Final Report

Major Project Presented in Fulfillment of the
Business IT Bachelor's Degree

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The Little Cake Box — Liverpool

Contents

1 Abstract

To summarise this report, in the beginning a client, who does not have a site for their business, was approached. With their consent, I began some processes and gained requirements/a specification; I started figuring out my approach to the project: I analysed what sort of functionality that will be included plus complexity.

In the business analysis, I measured the requirements which could be limited and considered the processes that would occur in the site and the typical users to would use it: I made some sample scenarios. This section looked into related sites and had users test them out.

The design stage starts with building up UI designs, users provided feedback. I designed the structure of the site in a hierarchy method - numerous use-case diagrams were developed that shows the functions available for different individuals.

The database analysis involves an entity-relationship diagram: information about implementation is included here.

During the implementation section, a segment discussed an overview of technical aspects (tools, coding languages, and potential issues); a schedule was produced. There is a piece that describes the creation process, including the methods used, any issues, and more.

There is a section specifically about my achievements; to summarise: I successfully created a website, fit of purpose and of satisfactory functionality as requested by the client.

There is a testing and evaluation section, which explains the tests I conducted in order to gain worthwhile feedback - there were numerous testings that checked features plus the design: both self-testing and user tests.

The evaluation section comments on the testing and how it benefits the project: it summarises the testing through graphs and explains why the project was successful.

The critical analysis sector is inspecting my work in an overview and fair manner - it reflects on the project: it explains what I believe went well, what didn't, and possible improvements.

There is also an appendix: a bibliography, list of figures, and raw data.

Word Count: 17,110

1.1 Acknowledgements

I wish to thank Aberystwyth university lecturers, those within the Computer Science Department in addition to staff members of the university, I appreciate the immense support throughout my studies.

Specifically, a big thanks to my supervisor, Edel Sherratt[1] for the constant guidance and advice.

I would also like to extend my appreciation to my family and friends for believing in me and dealing with me during these 3 years of education - plus this stressful period.

I wish to express gratitude to a good friend, who provided help: gave advice, supported me, and suggested tools that would help me a lot more than he could have known.

I would like to thank the client for allowing me to create the website with their permission and for providing aims that I could work with.

Finally, I want to thank all the users to took the time to fill out forms, test the site, and provide feedback.

[1] *Edel Sherratt; Aberystwyth University Staff Profiles.* `https://www.aber.ac.uk/en/cs/staff-list/staff_profiles/?login=eds`. Accessed: 2017-04-01

2 Background

Little Cake Box Marie Metcalfe owns a small baking business with the aim to create 'surprise' cakes for her customers. Essentially they give some details and then she'll present the cake when it is required with an exchange of money (she prefers cash in person): only when a customer wants a very specific design will she require a deposit and a meeting. She is a law student, works in a booking shop during her weekends, and baking cakes is her hobby. But if the website project goes as planned and gains more customers she will consider making this her priority.

Her small business was started a few years ago when she only made cakes for friends and family, however when she saw passion and received good feedback she decided to expand and cater to others: she now provides her services across Liverpool and is even more willing to expand across the Northwest.

2.1 Project Description

2.1.1 Introduction

For my major project, I will be producing a website. The site I am designing will be designed in a professional manner with reasonable coding skills. I am going to produce a cake shop for a client who runs a small cake business. The client bakes cakes for individuals in her local area as her customers are mostly mutual friends; she uploads her cakes to her Facebook profile and so would appreciate a website for more individuals in her city to contact her. The client requires a site that promotes her small business, she wants clients to email her plus a gallery available of her cakes. The client also likes the idea of a blog section so she can update her customers on her business, plus maybe a discussion board for interacting with her customers. The website will be building the clients cake business to be available online; allowing her customer market to expand in her small residential area, her city, and maybe across other cities in the North West of England.

2.1.2 Functions

There are various functions and features the website will cover. The main aspects will be a category system for a list of cakes in inventory that the business owner/client can bake; customers can request a certain category and state specific details, such as if the customer wants a chocolate cake or pink icing, etc. However, customers will have a form available to request a custom order with a text box to describe what they want; similar to the site: Etsy. There may be a booking system form/database available to book events, however the

client prefers the idea of a form sent to them directly through email - this allows the client to reply by email or call the customer with a quote, they can discuss details. The main function of the site is that the client wishes to be more engaged with a variety of people; she wishes for a blog section for her to communicate her life/business with her clients, describing and promoting the cakes she enjoyed baking for her customers. She wants her visitors to know some of her recipes and favourite cakes plus a gallery. The client also likes the idea of a discussion forum for her clients to discuss ideas together; she wants to communicate with her customers, who could provide advice to others and even offer their opinions to the business owner herself.

2.1.3 Related Sites

The client in situated in Liverpool in an urban area she mainly bakes cakes for mutual friends however with a website she can expand her business for more individuals in Liverpool. She can also have customers from Northwest England. There are a variety of websites for cake shops in Liverpool however majority are situated in the city centre of Liverpool. Various cake businesses are situated in the urban areas however aren't highly ranked and majority don't have actual sites, for example: Crosby Cake Company. A site called, Naked Cake, is a business situated in the urban area of Liverpool. The website is very simple: it has a gallery and page for contacting the business, it is perhaps a poor colour scheme though (white and a bright blue/green). Another site, Terry Tang Designer Cakes, is closer to the city centre and is much better designed compared to the other one, however I think there is too much text on the main page with the paragraphs designed poorly. Their logo is a nice design yet on the top of the page and not quite visible. A positive aspect though from both sites is the simplistic colour scheme and web design: two main colours, white background, and clear images.

Related sites will be explained in more detail further in the project report; specifically, the Business Analysis.

This project will be interesting: a blog on a baking website is quite unique - the client likes the idea of communicating with her customers plus allowing them to communicate together too. Pages to share her recipes, ideas, and provide her business.

3 Approach to Project

3.1 Technology

3.1.1 Proposed

There are various methods of building a site: using PHP, Java, and different programming languages. I will design this site using HTML, CSS, PHP, JavaScript I have experiences in web building so I will use a variety of all; JavaScript functions will be useful and Cascading Style Sheets will produce creative and professional-looking web pages. I will be using MySQL or PostgreSQL for the database setup and will be using server-side scripting (PHP) and use prepared SQL statements to ensure the site is secure.

3.1.2 Complexity of Site

The cake shop site will be reasonably sized, including an about page and contact details; the contact details include the email/phone number of the business owner. There will be a blog section, a discussion board, and a page with forms. There may be a page for an event system (to show available dates). Another page will include some recipes (list of favourite cakes) with a gallery.

There will be quite a lot of technical aspects of this project, for example: content generated from a database: list of recipes, favourite cakes, and a potential booking system. There will be a lot of different coding involved: SQL statements to pull from the database, PHP, and JavaScript for make text bigger for a user-friendly site. There could potentially be a log in system for the client to add new posts in the blog (perhaps add new images to her gallery) and to input some of her booked dates. PHP will be encoded to send form details to the clients email also the discussion form will be code based.

There may be some difficulties with the project, specifically the events system may be most complicated: the client has a complex schedule, she has other priorities and work so a so a different sort of events booking system may have to be designed: perhaps in the end a booking system isn't necessarily needed. Obviously as the prototype is being produced and whilst the project is being progressed there may be changes to the design: it could find other features for the site that could be better or perhaps some ideas aren't suitable.

3.2 Plan

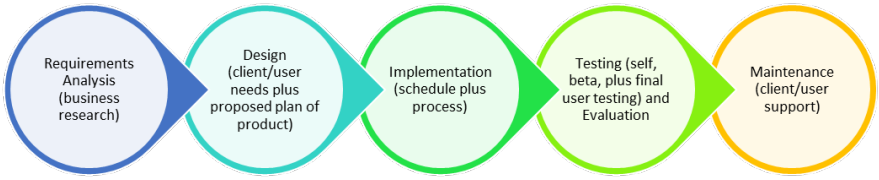

Figure 1: Software Development Life Cycle

During the requirements stage, a lot of business research will be conducted. Researching into website production/technical aspects, similar sites, and producing a schedule for the project. In the design stage, an in-depth design of the site will be conducted plus gaining information of client and user needs in order to produce a user-friendly site that also fits the aim/purpose. Both back-end and front end design will be made in preparation of the implementation stage. Before production, in the implementation stage a schedule will be created to follow an appropriate plan: it will note pre-releases and what is aimed to be created within time schedules. Testing will be combined with the implementation so we can ensure the site is being created: I will gain some beta testers and continuously perform self-testing. But after production, I will spend some time solely on the testing and evaluation stage so improvements can be made. Once the site is released, there will be a feedback form available for continuous maintenance.

Figure 2: Gantt Chart

4 Analysis

4.1 Business Analysis

4.1.1 Introduction

For this project, I will be producing a report and a web-based product – the report will be an in-depth explanation of a website that will be created for a client. I need to analyse the business to ensure I can create a website that will be of its highest potential, observing competitors, discussing possible users, and exploring features of the site through diagrams.

I have the responsibility to fully explore the concepts of web development: the front-end design (how the site will look) and back-end design (database elements) – I will be researching different sites related to the one I am to create and how those other sites seem well-designed. I will achieve the goals of what the client asks; I am to ensure maximum benefit is obtained from the business development; the aspects I explore will greatly provide help with the rest of the project.

The client is a late-twenties adult, Marie Metcalfe, who owns a small cake business in the city of Liverpool. She mainly caters to family, friends, and mutual friends, but she wishes to expand her business to other areas to bake cakes for – she wishes for a wider variety of individuals in Liverpool and even to individuals of North West England. She would also obviously consider catering to those quite a far distance from Liverpool (Sheffield or Birmingham) however information will be provided how in these circumstances the customer will have to travel to the business owner for the cake.

The client also wants to provide her recipes to customers: interacting more with them – many customers she gains end up being frequent buyers and so by having features of a 'recipe list' may promote web users to return – discussion boards will be available for customers to communicate with each other. Individuals who wish to buy a cake for an event will be using the website. They can explore what cakes are on offer (recipes), inquire about a custom order, and more.

4.1.2 Stakeholders

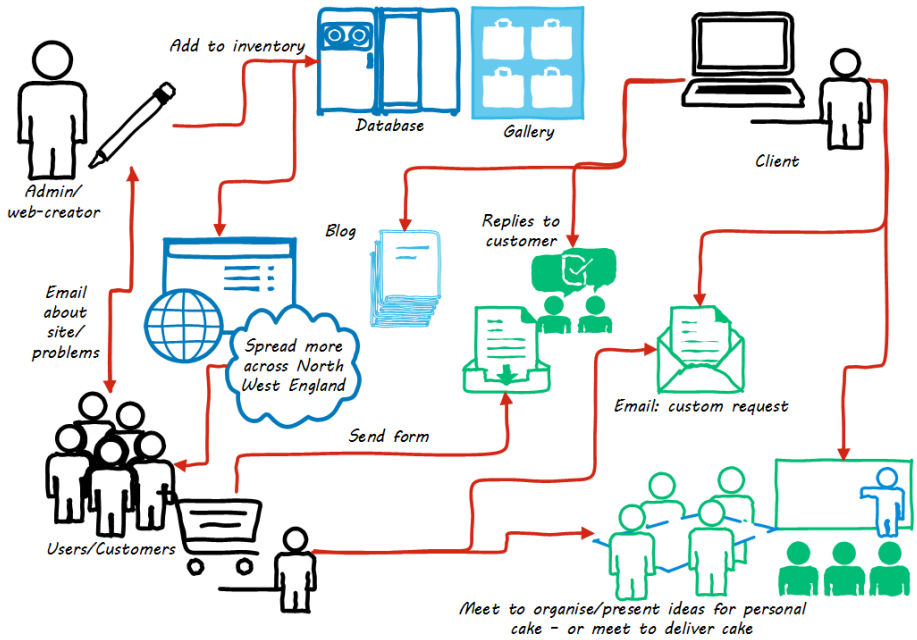

Figure 3: Rich Picture

Figure 3 shows a rich picture of the web product.

Web-creator/admin: creates the site, replies to emails (perhaps about a performance issue), and adds information to the database.

Client/business owner: adds content to the blog, replies to customers' orders (plus custom requests), and potentially arranges meetings.

Users/customers: browse the site (help expands the customer market space), sends forms (plus custom requests), and meets up with the business owner to discuss ideas or collect the cake.

These are the main aspects of the site which actors will be interacting with. As the 'event booking' system is not fully known (business owner doesn't know what sort of system she wants as her schedule varies) I could implement an organised system for when she will be meeting up with customers. Relationships [arrows]: the arrows direct to the type of interactions that will occur, for example the customer sends a form and the client replies; the client is the only one who will add to the blog and the admin is the one who adds to the database.

4.1.3 Typical Users

Typical users of this site will be adults of a wide variety of ages. Ages include 18+ as the client requires her customers to be adults. In general, there are no limitations/restrictions of the characteristics of users, just in general the site will be catering for adults who wish to have a cake (or cupcakes) made for an event or occasion – it is open for all as a wide variety of cake designs are available.

Some typical user biographies:

Georgina is a 59-year-old individual who wishes to have a cake baked for her grand-child's christening.

Harry is a 31-year-old who wishes to have a custom order cake baked for his brother's birthday (would like to inquire about a cake that looks like a snooker table with a cue ball).

Adam is a 27-year-old aspiring baker who is using the site for baking from recommended recipes and inspiration, emailing the client/business owner for advice, and using the discussion board to talk to customers or other chefs – this user isn't using the site for the main objective (ordering a cake), however they are using it for the other objectives what the client wants.

The user will be using the site mainly to order cakes: send a form or request a custom order. They are also using the site to bake cakes from recipes that the business owner provides (client may also suggest good kitchen utensils). Users can view the work [cakes] produced through a gallery and discuss/interact with other customers.

4.1.4 Scenarios

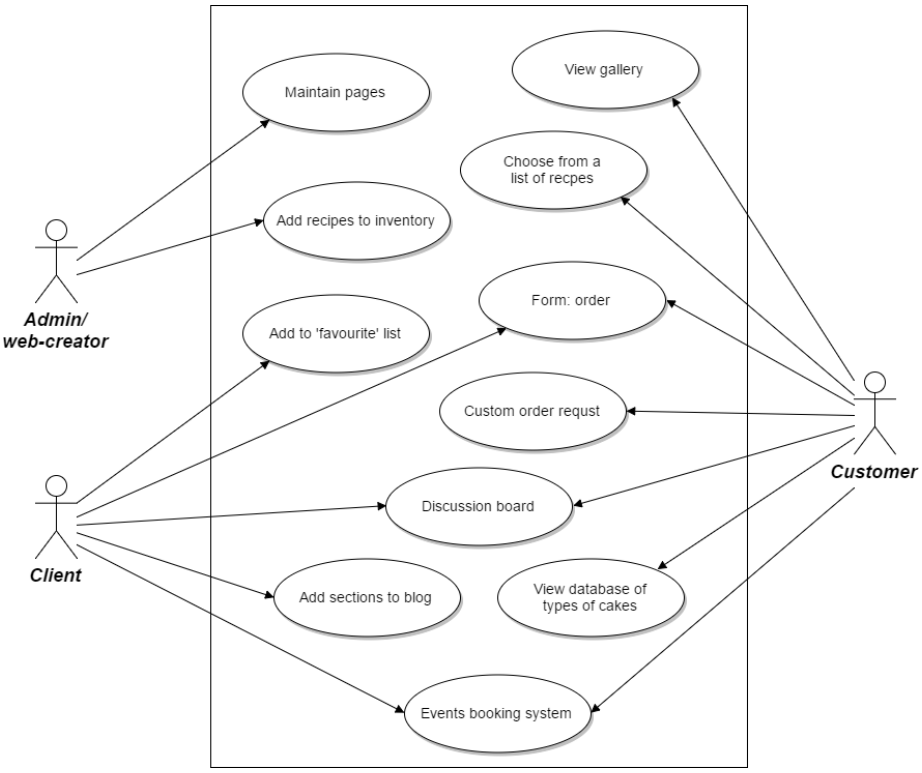

Figure 4: Business Analysis Use Case

Figure 4 shows the initial proposed Use Case diagram of the product.

Maintain pages: This is a feature of the site which the admin will interact/be in control – as the client is not advanced enough with technology she prefers if the admin had most control. Maintaining pages includes altering the text in an 'About' page, adding more images to the gallery, and updating contact information.

Add recipes to inventory: The database will be large: with a giant list of recipes/categories available, perhaps a log-in system for the client, and a list of the client's recipes (including favourites) to offer customers. There may be a section in the site for the admin to log in and add/update/delete certain things.

Add to 'favourite' list: The client has said that if the system is easy, she wouldn't mind the idea of being able to interact with the site to add her own favourite recipes or utensils. She can log in and add certain items.

Add sections to blog: This is the main feature the client wants: she doesn't particularly mind if she is the one to add posts or if I, the web-creator, adds them, she just wants the ability to interact with her customers.

Event booking system: This feature is quite complicated and not fully yet thought through. The client would like a booking system to observe and allow her customers to see when she may be free, however as her schedule is complicated she doesn't yet know if a system is needed. However I may add a slight small system for when perhaps an event is requested or such, or allow the client to log in and highlight days she will/will not be available.

Form: order:- Customers will interact with potentially two different forms available, one to make an order with a list of categories such as: what cake flavour, with icing, and more – it will most likely provide a quote. The other form will be in a lot more detail as it is aimed for requesting a custom order – no quote will be provided.

Discussion board: Both the customer and the client can access the discussion board and can interact with each other, this feature is open to all and will be logged: users can email the admin to report people.

