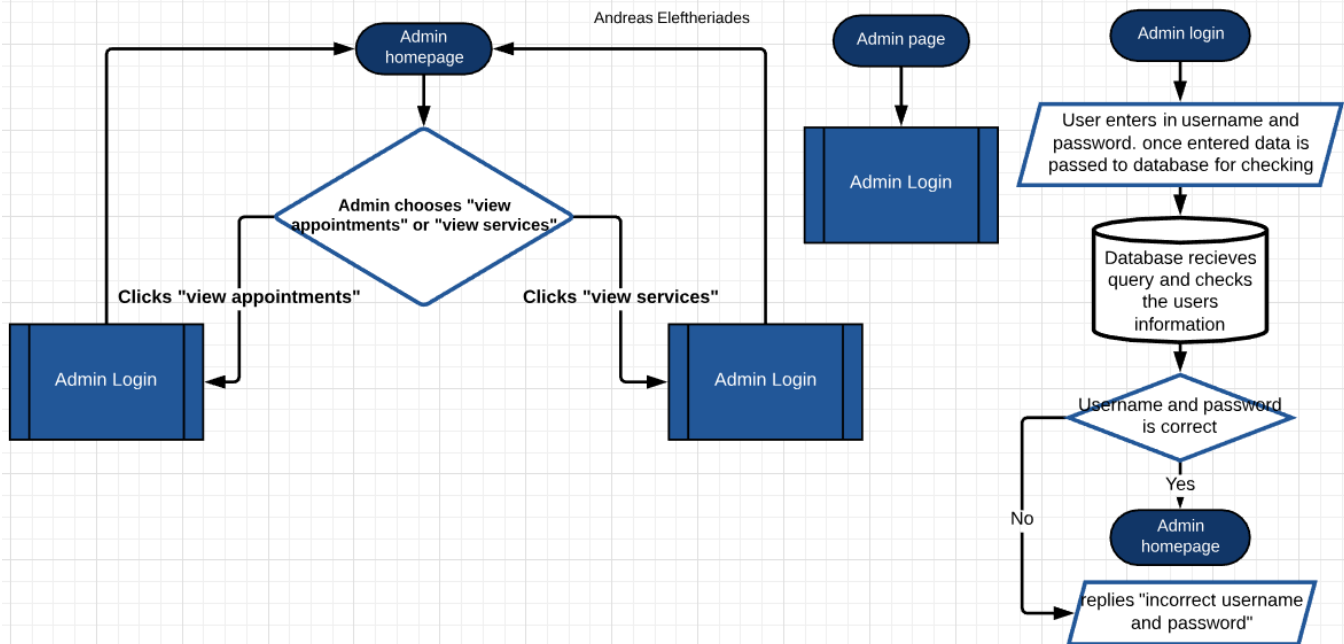

Andreas Eleftheriades
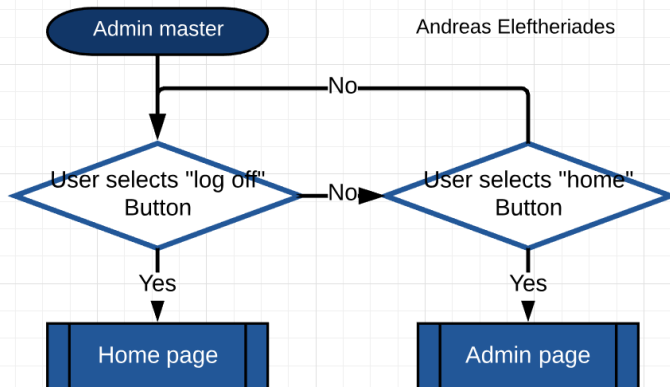
These master pagers are simplistic and designed to look similar from page to page in order to keep the simplistic design.

2.2.3 The admin home page of the program:

Flow chart for the admin homepage of the booking system site

For the admin side of this project, I foresee the admin/s being able to click on a button that will redirect them to a login page, after correctly login in, they will be take to a page where they can choose to view or edit upcoming booked appointments and view or edit active or inactive services that the business will offer. When the user has submitted their entered in username and password, it will be passed to the database where it will be checked if it matches the entry required username and password, if it is incorrect the system will say if the username or password or both are incorrect. Additionally when the user enters in the password it will be masked and each field will be mandatory to enter in.

2.2.4 The admin view appointments pages of the program:

Flow chart for the admin view appointments of the booking system site

Andreas Eleftheriades
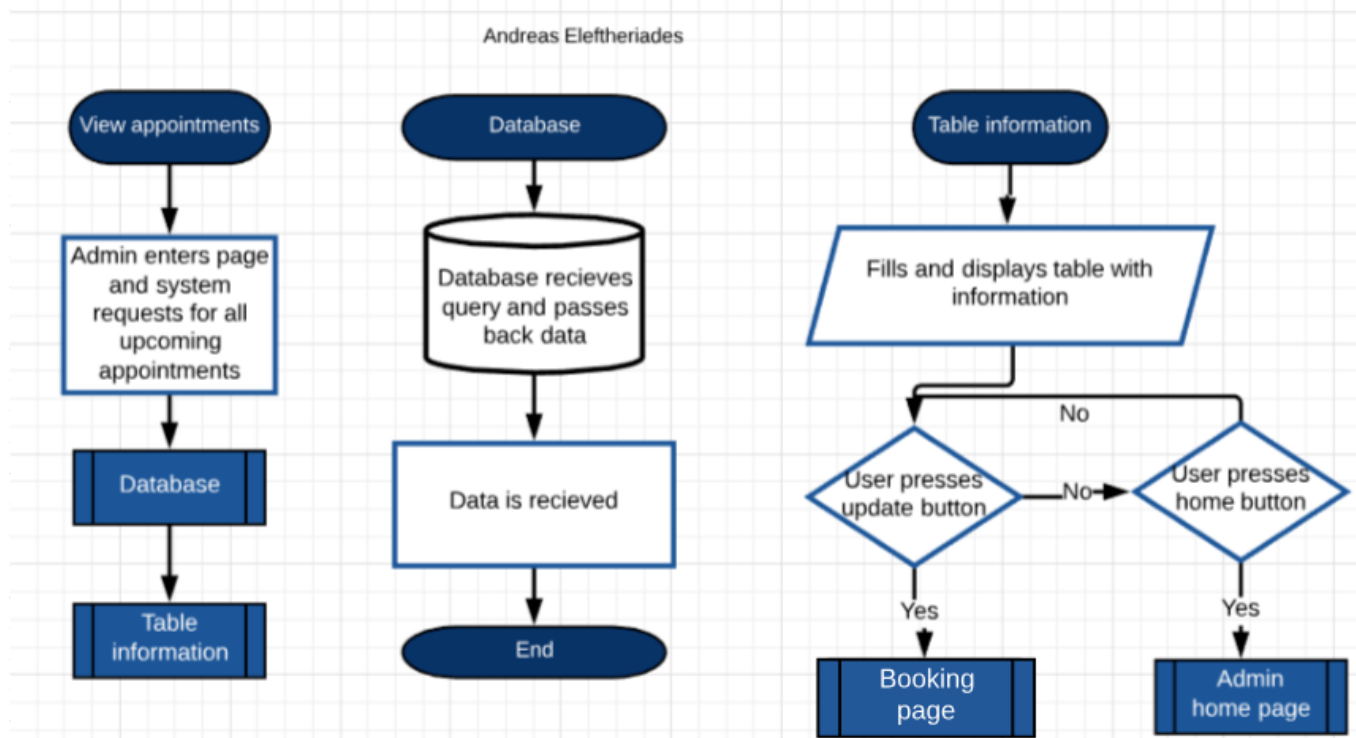
When the admin enters the "view appointments" page.

They will receive all upcoming active and inactive appointments that the customers have made in a form of a table which is readed from the database , in order to know the names and what appointments the person has chosen or in case the admin want to cancel or edit appointments. Each customer appointments will have the names of the customer, what appointment they choose, enabled, time and date of the appointment which the appointment is ordered by.

Next to each of the customer record will be an update button where the admin can click on incase they need to change details of the appointments e.g. the customer would like the time to move later in the day. When the updating button has been selected the booking id of the customer will be passed to the database - in order to request the customers details for updating - and the admin will be taken to the "make a booking" page where each field will be filled with the customer's details.

The admin will see the enabled button for the admin to cancel the booking or activating a booking.

