

# FACULTY OF COMPUTING & ENGINEERING

## Assignment Cover Sheet

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Date:

*1<sup>th</sup> September 2016*

## **Abstract**

In order to prepare a fundamental application, it was important to note what the equestrian owner had envisioned. Options such as phone and tablet apps were discussed, however it was concluded that a database management website would better suit the needs. The owner was asked to describe in a paragraph what type of website they required:

*We are requesting a website to organise our equestrian centre paper work. We need to record horse records, veterinary records, farrier records and bookings regularly. We need an attractive and informative website that is easy to use and can improve communication between livery owners, staff and management. (McCollum, 2015).*

A website must be implemented that concurs with what the owner has requested. An integral database management website is needed to house equestrian records. Allowing for quick and efficient access to any details if needed.

## **1.1 The Problem**

As mobile and internet technologies become more efficient and faster, the capabilities become endless. It is important for all businesses to use online capabilities to strengthen and manage their workload. As Bradberry states, some form of database management is important because:

*... it manages data efficiently and allows the user to perform multiple tasks with ease (Bradberry, 2015)*

Files, cabinets and folders can only hold so much, and when a business has been operating for over 25 years, working with data can be quite a task. An online application to help reduce the paperwork and allow easy navigation through

equestrian style data would be ideal. A blog on the website would also be a great tool and allow the easy transfer of messages.

An online application is a cost effective method that could greatly increase the efficiency of any owner's yard. It could be used as a training tool for new staff and would keep staff better informed. It would also create a better and more efficient relationship between owner, staff and livery owners. For example, a booking could be made and recorded on such a web based application. This would provide easier and faster access to booking details for the staff and owners.

The website would allow for additional advertising for the Equestrian Centre, the database management website could have a link that can redirect customers to the official Island Equestrian Centre website, where the customers or new staff can be informed further about how the Island Equestrian Centre runs as a business.

Accessibility would also come into play and allow the owner remote access, and the ability to manage their yard. The web application allows them to be miles away and still keep an eye on any changing details. This website will be an information and communication website. The interactive Equestrian management web application will help ease the data flow and overwhelming demands of owning your own equestrian centre. A methodical approach is required in creating and implementing a successful prototype. If the research, rich picture and storyboards are completed in an orderly fashion, then this can only strengthen the final concept.

Recording Livery bookings, horse details, farrier and vet appointments are just some of the overwhelming day-to-day tasks that derive from operating a successful equestrian centre. All documents must be precise and well organised, so at a moment's notice, they can be altered or removed. Within the equestrian environment, other external aspects come into play, such as feed selections, shoeing, dental upkeep and health status, horse ownership details and arena bookings. These aspects produce documents daily, which come from a variety of sources whether it is the vet, farrier, staff or customers. All these elements make owning your own equestrian centre quite a difficult task.

## **1.2 The Solution**

A web application would be a vital tool for any equestrian owner, a device that allows efficient and immediate access to relevant data regarding their yard. This web application can be accessed on various different formats allowing for more flexibility and mobility. This will allow for an organised paperwork-free approach. The owner can be a million miles away and still have access and control over their business. It allows them to update horse records, feeding selections and livery status. The solution contains the following main elements:

- **Rich Picture**
- **Risk Assessment**
- **Aim**
- **Research**
- **Focus Groups (Questionnaires)**
- **Functions and Requirements**
- **Target Audience**
- **Acceptable platform**
- **Cost & Accessibility**
- **Storyboards**
- **Implementation**

## **1.3 Rich Picture**

A rich picture allows a visualisation of the problem and can help highlight any issues an equestrian centre owner may be facing. Fig1.1 shows the flow of information to be recorded and what external elements generate. This Figure 1 shows an overflow of information and how it can be stressful to the owner. With such an overflow, a breakdown in communication between staff and customers is enviable. Fig1.1 and Fig1.2 help define the real problem and aid in finding a compatible solution.

Figure 1 – Rich Picture

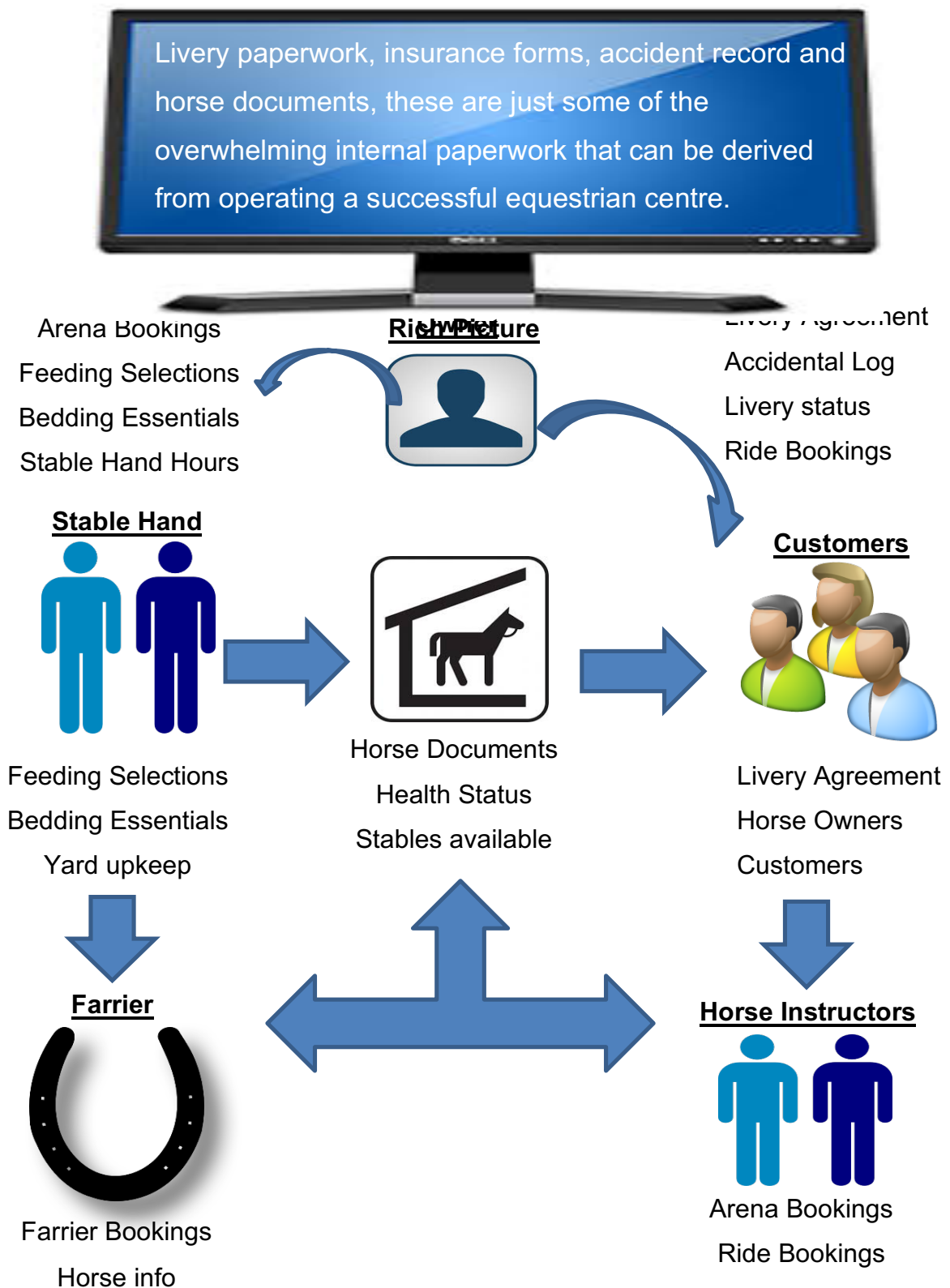
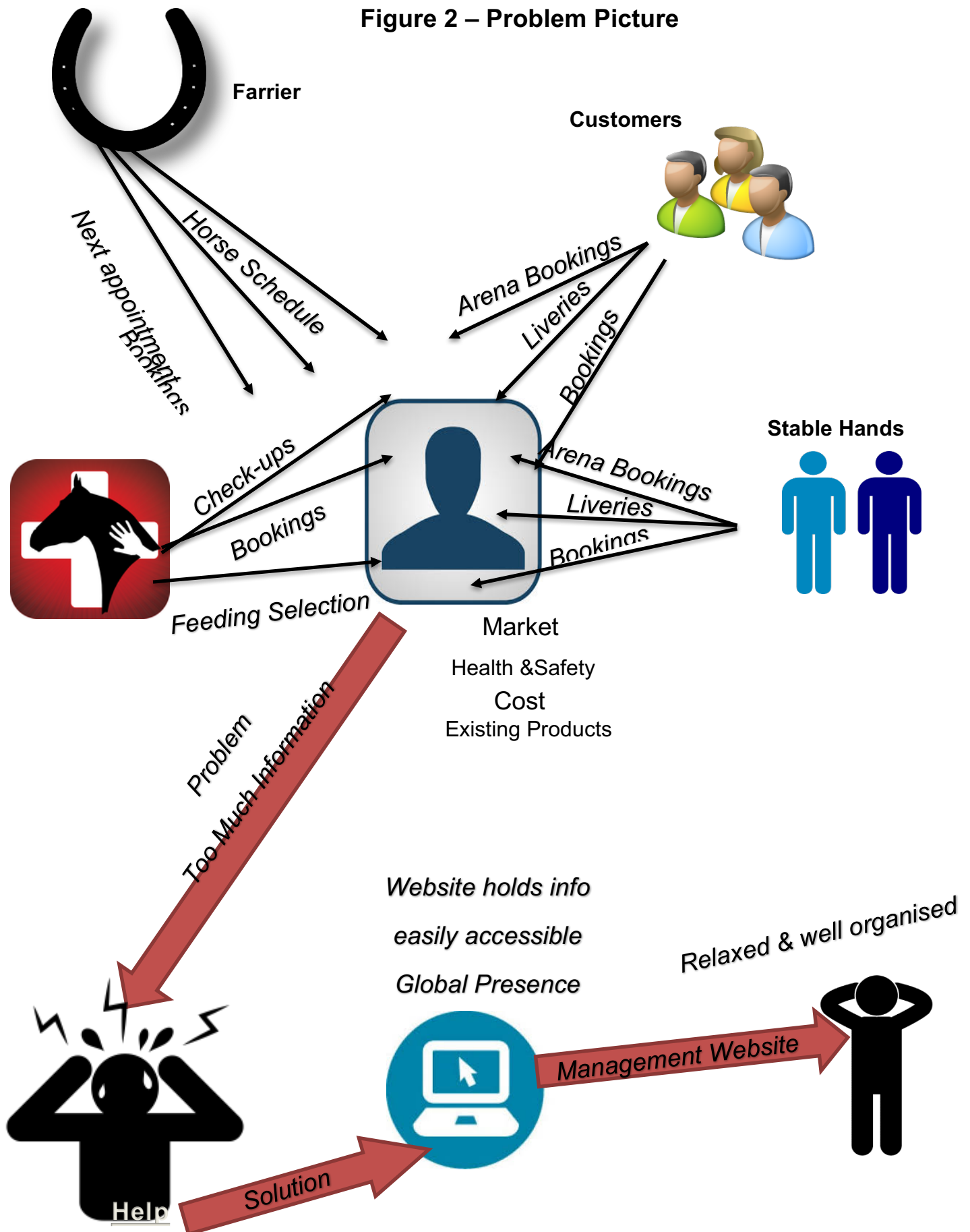


Figure 2 – Problem Picture



## **1.4 Risk Assessment**

The following table helps predetermine any issues or problems that may occur throughout the project, any issues that may arise are noted. The risk level is then determined and given a number signifying threat level:

1. Unlikely
2. Possible
3. Likely

Once the threat level has been noted a compatible solution is offered. This will allow for easier problem solving and a faster implementation process. Risk assessment for this project requires, unforeseen project management and technical issues.

<b><i>Risk Level</i></b>	<b><i>Probability</i></b>	<b><i>Threat</i></b>	<b><i>Solution</i></b>
Unforeseen Sickness	2	Moderate	Project must be ahead of schedule to allow for any issues
Missing Deadlines	2	Moderate	Set achievable and well dated deadlines.
Data Loss	2	High	Backup data on different devices regularly
Updates & Malfunction of Software	2	High	Safeguard software by maintaining updates and patches
Hardware Issues	3	Moderate	Keep ahead of schedule and allow time for any hardware issues that may arise
Unfinished application code	2	Moderate	Keep to deadlines and create enough time to implement your prototype. This will ensure an efficient end application

## Figure 3 – Risk Table

### 1.5 The Aim

The aim of this application is to create a system that is user friendly and efficient, a tool can be used by any equestrian owner. It will allow them access to all their paperwork quickly and allow checking of the past histories of their horses for feeding conditions and stable and arena availabilities. It will help them manage their animals, staff and livery owners.

### 1.6 Research

When researching and evaluating various equestrian type systems that are currently online, important aspects to consider are site design, site layout, colour schemes and menu organisation. These aspects will provide a great foundation and framework for the Stable Stallion.

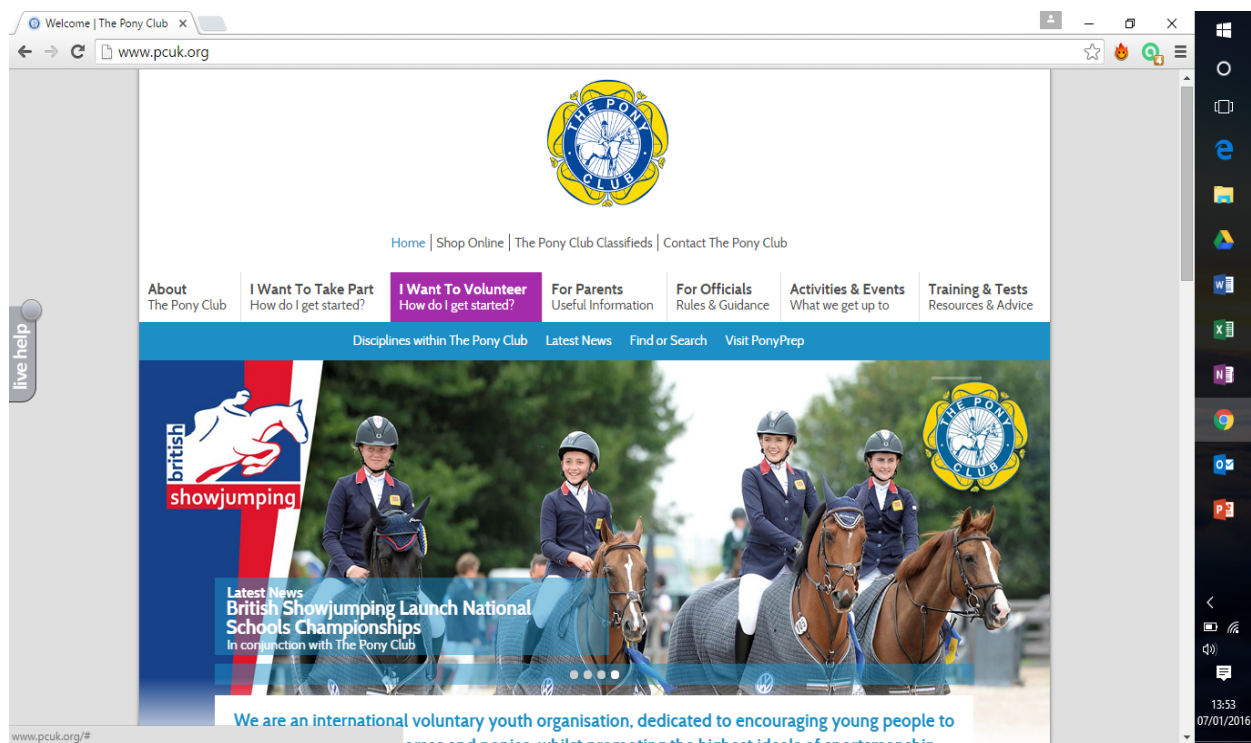


Figure 4 – Sample Webpage

Pony Club website (pcuk.org) was used as basis for what the business standard Equestrian style website might look like.