View gallery: A gallery will be interactive: allowing users to choose a category of cakes they wish to view – when sent to a new web page of cakes, I wish to have a script that allows users to see bigger versions of images, they can click an arrow that will send to the next image.

View database/list of cakes: Hopefully there will be a function of perhaps a 'sort' option so potential customers can sort through price of filter category of cakes available. However, this cannot be fully known yet as I still need to properly design a database system. There will definitely be a database available on the site with categories and type of cakes available that the customer/user can view.

Custom order request: This feature will be very similar to the order form, however will be different: instead of options to choose from it will mostly be a simple form with a text box available for the customer to type in their details.

Choose from a list of recipes: The client wants their recipes available plus some of their favourite cakes/utensils – they want this to be a feature in which they can interact with their customers. This feature is planned to be a list (drop down list) of potential recipes a customer can choose from to which details are displayed when a recipe is chosen.

Overall the stakeholders' needs are taken into account: the main aspects of interacting for the client is to add to her blog, observe a potential booking system, and be able to check customers' orders. Customers can view a database of the types of cakes/categories available, view a gallery, and submit a form (a simple order or a custom request).

4.1.5 Related Materials

I am researching related sites in the Liverpool as the client provides her business to customers in this North West city – she won't exactly be catering to those in London. I can observe the best/well-designed sites and learn from them. I tested the sites on different browsers.

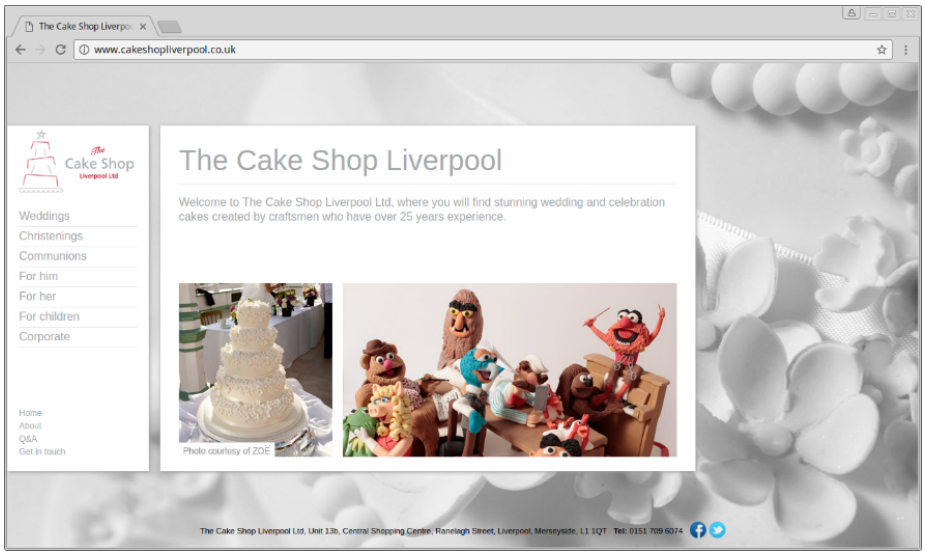

Figure 5: The Cake Shop Liverpool

The Cake Shop Liverpool[2] is nicely designed; however, it is not responsive as the main content stays in place and a user needs to scroll left/right if the window is too narrow vertically. If the monitor of a user is too large the background image stops adjusting its size. I sent this link to the client and they discussed their views that the colour scheme is nice but isn't the design she prefers.

[2] *The Cake Shop Liverpool.* `http://www.cakeshopliverpool.co.uk/`. Accessed: 2017-02-12

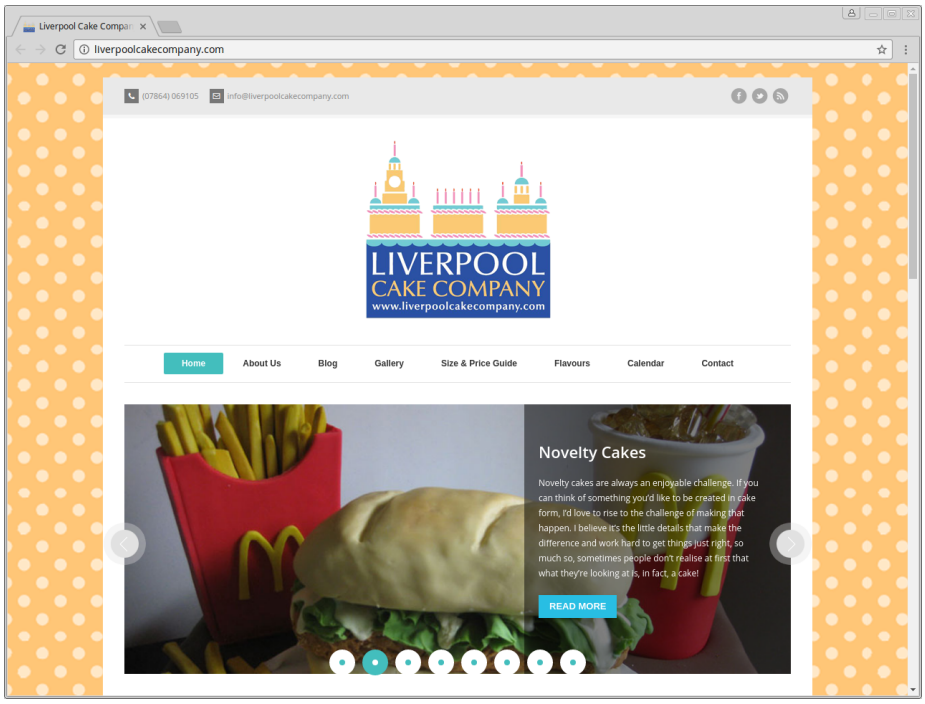

Figure 6: Liverpool Cake Company

The colour scheme for Liverpool Cake Company[3] is quite bold, most sites nowadays only use white with one other colour but this website using blue, orange, and white. Personally it looks well presented. I do believe there is too much white space around the logo. After sending a link to the client she agreed with my statement about being too much white space – though she liked the idea of the gallery: that users can choose from categories.

[3] *Liverpool Cake Company*. `http://liverpoolcakecompany.com/`. Accessed: 2017-02-12

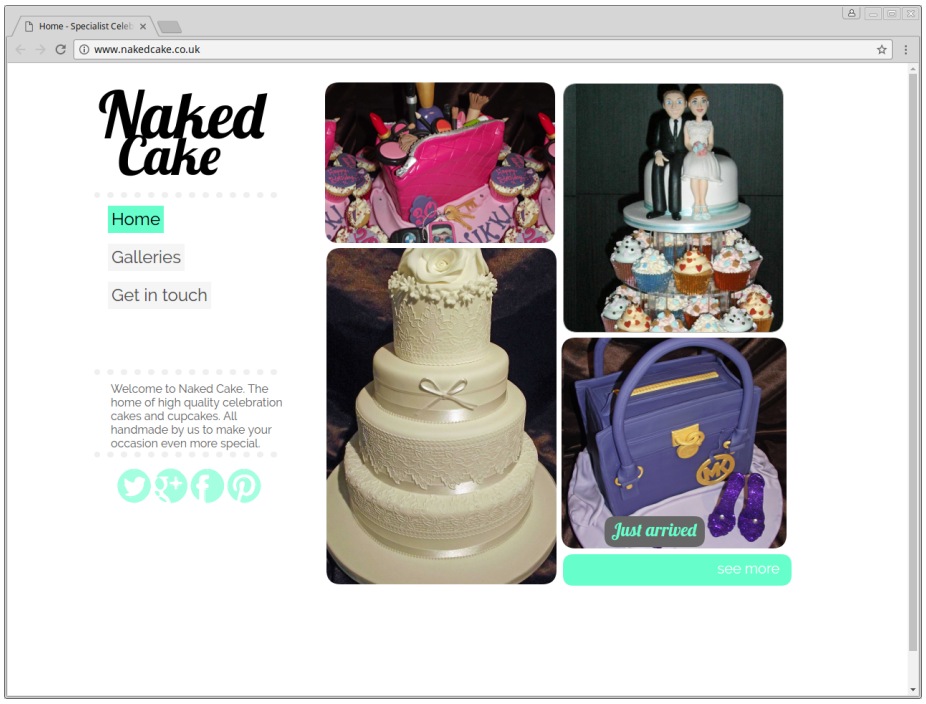

Figure 7: Naked Cake

The layout for Naked Cake[4] website is user-friendly. Images, text, and links are clearly visible, however maybe there are a lack of links available plus the colour scheme is too bold and bright. The client agreed that the colour is too bright, she also said that the very curved edges weren't a good idea in her opinion (but perhaps slightly would be OK).

[4] *Naked Cake*. `http://www.nakedcake.co.uk/`. Accessed: 2017-02-12

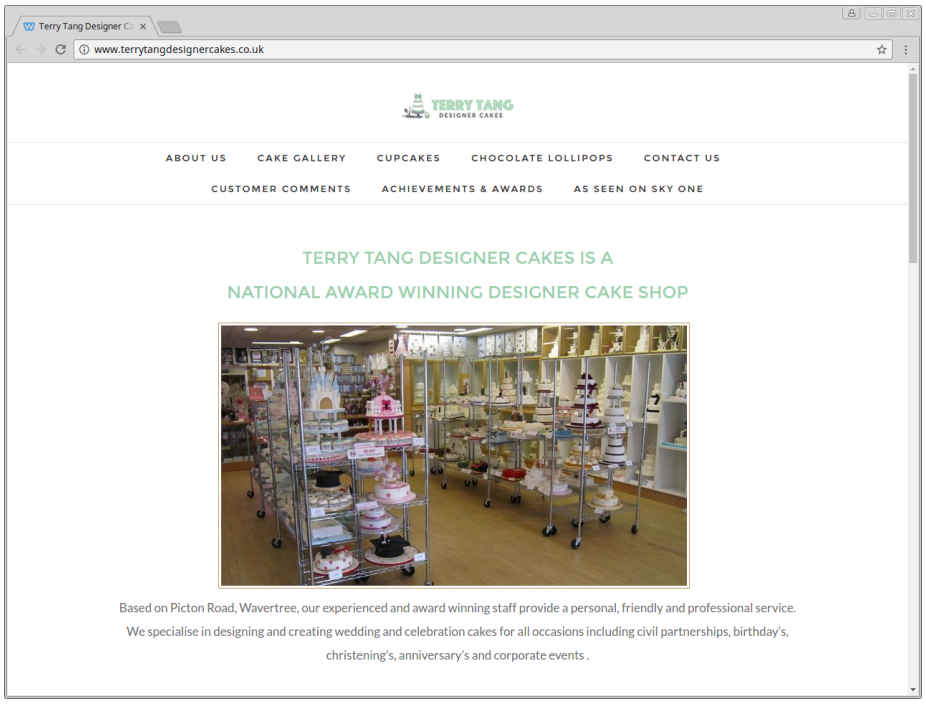

Figure 8: Terry Tang: Designer Cakes

Terry Tang Designer Cakes[5] website is nicely designed, the chosen font style and colour scheme is user-friendly: users can read text. However, the navigation system has drop down links which actually have somewhat transparent backgrounds making it slightly difficult to read. The website is slightly 'too white' – this is because it seems to lack in images. Also the logo is quite small and not properly clear.

Overall, from the client's feedback, my personal opinion and the feedback from the score sheet, I can come to an understanding that having plenty of images is best especially for the index page so potential customers can see what is available – images should be good quality. The colour scheme should be complimentary yet simple and nice – white is professional however, too much white space makes a 'boring' site – plenty of links should be available and clear. A responsive web design should be implemented; this will make it easier for mobile users.

[5] *Terry Tang Designer Cakes.* `http://www.terrytangdesignercakes.co.uk/`. Accessed: 2017-02-12

Score sheets I collected data in csv tables (see appendix for raw data).

I sent out a form to a random group of adults asking them about the four sites I researched - originally I observed seven. In the forms, I asked various questions, such as: "rate the colour scheme" or "rate the overall opinion of images used, for example: 1=bad (too few images plus bad quality); 10=good (plenty of images and are good quality)"

- Terry Tang got the best average score whilst Naked Cake got the lowest;
- The colour scheme was highest average for Terry Tang;
- Images used was highest for Liverpool Cake Company;
- Layout was high in Terry Tang;
- The font was highest rated for Terry Tang.

From this, I will use a colour scheme: somewhat inspired by Terry Tang, I could use a white and pink palette. Liverpool Cake Company had plenty of images on the main page, which is what users want: they are exploring the site to specifically buy a cake and so by having images available they know what they are expecting – Naked Cake was shortly behind and I believe this was because both sites had a few images on the index page. I may create a site inspired by Terry Tang's site; Liverpool Cake Company was second scored in average in layout and both sites were somewhat similar in layout (with Liverpool Cake Company having too much white space). I believe The Cake Shop Liverpool scored low in font because the font colour was grey making it potentially difficult to read.

4.1.6 Requirements plus Limitations

The project is required to be hosted online and is required to fit the main purpose: show what the business offers. It is also required to show a wide variety of images, plus an order form for customers to fill (to be directly sent to the client), and a social aspect.

There could potentially be limitations: the client might like the site in a specific way, whilst in another version/design it could be a lot more user-friendly. The discussion forum/guestbook could have limitations; we need to carefully consider this feature: we don't want very inappropriate language.

5 Design: UI, Web, and Database

5.1 UI Design

5.1.1 Introduction

User Interface (UI) is important: when individuals are using a product, it is useful to make it so they can use it with ease. The elements should be easy to access, understand, and the overall user experience should be positive.

For creating a website, I should definitely consider the user's needs, the site should also meet other technological needs however I will be focusing on creating a product that will be a positive user experience for potential customers.

I intend to create thorough designs of the website; produce designs for each page and think thoroughly about the navigation system. I also intend to assess users' opinion of the designs; I will ask some individuals, to participate in an activity: I will ask them to browse the site, give them objectives, and then gain some feedback - I have produced a research ethics application form and it has been approved by my supervisor, this just ensures that I am to fully inform participants of the study, ensure their information is confidential, and ask for their consent plus ensure they know that they can withdraw at any time.

5.1.2 Identifying Needs

For the website, there are various needs I should comply with, there are technology needs and user needs; these are different from the needs of the client: if they want a list of recipes, etc. UI needs include the design of the site that makes it appropriate as possible - as mobile usage is becoming more popular; I should create a site that is a responsive design.

The screen considerations for the site is a necessary element that needs to be thought through. The site should look appropriate on a small laptop screen, a big desktop computer, and a mobile device. The design should be responsive so text is readable in all screen sizes. The design of the site may alter with screen size, though that will be discussed further ahead when starting to design pages.

Another technology need is data. If there is a lot of data, a site may take a while to load; we don't want too much on our site. Several factors can affect load speed, such as amount of data and if the site is server/client-side. We aim to use JavaScript and PHP so it will be a combination of both. Client-side scripting includes JavaScript and they run on the browser - scripting needs to be enabled on the user's browser. Server-side scripting, PHP, runs on the server

and create interactive web pages that connect to a database. We hope to create a reasonably sized website with all sufficient data - the site won't be too large.

There are also other needs that we need to cater to the users' needs. We need to create a website that is fully functional yet also appealing and easy to use for customers. There are two main aspects we need to consider: usability (ease of use) and accessibility (interaction with the site). I will create a website that suits the client's requirements and the needs of the user - I aim to have some JavaScript to allow users to increase the font size and scrolling through images in the gallery should be easy to do.

I plan to have a group of individuals test out some designs, I will ask their opinions about usability and accessibility plus an overall user experience: to ensure the site fits its purpose. I will use Nielson's Usability Checks[6] to observe if the user thinks the dialogue is simple, the site is consistent, and more.

[6] *Communications of the ACM*. `http://dl.acm.org/citation.cfm?id=77486`. Accessed: 2017-02-24

5.1.3 Structure of Site

Firstly I need to grasp the initial designs of a structure, I need to decide the basic layout I want and a navigation system for the site - I will draw some straightforward designs showing the basic structure I aim to have; these layouts are inspired from my research regarding related websites. I will display the basic layout of pages including the navigation system, I am also going to draw a structure for the mobile site: I plan to have the site designs to be responsive so it'll look appropriate on a mobile device, for this I need to alter elements to ensure text, images, and links are easy to see on different screen sizes.

Below I am showing a diagram of the site: the structure of the navigation site through a diagram.

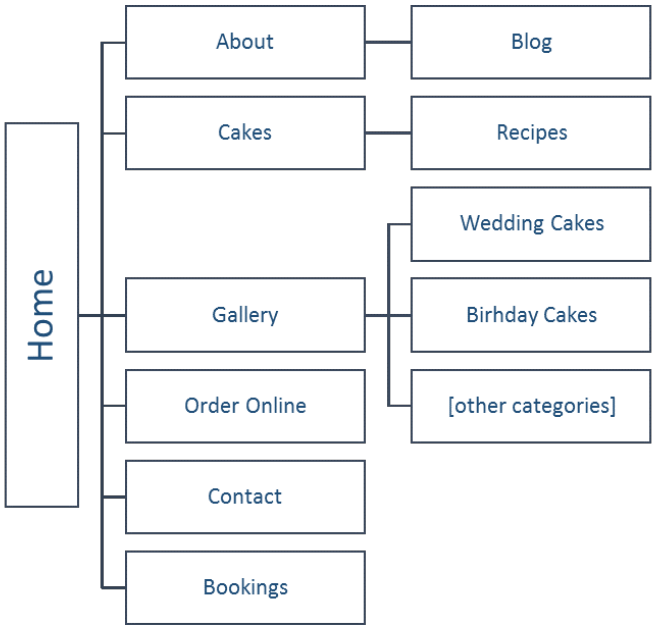

Figure 9: Structure of the Navigation System

Figure 9 shows an image of the navigation system.