Once the admin has finished editing the customers details, the admin can press update and will be taken back to the "view appointments" page , additionally the active customer records are green and inactive are red.

2.2.5 The admin view services pages of the program:

Flow chart for the admin view services of the booking system site

Andreas Eleftheriades
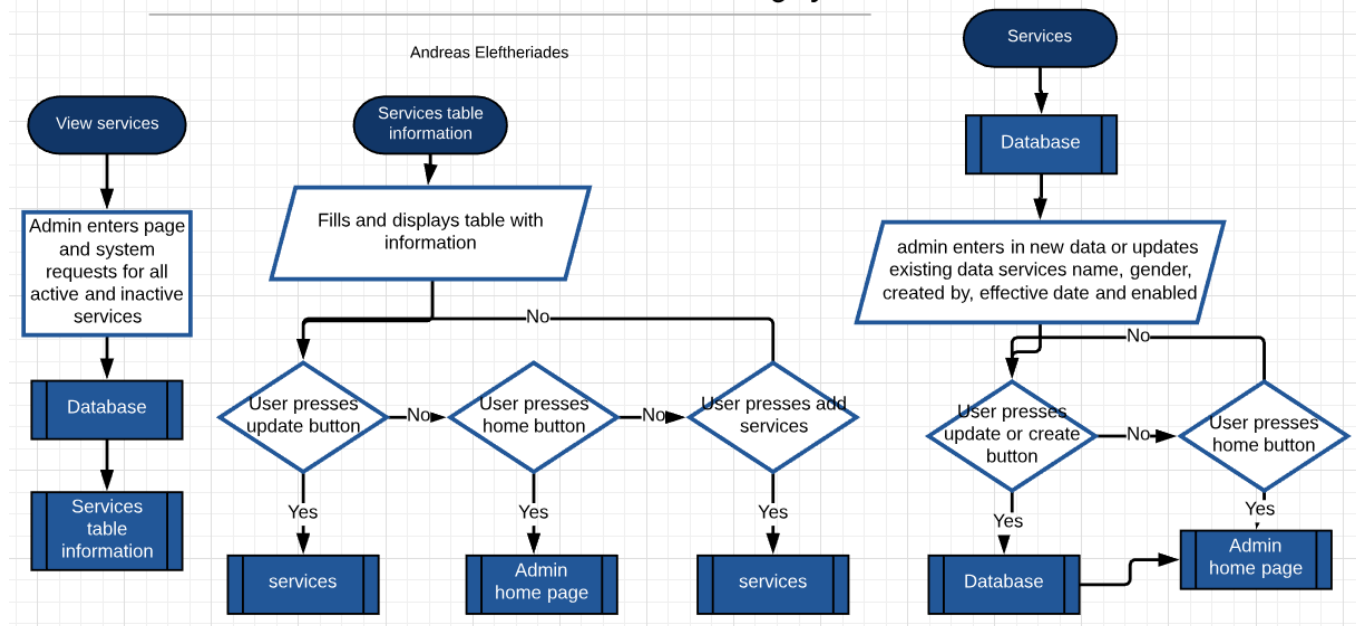
When the admin enters the "view services" page.

They will see all active and inactive services created by the business in a form of a table which is readed from the database.

Each record will have the service name, gender(that the service is for), price, effective date and enabled.

At the bottom of the list of records will be the "add service" button, which once selected the admin will be taken to the add services form page where the admin can fill out the new services name, gender(that it is for), admin's name, price, effective date and enable button.

Next to each service record there will be a update button and once selected the admin will be sent the "add service" page and the service choice will be passed to the database in order to send back that service's details for updating.

Each field in the "add services" page will be filled with the data from the database of the service.

The best part for this editing and adding services ,in this booking system, is once the admin/s have added or edit the service to active, it will automatically change the menu to show the latest active services offered by the business to the customer in the "make a booking" page therefore saving the business money on advertising as they will no longer need to always remind its customers the change in price or the arrival of a new service. In addition the system will keep record of who has edited or added a service.

2.2.6 The "make a booking" page and checkout page of the program:

Flow chart for the customer and admin "make a booking" page for the booking system site
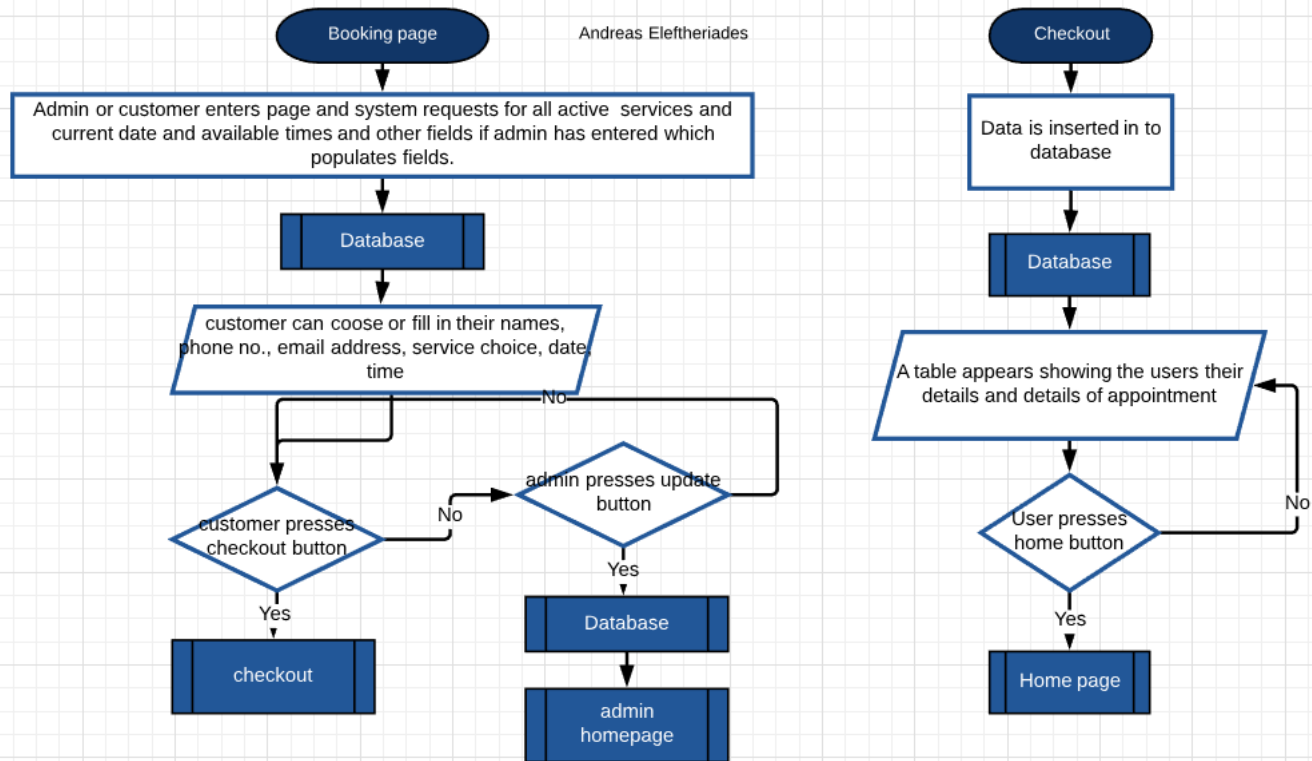
This web page will be used by both the admins and customers as I would like to reuse code and have a more automated and effective system.

If the customer selects "Make a booking" the customer will be taken to a booking form where they will enter in their details like First name, Second name, phone number, Email, Service Choice, Date(for a appointment) and Time. After details have been filled in, successfully and correctly as the system will validators for each field, the user will choose either to "clear" or to "check out". If the "clear" button is selected the form will be cleared and the user may re-enter in details again or press the home button in the master page. If the "check out" button is selected the user will be taken to a new page where a table will appear with details about the customers details and appointment details.

When the user is choosing their "service choice" from the list box it will have the latests menu of the business as it will be getting its data from the database and the services will be added or updated by the admin in the admin "view service" page.

When the user is choosing the date ,for the appointment, the program will already have the current date posted in as the user enters the page. The user can either change it to their own date by pressing the drop down arrows to choose the month and day.

When the user is choosing the time for their appointment, it will show all the available times that the business offers for each particular day. For certain days of the week, like Saturday and sunday there may be less available times because the business has less working hours on that day.