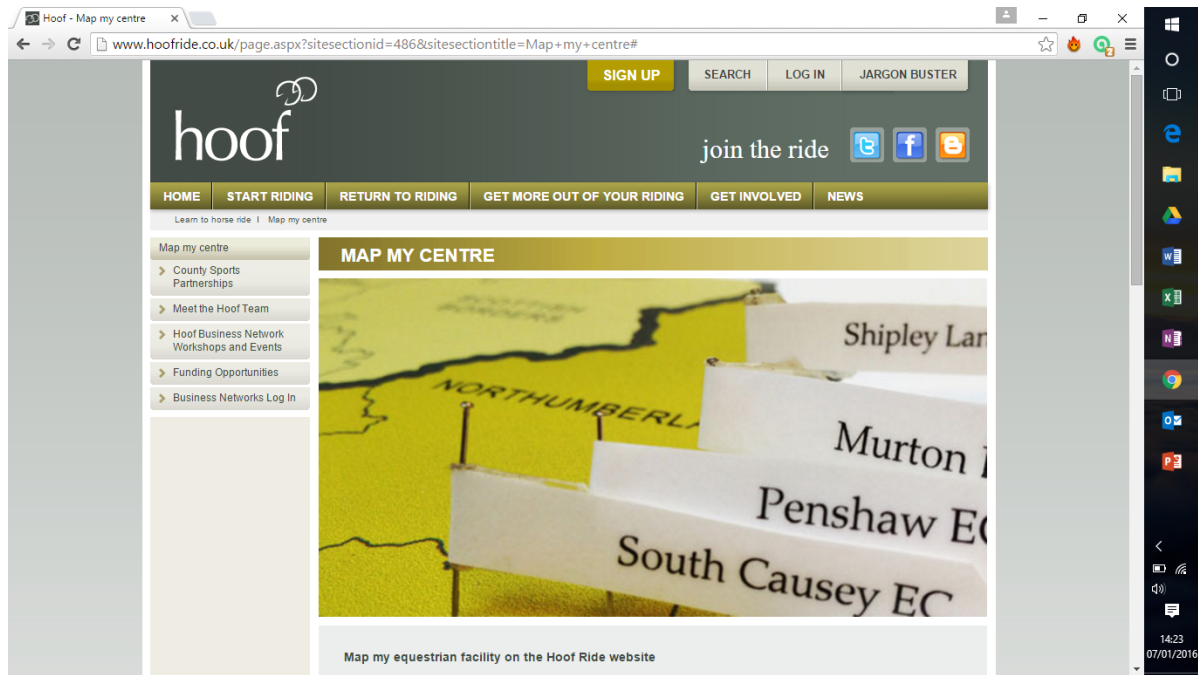


**Pros:**

- uses a variety of interesting colours, blue, white yellow and purple. Playful colours, with yellow highlight logo in blue, with white being the main background colour
- Easy to use with purple highlighting every roll over of menu selection buttons, upon click a fly out navigation appears showcasing other options
- A hero section on the main page shows websites demographic attending horse show, appealing to user.
- Simple help navigation, contact details easily acquired with live help being available

**Cons:**

- Over cluttered with information, not a lot of white space between information sections.
- Using full size image for hero section of main page can increase page loading time
- Menu layout although acceptable in terms of white space has barely visible borders for the menu buttons, limiting the efficiency of accessing the button.
- Search bar navigation is over complicated, and ideally should have been placed on main page and not on fly out menu.



**Figure 5 – Sample Webpage**

Hoof website [hoofride.co.uk](http://hoofride.co.uk) was used as basis for what another business standard Equestrian style website might look like.

#### **Pros:**

- uses relaxing colours frequently, a faded black colour for the menu background with Hoof logo in white, it uses bronze for highlighting main menus as well as the sign up button. Grey and light blue appear predominantly throughout the main page
- Easy to use with yellow highlighting every roll over of the bronze menu selection buttons. Buttons have enough white space and have easily visible borders.
- Search available on main page easy and accessible, very user friendly
- Simple help navigation, contact details easily acquired

#### **Cons:**

- A lot of information appears to user on main page, another option on menu could have scaled down the amount of main page info.
- Using a lot of images on main page can increase page loading time

- Menu system could be better as button upon being clicked on transfers user to another page where more selections appear, a drop down window would have been more efficient.
- Too many frequent colours, the bronze was maybe not the best choice for their menu system

The pros and cons of these websites highlight what an equestrian website requires in terms of presentation and colour scheme. The Stable Stallion website will have subtle colours and a variety of earth tones. The menu will have green faded with black appeal. This colour will help highlight the name “Stable Stallion” and the menu selection. The main colour on the age will be an autumn brown, a relaxing colour that can be used as the main background of the page. These colours will be consistent throughout the website and compliments the aesthetic feel of rural life. The main page after the log in page will have an easily accessible search bar for the user. The menu system will have a drop down menu, thus allowing more options for the user. All text information must be displayed clearly, as Walker states:

*With a high level of fluency, a site will feel familiar enough that visitors don't need spend mental effort scrutinizing and can instead focus on why they're on your site in the first place (Walker, 2015).*

This website will support an equestrian style management system, as well as a forum for users. This will help alter rich picture problems into solutions, and create better organisation and communication across management, staff and costumers. Other such equestrian style database management websites have been researched, however each website tends to target a wide range of different tasks

Websites such as triple crown (<http://www.triplecrownraces.com/>) , I horse (<http://www.ihorsetechnologies.com/>) and Tlore (<https://www.tlore.net/main/index.cfm>) were also researched. These different styles of equestrian sites placed emphasis on breeding and racing fundamentals, as well as care and client records. Websites like hoof.com allow customer to search for riding schools in their area and incorporates reviews, ratings and locations. The

various websites researched allow for the start of a prototype creation process. A framework can be constructed of what an equestrian website requires in terms of layout, colour schemes and user navigation. This framework will then be implemented into a first draft of the application.

These types of websites perform a wide range of tasks but can sometimes be unaffordable and overwhelming for a smaller, more family-run business. Stable Stallion's goal is to compact the day-to-day tasks of a riding centre and allow information to be easily organised and accessed, all at an affordable price that would suit any small business. By focusing on user's specifications, the Stable Stallion website will fine-tune specific roles. For example, vet visits can be recorded and updated, thus creating a medical history for all staff and livery owners. This will allow for easy access to recorded data and lower time being wasted. As Millar explains:

*I used to write these things in a notebook, with a page for every horse.  
But as your herd grows and your time decreases, you need  
something quicker (Millar, 2004).*

As Millar suggests when your business grows storage cabinets and files become obsolete. They begin to hinder your business rather than helping it, so it is important to implement a system that can handle a high data load.

## **1.7 Questionnaire**

Questionnaires were drawn up and distributed around various local equestrian centres. The focus group consisted of equestrian managers and staff and helped document their wants and needs. The questionnaire was separated into three sections to help record an informative response to certain aspects of the website.

- Part 1 of the questionnaire helped establish whether an equestrian owner would find great benefit in a database management site. It questioned whether staff would benefit from a database storing equestrian details.

- Part 2 of the questionnaire addressed layout issues of the website, allowing various owners and staff to select a predetermined name for the website. It also required them to decide on a colour scheme and background type.
- Part 3 of questionnaire were directed towards functional requirements. The user was presented with questions on what is the most important details to be recorded in an equestrian environment were. The user was also asked what features they look for in a website, this helps narrow down the layout and features for the website, and helps create a website that the user will find efficient and effective to use.

Conducting focus groups and distributing questionnaires highlighted elements required for implementing a successful automated management system. Targeting a user's specifications is a vital element of any project and came into play during prototype implementation

The information collected from research and questionnaires helped establish the users and highlighted specifications as shown in table 1. All data from the questionnaires was transformed into user wants and needs. This helped illustrate the user's wants and need, which the website could incorporate. This in turn allows a more comprehensive website to be built, focused solely around the user's expectations as and circumstance.

Table 1 showcases the wants and needs of the owner, staff and livery owners, it has been shown in a table for easy reading.

### User Results Table

As staff I want to access and amend horse details quickly.	As a livery owner I want to access bookings	As an owner I want a greater organisation of records and bookings.
As staff I want to access and add vet evaluations of animals.	As a livery owner I want access vet evaluations of my animal.	As an owner I want restriction and password protected access.
As staff I want to access and amend horse farrier details.	As a livery owner I want access farrier evaluations of my animal.	As an owner I want greater control over my business.
As staff I want an easier and faster way of looking up farriers.	As a livery owner I want to be able to edit my bookings.	As an owner I want an easy to use and simple website design

**Table 1 – Questionnaire Results**

## **1.8 Functional Requirements**

In order to build an effective web application, the users requirements, must consistently be kept in mind during the development and implementation process. Through the use of questionnaires and other external research, it has been established what the user wants, and what the user needs. These have been noted and have produced a range of functional and non-functional requirements as follows:

- The application must display horse details from the database in a clear and organised manner.
- The application must acknowledge the user when they search for a horse details, horse treatments and bookings.
- The application must allow the user to add and save details to the database, once details have been added a refreshed table of details is displayed.
- The application must alter data at the request of the user and save it to a database

- The application must delete records at the request of the user and save result to database. The user must be prompted and agree before delete query may take place. It must then display the updated records.
- The application must provide a secure environment where a user must log in before altering and viewing data.
- A link to the public website must exist for easy access to marketing material for the equestrian centre.

## **1.9 Non Functional Requirements**

- **Appearance** is an important feature that requires a visually relaxing and consistence style.
- **Navigation** must be organised and straight forward with a minimal risk of failure.
- **Performance** of the website should be consistent, no long loading times and a quick response to user input.
- **Scalability** and **capacity** are important features; it is vital that this system performs well with a high volume of data. As the Equestrian centre expands so should the website. It should effortlessly be able to work and present data effectively, regardless of the size of the stored information.
- **Availability** of the website is one of its main features, as the owner should be able to access the database from around the world as its online. It also must be accessible from a mobile device, as most standard mobiles have internet browsers. An app was suggested, but after carful research it was discovered that due to lack of signal at the equestrian centre a stable management app would not be the most effective approach.
- **Recoverability** will be kept in mind when developing the application. The use of a well-integrated database system will allow any information added to be instantly saved to a linked database. This ensures that was data has been modified if the site is forced to shut down for an unknown reason the user can rest assure that their updates and new data have been saved.
- **Security** is an important background feature of the website. When a user logs in it will allow them to view horse, farrier and vet details. The login details will be secured in a database, and no user may access website unless there details are in the database.

- **Data Integrity** must be reached in regards to the information stored in the database, table data must be entered correctly and efficiently, relationships must be created between tables to establish a link and disallow the entering of incorrect and inconsistent data.

## **Summary**

All these features will be required in order to implement a successful equestrian management style website. The questionnaires and all other external research information when collected provided a basic framework for the website. This framework will be a great guide throughout the application building process.

### **1.10 Professional Issues**

Countless money can be spent on facilitating the overflow of data, but why should it? Detailed documents are pushed to the back of the queue to make way for daily bookings and new horse reports. Over-packed folders containing vet and farrier details, and reams of treatment documents, can lead to problems.

The Stable Stallion is an application that will help organise the 'The Island Equestrian Centre' dataflow. It aims to cut the cost of extra filling cabinets, files, binders and storage. It will condense the overflow of information into an integral database, thus allowing the user to navigate more efficiency through search and display functions. No more time-consuming scans over pages and pages of information, the Stable Stallion will ask what details the user wants to see and will know exactly where to get them.

A high turnover in staff at The Island can mean a lot of repetitive training as staff needs to be taught how to read farrier and vet treatment forms, as well as understand how to correctly record a booking. They must also begin to get to know each horse and the particular requirements each animal needs. As the summer staff head back to school or universities, new staff will be taken on. The Stable Stallion allows for a simple way of adding reports and treatments. It is a responsive website that can help inform the new staff of a particular horse's requirements, such as field and stable



location and feeding. Eliminating these problems with the website can improve any new staffs work efficiency and confidence.

### **1.11 Target Audience**

At the forefront of this online application is the user, for this application the user will be the equestrian owner and staff. They are the target audience and, as such, must be kept as an example as to what capabilities this online application needs. The database management system will be built around the owner and help us design an effective, yet simple system. Also for consideration, is that not all staff are computer literate, so easy navigation is paramount.

### **1.12 Acceptable platform**

There are many applications to be considered with regard to the equestrian management system. With a variety of computer devices being available, it is important to evaluate each device in terms of efficiency and reliability. An online web application is most applicable and allows for use over a variety of different applications.

This application will be web based and in order to create the best possible solution, web based tools such as HTML5, flash and bootstrap were considered. After careful research, HTML5 was found to be the most acceptable tool. This web based tool is a combination of java script and HTML, and will allow the website to be clearly seen on any device windows, apple etc. As Lunne states:

*It is best for you or your web company to code your website in HTML and CSS. Some website builders use Flash, although this is not supported on Apple products such as iPads and iPhones, and makes the website difficult to find in search engines (Lunne, 2011)*

A good GUI is essential, as to help navigate the user through the website, as well as being aesthetically pleasing. The website will require simple login in screen with an integral database attached, this allows for concurrent access. Restrictions need to be

set in place, depending on the user and, obviously, if the user is the owner, then he/she can amend and delete data, as well as check important details. If the user is staff, the login page will take them into a restricted version of the website.

It was also found that a database system was required in order to record daily equestrian centre information. Different database tools were considered, such as SQL, DB2 and oracle etc. However, as the website would be built using WebMatrix software, SQL was found to be a more suitable data management system. The SQL Database's integrity will be a crucial element of the website, the more integral the database, the more efficient. This approach is supported by Teeling who comments:

*As a process, data integrity verifies that data has remained unaltered in transit from creation to reception (Teeling, 2012).*

### **1.13 Cost and Accessibility**

The Island Equestrian Centre is small business; the owner is not asking for an expensive website to run. WebMatrix is one of the considered website building applications, as it is free to download and use. The website must be efficient and cost effective. To achieve this, the website will be mirrored closely to the user's specifications. The website will need to be visible across multiple platforms as stated in Availability Platform. This website will give the owner and staff access to equestrian records and bookings through any internet device, allowing for mobility and convenience.