When designing the structure, I have considered the actors and the feature from the use case, general requests of the client, and the findings from the related websites (plus feedback from users who I sent a form to). This structure maps out what I expect users to take when visiting the cake shop. I also displayed some features: the categories for the gallery - I have yet to decide if I want links to pages of categorised images or just one-page gallery and let users filter images.

The image below is what I plan to have the site look like as a basic layout. The title will be at the top of the site in a header bar with a logo and a navigation system. I the less links available in the navigation system is best because the text may become 'too crowded' and so by having a drop down navigation system I can give more space for the main pages. Images are very important for a site like this: a baking site - customers need plenty of images available to be able to observe what sort of cakes the business owner makes; for the majority of pages I plan to have an image on the right hand side with the text on the left. There will be a footer that will include some important yet basic information, such as how the business owner owns the images on the site. This layout design is very appropriate; it fits what users want: an easy-to-see site - I plan to have plenty of images available (what users said they wanted).

Figure 10: Basic Layout of the Web Pages

Figure 10 shows how the layout of the site will appear on a web browser.

The image below shows how I plan to have the site look on a mobile device. As you can observe I had to adjust a lot for a 'smaller screen'. The image is now the main feature of the page with the text underneath. There is still a footer and header however I may make the footer smaller so it doesn't make up too much space. The navigation system has changed into a 'hamburger menu': the user will click/touch the button and a list will appear of the pages/links - many sites nowadays use this deign however I may change this. The navigation may not be easy for users for the mobile device, some individuals who don't particularly use technology may not even know this is the navigation system. I will use this for now and have users give their opinion so when creating the site I will know what option to choose.

Figure 11: Basic Layout of the Web Pages for Mobile

Figure 11 shows how the layout of the site will appear on a mobile device.

5.1.4 Develop Designs

For this section, I am to develop in-depth designs of what I plan to have each screen look like. I will show what I expect each page to look like and the typical usage of them.

I am going to use the website builder tool, Wix[7]. The website editor tool lets me create the design of the site without having to actually create a database: it lets me populate the site with data. This tool makes it easier when having users test out the site, the tool is easy to use. I have used images, fonts, and general designs they provide, such as the image for the logo. However I have imported the images the client has allowed me to use for the site.

The website is here: https://sap218.wixsite.com/cs39930[8]

[7] *It All Starts with Your Stunning Website — Free Website Builder (Wix).* `http://www.wix.com/`. Accessed: 2017-02-24

[8] *Little Cake Box — Liverpool.* `https://sap218.wixsite.com/cs39930`. Accessed: 2017-02-24

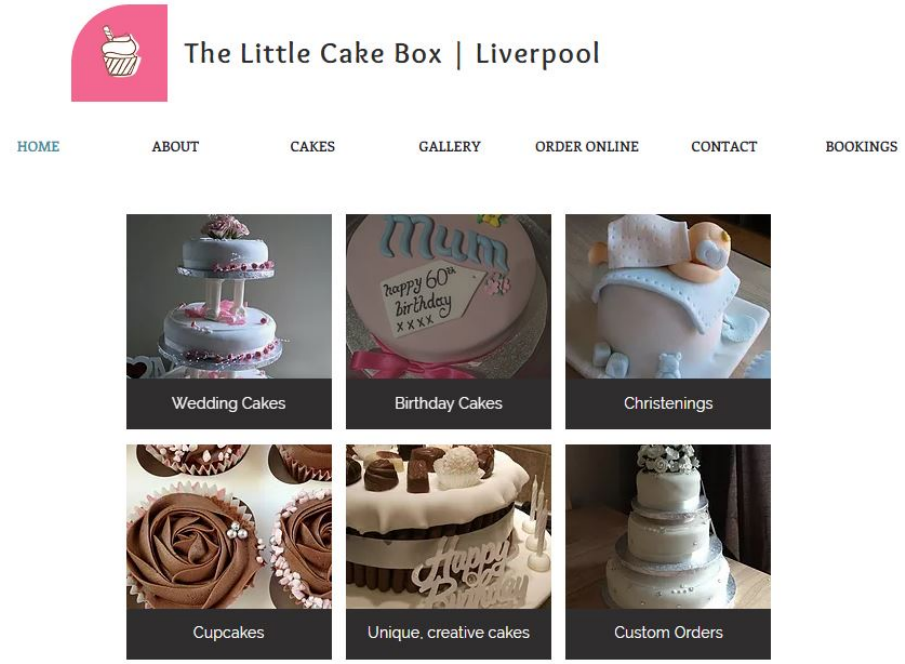

Figure 12: Design for the Index Page

Home Figure 12 shows planned design for the home page.

This is what I plan to have the Home page like. As stated in the section "Structure of Site", I want a header section with the title, logo, and navigation system. The index page will be simple, showing the navigation system, the title of the site, and images. These images show the types of cakes the client makes – I have linked some images to small galleries of their category and other images (Custom Orders) to a form. There is a gallery of all images combined, however filtering the gallery may be a really useful feature. The colour scheme is to be white, black, and a pink. However I will ask the client what she thinks of the colour scheme whilst I am designing the site and see if she'll prefer a different main colour: she may want yellow or blue.

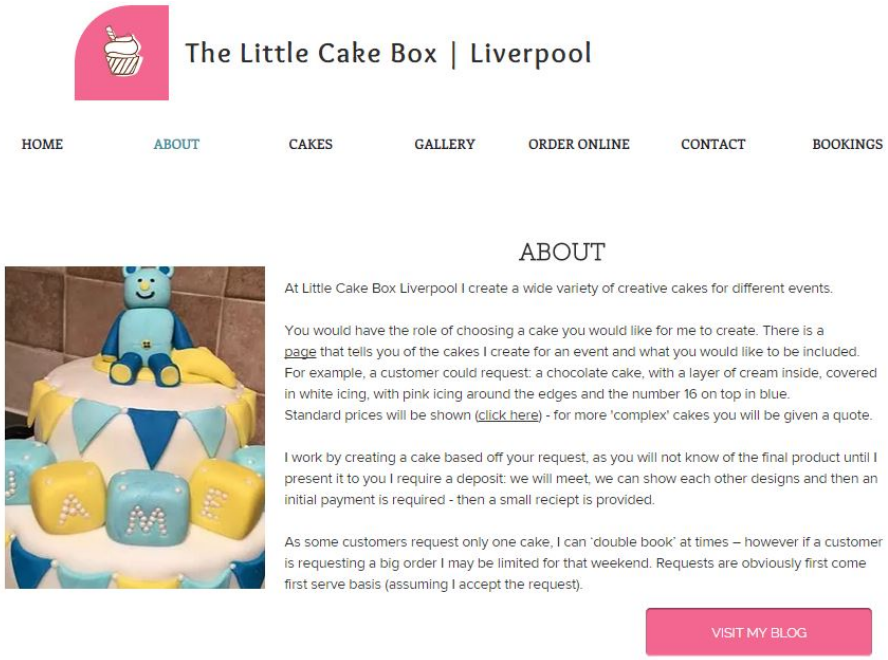

Figure 13: Design for the About Page

About Figure 13 shows the planned design for the 'about' page.

This is the "About" page. As you can see, Wix suggested having the image on the left side and So I thought for an experiment I will leave it there, though when building my site, I will test out different layout and have 'Beta' testers tell me what side they refer the image.

This page has links available to different pages of the site, for example it mentions the prices and so a link is provided for customers. The bog page is in a drop down arrow of the navigation system however it is also a button link on this page - I will ask users what they think about this.

The text is spread out and an appropriate font, however I may make paragraphs smaller as they say users don't like reading too much, only small sentences at a time - this also fits with the Search Engine Optimisation: we don't want to use too many key words and have a lot of thick/bulky paragraphs.

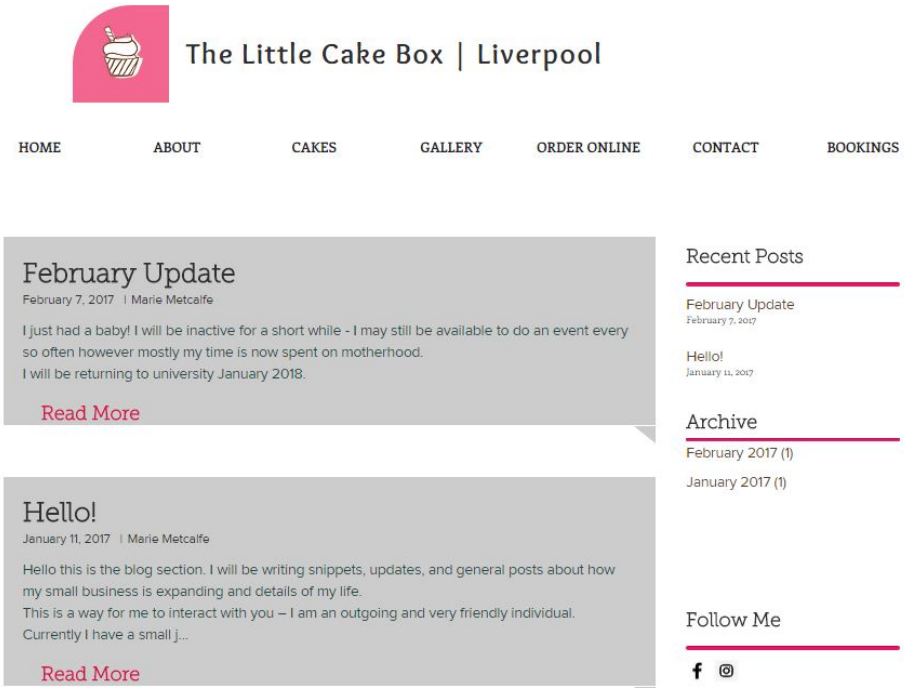

Figure 14: Design for the Blog

Blog Figure 14 shows the aim for the blog.

This is what I plan to have the blog page like - however perhaps without the 'Recent Posts' and 'Archive' sections – I may include an image of the business owner herself (of course with her permission) with just text boxed of her statements. I would like to keep the social media presence in this site too: social media is a big part of e-commerce and websites today: majority of sites have links to their Facebook/Twitter accounts. Wix puts in the different sections they believe is useful for a blog: they have tools to create posts and such – however I am using the web creating editor just to create 'prototypes', The different aspects of the site will include a lot of forms and database functions.

The blogs will be short statements from the client: for example as you can see in the February update she talks about her pregnancy and how she may not be available for a short while. I do not wish to have big chunks of text with a 'read more' button - however it may be necessary if the client wishes to make big statements.

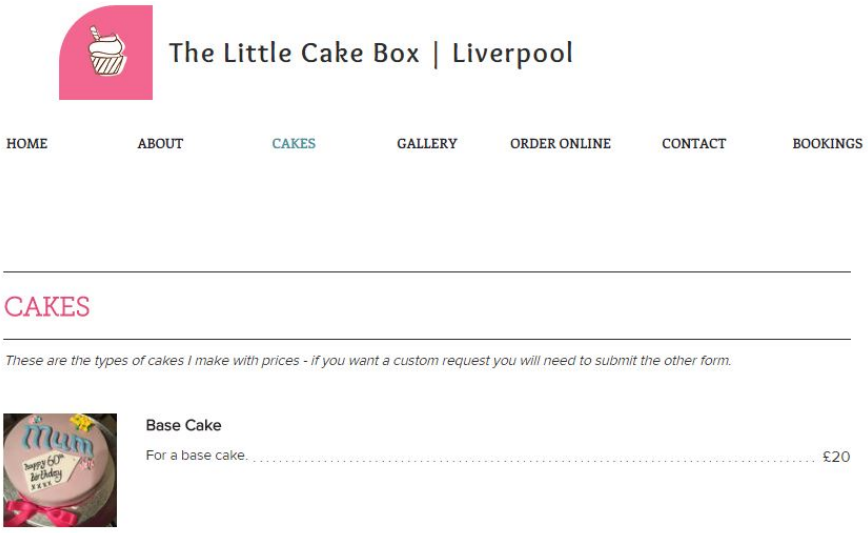

Figure 15: Design for the Cakes Page, 01

Cakes

For this page, I hope to have various other information, however for the prototype I decided to include the basic cakes, details, and prices the client provides: for example, she charges £20 for a simple base cake but for a very unique design she charges £30. For the actual site I will change these details: I will also include information about cake flavour, icing colour, and categories of cakes (how she bakes for weddings, birthdays, etc.) - I need to design the database system to fully know what sort of information I want on this page - I may decide to include prices on the "Order Online" page as this page will have the forms available.

Add a layer

Do you want a two tier cake? Perhaps add £10 to the original £20 for three tiers. £5

Cupcakes (12)

£10 for a pack of 12 cupcakes. £10

Add candles

You can request to add candles, a "Happy Birthday", or other designs for an additional £5. ..... £5

Unique Designs

Very unique designs average around £30. Though prices depend/vary with the type of custom cake you request. £30

Figure 16: Design for the Cakes Page, 02

Figure 15 and 16 shows the design for the cake page - this page will be linked to a database.

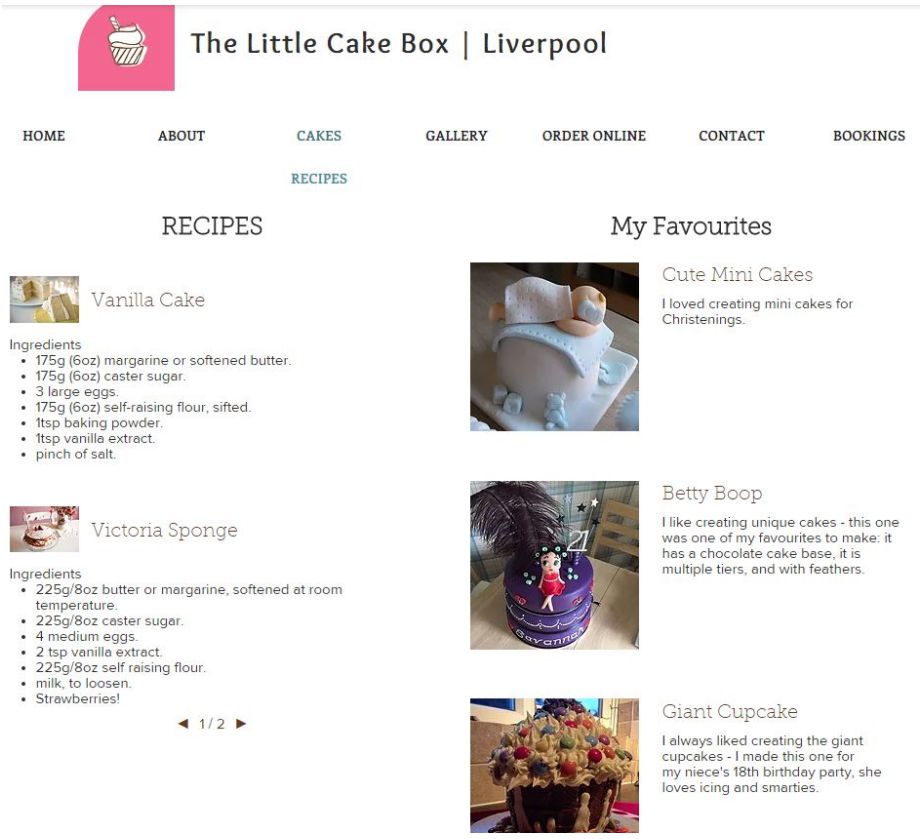

Figure 17: Design for the Recipes and Favourites

Recipes Figure 17 shows the design for the recipes provided and list of favourites.

This is the page of recipes the client wants to provide plus a list of her favourite cakes - I may decide to combine both lists together: recipes of the client's favourite cakes. Two separate lists may be slightly confusing for the user and so by combining them it could be much more useful and easier for the customers.

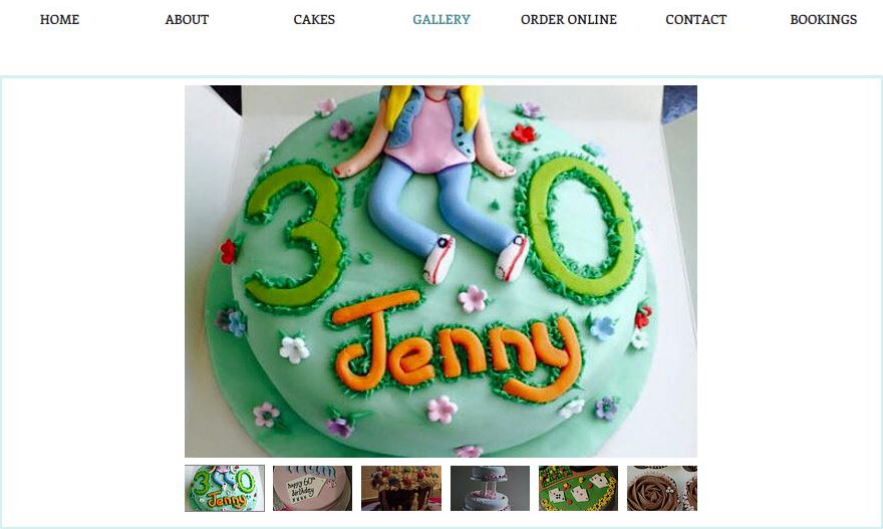

Figure 18: Design for the Gallery

Gallery Figure 18 shows the design for the gallery.