If the admin selects the update buttons in "view appointments" page, the system will pass in the data to this exact form which then the system will populate each field with the updating customers details where the admin can edit their information and update it.

Finally when the user has finished looking at the checkout information they can press the home button in the master page and they will be taken to the homepage where they can close the window and go on with their day

2.3 The back-end design of the booking system:

The Back end code will be coded and designed to try and be efficient. I will be using objects to try and make the flow of the programme smooth to read/write to the database. I will programme in C# in visual studios and SQL in microsoft SQL server management studios. First I will take about my two classes, then my database called "testdatabase" and finally i will talk about my webpages and the info store in them
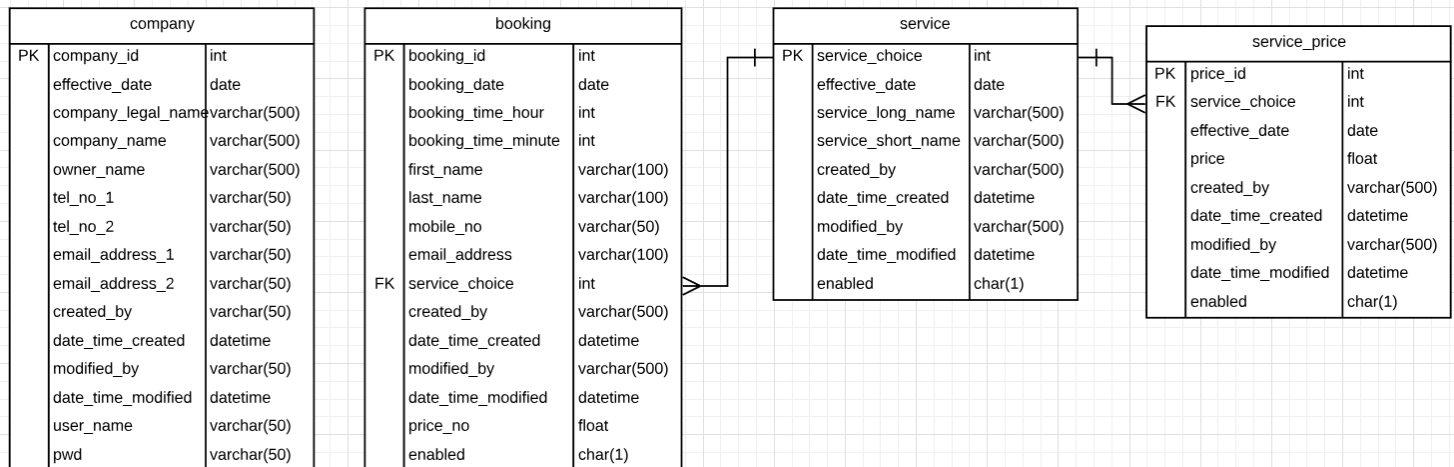C# has a wide range of libraries as well as having very affective object orientation feature making it easier for me to create classes and objects. SQL gives the necessary features for manipulating and improving the database.

2.3.1 The database design of the booking system:

The database I am using, microsoft SQL server management studios. It has better security policies that are non-compliant and built-in transparent data compression feature along with encryption - which will be helpful because i need to protect the admins login password and usernames. Currently my database called "Testdatabase" ,as decide to keep the name simple, will hold four tables "dbo.booking" , "dbo.company", "dbo.services" and "dbo.service_price". All tables i will discuss their purpose

Booking system ERD

Andreas Eleftheriades | April 25, 2019

company

PK	company_id	int
	effective_date	date
	company_legal_name	varchar(500)
	company_name	varchar(500)
	owner_name	varchar(500)
	tel_no_1	varchar(50)
	tel_no_2	varchar(50)
	email_address_1	varchar(50)
	email_address_2	varchar(50)
	created_by	varchar(50)
	date_time_created	datetime
	modified_by	varchar(50)
	date_time_modified	datetime
	user_name	varchar(50)
	pwd	varchar(50)

booking

PK	booking_id	int
	booking_date	date
	booking_time_hour	int
	booking_time_minute	int
	first_name	varchar(100)
	last_name	varchar(100)
	mobile_no	varchar(50)
	email_address	varchar(100)
FK	service_choice	int
	created_by	varchar(500)
	date_time_created	datetime
	modified_by	varchar(500)
	date_time_modified	datetime
	price_no	float
	enabled	char(1)

service

PK	service_choice	int
	effective_date	date
	service_long_name	varchar(500)
	service_short_name	varchar(500)
	created_by	varchar(500)
	date_time_created	datetime
	modified_by	varchar(500)
	date_time_modified	datetime
	enabled	char(1)

service_price

PK	price_id	int
FK	service_choice	int
	effective_date	date
	price	float
	created_by	varchar(500)
	date_time_created	datetime
	modified_by	varchar(500)
	date_time_modified	datetime
	enabled	char(1)

2.3.2.1 Dbo.booking

Dbo.booking is designed table to store all customers appointments upcoming, past or edited in order for the business to store the customers bookings and to allow the admin to view or edit upcoming appointment.

All information store will be able to meet all the necessary criteria needed to have a full understanding of who and what the customer wants

Dbo.booking design:

Field Name	Data Type	Allow Nulls
Booking_id	Integer	No
Booking_date	date	Yes
booking_time_hour	int	Yes
booking_time_minute	int	Yes
first_name	varchar(100)	Yes
last_name	varchar(100)	Yes
mobile_no	varchar(50)	Yes
email_address	varchar(100)	Yes
service_choice	int	No
created_by	varchar(500)	Yes
date_time_created	datetime	Yes
modified_by	varchar(500)	Yes
date_time_modified	datetime	Yes
price_no	float	Yes
enabled	char(1)	Yes

2.3.2.2 Dbo.company

Dbo.company table was needed because it holds a lot of information of the company and its employees like their usernames and password and for this project there is only one username and password in case the owner only wants one to share among her employees. The username is andreas and password is Pass#2!

Dbo.company design:

Field name	Data type	Allow nulls
company_id	int	No
effective_date	date	Yes
company_legal_name	varchar(500)	Yes
company_name	varchar(500)	Yes
owner_name	varchar(500)	Yes
tel_no_1	varchar(50)	Yes
tel_no_2	varchar(50)	Yes
email_address_1	varchar(50)	Yes
email_address_2	varchar(50)	Yes
created_by	varchar(50)	Yes
date_time_created	datetime	Yes
modified_by	varchar(50)	Yes
date_time_modified	datetime	Yes
user_name	varchar(50)	Yes
pwd	varchar(50)	Yes

2.3.2.3 Dbo.services:

Dbo.services table was designed to store all the necessary information about each services that the business offers in order to allow the admin and customers to view services to choose from and the admin to edit or add services in the future:

Dbo.services design:

Field name	Data type	Allow nulls
service_choice	int	No
effective_date	date	Yes
service_long_name	varchar(500)	Yes
service_short_name	varchar(500)	Yes
created_by	varchar(500)	Yes
date_time_created	datetime	Yes
modified_by	varchar(500)	Yes
date_time_modified	datetime	Yes
enabled	char(1)	Yes

2.3.2.4 Dbo.services_price:

Dbo.services_price table mainly is used to hold the prices of each services. I decide to have it as a separate table that one services table because it one brings more, as no the user can set a date to when they want certain prices to be activated and second it is more efficient

The reason for price id separate is because its 3rd normal form which means that every single field is completely depended on the primary key

Dbo.services_price design:

Field name	Data type	Allow Nulls
price_id	int	No
service_choice	int	No
effective_date	date	Yes
price	float	Yes
created_by	varchar(500)	Yes
date_time_created	datetime	Yes
modified_by	varchar(500)	Yes
date_time_modified	datetime	Yes
enabled	char(1)	Yes

2.3.1 SQL Design:

Below are all the designs of each sql requests that will be made

SELECT Query to get list of current services and prices to display it in a menu for when the customers are creating a booking or when the admin is updating the customers details

Fields required	Source table(s)	How are tables joined	criteria	sorting
Service choice Name of service Cost of service	Service Service_price	Service choice from service table and service choice from service_price table	service.service _choice = service_price .service_choice and service_price.price_id = (select max(price_id) from service_price.service_price where service_price.service_choice = service_price.service_choice and service_price.effective_date <= getdate())	Service name ASC