## 2.1 System Architecture

The following diagram displays the pages needed for the Stable Stallion, it also shows the correlation between each web page. Securitising certain web pages is evident and shows the pages that are displayed to the owner only.

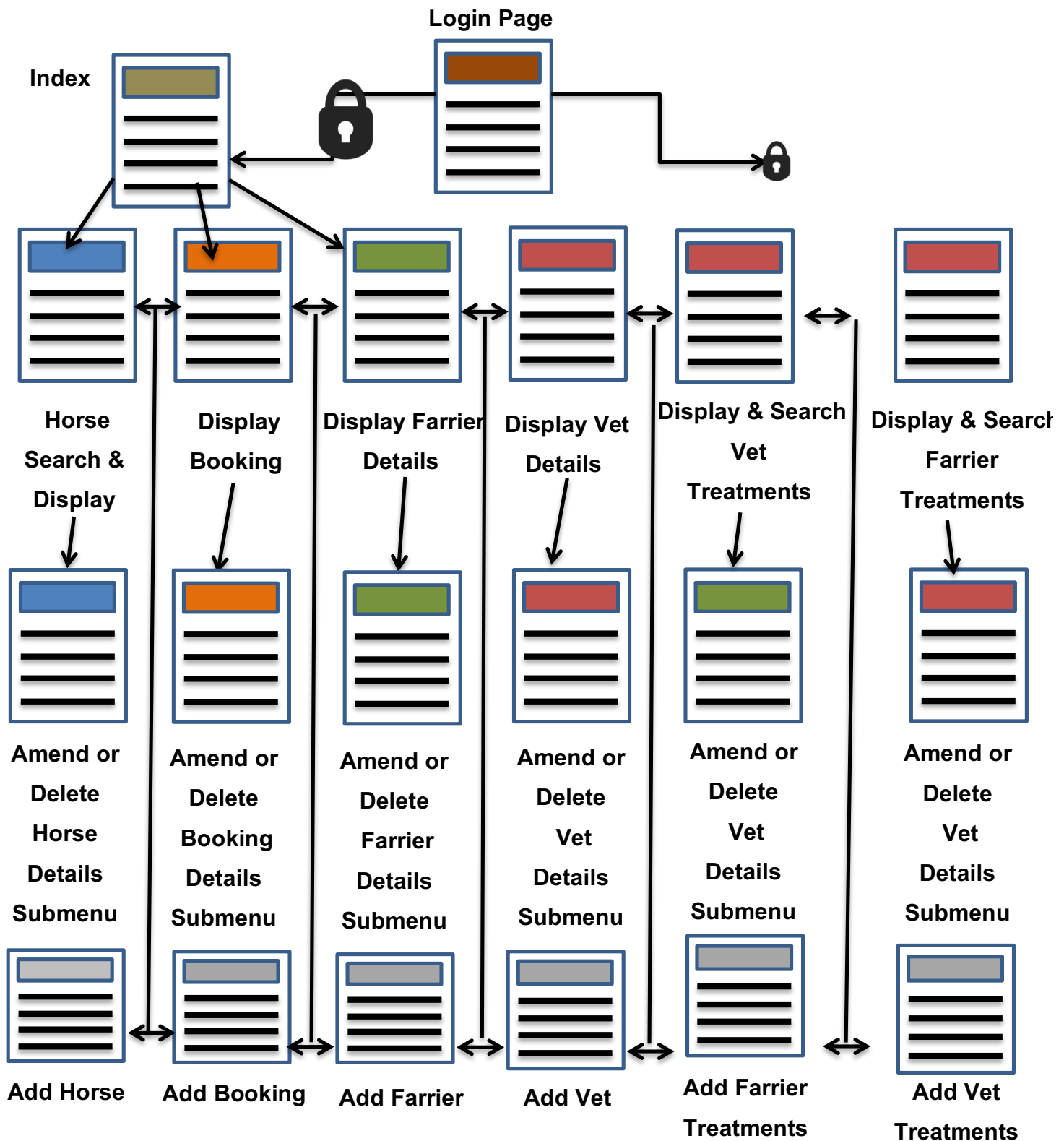


Figure 7 – Architecture Diagram

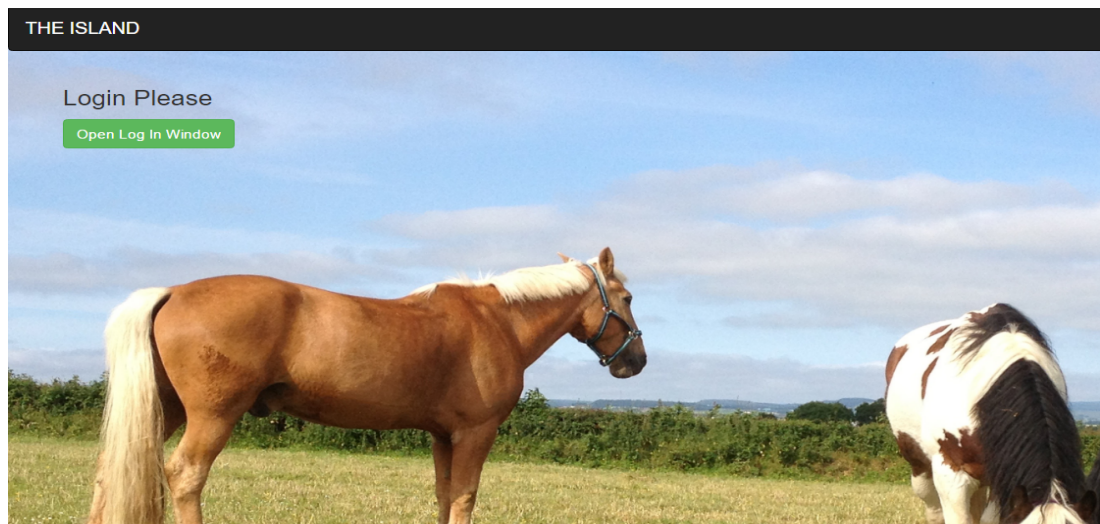
## **2.2 Prototype**

For any successful business, problems can stem from an overflow of information, the constant need for documenting and the storing of said information can lead to an increased error rate within the business. Folder and file cabinets can only hold so much but as your business grows, so does your need for extra storage. A business that can adapt and integrate a database management system is a must, if not for extra space or storage space, then for increased documentation efficiency.

In phase 1 research was conducted via external research and questionnaires (appendices 1), results were recorded to help design the best possible prototype, while meeting the needs of the equestrian owner. The prototype would have no functionality except for a basic layout and login window. Key features such as user interface responsiveness and website layout have been highlighted as important features to be considered. A System architecture diagram was also created to show the flow of the website and how a user might navigate through it. All these aspects of phase 1 allowed for a more planned and efficient approach to phase 2. It also ensured that the website would be setup accordingly and that the user interface created would be intuitive.

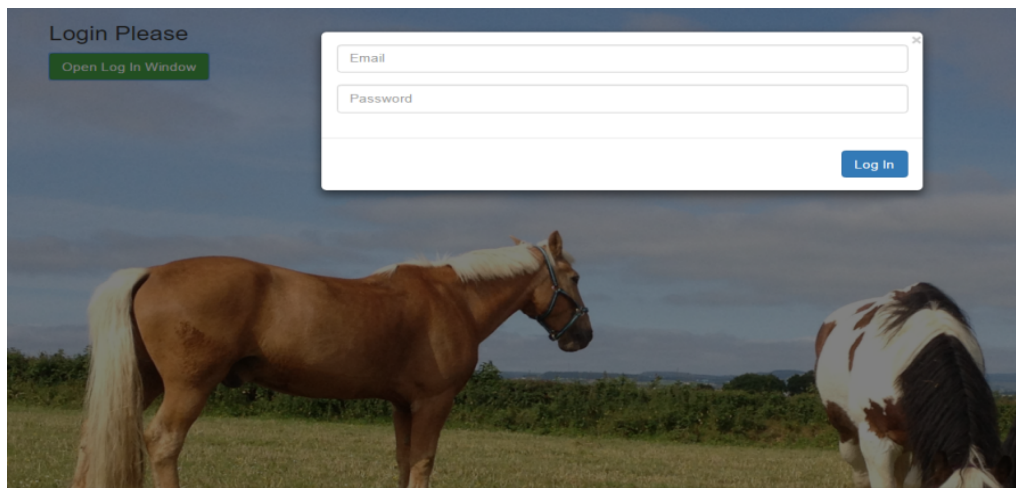
## **2.3 User Interface Design**

The user interface is a very important feature of the database management system, as it is important that the user enjoys the experience. That is why creating a prototype is so important to the overall development stage. It allows for a basic website template to be built and used as a basis for further development. The prototype can also be shown to the user, to allow for any changes to be made in good time. For this prototype, a soft and natural colour scheme combined with simple in-page navigation was built, thus helping to facilitate a good user experience. The Stable Stallion will have familiar website elements, elements that the user will have encountered before. This allows for the user to be familiar with how the website should behave, hence leading to familiarity and ease throughout the logging in and navigating process.



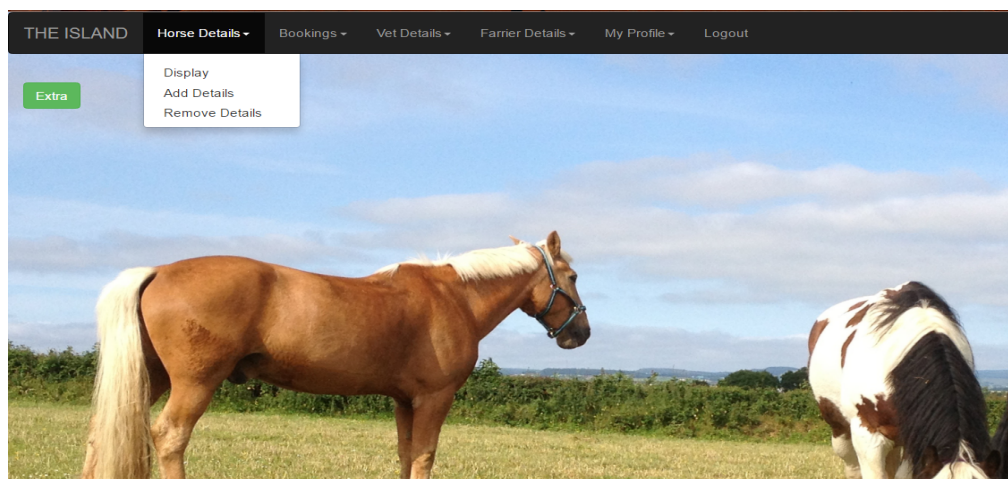
**Figure 8 – Login Page Prototype**

Figure 8 showcases the first webpage that will be visible to the user. The background consists of a picture of horses in a field, which has been allocated a centre alignment. Any buttons and text have been aligned to the upper left to avoid clashing with the picture. The text and button are made more visible by a light-blue background. A simplified version of the website's navigation bar is displayed. The name 'The Island' can be seen on the left-hand side, and on the right-hand side, there is one linked button. The 'about' button, when clicked, redirects the user to the 'about' webpage, which will inform them about the Island Equestrian Centre. In the center of the navigation bar is a linked button that will redirect the user to the official Equestrian centre website for all customer queries. All standard drop-down options have been disabled until the user logs in. All data has been minimised, and only important options regarding logging in have been left displayed. This style is beneficial to the user as they are not over-cumbered with information; they are only asked to simply log in. The lack of options on Figure 8 helps illustrate the only requirement for progressing.



**Figure 9 – Login Window Prototype**

Once the green button to login in has been selected, a login overlay window will appear. Figure 9 clearly shows the text that has been inserted to request the user to login. Below the text is a button suggesting the user to open login window, this is clearly visible, as the green stands out against the light blue background. Once the user has clicked on the button a login menu will pop out. The spaces provided have been overlaid with text, this is to help the user identify where their email and password are to be added. A login button is clearly visible below email and password fields. It is a bold blue colour on a white background to make it easy to see and easy to click on. Once the user has entered their details and clicked on the login button the website will progress. The system will compare the details entered with the information stored in the login table database. If the compare is a match, the user will be granted access to the features offered on the database management website. The login is designed to keep visitors who aren't employed by the equestrian centre from viewing the information, yet at the same time allowing equestrian employees to access the information no matter where they are located.



**Figure 10 – Login Prototype**

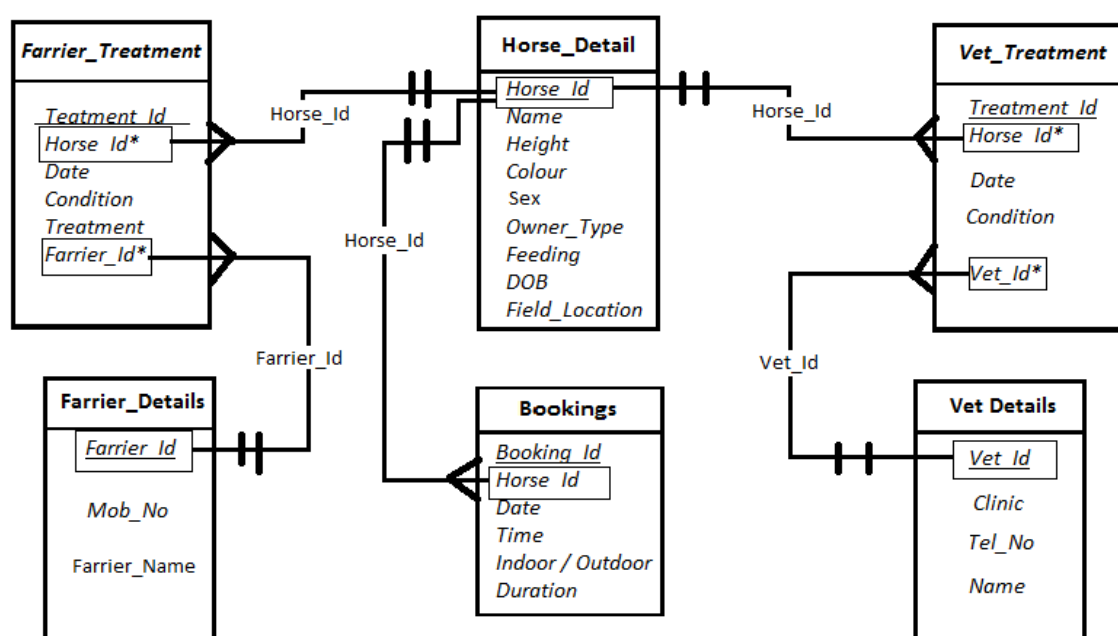
Once past the login page the user will be shown the website's index, from here they can navigate through the website using the navigation bar. The bar is coloured black, almost as a frame for the top of the website. Each heading is white in colour and stands out amongst the black backdrop. Each heading, upon being selected, will have a drop down menu and here the colour scheme is reversed, as we have a white drop-down background with black text. Both these colour schemes clearly illustrate the text and allow for an efficient display of said information.