As stated earlier, there will be a big gallery full of all the different types of cakes the client makes. However I may include a filter option (or something similar) so customers can look at certain categories of cakes: some may only want to browse through the wedding cakes and see if cakes 'look nice to them'. This gallery system is very useful and with an appropriate layout can be really liked by users: images will be clear and big enough for customers to fully observe cakes.

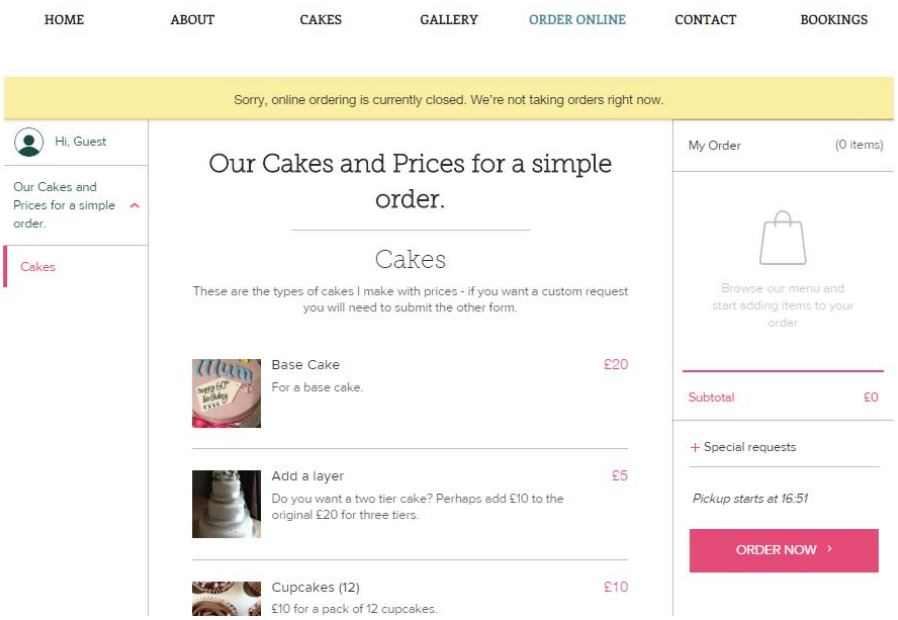

Figure 19: Design for the Form

Order Form Figure 19 shows the design for order form.

Wix offers this type of form, and it isn't badly designed: I may create something similar - however I will most likely include a checkbox stating: "tick to understand that you may need to pay a deposit".

The business owner prefers payment in person and so I will ensure customers know about this. The form can be inspired by the one provided: the customer chooses the flavour of the base cake, can decide if they want icing and what colour, maybe they want to add a layer. I may include a separate form for a custom order request, this form is for very unique cakes - though I could just include a text box in the form for customers to state whether or not they want a unique design.

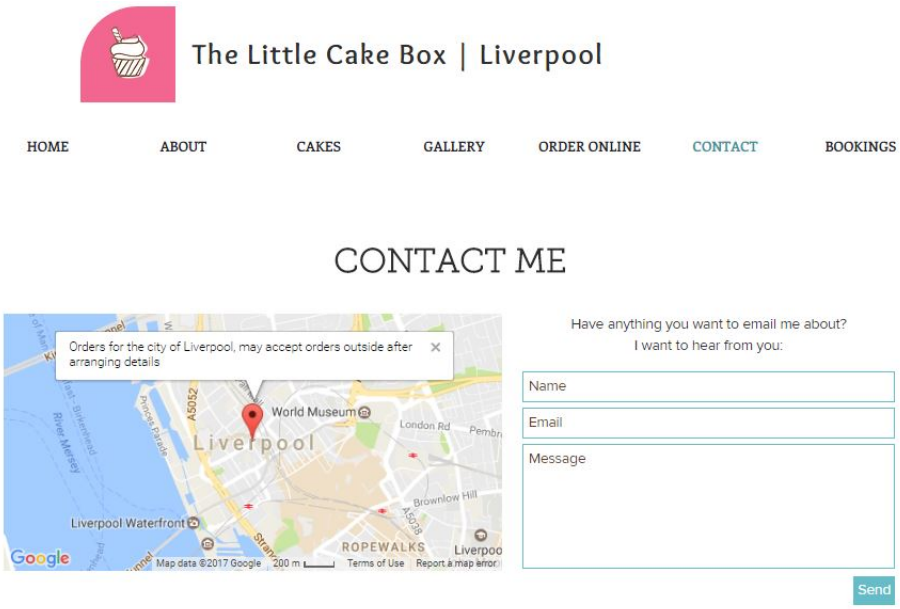

Figure 20: Design for the Contact Details

Contact Details Figure 20 shows the design for the contact details - mostly has a page with a form as I am yet to know the client's details.

This is the simple contact details the business owner will provide: she doesn't want her number available on the site; however if a customer submits a form she can call them to arrange details or such. Wix suggests a location marker however the client does not have a store, she works from home and travels often to meet up with potential customers and to deliver cakes, I may use a big picture of the North West and state how the client is based in Liverpool but open to orders outside.

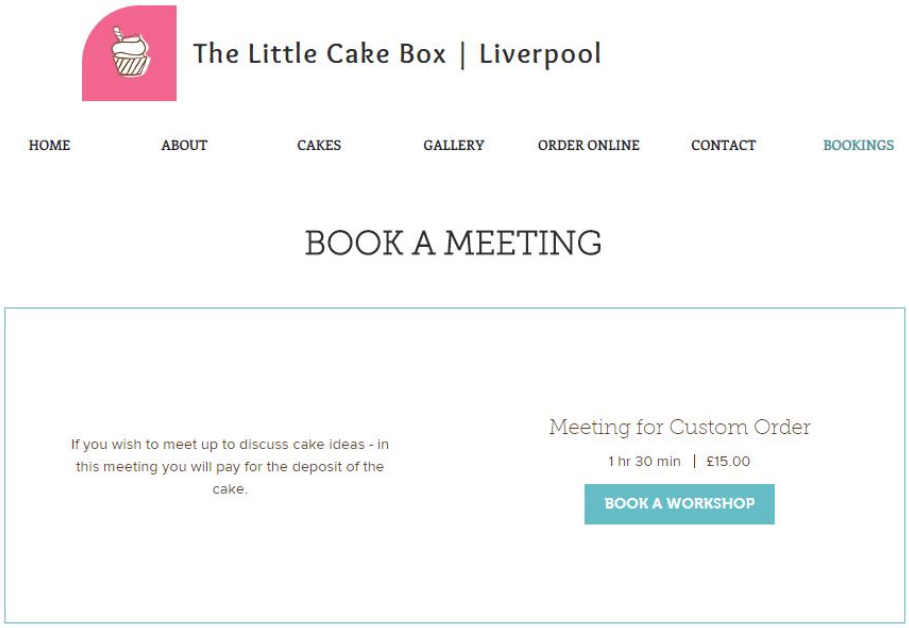

Figure 21: Design for the Booking System

Event Booking System Figure 21 shows the plan for the booking system - users will click the link to be directed to a form.

Wix does offer tools for a workshop so I decided to use this to my advantage: it allows customers to book meetings for custom orders. However I think I won't use this, I may just include a calendar of available/unavailable dates so the potential customers can see if the business owner is available when they want to order for an event.

Mobile Wix is very useful because it also offers what the site will look like on mobile - it creates responsive sites for the individual. I will show some of the designs on mobile:

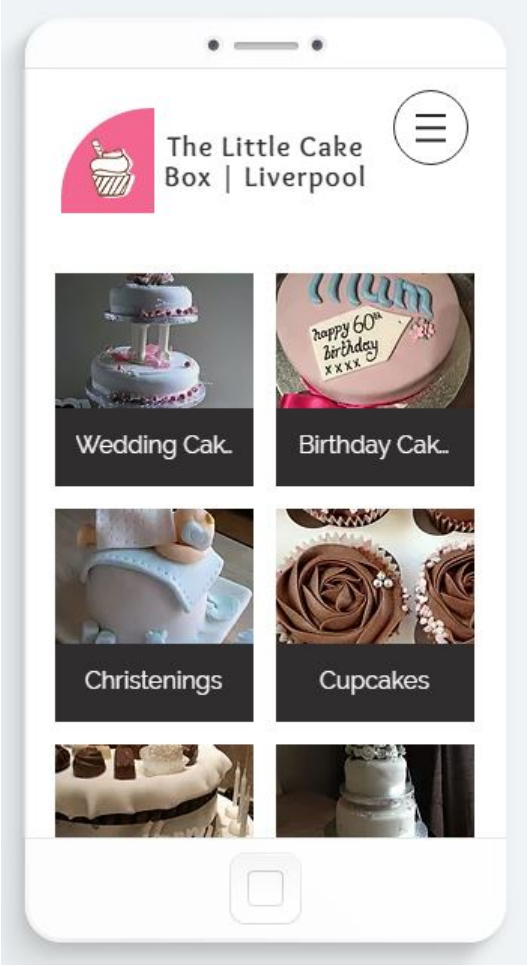

Figure 22: Home Page on Mobile

This is what I want the index page to look like on a mobile device: I want the site design/layout to be responsive so on a smaller screen the images are still visible. As you can see, the navigation system is a 'nav burger' - Wix automatically create this for individuals - as stated earlier, I may have this navigation system included in the site I produce however I am not yet fully sure.

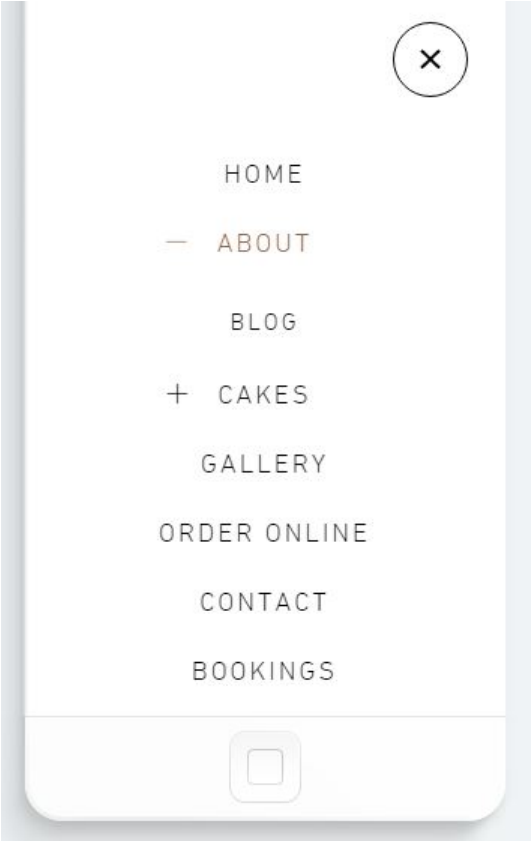

Figure 23: Navigation System on Mobile

Figure 23 and 22 shows the layout on mobile - as you can see they are responsive designs.

Mobile - continued As shown earlier in the drawn, basic structure designs, I hope to have pages look like this in the mobile version: an image above text - images are important for a site like this, potential customers need plenty of proof/evidence of the cakes the business owner makes.

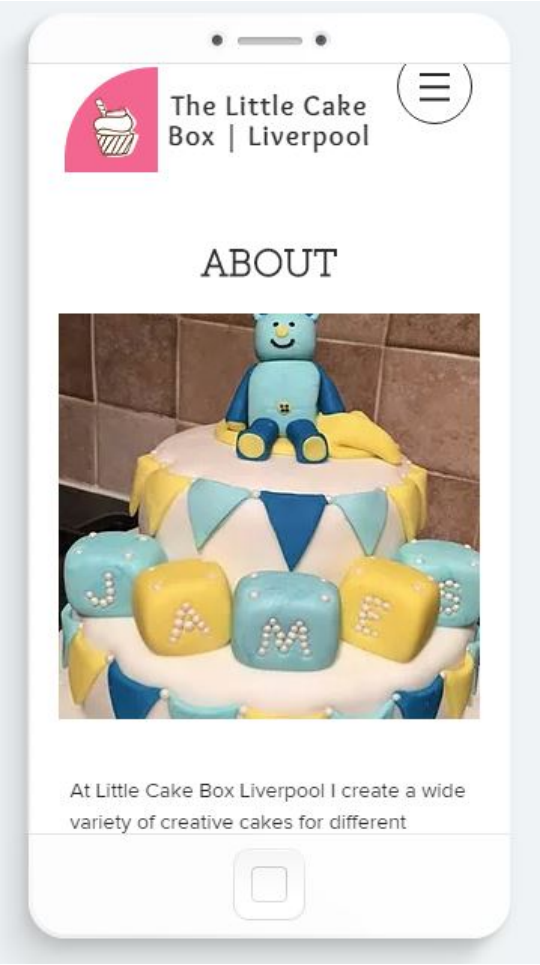

Figure 24: About Page on Mobile

Figure 25: The Gallery on Mobile

Figure 24 and 25 shows other designs on mobile.

This screen shot shows how the gallery looks on mobile - it also includes the footer. Obviously the footer will be different on the actual final product: I kept it simple for the prototype. The gallery however looks appropriate however it may need to be designed differently for mobile; I think I will add the category filer so it is easier for mobile users to view different cakes rather than scrolling through a giant list.

5.1.5 Testing

To test out my design, I used Wix to create prototypes and populated it with data; I produced a form for 5 users (see appendix figure [26]).

I followed ethical procedures to ensure the users know what the form was intended to do, what will be done with the feedback, and how their information will be secure. I used scenarios for the users to follow as if they were a customer visiting the site, one scenario was to ask the user to find the list of recipes available, afterwards I asked (in the form) how difficult it was to find this list, their opinion of it, and if it could be improved.

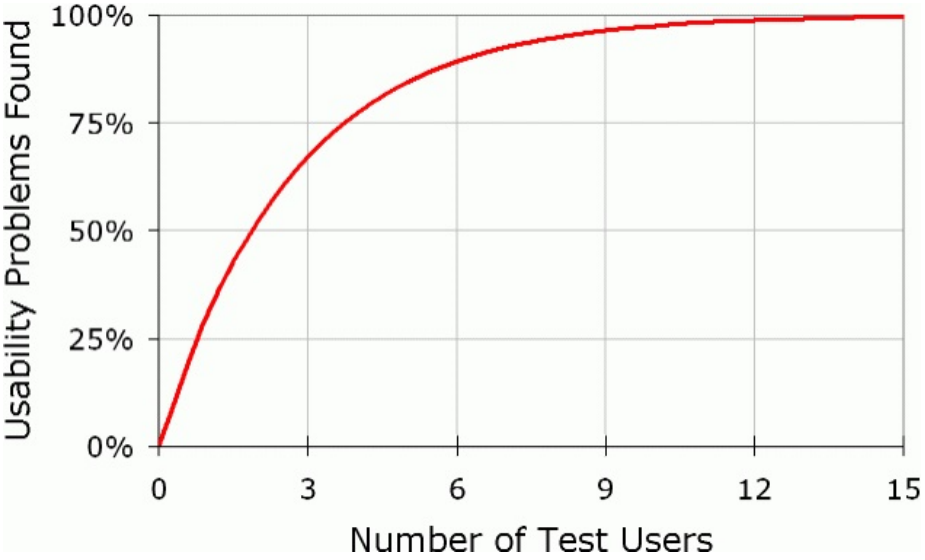

Figure 26: The Nelson Normal Group - Graph

A user's response of my prototype/design (see appendix for raw data plus graphs)

5/5 Gallery, blog, recipes/favourites list plus order form

4/5 Booking system

5/5 Usability and accessibility

5/5 Web browser and mobile version

Quote from this user: "Did not find 'Favourites' but very good features...[site is] Easily accessible...Excellent usability and consistency"

5.1.6 Evaluation

From the feedback, I know of the appropriate improvements I should make - I observed if any problems occurred and found that the one major issue that arose frequently was that users had difficulties finding the 'favourites' list. I have decided to alter the designs and I am planning on adding an additional option in the 'cakes' list of the navigation system; I plan on having a separate page for the favourites as opposed to having them next to the list of recipes.

5/5 think the site is understandable, layout is appropriate, and design is consistent.

4/5 agree that there should be categories/filtered gallery, that the colour scheme is appropriate, and state that they aren't in need of remembering a lot.

From the overall review of the feedback, I am also going to add more pages of a filtered gallery: I want users to be able to find categorised images of the cake shop.

"It is easy to read and navigate through the site. Layout is clean and appealing."

"Packed with details, yet not overbearing. Again clean design."

"Very good features"

"Easily accessible... Excellent usability and consistency"

"In my opinion site is easily readable, layout and design is pretty, as it fits sweet cake colour scheme. It is accessible on mobile devices, scales nicely, navigation is effortless."

Linking to the use case, we can see the customer can what was planned. They can see the blog, view the database of cakes, choose from a list of recipes/favourites, view the gallery, observe the order form with specific information about custom orders, finally book an 'event' or meeting.