SELECT Query to get a list of the customers details and appointment details and display it to the admin, in the booking form, in case the admin needs to edit customers details

Fields required	Source table(s)	How are tables joined	criteria
Booking ID, booking date, booking hour, booking minute, first name, second name, mobile number, email address, service choice, service name, enabled	Booking Service	Service choice from booking table and service choice from service table	booking.service_choice = service.service_choice and booking.booking_id = requested id string that was passed from the view appointment page

SELECT Query to get a list of the service's details and display it to the admin,in the service form, in case the admin needs to edit the services details

Fields required	Source table(s)	How are tables joined	criteria
Service choice, service name, price id, price , effective date, enabled,	Service Service price	service.service_choice = service_price.service_choice	service_price.price id = max price id from service price where service_price.service_choice = service_price.service_choice and service_price.effective date <= getdate and service_price.service_choice requested id string that was passed from the view services page

SELECT Query to get a list of all customer appointments details and display it to the admin in case the admin wants to view all upcoming appointments

Fields required	Source table(s)	How are tables joined	criteria	sorting
Booking date, booking hour, booking minute, service name, first name, second name, enable	Booking Service	booking.service_choice = service.service_choice	booking.booking_date >= current date	Booking date ASC, booking hour ASC

SELECT Query to get a list of all active and inactive services details and display it to the admin in case the admin wants to view all services created

Fields required	Source table(s)	How are tables joined	criteria	sorting
Service choice, enable, effective date,service name, price, price id	Service Service price	service.service_choice = service_price.service_choice	service_price.price id = max price id from service_price where service_price.service_choice = service_price.service_choice and service_price.effective_date <= current date	service_choice ASC

SELECT Query to get the password and username of the admin when the admin is login into the admins homepage

Fields required	Source table(s)	criteria
Username and password	company	Username = entered username

SELECT Query to get a list of the customers details and appointment details and display it to the customer in the checkout confirmation page

Fields required	Source table(s)	How are tables joined	criteria
Booking date, booking hour, booking minute, service name, first name, second name, price number	Booking a, service b, service_price c	a.service_choice = service.service_choice and service.service_choice = service_price.service_choice	service_price.effective_date =(select max(effective_date) from service_price where service_price.service_choice = service_price.service_choice and service_price.effective_date <=getdate()) and booking.booking_id = requested id string that was passed from the make a booking page

INSERT query to add booking

Fields required	Source table(s)
First name, last name , mobile number, email address, service choice, booking date, booking hour, booking minute	Booking

INSERT query to add a service

Fields required	Source table(s)
Service name, effective date, created, enabled	service

INSERT query to add a service price to the new service that was created

Fields required	Source table(s)
Service choice, effective date, price, created by ,enabled	service_price

UPDATE Query to update customers details and appointments details, once the admin has filled out the fields of the updating customer

Fields required	Source table(s)	criteria
First name, last name , mobile number, email address, service choice, booking date, booking hour, booking minute, enabled	Booking	Booking_id = Requested id string that was passed from the view appointment page

UPDATE Query to update service details, once the admin has filled out the fields of the updating service

Fields required	Source table(s)	criteria
Service name, enabled, modified by, price and	service	Booking_id = Requested id string that was passed from the view services page

2.3.2 Classes:

There are two main class that I used "Base_Response" and "GenericService". Both are very important and I will discuss their importance. I learned how to create this classes and methods and how they work from a udemy class that walks you through the process plus I already learned this knowledge from school on how to create classes and methods efficiently

There are two reasons why I created GenericServices:

1. To make a reusable set of read, write and update classes.
2. The other is it easier to implement the functions of reading, writing and updating to the database by class methods.

2.3.1.1 BaseResponse

Class Name:		BaseResponse	
Public	Name of attributes	Data Type	Comments
	TransactionCompleted	Boolean	It is a global variable Will be set to false. The purpose is to tell if the the transaction has been completed on the database
	ResponseMessage	String	Will store a user friendly message on what the service completed task did. To help the implementer of the service what happens if the transaction has an error
	NewID	String	Will store the newly created id from the database where a new ID was created. This is then populated for the implementing code to use.

2.3.1.2 GenericService

Generic Services has three class within it. gEach class has two methods and the reason for readrecord, updaterecord and createrecord being classes within the generic services with the two methods is to et it

Generic class has 3 classes within it. The idea here was to keep the create class with create methods separate from the read class with read methods and likewise for the update class . This compartmentalised the class design to their appropriate tasks.

Class Name:		GenericService
Public static	class	Comments
	ReadRecord	This class is designed to read information stored in the database
	CreateRecord	This class is designed to create a new record in the database
	UpdateRecord	This class is to update existing records in the database

Class Name:		ReadRecord
Public static	methods	Comments
	DataTable ResponseTable	This method is use to store response from the database in order for the system to display it to the user
	BaseResponse ProcessRead	This method is designed to execute queries on to the database and populate the ResponseTable

2.3.1.2.1 ReadRecord:

ReadRecord has a simple purpose and that is to show to the user information store in the database. The places i used ReadRecord method is to help me display the services that are offered by the business to the customers in the "make a booking" page, to display all upcoming appointments for the admin, in case the admin wants to view them and to display the services that the barber is offering to admin in case the admin wants to view services. It also is used to confirms the admin's username and password ReadRecord sends a query to database to ask for the information to fill out the listbox in "make a booking" or to confirm is the admin has enter in the right information or to request for the upcoming appointments or to request of services offered.

C# pseudocode For ReadRecord:

```csharp
public static class ReadRecord
{
public static DataTable ResponseTable = null;
public static BaseResponse ProcessRead(string SqlString, SqlConnection Connection)
{
BaseResponse _Response = new BaseResponse();
try
{
DataSet ResultDataSet = new DataSet("dataset");
SqlDataAdapter Adapter = new SqlDataAdapter();
try
{
Adapter.SelectCommand = new SqlCommand(SqlString, Connection);
Adapter.SelectCommand.CommandTimeout = 600;
Adapter.Fill(ResultDataSet);
}
catch (Exception Error)
{
_Response.ResponseMessage = Error.Message;
}

ResponseTable = ResultDataSet.Tables[0];
_Response.TransactionCompleted = true;
_Response.ResponseMessage = "Response successful.";
}
catch
{
_Response.ResponseMessage = "The connection is currently unavailable.";
}
return _Response;
}
```

2.3.1.2.2 CreateRecord:

CreateRecord also has a simple job and that is to store the filled out form from the "make a booking" page in to the database to create an appointment for the customers or to store the information filled out from the form for a new service that the barber/admin filled.

Class Name:		CreateRecord
Public static	methods	Comments
	BaseResponse Processcreate	This method is designed to execute queries on to the database in order to create a new booking or a new service and price

CreateRecord:

```
public static class CreateRecord
    {

        public static BaseResponse Processcreate(string SqlString, Boolean ReturnIndex, SqlConnection Connection)
        {
            BaseResponse _Response = new BaseResponse();

            if (ReturnIndex)
                SqlString += " SELECT SCOPE_IDENTITY() ";
            SqlCommand Comm = new SqlCommand(SqlString, Connection);
            Comm.CommandTimeout = 600;
            try
            {
                if (ReturnIndex)
                {

                    _Response.NewID = Comm.ExecuteScalar().ToString();
                    _Response.ResponseMessage = "Record created";
                }
                else
                {
                    _Response.NewID = "";
                    Comm.ExecuteNonQuery();
                }
            }
            catch (SqlException SqlError)
            {
                _Response.ResponseMessage = SqlString + SqlError.Message;
            }
            return _Response;
        }
    }
```

2.3.1.2.3 UpdateRecord:

UpdateRecord method was used when the admin/barbar was editing current services or current appointments in case customer canceled or needed to change their information e.g. name,phone number.