A basic framework, colour scheme and layout have already been discussed, these aspects are crucial when it comes to developing an aesthetically pleasing website. The user, upon accessing this website, must be greeted with a pleasant, yet familiar layout style. All links must be clearly shown, all navigation and side bars must be responsive and mobile friendly. Key aspects like the logout button must be ever present, it has been aligned to the right of the navigation bar. This is to show separation between this link and the rest, as, once clicked upon, the user will be transported back to the login page of the website. The above images show that these features have been created and implemented successfully.

## 2.4 Architectural Design

An important aspect of the horse database management site, is to create and implement an integral and accurate database. The database is how all the excess files being produced by the Equestrian Centre are stored. Details are split into separate tables to help organise data and increase the speed of data retrieval.

Once the tables had all be created a relationship had to be setup to link certain tables together. This allows for an integral database to be used, links such as the farrier and horse id as mentioned above are crucial to the integrity of the website database. In the next section I will showcase these relationships and how they link to each table.



**Figure 11 – Equestrian Centre Database Relationship Diagram**

The farrier and vet information has been broken down into four separate tables, this is to help organise and collect the related data more efficiently. Each farrier has a unique id number just like the horses, this points to their name and mobile number for contact purposes. The farrier id also acts as a foreign key; this allows the linking of farrier details to a sub table called farrier treatment. Here all farrier treatment information has been stored and allocated to a unique treatment id, which is referenced through the farrier id foreign key. The same has been created for the vet



details table all contact and information data has been recorded and set a unique vet id number. This is then used in a similar way to the farrier table, as the vet id is connected to the treatment tables vet id foreign key. Each treatment is recorded under a unique primary key called treatment id.

These relationships that have been established help maintain the databases integrity. A horse id cannot be referenced in the farrier or vet treatment tables unless it exists in the horse detail table. A booking cannot be added if the horse id they are referencing does not exist. Unique identifiers not only help with the collection and retrieval of data, they also stop the repeating of information. One horse can have various treatments, various vets and farriers working on him and various bookings. These unique identifiers allow for multiple treatments to be referenced to a unique id. This stops the many to many relationships that are created by an overbearing amount data.

Horse details are stored in a number of individual records for each horse at the equestrian centre. Unique identifiers have been created to sort the data, each table has a primary key, this references a single record.

Horse_Id	Name	Height	Colour	Sex	Ownership_Type	Feeding	DOB	Field_Location
1	Presto	13.2 Hands	Palomino	Gelding	Equestrian	Hard Feed	1993	Bulls Field
2	Cracker	13.3 Hands	Skewbald	Gelding	Equestrian	Silage	1992	Bulls Field
4	Darcy	12.1 Hands	Black	Gelidng	Livery	Light Feed- Silage	1996	The Bogue
5	Maverick	16 Hands	Chestnutt	Gelidng	Livery	Silage/Hard feed	2006	Bulls Field
7	Poppy	13.4 Hands	Chestnutt	Mare	Livery	Silage	2012	Bulls Field
8	Eva	13.3 Hands	Grey	Mare	Livery	Silage	2001	Bulls Field

**Figure 12 – The Island Horse Details Table**

Figure 12 keeps records of each horse the equestrian centre houses, each horse is represented by a horse id. The id is a primary key integer that has been created to stop duplicate rows and references a single horse. The id also auto-increments and will be hidden from the user's view when they access the site. This ensures that each horse, once created or added, will be given a predetermined and unique identifier. Important details that a user may require such as name, height and colour among others have been collected and added to the table. Each column cannot have null

values; this enforces that when a horse record is created all details must be completed before that horse can be added to the database.

Booking_Id	Date	Time	Duration	Indoor_Outdoor	Horse_Id
1	20/06/16	1400	1hr	Outdoor	2
2	05/07/16	1100	2hr	Outdoor	1
3	21/07/16	12.00	1 Hour	Indoor	2

**Figure 13 – The Island Horse Bookings Table**

Figure 13 shows the booking table and has an auto incremented and unique primary key id. Each booking id will reference a single booking record. Each tuple shows when a livery owner has requested arena time for their horse. The table allows no nulls as once a booking id has been created it must be completed for the booking to be accepted. Each booking must have a date, time and duration, they must also choose whether they want their booking in the outdoor or indoor arena. Once all the details have been added, all that is left is to add the horse.

Treatment_Id	Date	Condition	Treatment	Farrier_Id	Horse_Id
5	16/04/16	Hoof Rot	Regular Spray With Hoof Rot Aerosol	9	1
6	21/05/16	Bruising on Bottom Of Hoof	Hoof Pick and Protective Shoe	10	2
7	14/5/16	Cut Under Left Back Leg	Hoof Rot Spray	9	1
8	01/07/16	Hoof needs shawed	Shawing	10	2
9	01/07/16	Hoof needs shawed	Hoof Rot Spray	9	2

**Figure 14 – The Island Farrier Treatment Table**

Figure 14 showcases a simple layout for the farrier treatment details table, it allowed no null values. The Treatment id is an auto-incrementing integer that identifies each treatment record. The farrier id and horse id are used to reference a connection to other tables. The horse Id is a foreign key and references the horse id which is a primary key in the horse details table. The layout for the farrier details table is as follows:

- **Farrier Details** (Farrier\_Id, Mob, Farrier\_Name)

As can be seen, the farrier id in the treatments table references the farrier key in the farrier details table. This allows a treatment that is recorded to not only have a date, condition and treatment but also a farrier id and a horse id that references a farrier and horse that exists in the horse details table.

Treatment_Id	Date	Condition	Vet_Id	Horse_Id
5	13/06/16	Swelling Above Right Leg	2	1
6	12/06/16	Cut Under Right Eye	1	2
7	01/07/16	Cut Under Left Back Leg	1	2
13	06/06/16	Colic	1	2

**Figure 15 – The Island Vet Treatment Table**

Figure 15 is not dissimilar to Figure 14 apart from the need for a clinic name column, the vet id will be referenced to vet that exists in a vet details table. The vet table is as follows:

- **Vet Details (Vet\_Id, Clinic, Tel\_No, Vet\_Name)**

In order for a treatment to be added, they must add a vet or farrier id that already exists, as well as fill out the other columns. Once this has been completed and they have select add the treatment will have an auto incremented id number and the details will be added.

Email	Password
greer.mccollum@yahoo.co.uk	Wrestlemania25#

**Figure16 – The Island Users Table**

Figure 16 will consist of an email and password for each user, with these details entered into the login page it will allow users to access the equestrian website and stop any unwanted visitors. To keep the login simple, the table only requires an email and password. Each new member of staff will have to produce an email and password, once it is included in the table they will be able to access the database. All the above tables are a representation of where the equestrian centre data will be stored, but in order to enter said data, the information being added must match the table columns.

This table will store all available information on the employees. Each have a password and user name. Once a login has been activated on the Equestrian centre website, the details will be cross checked with the details in the table. If the username and password are a match, then the login stage can continue. For the user account details, each users record is defined by a primary key which in this case is the username. Each user will have a unique username id that can be used to login and points to their singular record in the users table. With an integral table build and well organised relationship between said tables the implementation process can begin.

### **3.1 Implementation**

The implementation has been conducted with reference to the analysis and design sections of this report. These sections were used to create a simple prototype that would be the basis for the future development of the equestrian management website. HTML coding an integral SQL database have facilitated the transition from prototype to working application.

The website was setup using a combination of programs, each one having their own advantages towards the build and functionality of the Stable Stallion. The programs and components are as follows:

- **Bootstrap**
- **Notepad ++**
- **WebMatrix**
- **SQL Compact Edition**

Bootstrap helped with the creation of the navigation bar elements, and general layout. Features from its websites were imported to allow the use of specific coding to increase the functionality of links and navigation bar. Notepad ++ housed the coding needed to produce the website, other programs were available. However, notepad ++ was ultimately used, as it was program that made implementing code less complex. Through the use of different colour schemes for different code and easy layout capabilities, the website design process was conducted efficiently and effectively.

WebMatrix is a program that was used to link my notepad++ coding to a database housing all equestrian centre details. WebMatrix altered the standard HTML pages that were created and changed them to CSHTML. These are normal HTML pages, but came with a server attached, this server connected my CSHTML pages to my SQL database. WebMatrix is a program that kept all features of the website in house. It organised and collected data in a more effecting and organised way. All data has been stored in a SQL compact Edition.

The main advantage here is the ability to program and link a database without using an external resource, as Premaratne puts it:

*With WebMatrix, there seems to be all you need to build and maintain a web application. By using it, a software provider should be able to build a system cheaper and quicker, so it would be feasible even for a local grocery store to use it (Premaratne, 2010).*

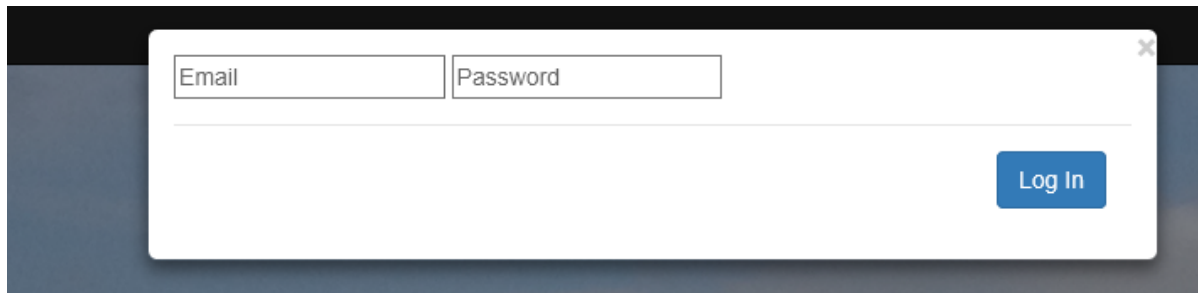
However, with Premaratne's opinion stated, WebMatrix's main advantage over most standard web application builders is the ability to scale. It has allowed for the integration of a larger database to deal with a higher data volume, if needed. This is a great tool for future implementation. If the website is successfully implemented and fit for purpose, then the website must grow to meet the demands of the user. WebMatrix can facilitate such a change and because of these features along with countless others such as end tag automation and CSHTML files, not to mention free to download. WebMatrix has all the tools to allow a small website to grow and continually meet the needs of its users.

The web pages were created using standard HTML code and razor syntax. Razor syntax is not a programming language. It is a server based code that allows for a more dynamic web pages to be built. It starts with a '@' symbol and when a web page is requested, the server will deal with the mark-up syntax after the @ symbol before it runs the page on the browser. So before the Island Equestrian centre websites appears, it establishes an open connection to the database. Once a connection has been established it will then run any predetermined queries that have been created by the developer and will allow the website to recall and display selected information if coded for that purpose.

WebMatrix provides a proper structure for cascading style sheets (CSS), pictures and HTML documents within the website. New folders were created within the 'The Island' website's root folder. A file called images which would contain all the background pictures was implemented in the website. A CSS folder was also created to help store basic layouts for the website, these then could be used to create a

website template. This helps avoid a lot of repetitive layout styling and can increase the ease and time at which it takes to create said website. All these folders also created a more organised and tidy workspace. A feature which became more useful as the web pages and CSS pages became more numerous in amount.

These programs combined with my prototype created in the analysis and design sections allowed for a more comprehensive website to be built.



**Figure 17 – The Login Window**

Figure 17 shows the basic login that will help the user login and display information only once they have successfully entered their details. Once they have added their email and password into the input fields, the user will have to click the login button. Once the button has been activated the email and password entered will be compared against the details of The Island Users table. If they match, then the user will be redirected to the index page.



**Figure 18 – Navigations Bar**

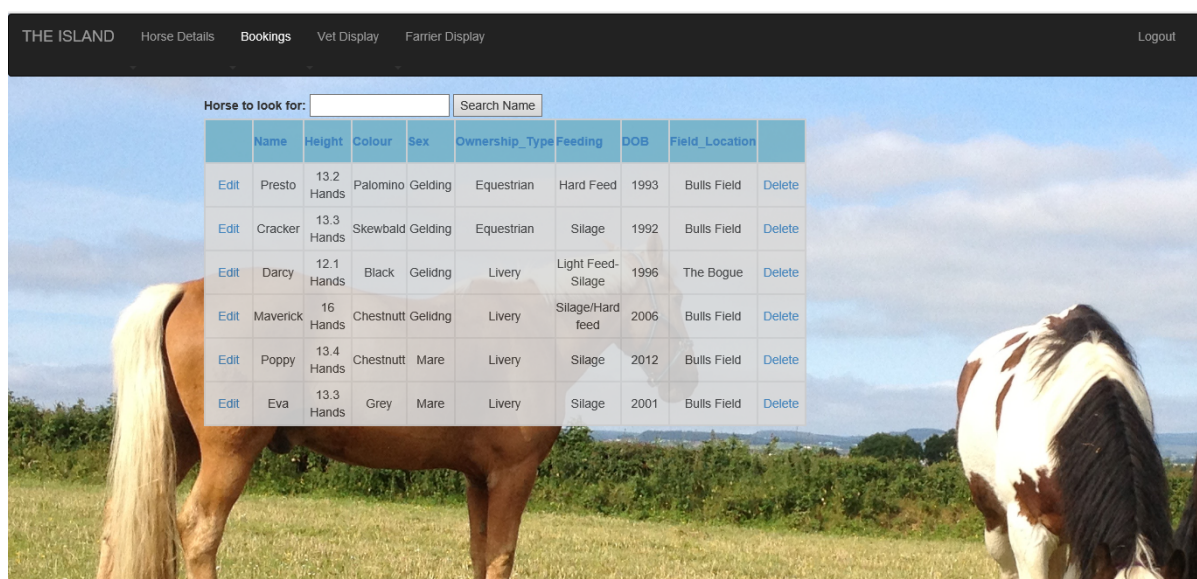
Figure 18 showcases the navigation bar that will be displayed on the Stable Stallion website. It will be consistent through the navigation process, the only web page with restricted access is the log in page. But once the user has logged in this will be the feature that will allow them to progress through the website with relative ease.

The navigation is black in colour with the drop downs links in white. This colour scheme enables the navigation bar to stand out and be easily visible to the user. The name of the equestrian centre is clearly shown on the far left side of the navigation bar. The text has been displayed in upper case so that it stands out amongst the other drop down options. This home link will redirect the user to the home page if, and when, they need it.

The other options to the right hand side of the 'THE ISLAND' link will be used by the user to reach the 'display horses' page among others. When the user clicks on one of the options, a box containing further options will drop below. From here, the choices for the horse display option will be shown. The drop down box colour is white, with black text for the further options. The exact opposite of the navigation bar, which gives it a unique look considering its close proximity.

As can be clearly seen in Figure 18 the logout button has been given a left side alignment, this is done to separate it from the rest of the website drop down links. It can be clearly seen by the user in this position and will be continually visible on every page contained in the website. This will allow the user to log out whenever they wish, without having to revert back to the home page.