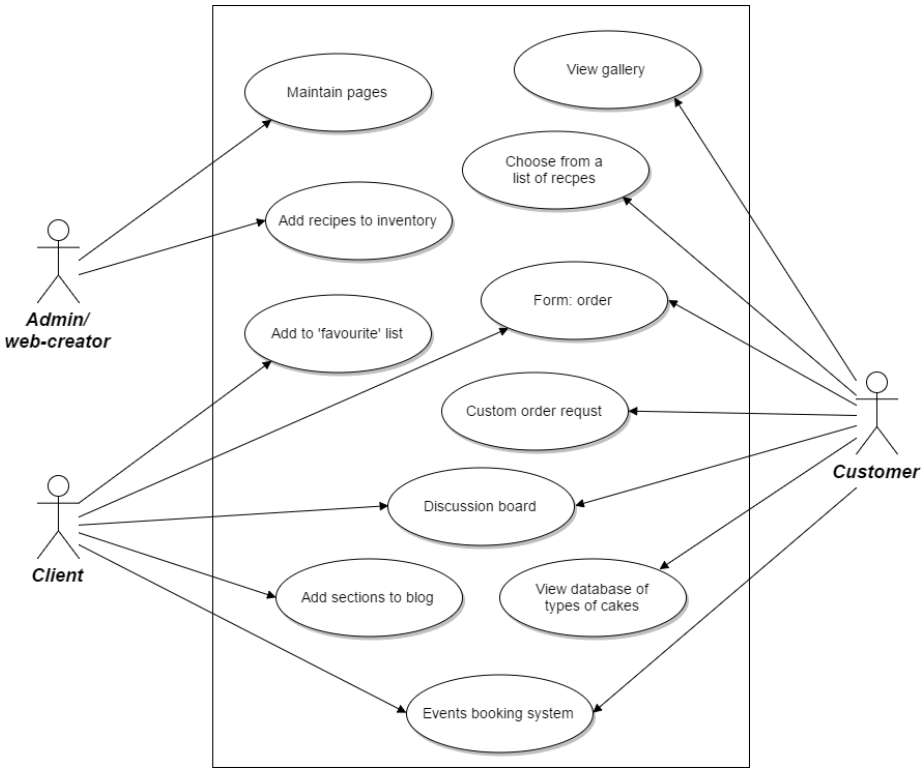

Figure 27: Original Use Case

Figure 27 shows the orignal use case diagram.

I have included an improved part of the use case: the customer section. As you can see I have included the vital information to show the actor: customers, what they can interact/do with the site.

This improved use case supports the web pages' designs.

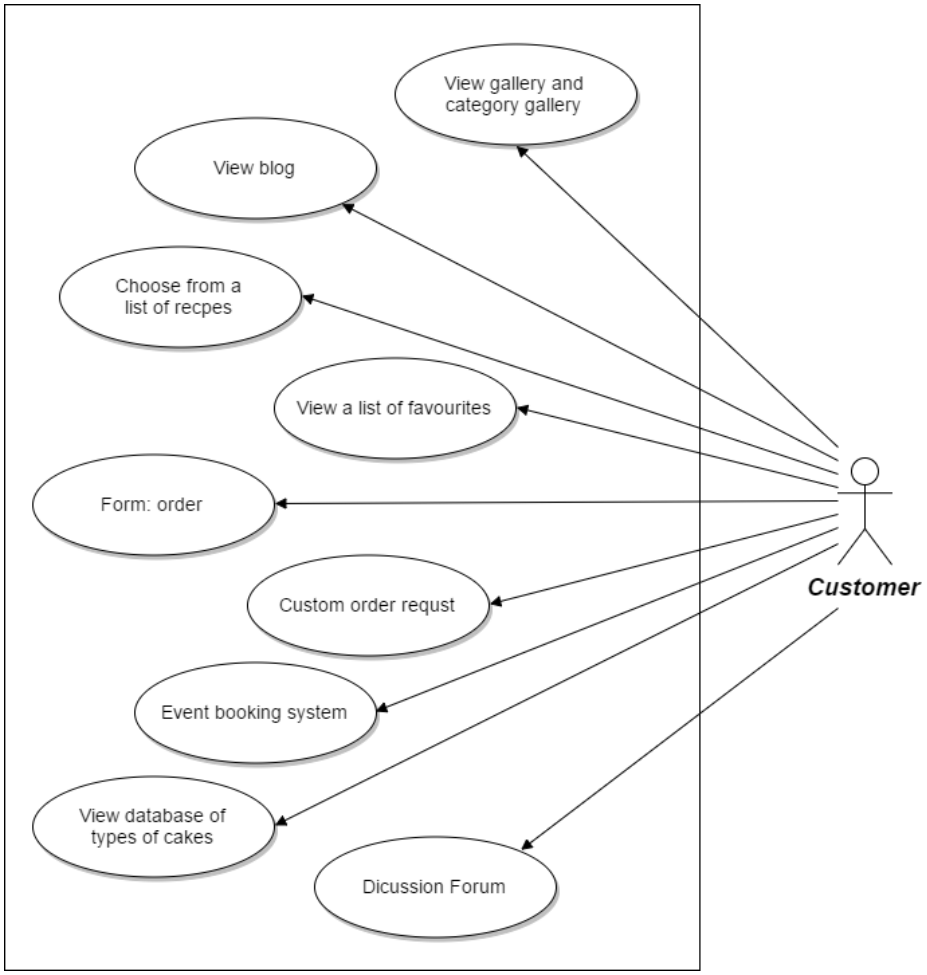

Figure 28: Improved Use Case Diagram for Customer Features

Figure 28 shows the improved use case diagram.

Wix doesn't have features to let people create a discussion forum (from what I could observe) so I will attempt to create one to practice: this will be explained further in the next section: Using Technology for Risky Aspects of Site.

From the feedback and the observation process, users seem to be more than reasonably satisfied with the designs: there were a few things I observed and noted which I can consider when producing the site.

Using Nielson's Usability Checks, I have been able to observe how my site is a high standard UI - 5 checks whilst observed by 5 users.

Simple and natural dialogue in users' language 4 out of 5 rated text a 5/5; 1 out of 5 rated 4/5; accessibility backed up

Minimum user memory load 4 out of 5 say the site doesn't require them to remember a lot; user's perception backed up

Consistency 5 out of 5 agreed the site is consistent throughout

Feedback when things happen/go wrong I noted issues: the responsive design for mobile had a few issues, only one had difficulty with Wix's navigation menu

Shortcuts for habitable tasks I gained feedback that a better link to 'favourites' would be much better; usability feedback is that 5 out of 5 agree the layout is appropriate

The designs were very successful as they are understandable and I only had a few issues which can be easily fixed. However, from my designs, when I actually start producing a site some assumptions could be wrong, for example the discussion forum: I have the capabilities to produce the other features like the forms however I have not produced a guestbook yet.

I will use the next section, Using Technology for Risky Aspects of Site, to look at more technical aspects, I will practice my skills: look in more JavaScript, PHP, and responsive CSS.

There is also room for changes, the site may change during the creation stage: as I gained different feedback I may test out different features and choose the best one - I will use 'beta testers' to test out the site continuously during the creation process to gain their opinions constantly. Also there is a chance for the need of 'pivoting', the client may also change her mind or want some aspects different.

Overall, the designs gained respectable feedback - the only small potential issues could be when producing the technical parts - however, the front-end design is the most important for now: I need to focus on the design, layout, and other usability/accessibility features that will make an attractive site.

5.1.7 Using Technology for Risky Aspects of Site

For the site, I will be using HTML5 and CSS3 - I can create a responsive website as mobile users are becoming more popular recently; especially buying from e-commerce sites.

I have done some testing of different responsive navigation systems. As seen in the image below, I tested out having the navigation system like this rather than a drop down image in the top, right corner. As you can also see in the image, I have created a logo for the client's business (which she agreed to) using the site: Online Logo Maker[9].

Figure 29: Test of Responsive Design with a Prototype

Figure 29 shows the testing of other responsive designs.

I will be using PHP also for server-side scripting: connecting to the database plus using PHP to make forms send straight to the client, by using

```
\mailto: "sap21@aber.ac.uk"
```

with HTML forms, opens the client's email service and so using PHP will make it send directly.

[9] *Online Logo Maker*. `http://www.onlinelogomaker.com/`. Accessed: 2017-02-24

There are other risky/difficult parts and elements of the project that need to be tested: the guestbook/discussion forum. I found a website that allows users to use their database system: they provide the code and the comments are saved in their system: HTML Comment Box[10] (see appendix for code).

The image below is what the JavaScript displays (without appropriate CSS):

Figure 30: Guestbook

Figure 30 shows the results from using the code from HTML Comment Box.

I can explore the code further and perhaps find out how to create my own guestbook, but if this difficult technical feature is too difficult there is always this code available.

[10] *HTML Comment Box*. `https://www.htmlcommentbox.com/html-guestbook.html`. Accessed: 2017-02-24

5.2 Web Analysis

5.2.1 Introduction

Designing the website and database thoroughly is very important, web pages need to be well thought out as they need to meet both the client's needs and attract customers. The database needs to be designed in an organised manner: identifying primary keys and what sort of information will be stored; many pages will only be used for user information, such as the 'About' page.

This section will include information regarding client and server side scripts which the website will use and benefit from. I will describe how scenarios turn into dynamic web pages with data (databases) and code (scripts).

Despite already designing the website, this section will include a lot more information about the web structure and include a wide variety of use cases. I will provide details regarding methods to take in order to reduce some site risks.

5.2.2 Web Structure

The diagram that was previously created to show the web structure lacked features; it was very basic. However, I have recreated it (below) and shown a hierarchy system. Any changes made were because of the feedback I gained from the research I conducted. As you can see, the navigation system is shown in much more detail.

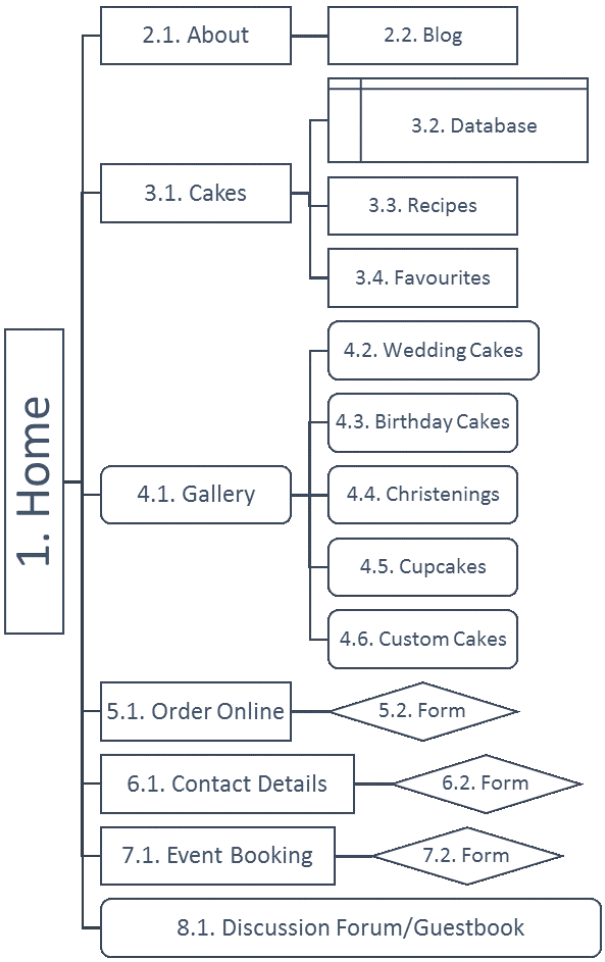

Figure 31: Structure of the Website

Figure 31 shows a diagram of the navigation system and website, this is a much improved version (see appendix for key).

Each page will have the logo with website name, navigation system, and footer. This is the basic layout for all pages. The layout however, including the navigation system, is functionally dependent on the screen/window size. The smaller the screen, the layout will alter slightly to make the site more user-friendly. As mentioned and seen in the previous section, the design of the site changes on mobile or when the window size of the browser is smaller.

All pages are linked through the navigation system; though some pages can only be chosen through a drop-down list - also some pages have more 'encouragement', for example the About page may have a button to direct users to the blog.

There will be a log in section for the client - here she can add more to the big database of cakes, add recipes plus favourites, and add content into the blog table. All database features will be displayed in a table with CSS used to format it appropriately - PHP will be used to connect to the server for database features.

Other scripts will be available too: there may be feature in the footer which allows users to change the font size for each page – this will make the site more user-friendly for those who may have difficulties with their sight. If there are a lot of JavaScript's involved, I may have to use external scripts and then source them in the HTML doc - stated in the ¡body¿ content.

```
<script src="exmaple.js"></script>
```

I may use 'window.alert' (pop-up box) if I want to ensure the customer knows vital information.

As you will notice in the use cases, the features of the admin for majority of the site is to maintain pages, whilst the client can email admin if they wanted a change: for example, for the About page, if the client wanted some information changed they can email the admin and then changes will be made. The customer always has the ability to choose from a list of links of the navigation system.

Page hierarchy and navigation clearly shows interfaces with browser and with persistent data store - I will link this further in regards to key use cases.

1. Home

This is the first page users will be directed to when typing the site's URL or following a link: the client may have the link available on their social media account(s). This page will have images with links: keeping this page simple as possible attracts customers as the first thing they see are images which is important for a cake shop site.

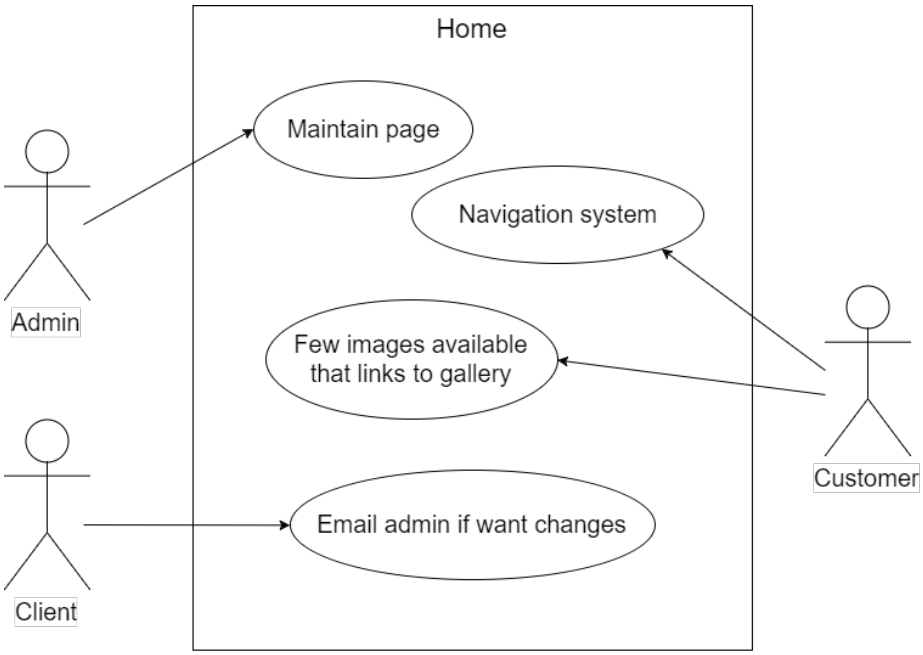

Figure 32: Use Case Diagram for Home

Figure 32 shows a use case diagram of the Home page.

As you can see, the Home page is quite basic in functionality: the main feature for the customer is the images available showing a variety of cakes - these images will either be links to the gallery or just a hover over image to make the site attractive.

As you can see, on every page users can interact with the navigation system, however the navigation system will be on a separate page, by using the code (at the top of the html content):

```
<?php  include 'inc/header.php';  ?>
```

We can create a separate page for the navigation system and header in general (logo and title) - the header will have the DOCTYPE declaration, the head information and the beginning of the body content.

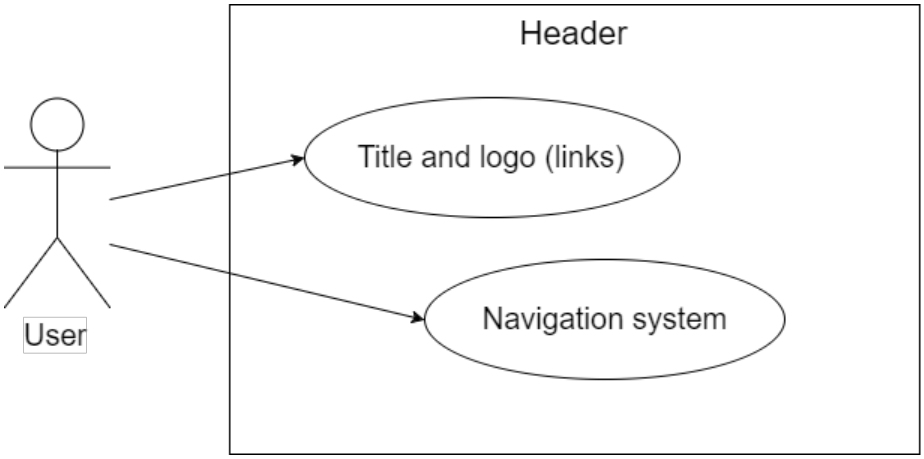

Figure 33: Use Case Diagram for the Header

Figure 33 shows a use case diagram of the header page, this page will include the header: logo, title, and navigation system.

We can also do this method for the footer. It will include the footer information and then the end of body content and html.

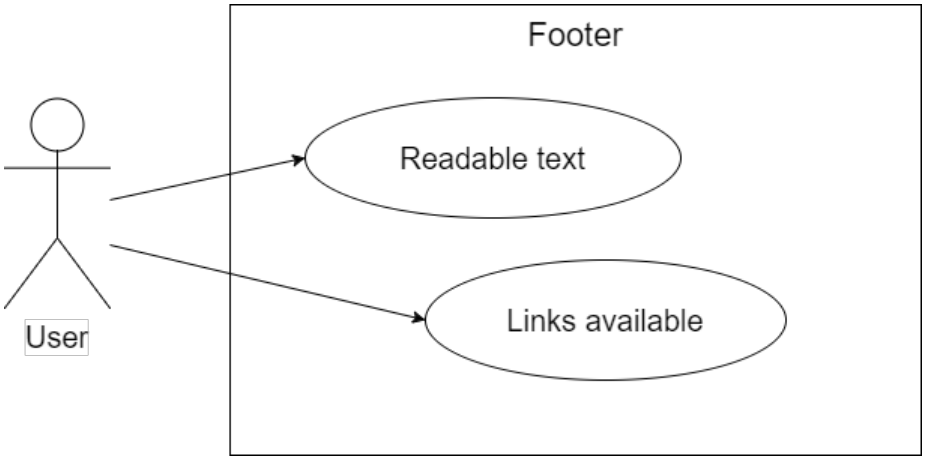

Figure 34: Use Case Diagram for the Footer

Figure 34 shows a use case diagram of the footer page.