Class Name:		UpdateRecord	
Public static	methods	Comments	
	BaseResponse ProcessUpdate	This method is designed to execute queries on to the database in order to update a booking or a service and price	

C# code for UpdateRecord:

```csharp
public static class UpdateRecord
{
    public static BaseResponse ProcessUpdate(string SqlString, SqlConnection Connection)
    {
        BaseResponse _Response = new BaseResponse();

        SqlCommand Comm = new SqlCommand(SqlString, Connection);
        Comm.CommandTimeout = 600;
        try
        {
            string Result = Comm.ExecuteNonQuery().ToString();
            if (Result != "0")
            {
                _Response.ResponseMessage = "Record Updated";
            }
            else
            {
                _Response.ResponseMessage = "Record Not Updated";
            }
        }
        catch (SqlException SqlError)
        {
            _Response.ResponseMessage = SqlString + SqlError.Message;
        }
        return _Response;
    }
}
```

2.4 Algorithms design:

2.4.1 C sharp populate date and times algorithms:

```csharp
for (int i = 1; i <= 12; i++)
            {

                ListItem _LI = new ListItem();
                _LI.Value = i.ToString();
                _LI.Text = i.ToString();

                switch (i)
                {
                   case 1:
                      _LI.Text = "January";
                      _LI.Value = "1";
                      ddlMonth.Items.Add(_LI);

                      break;
                   case 2:
                      _LI.Text = "February";
                      _LI.Value = "2";
                      ddlMonth.Items.Add(_LI);
                      break;
                   case 3:
                      _LI.Text = "March";
                      _LI.Value = "3";
                      ddlMonth.Items.Add(_LI);
                      break;
                   case 4:
                      _LI.Text = "April";
                      _LI.Value = "4";
                      ddlMonth.Items.Add(_LI);
                      break;
                   case 5:
                      _LI.Text = "May";
                      _LI.Value = "5";
                      ddlMonth.Items.Add(_LI);
                      break;
                   case 6:
                      _LI.Text = "June";
                      _LI.Value = "6";
                      ddlMonth.Items.Add(_LI);
                      break;
                   case 7:
                      _LI.Text = "July";
                      _LI.Value = "7";
                      ddlMonth.Items.Add(_LI);
                      break;
                   case 8:
                      _LI.Text = "August";
                      _LI.Value = "8";
                      ddlMonth.Items.Add(_LI);
                      break;
                   case 9:
                      _LI.Text = "September";
                      _LI.Value = "9";
                      ddlMonth.Items.Add(_LI);
                      break;
                   case 10:
                      _LI.Text = "October";
                      _LI.Value = "10";
```

```
                    ddlMonth.Items.Add(_LI);
                    break;
                case 11:
                    _LI.Text = "November";
                    _LI.Value = "11";
                    ddlMonth.Items.Add(_LI);
                    break;
                case 12:
                    _LI.Text = "December";
                    _LI.Value = "12";
                    ddlMonth.Items.Add(_LI);
                    break;
            }
        }
        ddlMonth.SelectedValue = DateTime.Now.Month.ToString();
        PopulateDays(Convert.ToInt32(ddlMonth.SelectedValue));
        ddlDay.SelectedValue = DateTime.Now.Day.ToString();
        Populatehours();

protected void Populatehours()
    {
        ddlTimes.Items.Clear();
        DayOfWeek DayOfTheWeek = DateTime.Parse(ddlDay.SelectedValue.ToString() + "-" + ddlMonth.SelectedItem.Text.ToString() + "-" +
DateTime.Now.Year.ToString()).DayOfWeek;

        int StartHours;
        int EndHours;


        if (DayOfTheWeek == DayOfWeek.Sunday)
        {
            StartHours = 10;
            EndHours = 18;
        }
        Else
        {
            StartHours = 9;
            EndHours = 19;
        }



        for (int i = StartHours; i <= EndHours; i++)
        {
            ListItem _LI = new ListItem();
            _LI.Value = i.ToString();
            _LI.Text = i.ToString() + ":00";

            ddlTimes.Items.Add(_LI);
        }
    }
 protected void ddlMonth_SelectedIndexChanged(object sender, EventArgs e)
    {
        PopulateDays(Convert.ToInt32(ddlMonth.SelectedValue));
    }
    protected void PopulateDays(int Month)
    {
        ddlDay.Items.Clear();
        int days = DateTime.DaysInMonth(DateTime.Now.Year, Month);
        for (int i = 1; i <= days; i++)//loops each day value in the drop down list
        {
            ListItem _LI = new ListItem();
            _LI.Text = i.ToString();
            _LI.Value = i.ToString();
            ddlDay.Items.Add(_LI);
```

```
            }
        }
        protected void ddlDay_SelectedIndexChanged(object sender, EventArgs e)
        {
            Populatehours();
        }
```

2.4.1 C sharp login verification algorithms:

```
BaseResponse _Response = GenericServices.ReadRecord.ProcessRead(SqlString, _Connection);
        _Connection.Close();

        if (_Response.TransactionCompleted)
        {
            if (GenericServices.ReadRecord.ResponseTable.Rows.Count > 0)
            {
                if (txtUsername.Text == GenericServices.ReadRecord.ResponseTable.Rows[0]["user_name"].ToString())
                {
                    if (txtPassword.Text == GenericServices.ReadRecord.ResponseTable.Rows[0]["pwd"].ToString())
                    {
                    Session.Add("Username", txtUsername.Text);
                    Response.Redirect("AdminHome.aspx");
                    }
                    else
                    {
                    lblErrorMessage.Text = "Invalid user name and password combination";
                    }
                }
                else
                {
                    lblErrorMessage.Text = "Invalid user name";
                }
            }
            else
            {
                lblErrorMessage.Text = "Invalid user name";
            }
        }
        else
        {
            lblErrorMessage.Text = _Response.ResponseMessage;
        }
    }
}
```

2.4 Structure of file

2.4.1 Pages of website

I created multiple pages in order to allow users to move around and find what they want and to make the website more efficient and adaptable in the future.

There are three main pages which break up into sub-pages:
1. Admin - For the admins to go to their page
    a. Addservice - This page is to allow admins to add services
    b. AdminBookings - This will allow admins to view upcoming appointments
    c. AdminHome - This is the home page for the admins where they can choose which pages they would like to go to
    d. BookingDetails - This will link the admins to go and edit customers bookings in case they need to edit their information
    e. MilasBarbersAdmin - This is the admin login page which allows the successful admins to go to the admin home page
    f. ServiceDetails - Allows the admins to update or edit offered services
    g. Services - Allows the admins to view active and deactive services
2. Booking - For customers check out and view location of the store
    a. CheckOut - is the check out page where the customer will be taken to when they have successfully booked an appointment. Ps the writing will be in green for success
    b. ViewLocations - This gives a geo location of the store and how the customers can find it
3. Control - To allow customers to create bookings and for admins to edit customers bookings

2.5 GUI design

This is the Homepage of the programme.

This is the "make a booking" page and when the Admin is updating customers details

This is the Check out page

Milas Hair Salon Booking System

MilasUnisexBarbers.com

Milas Barbers

Home>>

Checkout. Thank you for Booking with us today!

Below is the details about your appointment. Incase you want to change or cancel your bookings please call Milas Barbers between opening hours. Thank you!

Your Information and details:

Date:	Time:	Service choice:	Customer Na...	Price:
4/26/2019	10:00	Dry cut	Mark Otto	£9

Home>>
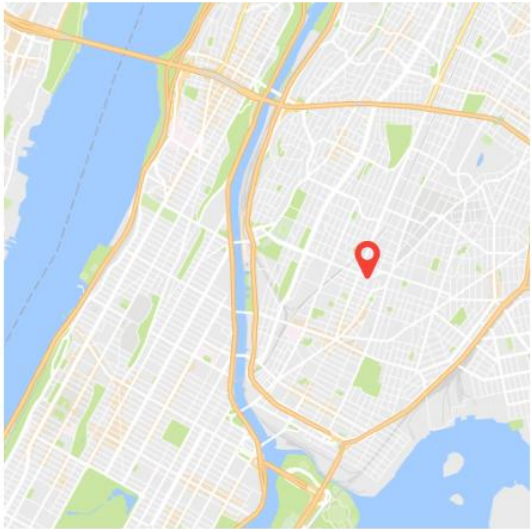
This is the "view location" page

MilasUnisexBarbers.com

Milas Barbers

Home>>

Location of Store:

This is the Admin homepage

MilasUnisexBarbers.com

Milas Barbers

Home>>

Admin Login

Below is where the admin can login

Username: [Input]

Password: [Input]

Login>>

This is the Admin homepage

MilasUnisexBarbers.com

Milas Barbers

Logout   Home>>   Admin Homepage

Below is where the admin can View Appointments or View Services

View Appointments: View Services:

Booked Appointments>>   View Service>>

This is the Admin View Appointments page

MilasUnisexBarbers.com

Milas Barbers

Logout   Home>>   Upcoming appointments

Below is where the admin can view or edit appointments

Date:	Time:	Service Choice	Customer Name:	Enabled:	Update:
4/12/2019	10:00	Dry cut	Mark Otto	expecting client	Update
4/12/2019	11:00	Wet Shave	Tom Ray	expecting client	Update
4/18/2019	16:00	Colouring	Lucy James	not expecting …	Update
5/10/2019	10:00	Dry cut	Mark Otto	expecting client	Update

This is the Admin View Services page

This is the Admin Services add and update page

2.6 System Overview
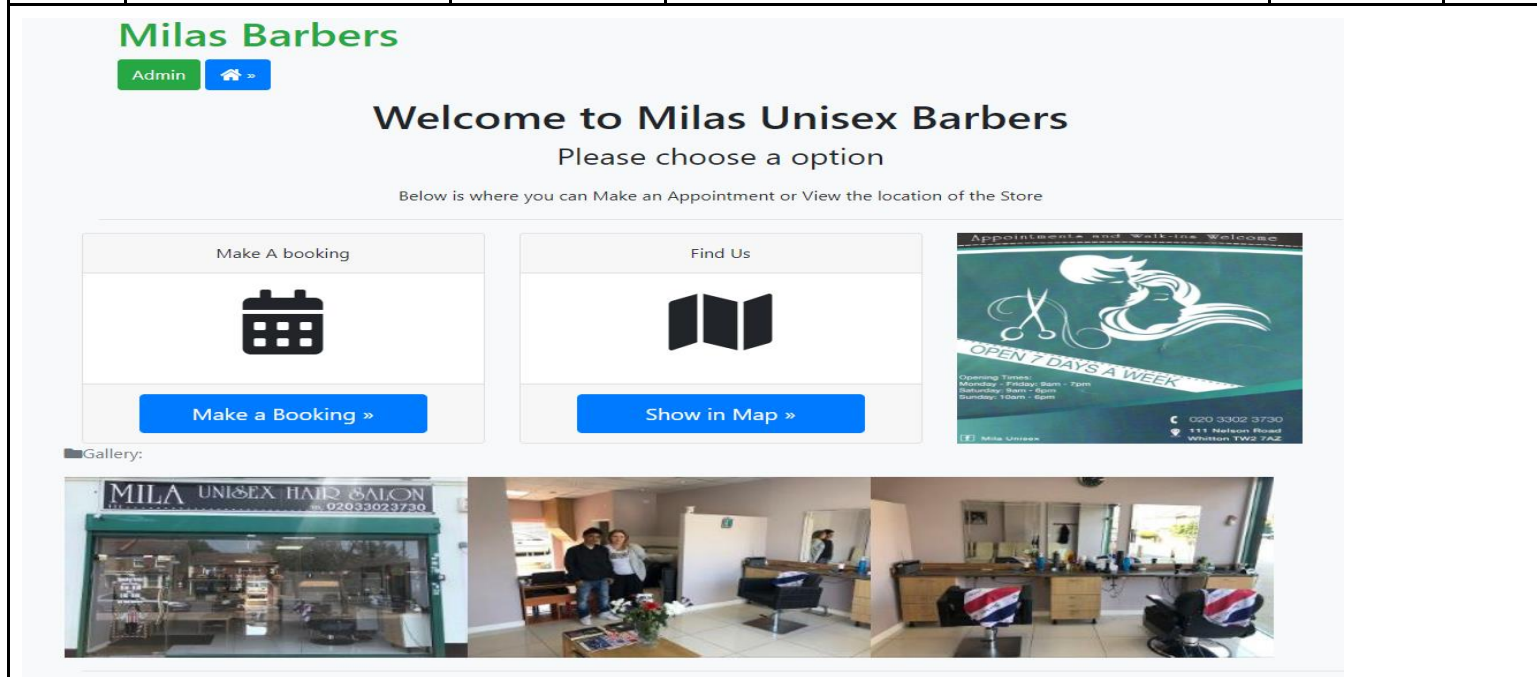
This system will look simplistic yet have be complex and efficient because in the "make a booking" form the customer/user will have to fill out their first name, second name and phone number to allow the barber to call to remind or to check if the customer is still coming. Then there will be a listbox ,which is the menu of the services offered, with the latest services offered by the business. There will be a month day dropdowns where the customer can choose the date of their appointment but first as the customer opens up the page the month day drop downs will automatically be filled with the current date. Finally the customer can choose any given time for their appointment. Then the admins will get to login with there credential. After login in the admins can" view appointments" which when selected the admin will be take to a page with active upcoming appointments in green and deactivated upcoming appointments in red. All past and upcoming appointments will be stored in the database

Hierarchy chart of the make a booking page from the booking system site
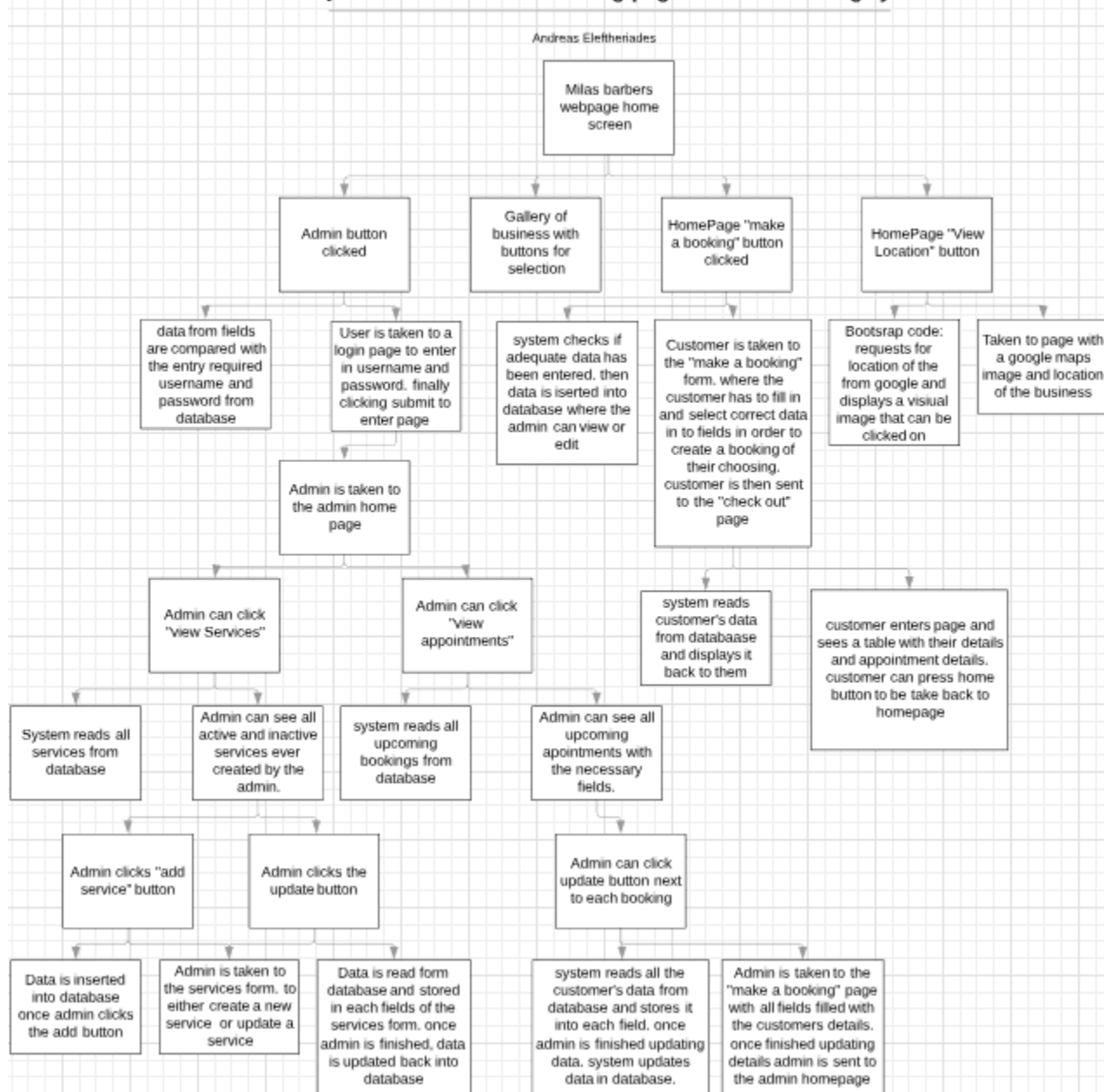
3 SYSTEM TESTING

3.1 Normal Testing

Test No.	Reason	Input	Expected Result	Actual Result	Pass /Fail
1	The loading screen must be a simple and well developed page giving images of the business and buttons to move user to specific locations	Run the application.	The loading screen - a white Welcome Screen With buttons to send the user to different pagers and a gallery with pictures of the business.	Same as expected.	P

2	One button should take the user to the "make a booking" page	Click Button.	User is moved to make a booking form. With current date and time with available times for that day	Same as expected.	P

Milas Barbers

Book appointment

Below is where you can book your appointment for hairdressing.