### ***Horse Details:***



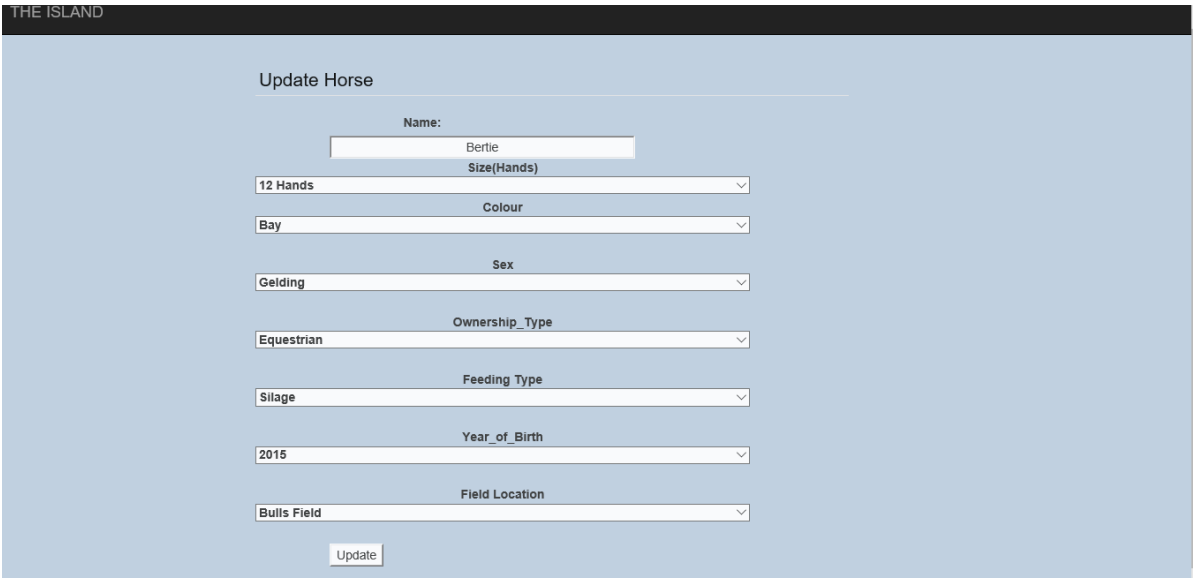
	Name	Height	Colour	Sex	Ownership_Type	Feeding	DOB	Field_Location	
<a href="#">Edit</a>	Presto	13.2 Hands	Palomino	Gelding	Equestrian	Hard Feed	1993	Bulls Field	<a href="#">Delete</a>
<a href="#">Edit</a>	Cracker	13.3 Hands	Skewbald	Gelding	Equestrian	Silage	1992	Bulls Field	<a href="#">Delete</a>
<a href="#">Edit</a>	Darcy	12.1 Hands	Black	Gelding	Livery	Light Feed-Silage	1996	The Bogue	<a href="#">Delete</a>
<a href="#">Edit</a>	Maverick	16 Hands	Chestnut	Gelding	Livery	Silage/Hard feed	2006	Bulls Field	<a href="#">Delete</a>
<a href="#">Edit</a>	Poppy	13.4 Hands	Chestnut	Mare	Livery	Silage	2012	Bulls Field	<a href="#">Delete</a>
<a href="#">Edit</a>	Eva	13.3 Hands	Grey	Mare	Livery	Silage	2001	Bulls Field	<a href="#">Delete</a>

**Figure 19 – Display Horse Details**



As seen in Figure 19, a display of the horse details is presented. The user will navigate to this page once they click on the drop down section and select the search horse option. The table in default form will display all horses ordered by an unseen horse id number. This allows the user to see what horse was entered in first and which one was added last. The horse details have been added in a webgrid format. In the early stages HTML tables were considered for display data. However, automated data divides, paging and custom table styles encouraged the use of a webgrid table. The table has been placed in the centre for optimal visualisation. The table also has an opacity level which allows for the background image to blend seamlessly with the table.

In the webgrid table shown in Figure 19 each horse(entity) has an indiviual record referenced by a unique id number. Each column holds data about that horse, whether it be size, colour, etc. Only two columns within the horse details table do not describe the animal. These are the edit and delete columns, which are provided to the user should they wish to edit or delete a single record. If the user clicks on the edit column, they will be redirected to the following webpage shown in Figure 20.



**Figure 20 – Update Horse Details**

As seen in Figure 20 the original details are displayed, the horse details have been aligned in the centre, for optimal visualisation. The user can choose which details they wish to alter. Once they are finished, they must click on the update button, which

updates the data in the database and redirects them to the display horse details page with all changes in place. It is worth to note that even if the user decides not to change anything, they must click on the update to proceed back to the page. The navigation bar has been disabled so that it will not interfere with the process of updating data. Drop down list have been included in the update page to help lower an error inputs.

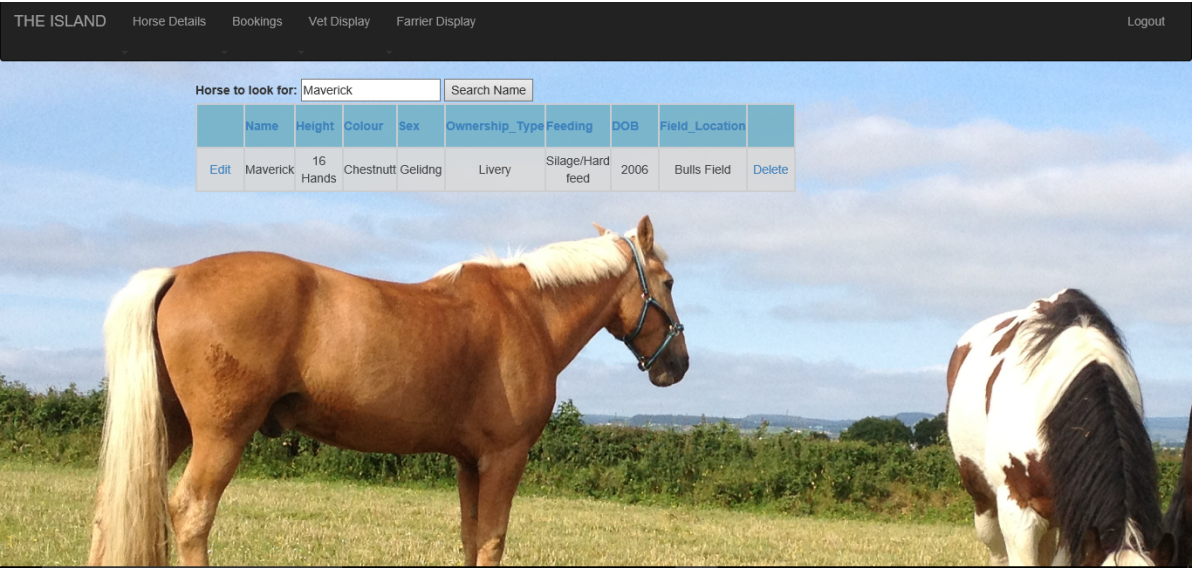
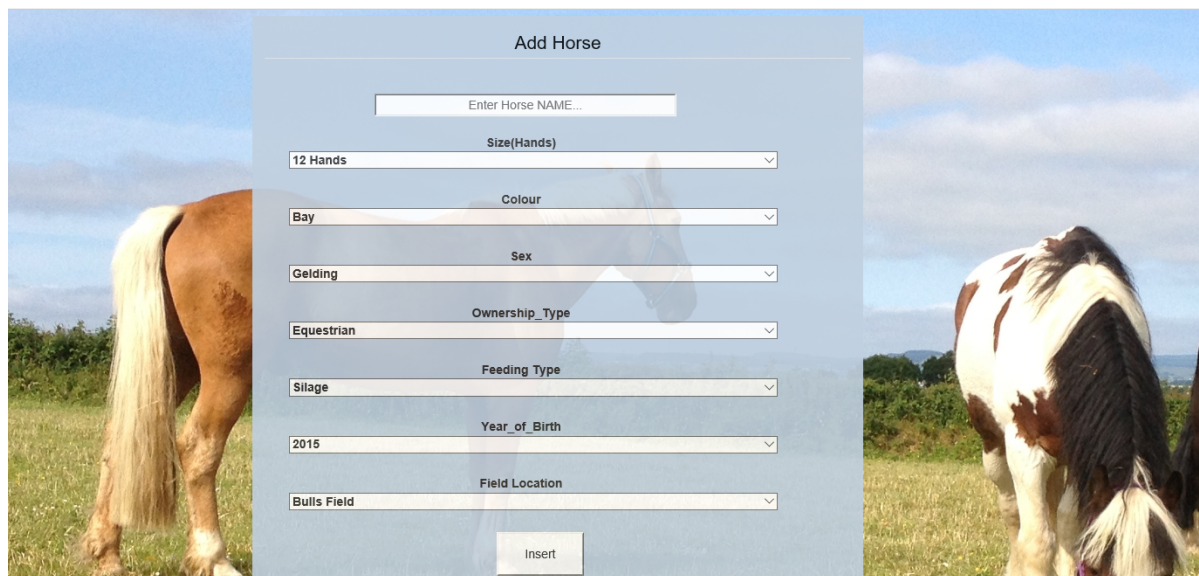


Figure 21 – Horse Details by Search

In Figure 21 we again see a display of horse details. However, in this screen shot a search box function is being used. As the amount of horses belonging to the equestrian centre grow, a user may want to search for their horse. As the input box in Figure 21 clearly shows, a user must enter a horse to search for. Once the user has entered the horse and the name matches a horse name from the database, then the related information will be displayed. As shown in Figure 21 a horse named Maverick has been added to the search box, and as there is a horse called Maverick in the database, his record is shown. This search function has been added to increase the efficiency of the display, and saves the user from having to scan through various other horse records. A challenge that was addressed in the problem statement, and shows how a database system can save a business time and money.



The screenshot shows a web application interface for adding a horse. The background is a photograph of two horses in a grassy field under a blue sky. Overlaid on this is a semi-transparent form titled "Add Horse". The form contains the following elements:

- A text input field labeled "Enter Horse NAME..."
- A dropdown menu labeled "Size(Hands)" with "12 Hands" selected.
- A dropdown menu labeled "Colour" with "Bay" selected.
- A dropdown menu labeled "Sex" with "Gelding" selected.
- A dropdown menu labeled "Ownership\_Type" with "Equestrian" selected.
- A dropdown menu labeled "Feeding Type" with "Silage" selected.
- A dropdown menu labeled "Year\_of\_Birth" with "2015" selected.
- A dropdown menu labeled "Field Location" with "Bulls Field" selected.
- An "Insert" button at the bottom right of the form.

**Figure 22 – Add Horse Details**

Figure 22 shows the add horse form, this form has been styled to allow for options and input boxes to be displayed centrally. The opacity for the form has been adjusted to help blend the background image. This creates a softer look for the add horse form, and can show the data clearly without compromising the look of the webpage. The add horse feature can be seen in Figure 22, the horse's name is the only element that requires user input, the other horse details are selected from a drop down list. The drop down list is used to reduce the chance of adding error filled data to the database. Common mistakes like spelling, lower and upper cases can have an effect on the data being entered. The drop down select boxes have been centred and extend the width of the form, to allow for easy click and use access. Once the user selects the required options from the drop down list, they can then select the insert button. The horse is then automatically given the next logical id number and the horse details are added to the database. Once the details have been added, the page they are currently on will be refreshed and horse details will be shown, including the new horse added.



Name: Cooper  
Height: 12 Hands  
Colour: Bay  
Sex: Gelding  
Ownership\_Type: Equestrian  
Feeding: Silage  
DOB: 2015  
Field\_Location: Bulls Field

---

Are you sure you want to delete the following horse?

Delete

**Figure 23 – Delete Horse Details**

The delete horse page can be seen in Figure 23; to get this page the user must click on the search horse drop down link. Once the user has arrived on the display horse details page, they will be shown all horses currently on the yard and then have the choice of selecting the edit link or delete link, which is shown beside each horse record. Once the user has selected a particular record that they wish to delete, they will be transported to the delete horse page.

This page will display the details of the horse they wish to remove. This is a feature that is used to allow the user a chance to confirm the deletion. As the delete is permanent and cannot be undone, the user is given a second chance to delete. Once the user confirms that the horse record can be deleted, the record is removed from the horse details table inside the equestrian database. After the deletion has taken place, the user will then be taken to the index page where they can go back to the display horse details page and physically see the change. The page data will be displayed centrally and will allow the user to view the data they are about to delete easily.



Booking Details:

THE ISLAND

Horse Details

Bookings

Vet Display

Farrier Display

Logout

Edit	Date	Time	Duration	Indoor/Outdoor	Horse Name	Delete
<a href="#">Edit</a>	05/07/16	1100	2hr	Outdoor	Presto	<a href="#">Delete</a>
<a href="#">Edit</a>	20/06/16	1400	1hr	Outdoor	Cracker	<a href="#">Delete</a>
<a href="#">Edit</a>	21/06/16	12.00	1 Hour	Indoor	Cracker	<a href="#">Delete</a>

Figure 24 – Display Bookings Details

Figure 24 shows the display booking webpage, on this page details of bookings can be clearly seen. The bookings data has been displayed using a web grid layout. Each booking has a unique booking id which keeps each booking record separate and does not allow for any duplicates. Each record has a date, time, duration, horse id and choice of indoor or outdoor. Like the horse details page, edit and delete options have been shown in the table and can be used to modify and delete the data.

THE ISLAND

Horse Details

Bookings

Vet Display

Farrier Display

Logout

Add Booking

...please enter date

Time(24hr)

9.00

Duration

30 Mintues

Indoor or Outdoor

Indoor

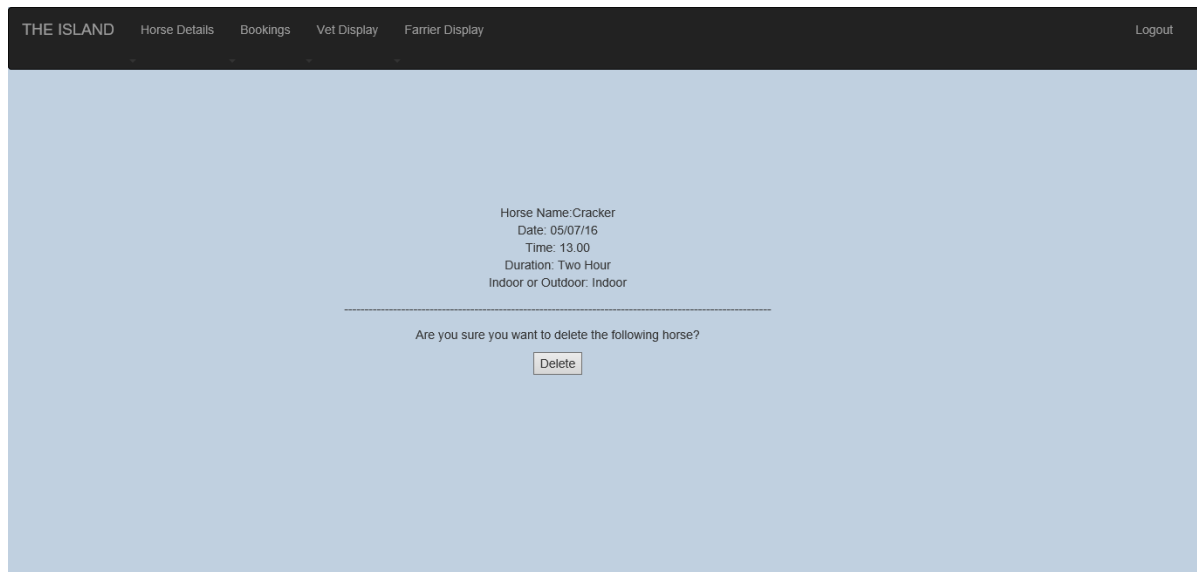
Horse Name:

Presto

Insert

Figure 25– Add Bookings Details

Figure 25 shows the layout for the add booking page, the user has been tasked with two typing inputs. One is for the date of the booking, the other is asking for the horse id number. A clear dropdown menu has been added to help the user uncover what id their horse has. Time, duration and indoor / outdoor fields are also drop down menus and encourage more efficient data saving. Once the user has added the details and clicked insert, the booking will be placed into the database. It will then redirect them to the bookings table where they will be able to see the booking they just added.