These will be separate files however implemented into every page so they will be displayed and the users will be able to interact with them.

2.1. About

This page is very simple; it offers basic information about the company with a nice image. There may be a bold button to encourage customers to visit further into the site: to visit the blog section so they can not only read about the company but can read about the client/business owner. As this page is mostly text-based, there are no major features the customer can interact with. They can though read the text and click a button to be directed to the blog.

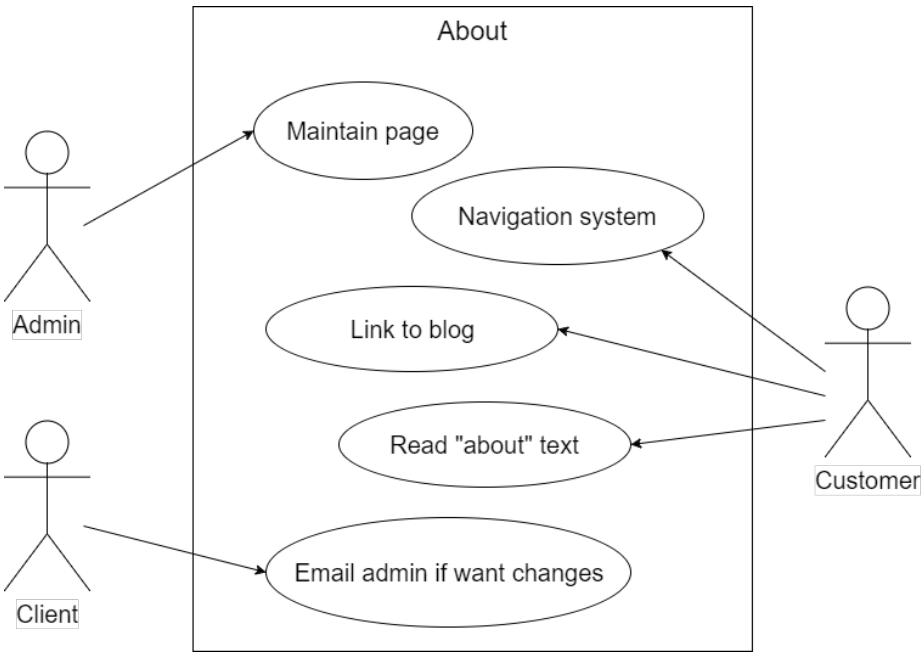

Figure 35: Use Case Diagram for About

Figure 35 shows a use case diagram of the About page.

2.2. Blog

This page focuses on the blog feature of the site; the client will add content/blog posts into the database which will then be available for users to read. JavaScript may be available on this page: users can click a button to display date and time, just as a quick small reference for customers to see when the client posted the last blog post.

Figure 36 shows a use case diagram of the Blog.

The blog page will have more functionality - the customer can read and there will be links available to social media. The main feature is that the client

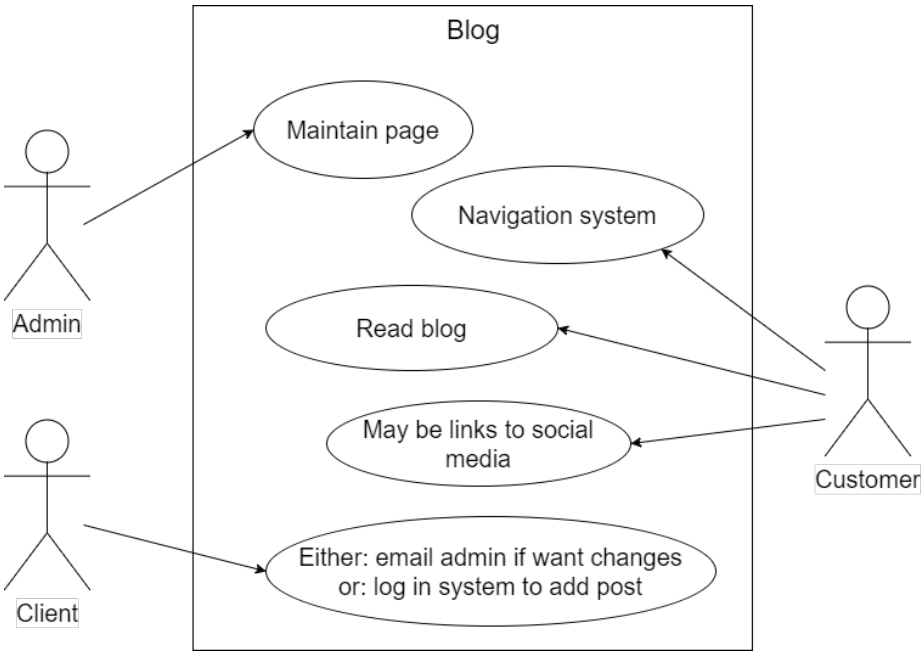

Figure 36: Use Case Diagram for Blog

will log in to add a blog post, this system will update automatically and the blog table will gain a new row.

3.1. Cakes and Database

The cakes section is where the database will mostly be situated. The cakes page will include the major database of what cakes are available for order: it will categories and prices. There will hopefully be a filter/sort system so users could attempt to re-organise the table in regards to how they prefer: that being perhaps order in cheapest price or flavor of cake. This page is dependent on the database.

This page, despite having server-side scripting, will not have any functionality other than viewing of the database. There may be other functions allowing the client to add or update the system, but this may be left to having the client emailing the admin asking for changes to be made (like other simplistic pages).

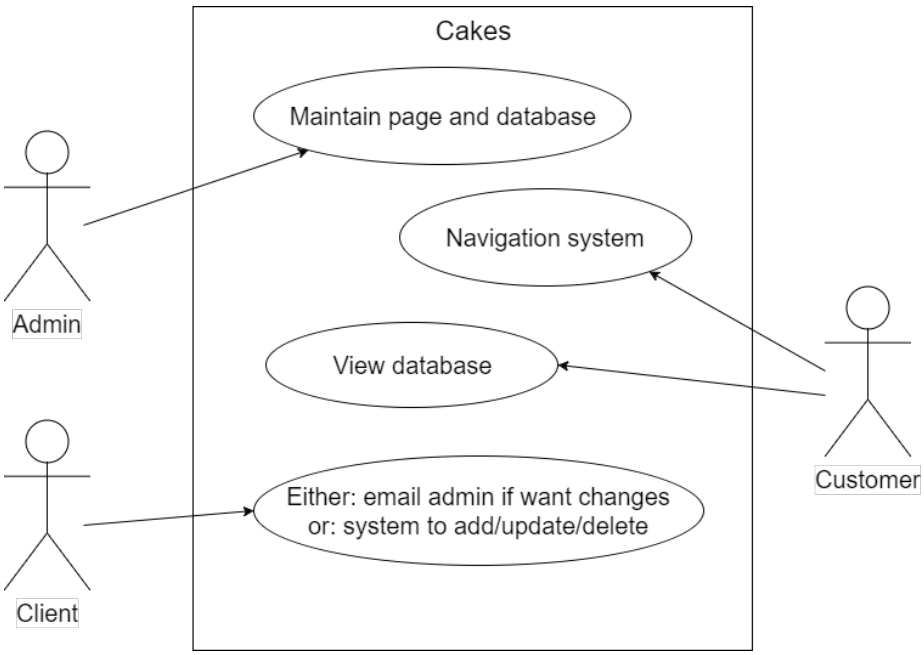

Figure 37: Use Case Diagram for Cakes

Figure 37 shows a use case diagram of the Cakes page including functionality of the database.

3.3. Recipes

The client wants some recipes available to her customers. This page was originally going to be a database table however it will be limited to just a few recipes available and so this page will be a simple text based page and

will not be dependent on any other features. The list of recipes has yet to be chosen: throughout the designing stage the idea of a database or just text-based recipes were un-decided. Either way, this page will be simple and no interactions available for the customer. If though, a database is implemented, the client may have a log in system so they can add more recipes to the list.

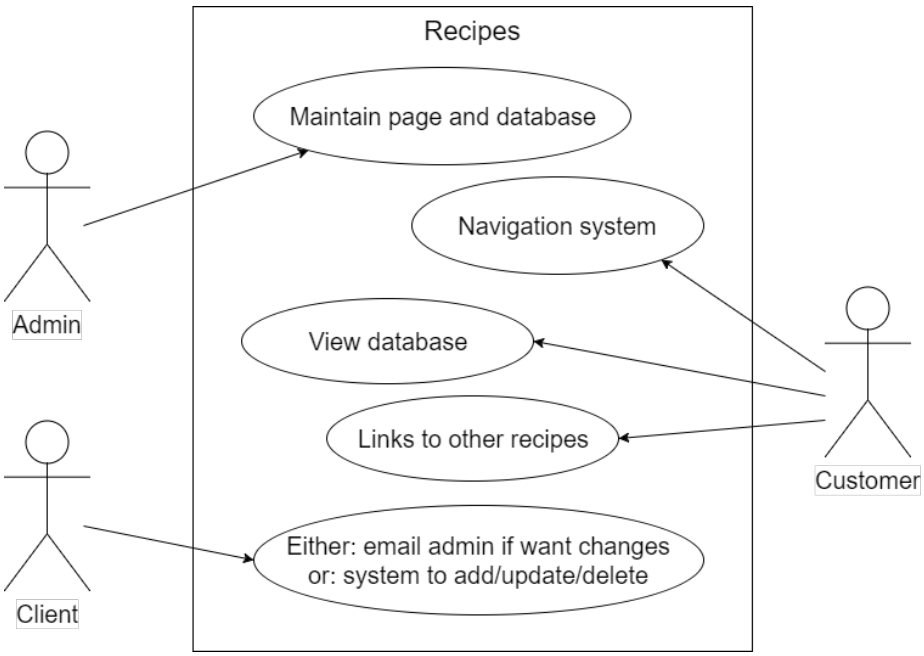

Figure 38: Use Case Diagram for Recipes

Figure 38 shows a use case diagram of the page for the list of recipes.

3.4. Favourites

This page will have a database here, with different categories of 'favourites' - there will be favourite cakes the client made or favourite items she bought which she wants to recommend. The client will log-in and add items to this list: item name, web-URL with price, and description.

Figure 39 shows a use case diagram of the Favourites page.

The list of favourites will be a database. The client will log in to add content which will then be updated on the page. The customer can view the list and there may be links available to where they could buy items (such as utensils).

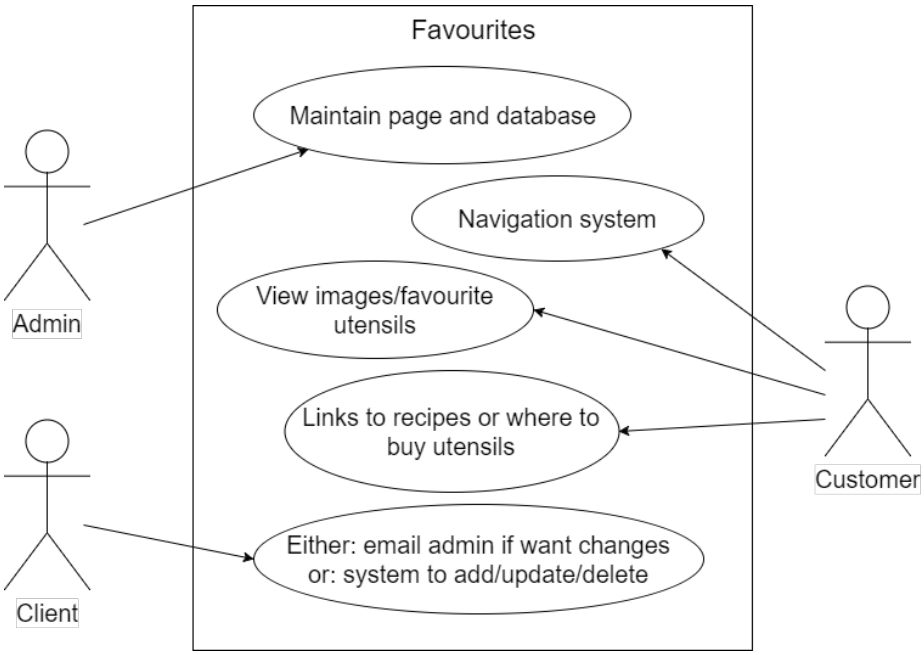

Figure 39: Use Case Diagram for Favourites

4. Galleries

As you can see from the web structure diagram, these pages are interactive galleries: the aim is to have the customer choose this/or one of these pages and have a set of images available. I did originally intend to have one page full of images and the customer could sort/filter to choose a category but I instead altered the designs to have separate pages. These set of pages don't rely on any other features: simply be directed to a set of images. The main gallery page has all images available, but the other pages/links in the drop-down list (navigation system) will have only a sorted set of images: categorised.

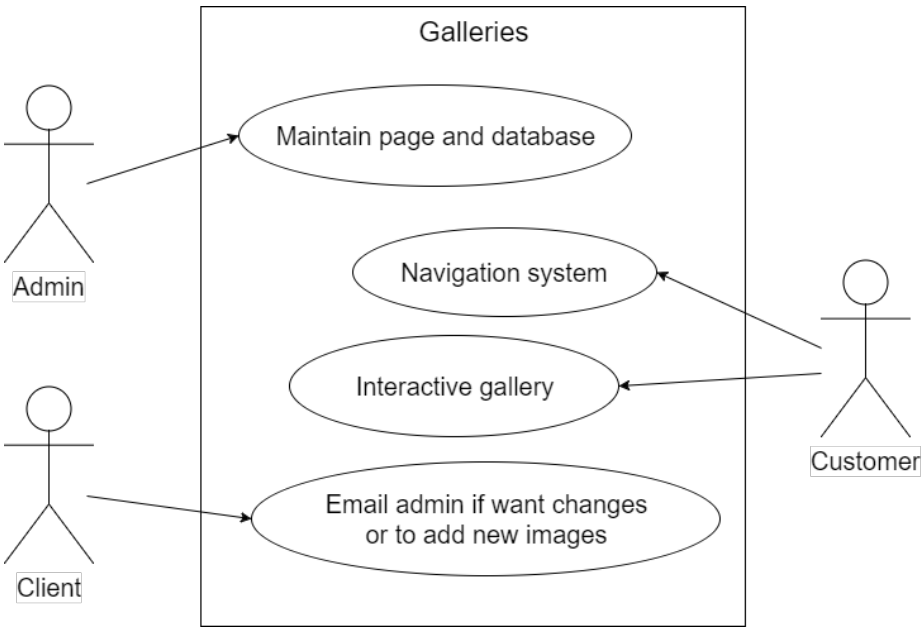

Figure 40: Use Case Diagram for Galleries

Figure 40 shows a use case diagram for all the different gallery pages.

This use case applies to all gallery pages of the site - these pages will most likely be where most of the interactions will take place. The customer will be able to browse through the images available.

5. Order Online

This page will have the feature of an online form. Customers will fill in details of the cake they want and it will send to the client's email address. This page will mostly be one giant form with JavaScript used for form validations. The form will request name, email, and then details of the cake they want. There will be an important text box about the client's procedure (how she requests deposits and payments in person).

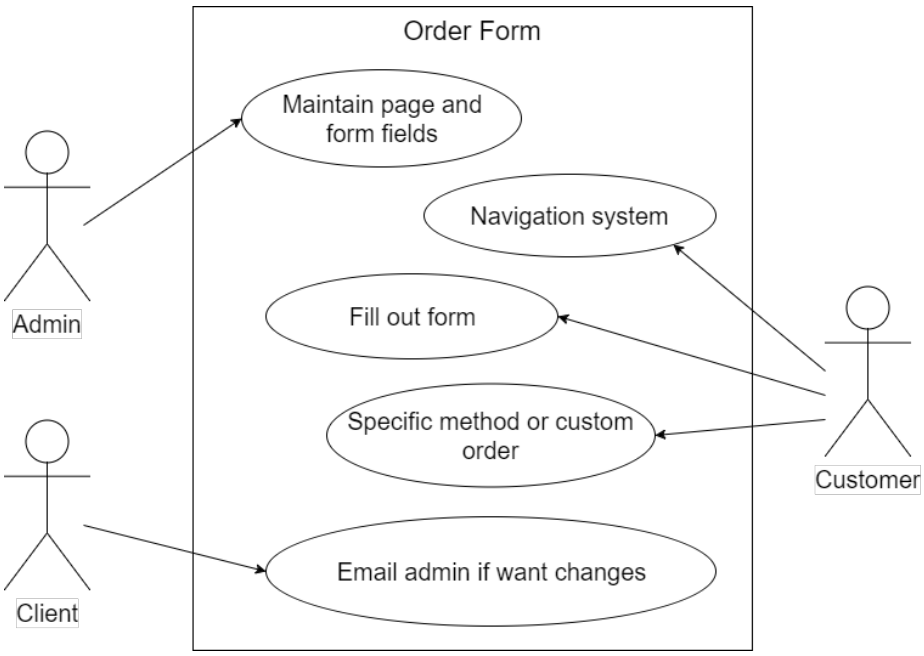

Figure 41: Use Case Diagram for Order Form

Figure 41 shows a use case diagram for all the Order Form.