🏠 Your information

First Name

First Name

Last Name

Last Name

Phone number   +44   Phone number

Email   ✉   you@example.com

Service choice:

--Select Option--
Children's Cut (up to 12) (£ 8)
Gents - Dry Cut (£ 15)
Gents - Senior (£ 7)
Gents - wash,blow,cut (£ 13)
Gents - Wet Shave (£ 9)
Ladies - Colouring - Extra Long Ha
Ladies - Colouring - Long Hair (£ 4

Date (for the appointment)

Month:

April ▼

Day:

27 ▼

Time

9:00 ▼

Check out   **Clear**

2:17 PM
4/27/2019

| 3 | The customer should be able to book an appointment for a future date | Click day drop down or month drop down | The user can scroll through the moths and days to select their personal date | Same as expected | P |

Date (for the appointment)

Month:

September ▼

---Select Month--
January
February
March
April
May
June
July
August
September
October
November
December

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

1 ▼

4	Customer information should be validated to ensure accuracy	Fill in form incorrectly	There will be a required fields for first name,last name,phone number,email address and service choice. Phone number and email address will have an extra lay of validation.	Same as expected	P

5	After filling up form the user presses the clear button	Click Buttons.	If clear is clicked, the form is cleared.	Same as expected.	P
6	A simple confirmation page to show information about the appointment made by the customer and to show some details about the customer	Click the check out button	If the user clicks the check out button they will be taken to the "check out" page where they will see their full name, price of service, service choice, date and time of appointment	Same as expected	P

7	The user presses the home button icon to go back to the home page	Clicks the home icon button.	If clicked, the user is taken to the home page	Same as expected.	P

Milas Barbers

Checkout. Thank you for

Home 🏠

8	The other button called "view Location" should take the user to a google map image of the business location	Clicks the "view location	Button redirects the user to a google map image of the business	Same as expected.	P

Find Us

Show in Map »

Milas Barbers

Location of Store:

Mila Unisex Hair Salon
111 Nelson Rd, Twickenham TW2 7AZ
5.0 ★★★★★ 14 reviews
View larger map

Directions Save

9	A button on the home page should take admin/s to a login page	Click the admin button	User is taken to the login in page to sign in. only correct password and username can be accepted. Then the admin(s) are to take to admin page	Same as expected.	P

Milas Barbers

Admin Login

Below is where the admin can login

Username: * Required field

Password: * Required field

Login

Milas Barbers

Admin 🏠 »

W

© 2015-2019 Milas Barbers

10	Incorrect username and password	Types in incorrect username and password	An error will appear saying "invalid username and password combination"	Same as expected	P

Admin Login
Below is where the admin can login
Username: test
Password:
Login   Invalid user name and password combination

11	Correct username and incorrect password	Types in incorrect password	An error will appear saying "invalid password"	Same as expected	P

Admin Login
Below is where the admin can login
Username: andreas
Password: ••••••••
Login   Invalid password

12	Incorrect username and correct password	Types in incorrect username	An error will appear saying "invalid username password"	Same as expected	P

Admin Login

Below is where the admin can login

Username: test2

Password:

Login   Invalid user name and password combination

13	Once the admin/s have correctly login, they will be taken to an admin home page where there will be a "view appointments" button and a "view services" button.	Types in the correct username and password	User will be redirected to the admin home page where there will be a "view appointments" and "view services" buttons. Finally there will be a logout and home buttons in the master page	Same as expected	P

Admin Login

Below is where the admin can login

Username: andreas

Password: ....

Login

Milas Barbers

Log out »   🏠 »

Admin Homepage

Below is where the administrator can choose to View Appointments and View Services

View Booking   View Services

Appointments »   View Services »

© 2015-2019 Milas Barbers

14	The admin/s can click on "View appointments" to view upcoming appointments	clicks "View appointments"	Admin will be taken to the "admin bookings"" to view all active and inactive upcoming appointments	Same as expected	P

| 15 | Once in "view appointments" admin/s can update upcoming appointments in case customers want to cancel or edit information. This is done using the "make a booking" form. | Click update button. Fill in form. Click checkout or clear button | Admin will be redirected to the "make a booking" page where the customers details will be filled into the correct fields finally clicking the checkout button to be redirected to the admin home page or click clear to re-do the form for the customer. | Same as expected | P |

Milas Barbers

Log out » 🏠 »

🏠 View Booking

Enabled ☑

First Name: test3

Last Name: checkout

Phone number: +44 654654645

Email: ✉ test@gmail.com

Service choice:
- Ladies - Dry Cut - Medium to Long Hair (£ 15)
- Ladies - Dry Cut - Short Hair (£ 12)
- Ladies - Full Head Highlights - Extra Long Hair (£ 70)
- Ladies - Full Head Highlights - Long Hair (£ 60)
- Ladies - Full Head Highlights - Medium Hair (£ 50)
- Ladies - Full Head Highlights - Short Hair (£ 40)
- Ladies - Half Head Highlights - Long Hair (£ 45)
- Ladies - Half Head Highlights - MediumHair (£ 40)
- Ladies - Half Head Highlights - Short Hair (£ 35)
- Ladies - Root Highlights (£ 50)
- Gents - Senior (£ 7)
- Gents - test (£ 34)
- Gents - test2 (£ 1)
- Ladies - Wash Cut - Extra Long HAir (£ 21)
- Ladies - Wash Cut - Medium to Long Hair (£ 18)
- Ladies - Wash Cut - Short Hair (£ 15)
- Ladies - Wash, Cut & Blow - Extra Long HA=air (£ 30)
- Ladies - Wash, Cut & Blow - Short Hair (£ 20)
- Ladies - Wash, Cut & Blow- Medium to Long Hair (£ 25)
- Gents - Wet Shave (£ 9)

Date (for the appointment)   Time
Month: April   9:00
Day: 30

28-Apr-2019	11:00	Ladies - Dry Cut - Short Hair	test Eleftheriades	Client Cancelled	Update
30-Apr-2019	09:00	Gents - Wet Shave	test3 checkout	Expecting Client	Update
04-Jul-2019	10:00	Gents - Wet Shave	Andreas Eleftheriades	Expecting Client	Update

Check out   Clear

| 16 | Admin/s can click on "View services" to see all active services and all inactive services. Once in "view services" admin/s can update all services or add a service. | clicks "view service" button | Admin will be taken to the "view services page were they can view active and inactive services. Furthermore there will be update buttons next to each service and an add services button at the button of the page | Same as expected | P |

Milas Barbers

Log out »   🏠 »

Services

Below is where you can view or edit or add Services

Service Date	Service Name	Enabled	Price	Options
01-Mar-2019	Gents - Dry Cut	Activated service	£ 15	Update
01-Feb-2019	Gents - Wet Shave	Activated service	£ 9	Update
01-Jan-2019	Gents - Senior	Activated service	£ 7	Update
01-Feb-2019	Children's Cut (up to 12)	Activated service	£ 8	Update
01-Jan-2019	Ladies - Dry Cut - Short Hair	Activated service	£ 12	Update

View Services

View Services »

17	Admin/s can fill out a service form to create a service.	Click "add service" . fill out fill. click complete	Admin can fill out a necessary form that will be stored into the database. Admin clicks "completes" to store the new service	Same as expected	P

Milas Barbers

Log out »   🏠 »

Add Services

Service Name(main name): test

Gender(Ladies or Gents): Gents

Price: £ 1

Created By: Andreas

Effective Date:

<	April 2019	>

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

Enabled: ☐

+Add Service

Complete

© 2015-2019 Milas Barbers

10-Apr-2019 Gents - test   Deactivated service £ 1   Update

18	services information should be validated to ensure accuracy	Not entering		Same as expected	P