**Figure 26 – Delete Bookings Details**

Figure 26 shows the prompted display that the user will be presented with when they choose to delete a booking. The style and layout mirror the delete horse prompt seen in Figure 23. This is no accident as the user can become familiar with this layout style and allow for more familiarity when conducting these data changing functions.

Farrier Details:

THE ISLAND   Horse Details   Bookings   Vet Display   Farrier Display   Logout

Edit	Mob No	Name	Delete
<a href="#">Edit</a>	07746736912	Lee Johnston	<a href="#">Delete</a>
<a href="#">Edit</a>	07801102455	Walter Stewart	<a href="#">Delete</a>
<a href="#">Edit</a>	07726847265	Mark Wilson	<a href="#">Delete</a>
<a href="#">Edit</a>	0780125436	James McKinney	<a href="#">Delete</a>

Figure 27– Display Farrier Details

Figure 27 displays all farrier details, in a clear and structured way, the table has been centred in the webpage and uses a web grid for display purpose. The only vital details to be recorded is a name and contact number. Each farrier is given a unique id number that will be referenced in the farrier treatment table and used to link a farrier to their treatment. Edit and delete options can be clearly seen at both sides of the farrier details table.

THE ISLAND   Horse Details   Bookings   Vet Display   Farrier Display   Logout

Add Farrier

Farrier\_Name:

Farrier\_Mob:

Insert

Figure 28– Add Farrier Details

Figure 28 shows the add bookings web page, it illustrates the details that are needed to add a new farrier to the farrier table. The Island has three farriers at present and can be seen in figure 27. The user simply adds the farrier's name and mobile number, once the input fields have data then the user may click the insert button. The inserted farrier will have a unique farrier id number created and will be added to the database.



**Figure 29– Delete Farrier Details**

Figure 29 is very similar to Figure 26, the user will select a farrier record he wishes to delete and click on the corresponding link. Once the user has chosen a farrier they will be redirected to another web page where they will be shown the details they have selected and asked again if they wish to delete. If the answer is yes, they must click on the delete button again and the record will be deleted from the farrier details table.



***Vet-Details:***

THE ISLAND

Horse Details

Bookings

Vet Display

Farrier Display

Logout

Edit	Veterinary Clinic	Tel_No	Name	Delete
<a href="#">Edit</a>	Coleraine	02870348148	Catherine McNeill	<a href="#">Delete</a>
<a href="#">Edit</a>	Milburn	02870344842	Cathal Carr	<a href="#">Delete</a>
<a href="#">Edit</a>	Knockanboy	02870320645	Jill Hegarty	<a href="#">Delete</a>

**Figure 30– Display Vet Details**

Figure 30 is another example of the use of a webgrid layout to display details. The web grid table has been aligned in the middle, to easier showcase different vet details. In this instance the details being displayed are the equestrian vet details. Clinic, telephone number and name have all been recorded. The edit and delete options at both sides of the table can be clearly seen. They can be clicked upon to allow the editing or deleting of any vet details. The web grid table has been aligned in the middle.

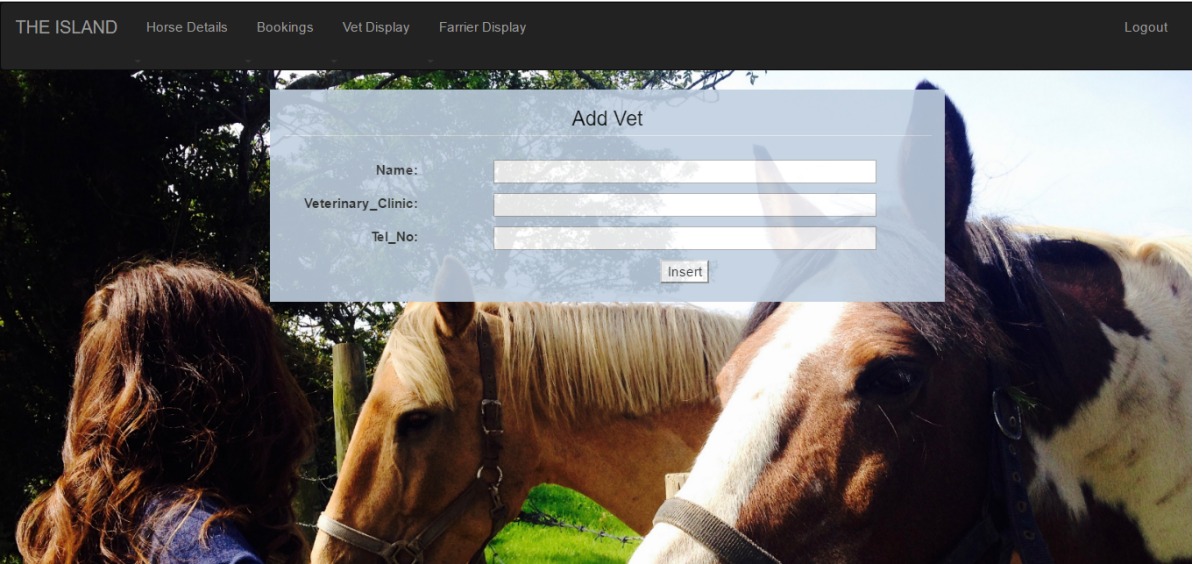


Figure 31– Add Vet Details

Figure 31 demonstrates a form containing input boxes, drop down menus were considered, to lower error submission rate. But because a new vet or clinic cannot be predetermined, the choice was made to allow the user to add the details by typing them in. Once they added the details (of which are only three input boxes) and clicked the insert button the form will be submitted. This will then take the vet details and add them to the vet details table, which the user will be redirected to.

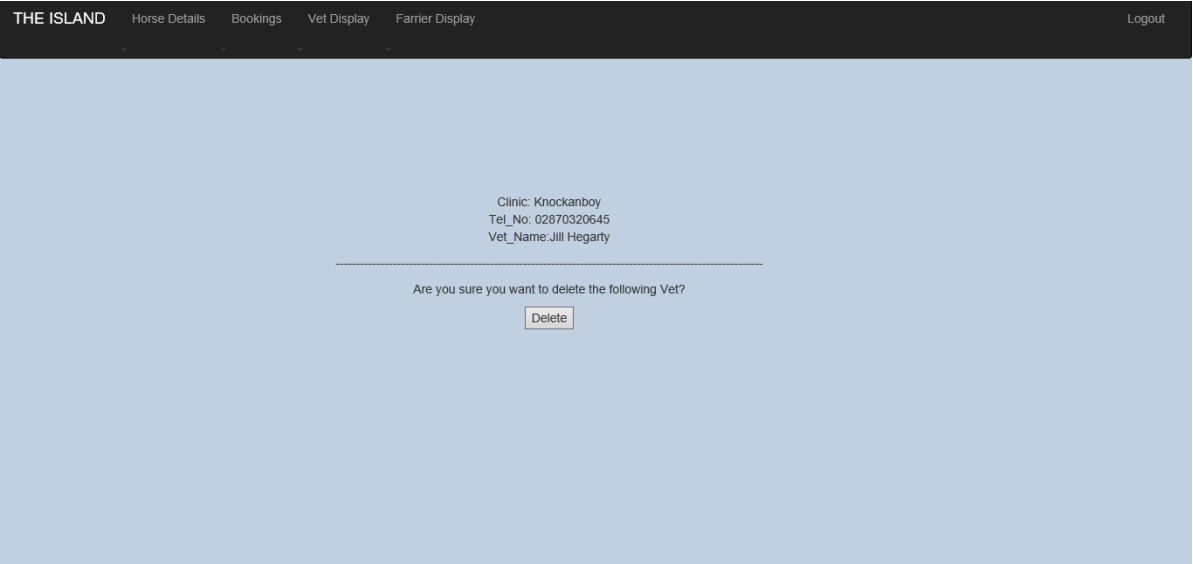


Figure 32– Delete Vet Details

Figure 32 showcases the delete vet details page, which the user will be redirected to should they click on the delete record link in the display vet details page. Very similar to the delete farrier page and how it operates, so well we will move on.

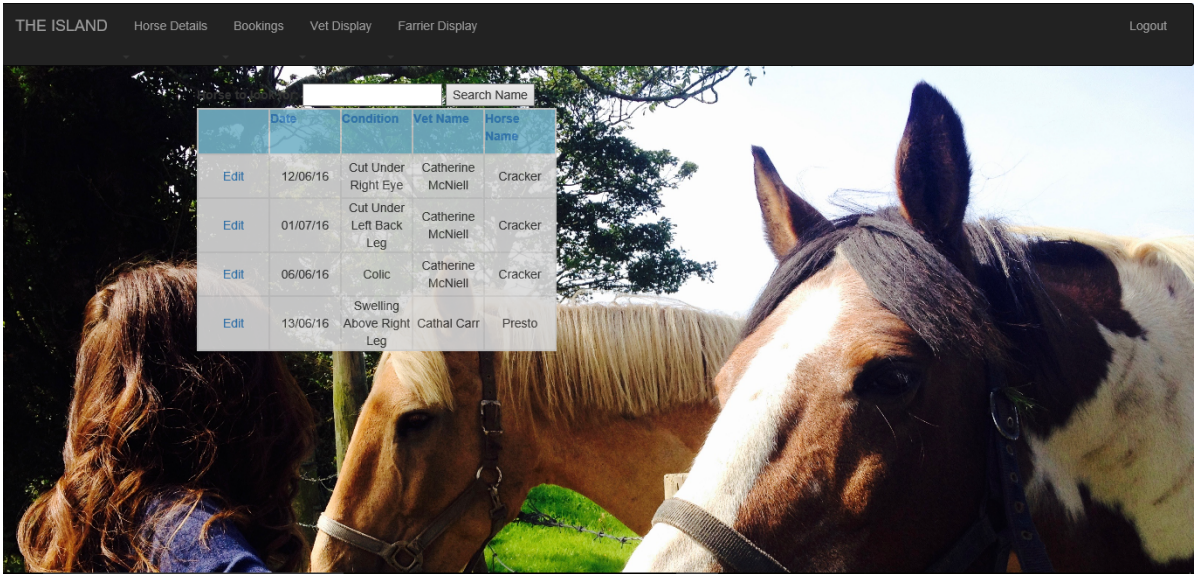
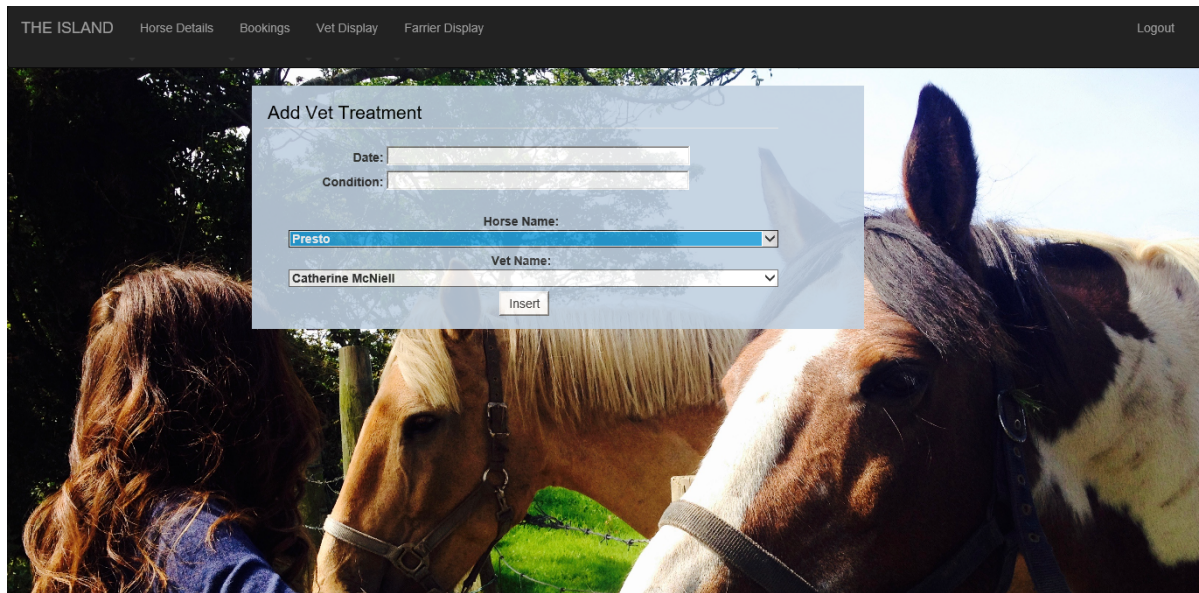


Figure 33– Display Vet Treatments

Figure 32 shows the display layout for the vet’s treatment details, it records what condition the horse may have, followed by treatment. It also records the date on which the check-up was conducted. It takes all these records and assigns them to a particular name of a horse, the horse name is linked to the horse details table through horse id. As you can see from most of the displays, there is a familiar pattern and layout being used, this is to help familiarise the user and help keep the website information display consistent. The edit options can be clearly seen on the left-hand-side, however, the delete has been removed at the last second as the user specified that vet and farrier treatment details must always be kept for insurance reasons.





The screenshot shows a web application interface. At the top, a dark navigation bar contains the text 'THE ISLAND' and several menu items: 'Horse Details', 'Bookings', 'Vet Display', and 'Farrier Display'. A 'Logout' link is positioned in the top right corner. The main content area features a semi-transparent modal window titled 'Add Vet Treatment'. This form includes the following fields: a 'Date:' text input, a 'Condition:' text input, a 'Horse Name:' dropdown menu with 'Presto' selected, and a 'Vet Name:' dropdown menu with 'Catherine McNiell' selected. An 'Insert' button is located at the bottom of the form. The background image shows a woman with long brown hair looking at two horses, one brown and one white with brown spots, in an outdoor setting.