For the ordering page, the admin may have to be more available to alter the system: the client may request to have more form fields available. The customer will interact with the form here, with an alternative method for custom orders.

6. Contact Details

The contact details page will be very basic, perhaps a simple map of Liverpool with a radius of how far the client will travel to meet with customers - but there will be text stating how the client will accept meetings with those who agree to meet them within the area. There will also be a simple form here for customers who wish to email the client regarding any other information. There may be another form here to send to the admin/web-creator to email any information regarding the site (potential issues).

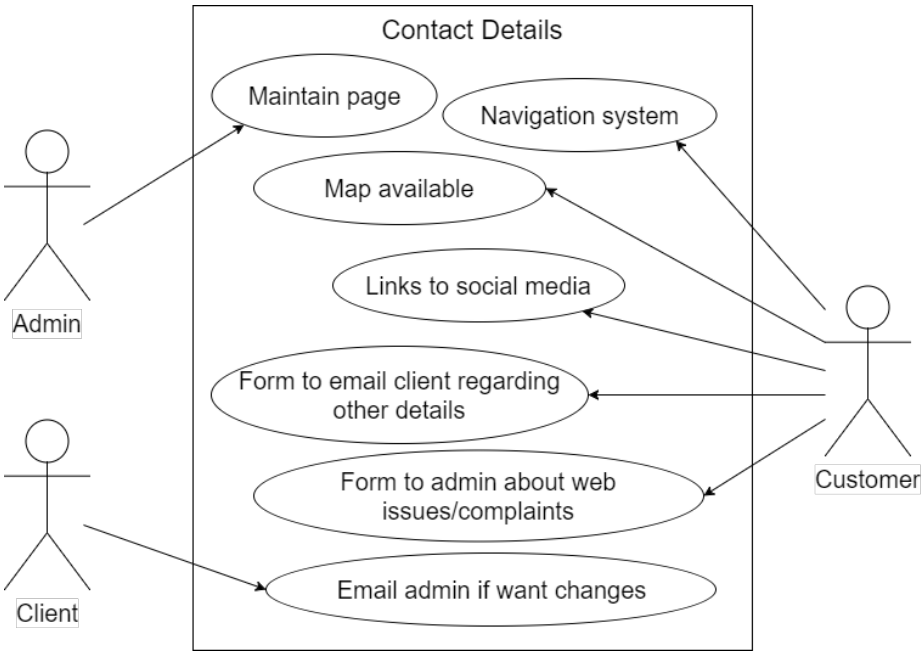

Figure 42: Use Case Diagram for Contact Details

Figure 42 shows a use case diagram for the page with contact details.

7. Event Booking

This page might be the page which the map and contact form is located. Despite already testing out different options, when the official site is available and being tested, the design might be changed per reviews/feedback.

These two pages are somewhat linked in the sense there will be forms, however the structure of the forms may be different - I may decide to include

social media links and location in the contact page along with the web admin's and client's details.

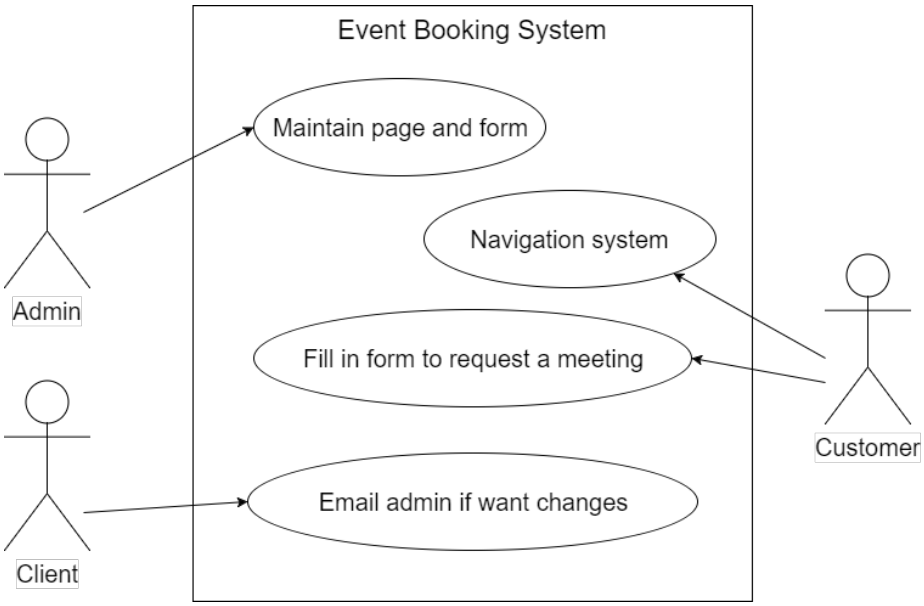

Figure 43: Use Case Diagram for Event Booking System

Figure 43 shows a use case diagram for the event booking system.

As mentioned, the event booking system and the contact details pages are somewhat similar: both will have forms. So, when producing the site, I may have to 'pivot' designs; as mentioned continuously throughout I will be using beta testers to test out the site and I will ask them about different ideas. I will gain feedback to know whether I will use a specific idea.

8. Discussion Forum/Guestbook

The guestbook will be functional page for users to write comments and reply to others. I have already found a piece of code online, mentioned in the previous section, which allows me to create a guestbook. The information on the page is dependent on what the customer inputs. There will be a button explaining that the business owner will not use the discussion forum, but if the customer wished to contact the client they can go to another form - they may wish to ask about a specific recipe for one of their cakes - of course the client can comment, but they do somewhat prefer customers emailing them. The discussion forum will be very interactive. The admin and client will monitor this; however, it is aimed for customers to interact with each other.

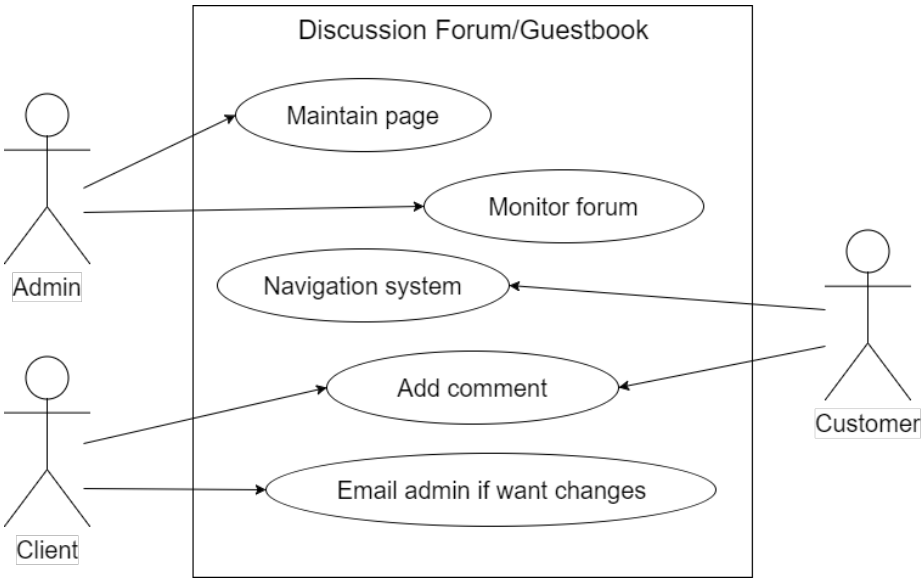

Figure 44: Use Case Diagram for the Guestbook

Figure 44 shows a use case diagram for the planned discussion forum for the users.

Page hierarchy and navigation clearly shows interfaces with browser and with persistent data store - I will link this further in regards to key use cases.

Altogether, as you can observe, each page has different sets of information and data which it focuses on. Pages also have different functional dependencies and data which can affect different aspects of the site.

Some pages, which will be simple text-based will be HTML, those with databases will be generated with PHP. JavaScript will be included too.

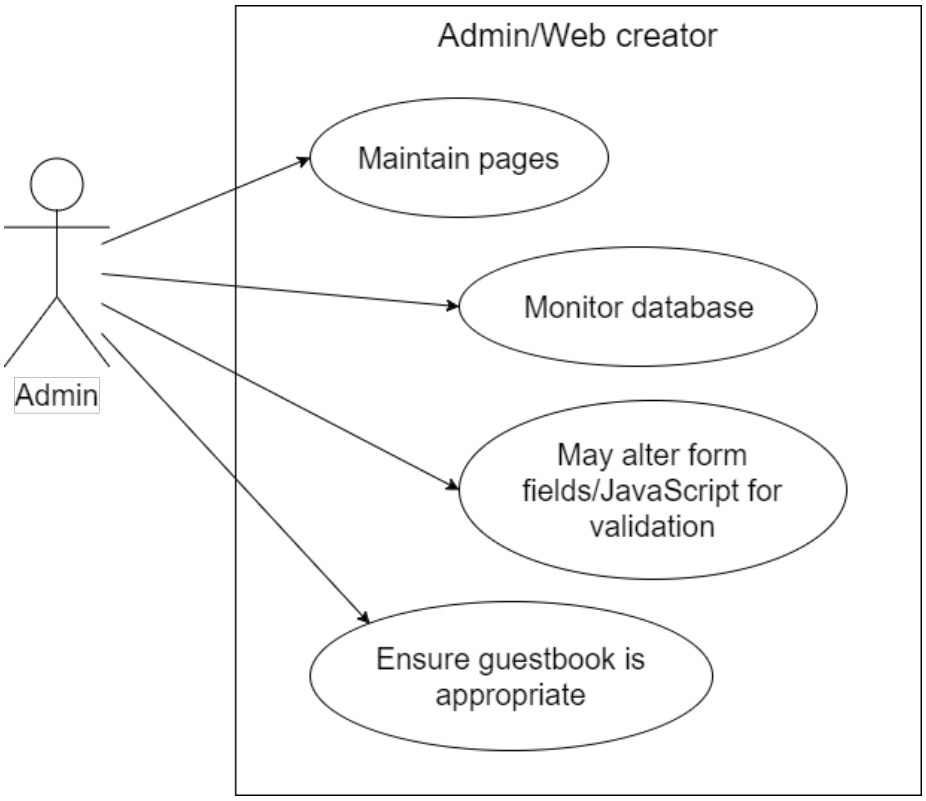

Figure 45: Use Case Diagram for Admin

Use Case for Admin Figure 45 shows a use case diagram for the admin's functionality.

As you can see from the above use case diagram, this is the overall interactions the admin will have with the site. The web creator maintains the pages and fix any issues that occur. The database will be monitored to ensure server-side scripts continuously work appropriately. Client-side scripts will also be checked to ensure form fields are secure so customers will enter appropriate data. The admin also has access to the guestbook, they will most likely not comment on it however they will ensure it remains an appropriate form of communication for customers.

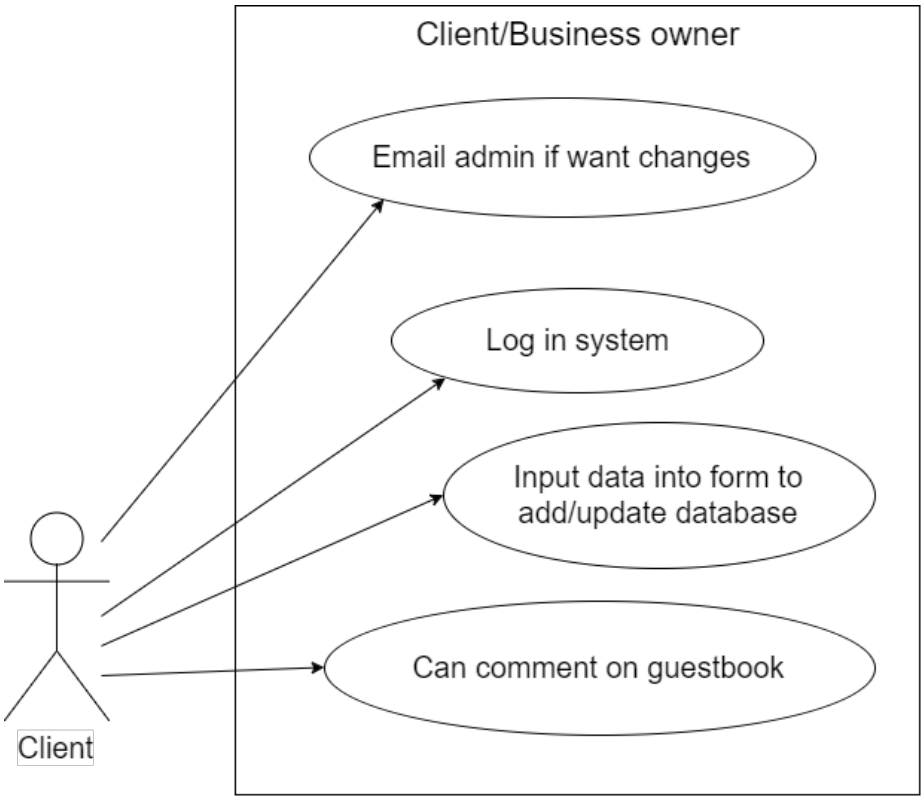

Figure 46: Use Case Diagram for Client

Use Case for Client Figure 46 shows a use case diagram for the client's functionality.

The client will issue any comments to the admin if they want any changes: some change requests could include perhaps altering the information in the 'About' page, or requesting the map image to change to show the new areas they are open to working within. There will be a log in system for the client to add/update data for the database. The guestbook is open to the client; however, they do prefer that customers email them directly if they have any direct questions to the client personally.

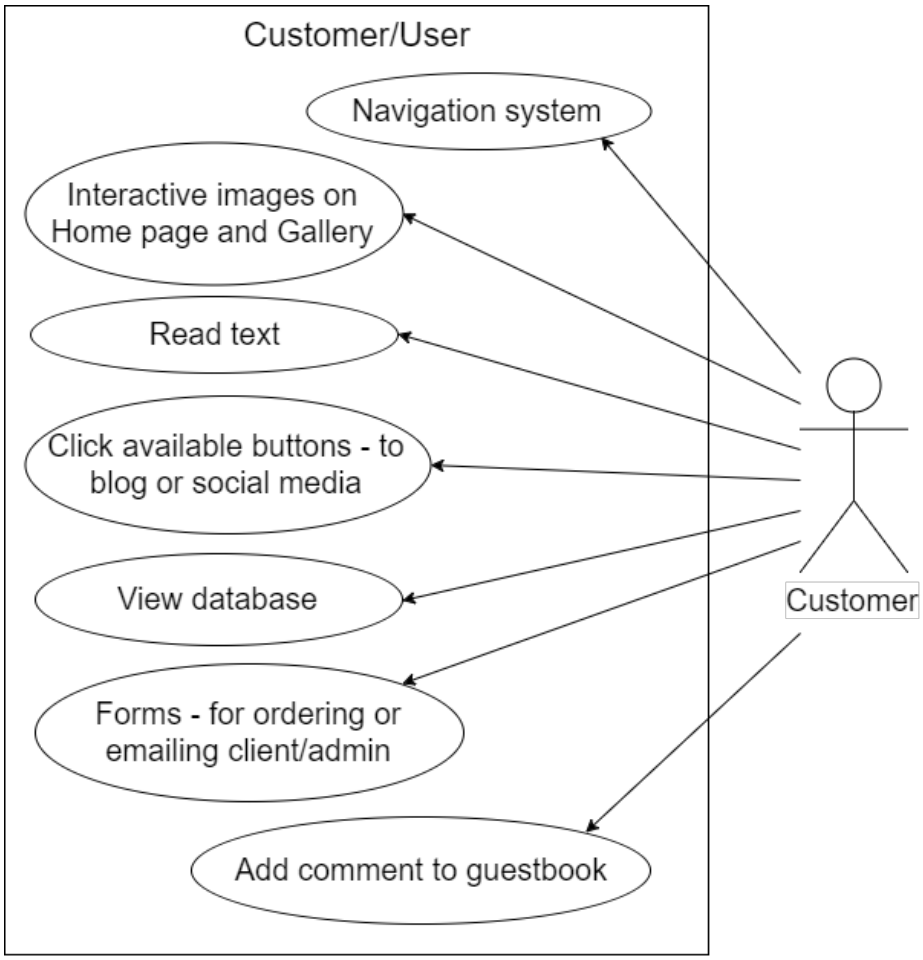

Figure 47: Use Case Diagram for Customer/User

Use Case for User Figure 47 shows a use case diagram for the user's functionality.

As you can observe, the customer has a wide variety of features they can interact with in the website. The main, which will be available on every page, is the navigation system. Images will be interactive on both the index and gallery pages. All text will be readable along with databases. Buttons will be present to attract customers to direct them to different pages: the blog or social media accounts. Forms and the guestbook are available for customers to input information.

Overall From the previous section, the Business Analysis, you can observe that the old version of the use case was very simplistic. Through user responses and during the UI design an evaluation, the design of the site has become more clear and decided upon.