19	Admin/s can use the service form to update an existing service.		*		Same as expected	P

Milas Barbers

Log out »   🏠»

Update Service

Service Name(main name):	test
Gender(Ladies or Gents):	Gents
Price:	£ 300
Modified By:	James

Effective Date:

	April 2019					>
Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

Enabled: ☐

Complete

10-Apr-2019 Gents - test   Deactivated service £ 300   Update

20	Admin can click the home icon to return to the admin home page	Clicks home icon button	When admin clicks the home icon button in any of the admin pages they will be taken to the admin homepage	Same as expected	**P**

Milas Barbers

Log out »   🏠»

21	Admin can log out of the admin page.	Clicks logout button	When admin clicks the logout button they will be taken to the homepage	Same as expected	**P**

Milas Barbers

Log out »   🏠»

3.2 Database:

Images of my Microsoft SQL database and tables:

LAPTOP-S0ESM9EE\MAIN_SQL (SQL Server 14.0.2002 - andreas)
- Databases
  - System Databases
  - Database Snapshots
  - TestDatabase
    - Tables
      - System Tables
      - FileTables
      - External Tables
      - Graph Tables
      - dbo.booking
      - dbo.company
      - dbo.service
      - dbo.service_price
    - Views
    - External Resources
    - Synonyms
    - Programmability
    - Service Broker
    - Storage
    - Security

Column Name	Data Type	Allow Nulls
company_id	int	☐
effective_date	date	☑
company_legal_name	varchar(500)	☑
company_name	varchar(500)	☑
owner_name	varchar(500)	☑
tel_no_1	varchar(50)	☑
tel_no_2	varchar(50)	☑
email_address_1	varchar(50)	☑
email_address_2	varchar(50)	☑
created_by	varchar(50)	☑
date_time_created	datetime	☑
modified_by	varchar(50)	☑
date_time_modified	datetime	☑
user_name	varchar(50)	☑
pwd	varchar(50)	☑
		☐

Column Name	Data Type	Allow Nulls
service_choice	int	☐
effective_date	date	☑
service_long_name	varchar(500)	☑
service_short_name	varchar(500)	☑
created_by	varchar(500)	☑
date_time_created	datetime	☑
modified_by	varchar(500)	☑
date_time_modified	datetime	☑
enabled	char(1)	☑
		☐

Column Name	Data Type	Allow Nulls
price_id	int	☐
service_choice	int	☐
effective_date	date	☑
price	float	☑
created_by	varchar(500)	☑
date_time_created	datetime	☑
modified_by	varchar(500)	☑
date_time_modified	datetime	☑
enabled	char(1)	☑
		☐

company

	Column Name	Data Type	Allow Nulls
🔑	company_id	int	☐
	effective_date	date	☑
	company_legal_name	varchar(500)	☑
	company_name	varchar(500)	☑
	owner_name	varchar(500)	☑
	tel_no_1	varchar(50)	☑
	tel_no_2	varchar(50)	☑
	email_address_1	varchar(50)	☑
	email_address_2	varchar(50)	☑
	created_by	varchar(50)	☑
	date_time_created	datetime	☑
	modified_by	varchar(50)	☑
	date_time_modified	datetime	☑
	user_name	varchar(50)	☑
	pwd	varchar(50)	☑
			☐

	Column Name	Data Type	Allow Nulls
🔑	booking_id	int	☐
	booking_date	date	☑
	booking_time_hour	int	☑
	booking_time_minute	int	☑
	first_name	varchar(100)	☑
	last_name	varchar(100)	☑
	mobile_no	varchar(50)	☑
	email_address	varchar(100)	☑
	service_choice	int	☐
	created_by	varchar(500)	☑
	date_time_created	datetime	☑
	modified_by	varchar(500)	☑
	date_time_modified	datetime	☑
	price_no	float	☑
	enabled	char(1)	☑
			☐

booking

	Column Name	Data Type	Allow Nulls
🔑	booking_id	int	☐
	booking_date	date	☑
	booking_time_hour	int	☑
	booking_time_minute	int	☑
	first_name	varchar(100)	☑
	last_name	varchar(100)	☑
	mobile_no	varchar(50)	☑
	email_address	varchar(100)	☑
	service_choice	int	☐
	created_by	varchar(500)	☑
	date_time_created	datetime	☑
	modified_by	varchar(500)	☑
	date_time_modified	datetime	☑
	price_no	float	☑
	enabled	char(1)	☑
			☐

service

	Column Name	Data Type	Allow Nulls
🔑	service_choice	int	☐
	effective_date	date	☑
	service_long_name	varchar(500)	☑
	service_short_name	varchar(500)	☑
	created_by	varchar(500)	☑
	date_time_created	datetime	☑
	modified_by	varchar(500)	☑
	date_time_modified	datetime	☑
	enabled	char(1)	☑
			☐

service_price

	Column Name	Data Type	Allow Nulls
🔑	price_id	int	☐
	service_choice	int	☐
	effective_date	date	☑
	price	float	☑
	created_by	varchar(500)	☑
	date_time_created	datetime	☑
	modified_by	varchar(500)	☑
	date_time_modified	datetime	☑
	enabled	char(1)	☑
			☐

4 Evaluation

4.1 Objective analysis

4.1.1 Application Startup

These were the original objectives:

This application will require an internet connection, as the user needs to be able to load into the main webpage. The application startup should be fast and smooth.

1. The loading screen must be a simple and well developed page giving images of the business and buttons to move user to specific locations
2. One button should take the user to the "make a booking" page and the other button called "view Location" should take the user to a google map image of the business location
3. The customer should be able to book an appointment for a future date
4. Customer information should be validated to ensure accuracy
5. A simple confirmation page to show information about the appointment made by the customer and to show some details about the customer.

Objective **1** has been completed as the webpage is displayed . The web page displays images of the business and buttons to send users to other pagers. Objective **2** has been completed. The "make a booking" button takes the user to a fully functioning booking form that meets the owners description to ask for the names of the customer, phone number, email address, service choice, date and time . The "view location" button to take the user to a google moving map so show the location of the business . Objective **4** has been completed. After the user finishes entering the correct information and clicks the checkout button they will be taken to the checkout page to view their details and booking details like date, time , name of service and price with their full name and last name.
Objective **5** has been completed. Once the customer has correctly filled in the "make a booking" form and clicked the checkout button they customer is taken to a new page with details about the customer and appointment.

4.1.2 Admin Page

These were the original objectives:

How barber owner and employees move around the admins page to view upcoming appointment and edit or add services to menu:

6. A button on the home page should take admin/s to a login page
7. Once the admin/s have correctly login, they will be taken to an admin home page where there will be a "view appointments" button and a "view services" button.
8. The admin/s can click on "View appointments" to view upcoming appointments
9. Once in "view appointments" admin/s can update upcoming appointments in case customers want to cancel or edit information. This is done using the "make a booking" form.
10. Admin/s can click on "View services" to see all active services and all inactive services. Once in "view services" admin/s can update all services or add a service.
11. Admin/s can fill out a service form to create a service or use the service form to update an existing service.
12. Admin can log out of the admin page.

Objective 6 has been completed. The admin button is located in the top left corner, once clicked the user will be taken to a fully functionally and secure login system.
Objective 7 has been completed. After entering the correct details
Objective **4** has been completed.Once the admin/s has successfully login they can choose the buttons and if the admin chooses "view appointments" they can view all upcoming appointments, if its an active appointments its green and if the customer calls to cancel the appointment they it can be changed and it becomes red. Objective **5** has been completed. When the admin clicks "view services" a list of all active (green) and deactive(red) services will pop up and the active services will be the same as the services that the customer sees when they are making a booking. Objective **6** is complete and the admin can log out and go back to website home page.

4.2 Further development.

This project will most probably go online only if the owner is happy for now but i definitely believe this project can improve far more especially in the look and being more beautiful to attract customers.
I want the website to do more like:

- A Start up page that always people to login/sign up with facebook or google which will be secure
- The homepage having some advertisement to pay for the running of the website online and having a server
- People being allowed to safely enter in their credit card information to do all purchases at once.

However i did think about if users book months in the future to pay for lower prices and not higher prices in the future. Additionally I don't really agree on adding the function for payment online also there are a lot of cancellations found in a hair salon, and if there was the function for paying online it will be a real problem and there will be a struggle with repaying the user.