**Figure 34– Add Vet Treatments**

Figure 34 shows the add treatments form, at the start of the form there is two basic input fields. The user must type in a date and a condition for the vets' treatment, the user must then choose from a filled list which horse and vet were involved in the treatment. The vet treatment table as seen in Figure 14 does not have a horse name or vet name column. These two attributes are called from the horse details (Figure 11) and vet details (Figure 14) tables. It is here that the integrity of the relationships between tables need to be intact. The horse id and vet id are used to determine what horse and vet belong to a particular treatment record. The horse and vet name will not be added to the vet treatments table only their respective ids. The names are only shown to provide the user with an easier add application and to reduce discrepancies. Once the user has selected all the treatment details and clicked insert, a record of the treatment will be added to the database.

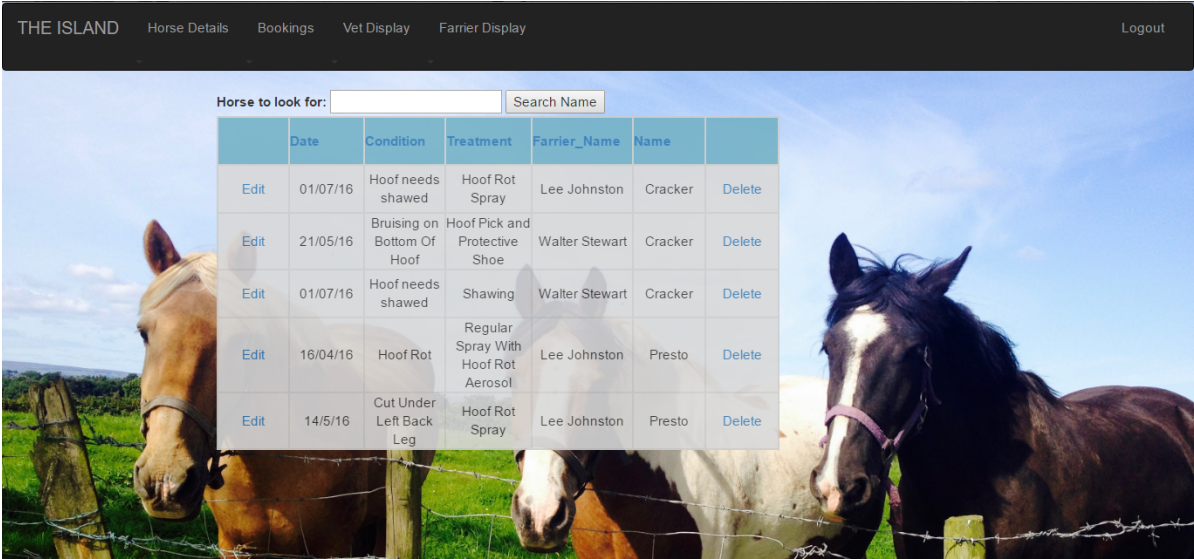


Figure 35– Display Farrier Treatments

Figure 35 shows the display layout for the farrier treatment web page. A web grid layout has been used again in order to familiarise the display with the user. The grid has been centralised and margined for an efficient showcase. Figure 35 also shows search components that can be used to search for a treatment based on horse name. An Edit option has been added to each side of the grid, once again similar to Figure 33. This allows the user to alter and update farrier treatments.

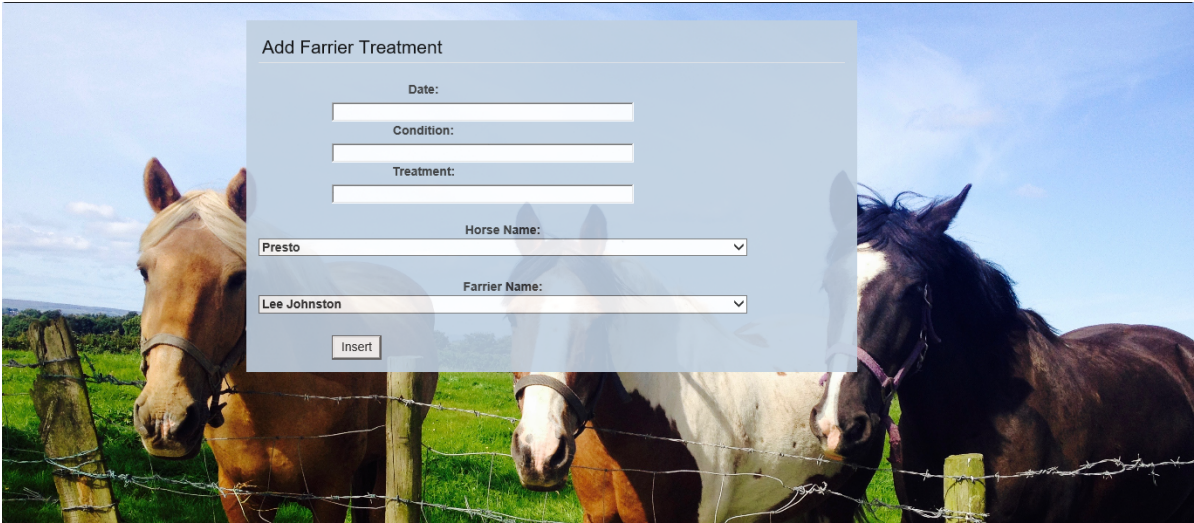
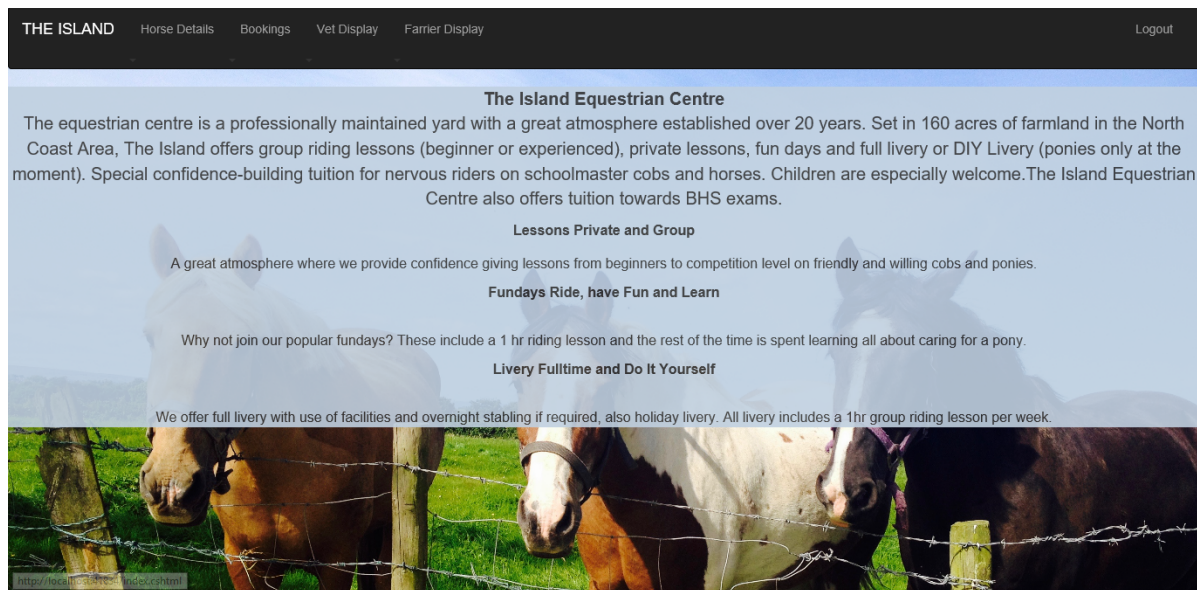


Figure 36– Add Farrier Treatments

Figure 36 showcases the add treatment web page, on this particular page a user has the ability to add a farrier treatment to the farrier treatment table. The user must input a date, condition and treatment. Once they have completed that they must select a

horse name and farrier name. Once all details have been input and selected the user must click on the insert button to add the treatment record to the existing database.



**Figure 37– About Page**

Figure 37 is a display created to inform users about the Island Equestrian Centre. It showcases a short bio on the business and goes on to highlight various aspects of the equestrian centre. The link for this page is only present on the login page.

### **3.2 Testing**

Upon a successful implementation stage, the website was tested for various errors and data inconsistencies. Practice runs were completed to test the website's look and functionality. All functions were running successfully, with only a few minor tweaks needed to the code and layout designs. However, for the website to be fully tested, it needed to be run in a real-life scenario. With this in mind, the Island Equestrian Centre owner was contacted and asked if they would participate in the testing of the software. They were informed that to help with the final product, it would be vital that they run through the website without any developer's input. This would allow for more efficient feedback on what the website might incorporate to help with the overall navigation and functionality. What follows is the comments made by the owner after testing the application:

- ***Owner suggested some indication as to how she should proceed through the website once logged in.***

Text was added to the front index page, to ask the user to select a link from the navigation bar. Text was also added to other add data and update data pages. This allowed the owner to navigate more comfortably through the website, without getting lost.

- ***Owner wanted a higher opacity with display tables to show more of background images.***

The opacity of the forms used for various pages was increased, this enabled the images and the forms to blend together. The owner agreed that these changes made the display web pages more aesthetically pleasing.

- ***Owner liked the display but asked for horses to be sorted by when they were added to the database.***

Horse details, bookings and treatments were all sorted into when they were entered. So the first horse entered will be the start of the table, whereas the last horse added will be at the end of the table.

- ***Owner asked for more drop down access in the edit horse page, for easier adding of data.***

The edit horse and booking page had input fields replaced by drop down menu selections. The owner agreed this made editing data easier as most recent entries were at the start of the table.

- ***Owner wanted official equestrian centre website link to be more obvious on the login page.***

The link to the official page was originally display in the navigation bar on the login page. It has now been changed to a more central space and can be easily seen as a result. The owner agreed that the link was easier to see and approved of the new positioning.



- ***Owner wanted more visible error statements if attempting a failed login.***

When a user tries to log in and is unsuccessful a clearer more centralised error will be shown. It will inform them of the fact that they have added details that do not match an account. They will then be asked to enter correct details in order to proceed through the website.

The testing allowed the user to single out any problems they had navigating the site. A programmer can only assume so much, so it's important to have the user test the application without any assistance. This creates an instance of true to life testing, in which the website can be run. Any problems that the user found were recorded and fixed based on their input. This is one of the many ways in which the Stable Stallion has been created to meet the user's expectations.

### **3.3 Future website functionality**

For future implementation, the website would incorporate more tables to the 'The Island' database. Records would be taken of lesson bookings in which a customer can book a particular day and time for a riding lesson. Another aspect that could be recorded for future implementation would be shaving deliveries and equestrian stock equipment such as hats and boots. Lastly a feature that would remember a horse when it is deleted, this would allow the user to be notified if their added horse that was previously at the yard. However, due to time constraints and wanting the desire to have an efficient website, these future implementations could not be added at this time.

### **3.4 Conclusion**

The Stable Stallion was developed as a way of solving the problem of overflowing data. The Island Equestrian Centre was a local successful business that was struggling to contain the ever increasing amount of paperwork. Rich pictures were created as a way of visualising the problems that need addressing. These diagrams allowed for solutions to be drawn up. The application was developed to allow the owner to effortlessly store, add, update and delete various equestrian records. These records were added to a database which kept it secure and integral. This was to limit the use of folder and file cabinets, and create more space in the equestrian centre's



office. The application would also help lower the rate of errors being recorded as most information being added was predetermined.

The application created is a database management website, it used HTML coding to design each page and a database sever connections to handle and store all paperwork. These connections were used though Razor syntax code that allowed database queries to be sent to the database for requests. Requests such as insert, delete and display all were used through the different web pages. The software used to build the application was WebMatrix, it helped keep all coding and database data in house and organised. WebMatrix also has the added advantage of upgrading to a bigger web application if needed.

In order to create such an effective and time saving application, careful research was undertaken. Various online equestrian websites as well as other external research including but not limited to questionnaires were studied and used to assemble prototype. The prototype was created using data recorded from questionnaires, which was added to a user stories table. Thus the user story table helped create basic page layouts and navigation bars. It also helped establish the applications functional and non-functional requirements. It also helped distinguish any particular layout and colour schemes. A risk assessment was also carried out to determine any liabilities that could occur during development. Any problems that could potentially undermine deadlines were noted and discussed. This would allow for better preparation in the implementation and prototype build stage.

Certain Aspects such as cost, availability, target audience and professional issues were taken into consideration. Firstly, cost was an issue, the equestrian centre is a small and local business and as such expressed concern over potential costs of application. Through researching different web building applications a cost effective solution was selected. This solution came in the form of WebMatrix, a free web building software that could incorporate the local business's data with room for expansion. Secondly availability was discussed, but because of lack of service on mobile phones around the equestrian centre a website was decided upon instead of an app. The target audience was discussed and it was established that this online application would meet the needs of equestrian owners and staff. These would be the target audience as their everyday activities would benefit from a database

management site. Lastly professional issues were discussed and how this website would fit in with the equestrian centre. The website needed to be user friendly and completed effectively. The database needed to be integral as not to record incorrect data, relationships and unique ids were created to help with the data and stop and repeating data. The website that was about to be created needed to be efficient and meet the user's needs.

A System architecture diagram was drawn up to help visualise a navigation path through the website. This would help distinguish which pages are linked to which and how the website would operate. Once this was created a prototype of the website could be planned and developed. This prototype would incorporate a basic navigation bar, login form and layout scheme. The user was shown this basic model in order to confirm their approval for the prototype. Once the prototype was completed and agreed on then the implementation could begin.

First stage of the implementation was to create an integral database, which was completed via WebMatrix's SQL database. Horse and Booking details are examples of some of the tables created to hold the equestrian data. In the architectural design section tables are displayed showing the held data. Various other tables were broken down using normalisation, this was to stop any data redundancy. A relationship diagram is also shown, and helps illustrate the relationships between tables. These various relationships and normalisation techniques help improve the data's integrity.

Once the database had been built it was shown to a supervisor for a second opinion. As the database plays a pivotal role in the functionality of the website, it was important to build and integrate an efficiently organised database. After the database was cleared by the supervisor, website functionality had to be added. The website was built to not only display data in a clear and concise way, but also to accept the adding, deleting and editing of equestrian data. These functions were created through HTML and Razor syntax. Firstly, a login function was added as per the request of the equestrian owner as seen in the prototype section.

Secondly a display function was created to display various equestrian data. These displays were coded to organise and display various details so that they can be

clearly seen by the user. Added functionality included edit, delete and search options for the data being displayed. Once the website had all these added working functions and a strong aesthetically pleasing background, testing could begin.

Functionality testing was completed by the programmer; this was to make sure all page functions worked correctly. Data was added, removed and edited to test if the razor syntax code and database connections were all valid. The equestrian owner was also asked to partake in some testing as to acquire their opinion of the website as a whole. They were asked to run through the website without any guidance to see if the website had an ease of navigation. Any problems they had were recorded and used for further implementation. A brief discussion was also had as to future implementation of the application. Aspects that could not be fitted into deadlines, but could be an area that could be improved upon in the future.

Overall the website was positively received by the equestrian owner, they enjoy the simplicity and functionality of the website. Aspects such as the login and search functions were hailed as great improvements for security and ease of access. The application most importantly met the Island Equestrian Centre's needs, whether it be the needs of new staff or the owner.

## **References**

Bradberry T. (2015) "What is the importance of database management?"

Available at: <https://www.linkedin.com/pulse/what-importance-database-management-system-scott-aveda> (Date accessed 8 Jan 2016).

Lunne E. (2011) "How to setup your company website"

Available at: <http://www.theguardian.com/money/2011/jul/22/self-employment-setup-website> (Date accessed 17 Jan 2016).

McCollum, J (2015) 'Interview with the author', Island Equestrian Centre.

Available at: <http://www.theislandequestriancentre.com/>  
(Date accessed 30 Nov 2015).

Millar C. (2004) "Accounting Software for Owners"

Available at: <http://www.thehorse.com/articles/11589/accounting-software-for-owners> (Date accessed 25 March 2016).

Premaratne, J (2010) "WebMatrix: Website Development made easier?"

Available at: <https://www.simple-talk.com/dotnet/asp.net/webmatrix-website-development-made-easier/> (Date accessed 20 March 2016).

Teeling M. (2012) "What is data integrity?"

Available at: <https://www.veracode.co.uk/blog/2012/05/what-is-data-integrity>  
(Date accessed 30 March 2016).

Walker T. (2015) "Why simple websites are significantly better"

Available at: <http://conversionxl.com/why-simple-websites-are-scientifically-better/> (Date accessed 12 June 2016).

**Appendix 1****Equestrian Owner Questionnaire**

Name:

Occupation:

Date:

**Part I: Introduction - Please mark the following options to show whether you AGREE or DISAGREE with following options:**

- 1) \_\_\_\_\_ A database connected website will facilitate and condense the amount of daily equestrian centre paperwork

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Strongly Agree</b>	<b>Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Don't Know</b>

- 2) \_\_\_\_\_ My managers would benefit from an equestrian styled database management site

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Strongly Agree</b>	<b>Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Don't Know</b>

- 3) \_\_\_\_\_ My staff would benefit from an equestrian styled database management site

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Strongly Agree</b>	<b>Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Don't Know</b>

**Please answer questions truthfully and to the best of your ability**

**Part II: Website Layout**

- 1) \_\_\_\_\_ **What name do you find most suited to an equestrian style website?**
- a. Stable Boy
  - b. Stable Stallion
  - c. Equestrian Organizer
  - d. Stable Mare
- 2) \_\_\_\_\_ **What colour scheme would you prefer for an equestrian style website?**
- a. Dark Blue and grey
  - b. Green and light brown
  - c. Black and white
  - d. Light Blue and Bronze
- 4) \_\_\_\_\_ **What do you prefer for the background of the equestrian website**
- a. Grey Background
  - b. Pictures of Horses
  - c. Equestrian Centre logo
  - d. If a particular colour enter here \_\_\_\_\_

**Part III: Website Functions - For this part please number choices ranging from 1 = VERY IMPORTANT to 4 = NOT AS IMPORTANT**

1) \_\_\_\_\_ **What are the most important day to day tasks that need to be recorded?**

- a. Horse Details and Bookings
- b. Farrier and Vet evaluations
- c. Riding School Details
- d. Livery details

2) \_\_\_\_\_ **What functions should this management website have?**

- a. Horse Search
- b. Adding Horses
- c. Editing Bookings and Updating Treatments
- d. Login

3) \_\_\_\_\_ **What is the most important aspect of a website?**

- a. Correct and easily read information
- b. Easy navigation and menu system
- c. Cost
- d. Available platforms

3) \_\_\_\_\_ **What is the most important feature of a website**

- a. A consistent application than can handle data.
- b. A simple home page with easy navigation
- c. A relaxing colour scheme and easily visible buttons
- d. Cost and Available platforms

## Appendix 2 -Meeting Log

Supervisor	Marek Szularz
Meeting Date	<b>Monday, 14 December 2015 14:40:43</b>
Meeting	<p>Met with supervisor discussed equestrian style application to be designed.</p> <p>Marek responded favorably and said it was a good practical idea.</p> <p>Discussed research and other applications that mirror what I've chosen to do.</p>

Supervisor	Marek Szularz
Meeting Date	<b>Tuesday, 15 December 2015 11:44</b>
Meeting	<p>Met with supervisor to show him an example of my problem statement and solution and what tools I would need for my project to be completed. I also discussed with my supervisor on the steps of implementing a rich picture for my solution.</p> <p>Left him a copy to look over and prearranged another meeting for when he's back after the 5th of Jan. I was also set an object of having a sample report for him in or next meeting.</p>

Supervisor	Marek Szularz
Meeting Date	<b>Monday, 18 January 2016 10.00</b>
Meeting	Met with supervisor to discuss progress

Supervisor	Marek Szularz
Meeting Date	<b>Tuesday, 26 January 2016 11:00</b>
T	Met with Marek to discuss hand in dates for 1 <sup>st</sup> and second report. Discussed what need to be added to reports and what could be improved upon.



Supervisor	Janet Alison
Meeting Date	<b>Tuesday, 14 June 2016 10:00</b>
Meeting	Met with Janet to show work so far and discuss future project plans

Supervisor	Janet Alison & Adrian Moore
Meeting Date	<b>Tuesday, 28 June 2016 10:00</b>
Meeting	Presented prototype to Janet and Adrian

Supervisor	Janet Alison & Adrian Moore
Meeting Date	<b>Wednesday, 6 July 2016 10.00</b>
Meeting	Met with supervisor Janet and Adrian to troubleshoot website login problem.

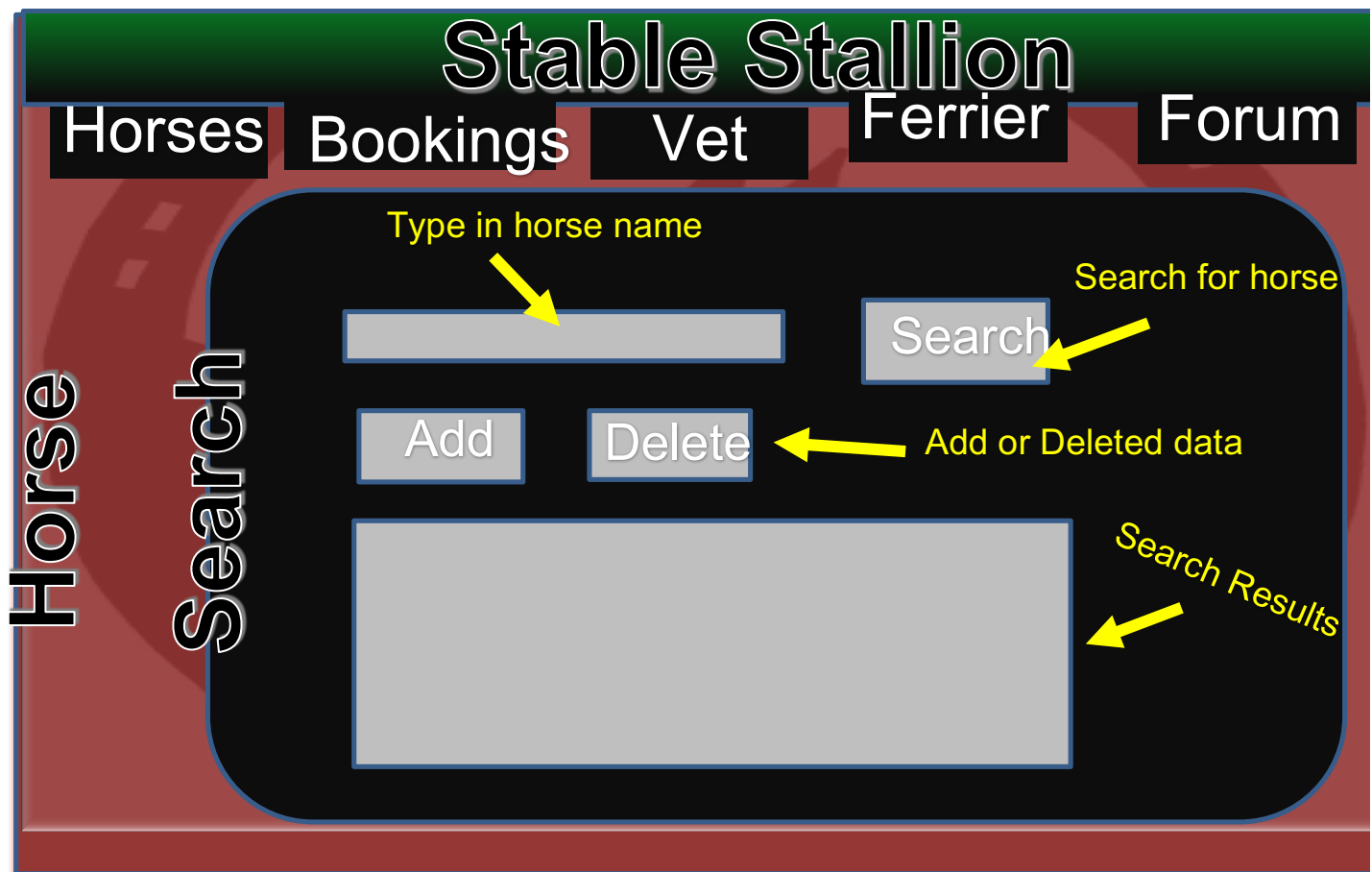
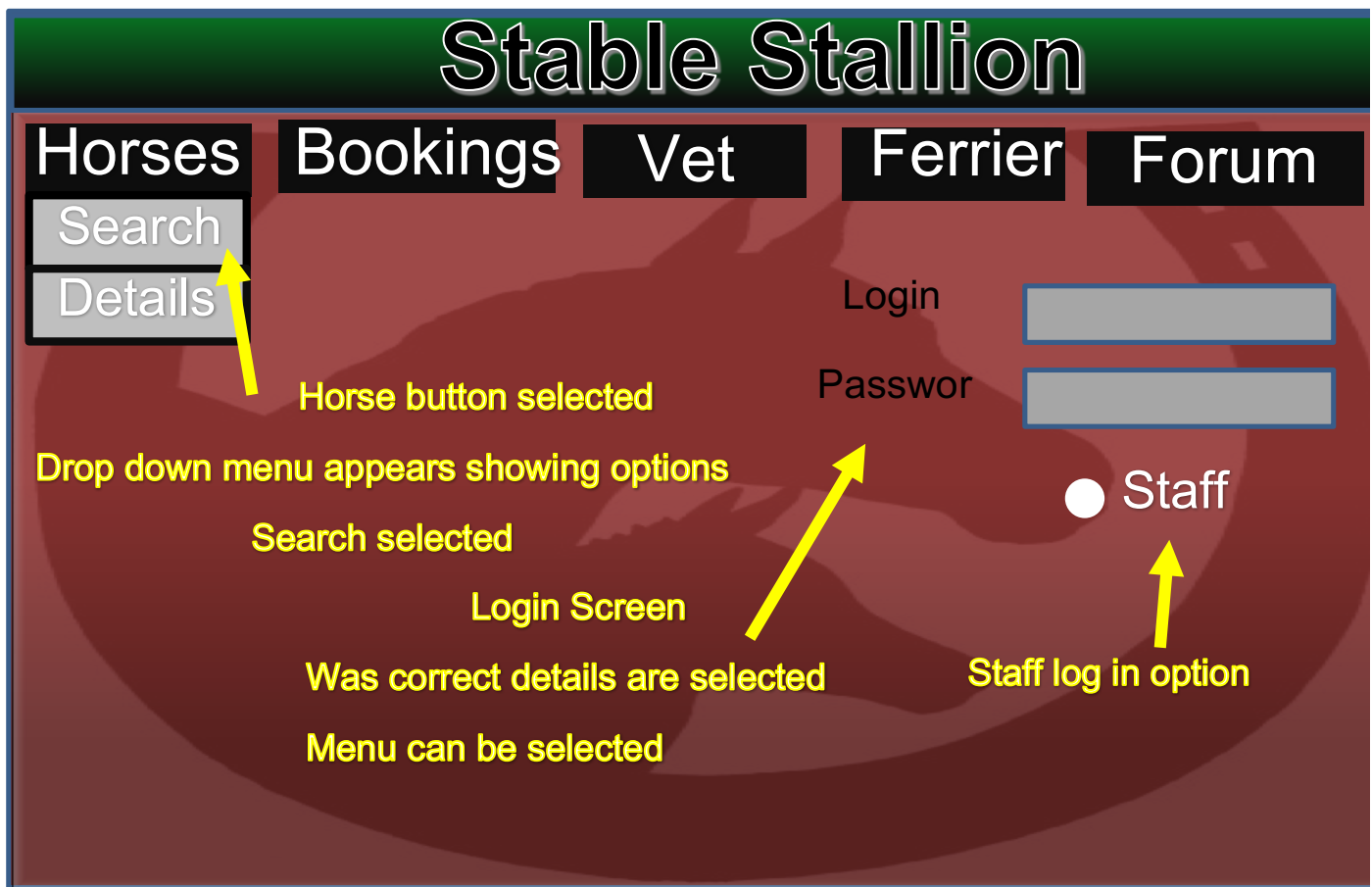
Supervisor	Janet Alison
Meeting Date	<b>Thursday, 17 July 2016 10.00</b>
Meeting	Met with supervisor Janet to show progress

Supervisor	Janet Alison
Meeting Date	<b>Wednesday, 03 August 2016 9.00</b>
Meeting	Meeting to show progress

Supervisor	Adrian Moore
Meeting Date	<b>Tuesday, 16 August 2016 10:00</b>
Meeting	Met with Adrian to run through website, provided suggestions for login page.

Supervisor	Janet Alison
Meeting Date	<b>Wednesday, 24 August 2016 10:00</b>
Meeting	Met with Janet to discuss report and any problems that need addressing. Also discussed viva and presentation.

## Appendix 3 – Storyboards



Horse

Details

# Stable Stallion

Horses Bookings Vet Ferrier Forum

Name

Age

Size

Colour

Injuries

Feeding

Picture

Amend

Horse Extended Details

Amend Details

# Stable Stallion

Horses Bookings Vet Ferrier Forum

Add

Check

Add Booking Details

Check Bookings

Arena or lesson booking

● Arena Booking ● Lesson Booking

Name

Horse

Date

Time

Duration

Booking Details

Amend

Amend Booking details

All

# Stable Stallion

Horses Bookings Vet Ferrier Forum

Link to vet results

Link to vet history

## Vet Results

Results		
History		

Vet	<input type="text"/>	
Horse	<input type="text"/>	
Date	<input type="text"/>	Amend
Time	<input type="text"/>	
Condition	<input type="text"/>	

# Stable Stallion

Horses Bookings Vet Ferrier Forum

Link to vet results

Link to vet history

## Vet History

Results		
History		

Vet	<input type="text"/>	
Horse	<input type="text"/>	Amend
Date	<input type="text"/>	
Time	<input type="text"/>	Delete
Next Check-up	<input type="text"/>	
Treatment	<input type="text"/>	

# Stable Stallion

Horses

Bookings

Vet

Ferrier

Forum

Ferrier

Link to Ferrier Results

Link to Ferrier history

Results

History

# Stable Stallion

Horses

Bookings

Vet

Ferrier

Forum

Forums

Link to forum

Link to private

Forum

Messages