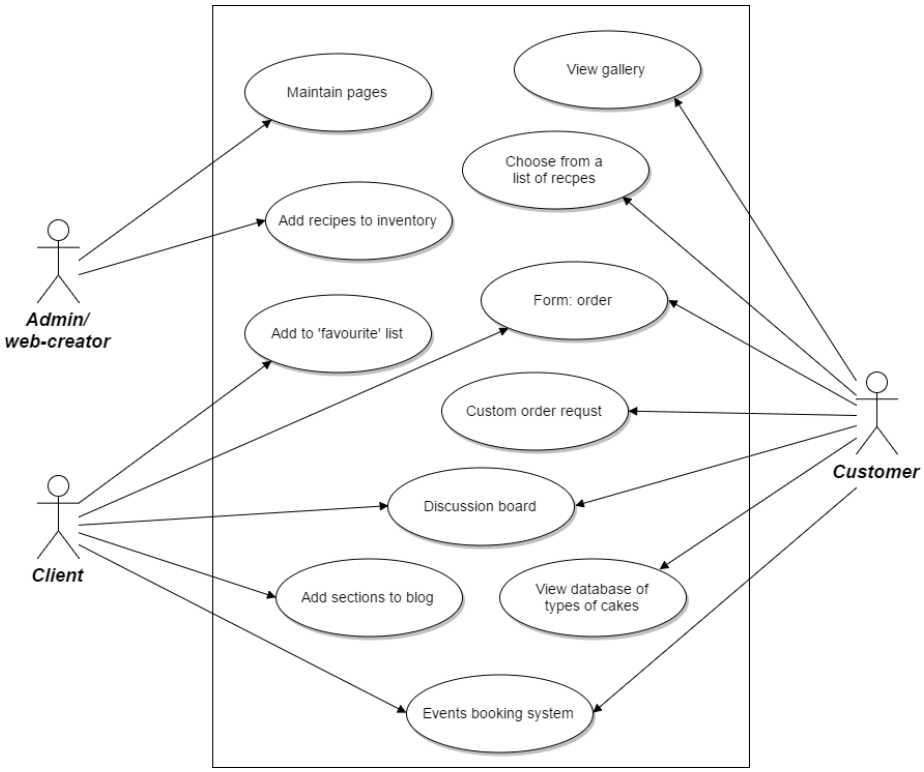

Figure 48: Old Version of the overall Use Case Diagram

Figure 48 shows a the older version of the use case for the site, this was mentioned in the Business Analysis report.

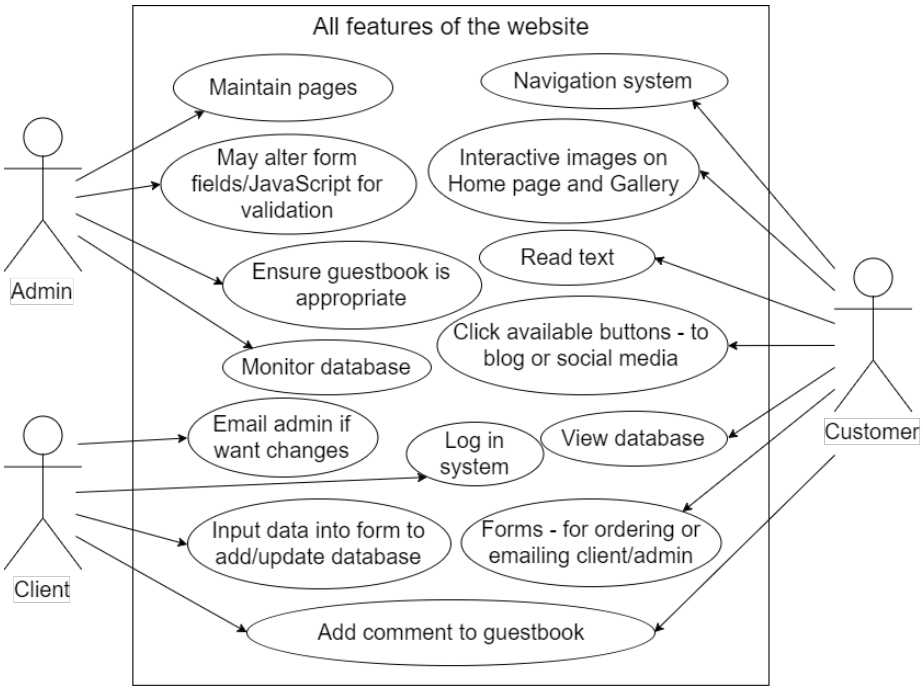

Figure 49: Newer Version of the overall Use Case Diagram

Figure 49 shows a the newer version of the use case diagram for the site as a whole - each actor is mentioned with all of their functionality.

Improved Use Case This is the use case system with all functions included. The use case is always useful when producing the site, I can always look back (to ensure I haven't forgotten anything). This behaviour diagram shows an overview of the system and functions/features that the different actors can interact with.

5.2.3 Client Vs. Server

JavaScript and PHP are scripts with different uses, they are pieces of code which created activities in the browser and server.

Client-side scripting occurs in the browser: JavaScript will be used. The code will run on the user's browser.

Server-side scripting occurs over the server: PHP - for the website it will be used to pull the database tables. PHP can create dynamic web pages.

5.3 Database Design

5.3.1 Introduction

For my website that I will be producing, I intend to include a database. As mentioned from the use case diagrams: I need a database for the cakes, blog, and favourites. There will be a database, or something similar for the user to log into so they can add, update, and delete information from the other databases.

I am going to use PostgreSQL as it has better data integrity compared to MySQL; PostgreSQL ensures data is valid before adding/updating it into the database table.

I have created an entity relationship diagram to show the database. Entity relationship diagrams shows the database structure plus planned types of data storage including the data types.

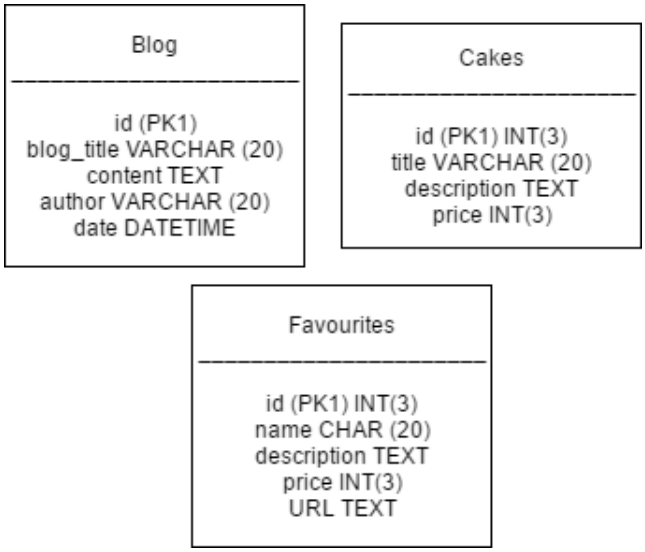

Figure 50: Entity Relationship Diagram

Figure 50 shows an entity relationship diagram of the database I plan to create: you can see the different tables which are intended to be included.

As you can see from the above entity relationship diagram there are three main tables, which are not linked together. They all each have Primary Keys, ID which will identify each data set in the table plus all data storage have types. There may be another table for user accounts: multiple users (admin and client) can access the favourites and cake tables to add/update data, though for the blog table the only one user is needed to access it: this will be the client.

Cakes entities:

- 'title' will be a string of characters 20 letters long,
- 'description' will be a text based data,
- 'price' will have a limit of 3 integers;

Blog entities:

- 'blogtitle' will be a string of characters 20 letters long: titles should be too long,
- 'content' text based data,
- 'author' a string of 20 characters: the client's name will mostly remain the same throughout the blog however if changed the new name should still be given a limit of 20,
- 'date' data here will be date as the blog needs to be given a date for when created/released;

Favourites entities:

- 'name' this will again be a string of characters no more than 20 letters,
- 'description' again text based,
- 'price' limited at 3 integers,
- 'url' text based as some URLs are long and unpredictable.

This diagram supports the use case and the website itself. I will be able to implement this system into the site and implement the data entities into a database as the diagram is well-designed, showing types of data storage and what data will stored be in each table.

5.3.2 Sample Tables or Equivalent

I can use Microsoft Access 2016[11] to create sample tables and fill it up with data to experiment with the system - this software supports database creation: the creation process is somewhat simpler than inputting data into a terminal or such; with this software, a user can simply click and type and constantly observe the tables.

For my PostgreSQL database, I plan to manually enter data, for example:

```
INSERT INTO table_name
VALUES (value1,value2,value3,...);
```

Following onto the next few pages, you will see images that show the data types of the fields for each table and some sample data.

Whilst creating the site I will be using PHP, though I may implement the database/tables using PDO: PHP Data Objects supports PostgreSQL databases.

This is the cakes database in a terminal. This is just an example of what other tables may look like:

```
cs399030_16_17=> select * from cake_db;
 id |     title      |                                             description                                              | price
----+----------------+------------------------------------------------------------------------------------------------------+-------
  1 | Base cake      | Simple one, shaped, cake                                                                             |    20
  4 | Add candles    | Add candles, a "Happy Birthday", or other similar toppings                                           |     5
  5 | Unique Request | For a very unique and specific request, you'll need to book a meeting and pay a deposit: a third of the price (£10) |    30
  2 | Extra layer    | Too add a layer making your cake with some height                                                    |    10
  3 | Cupcakes       | Pack of 12 cupcakes                                                                                  |     6
(5 rows)
```

Figure 51: Cakes Table in a Terminal

Figure 51 shows the Cake's table in the database: as you can observe this table is quite basic and follows the original plan of data types.

[11] *Microsoft Access 2016*. Year Accessed: 2017

5.3.3 Reducing Risks

Some issues could occur: specifically, database security or log in systems. The aim is to allow the client to log in to add blog posts. However, if the file permissions of the PHP are not set correctly, there could be someone gaining unauthorised access - correcting permissions ensures that any important information will be secure.

I will majority be creating this site through scratch though may use inspiration from public domain elements available: perhaps some CSS to assist with style. I may use Notepad++[12] for the editing or other similar software: I plan to mostly code from scratch and knowledge but use the internet for help/assistance.

The main challenge is implementing the log in system for the client to add blog posts. This will be tackled throughout the implementation stage: I will create a schedule and ensure sufficient amount of time is spent on this challenge. There may potentially be further/other risks, or issues with proposed technology, will be discussed in much more detail in the section regarding implementation schedule.

In the end, I used a software tool to write up the Content Management System. JetBrains DataGrip[13] is an IDE to write a CMS. The database implementation in the website supported the use cases: it allowed users to read the data in the blog, cakes, and favourite items sections.

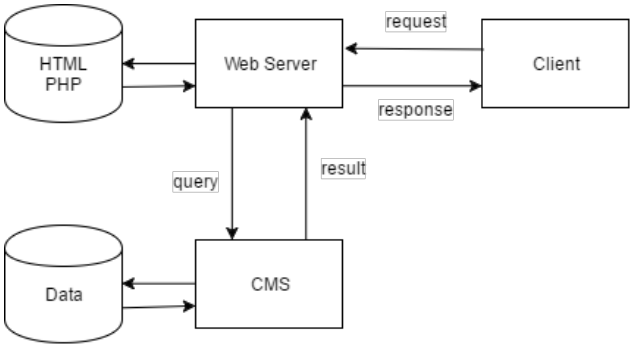

Figure 52: Web Processes

[12] *Notepad++*. `https://github.com/notepad-plus-plus/notepad-plus-plus`. Accessed: 2017-03-13

[13] *DataGrip 2016.3.4*. `https://www.jetbrains.com/datagrip/`. Accessed: 2017-03-30

6 Implementation

6.1 Planning

6.1.1 Overview of Proposed Technology

This section will explain overall the technical aspects - as a side note: there won't be any copyright issues as I am using the images that belong to the client (with her permission). The site will be hosted on the Aberystwyth University network in my public space: http://users.aber.ac.uk/sap21/[14].

I have experiences in web building (created HTML5 and PHP files/sites from scratch with CSS(3) and JavaScript); I have used a variety of different tools in the past, such as Microsoft Expression Web 4[15] and Adobe Dreamweaver[16]; plus, online web building tools such as Wordpress[17] and Wix.

A technology need is: data (the product will be reasonably sized with sufficient data). If there is a lot of data, loading time increases; several factors can affect load speed, such as amount of data and if the site is server/client-side.

JavaScript and PHP are programming languages with different uses, they are pieces of code which created activities in the browser and server. Client-side scripting occurs in the browser: JavaScript. JavaScript will run on the browser - scripting needs to be enabled on the user's browser so I will limit JavaScript functions (some users disable scripts). JavaScript functions will be very useful; some can be to make text bigger for a user-friendly site, or some are used to browse through a gallery.

Server-side scripting, PHP, runs on the server and creates dynamic web pages that can connect to a database. PHP will be coded to send form information to the client's email specifically (rather than opening up the client's email service). I will be using POST to ensure client security, this HTTP request method is better than GET: GET saves information in the URL.

Considering security issues, to prevent unauthorised access, for the PHP files, I can set permissions to:

```
chmod 644 *.php //all PHP files
chmod 400 config.php //ensures that database information
      (login credentials) will be secure
```

I will be using PostgreSQL for the database, SQL statements will be used to pull information from the database - PostgreSQL ensures data is valid before adding/updating it into the database table. Databases will be implemented with PDO, PHP Data Objects supports PostgreSQL databases.

[14] *sap21 Public Space*. `http://users.aber.ac.uk/sap21/`. Accessed: 2017-04-07

[15] *Microsoft Expression Web 4*. `https://www.microsoft.com/en-gb/download/details.aspx?id=36179`. Accessed: 2017-03-30

[16] *Adobe Dreamweaver CC*. `http://www.adobe.com/uk/products/dreamweaver.html`. Accessed: 2017-03-30

[17] *WordPress*. `https://wordpress.com/`. Accessed: 2017-03-30

6.1.2 Schedule

Implementation has been continuously ongoing, however now it is going to be fully underway once a schedule has been planned.

The main features/functions of the use-cases include:
- Navigation system
- View images (including gallery)
- Read text
- Additional buttons (social media, etc.)
- Database available
- Forms inserted
- Log in system
- Add/update/delete DB

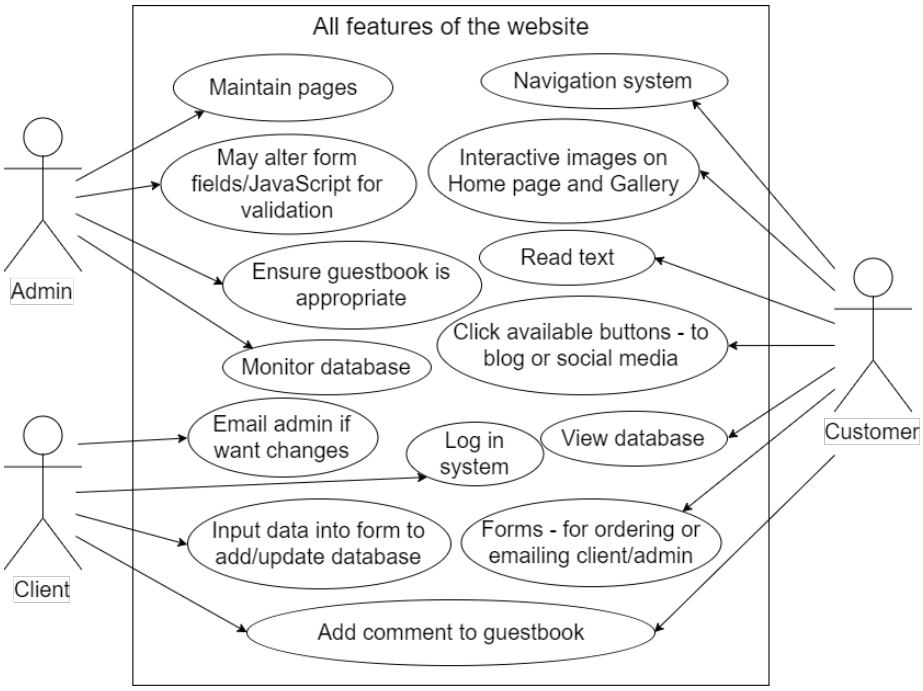

Figure 53: The Final Use Case Diagram

Figure 53 the image (again) of the final use case diagram of the product.

I am basing my schedule with these main features - I will create early releases to support some features of the use cases, then as each release develops more functionality for the site will be available. I will test the site in between each release using scenarios from each use case from the web and database design section.

Little Cake Box Implementation Plan										
Use Case	pre-release 0.1	pre-release 0.2	pre-release 0.3	Release 1.0	release 1.1	release 1.2	release 1.3	Release 2.0	Client	User
Navigation system	✓			✓				✓	✓	✓
View images	✓			✓				✓		✓
Read text	✓			✓				✓		✓
Additional buttons (social media, etc.)		✓		✓				✓		✓
Database available			✓	✓				✓		✓
Forms inserted			✓	✓				✓		✓
Guestbook inserted		✓		✓				✓	✓	✓
Log in system					✓		✓	✓	✓	
Add/update/delete DB						✓	✓	✓	✓	

Figure 54: The Schedule of Implementation

Figure 54 shows the planned schedule: as you can see the pre-releases are set up appropriately (see appendix for in-depth information).

6.2 Process

Journal I used a journal during production to comment on my progress.

Post 1 I focused on the web's design and layout to get it ready for other implementation stages; did a few responsive features: header (logo), navigation system, and footer - text plus images (galleries) were inserted too. Included a sitemap and FAQ page. Links all worked, plus social media icons. Added a simple form that sends data immediately to emails using PHP.

Post 2 I worked on the databases, I implementation them and set them up - added the guestbook code script then implemented the map feature. Worked more on forms (ordering, bookings, and contacting): got them working fully. Tested out powr.io[18] plugins as a back up to some features in case there are issues in the future. Did 1.0 testing: self tested and had beta testers too - noted issues and wrote up about improvements needed to do before Release 2.0.

Post 3 Made improvements from the feedback, focused on CSS to make improvements to the forms and layout plus got responsive design for mobile working. Did some HTML validating checks - fixed up the issues: mainly the minor errors in some tables due to my 'forgetful' formatting (such as forgetting a 'greater-than symbol' to end a table row). Looked into JavaScript: tested out scripts to make text bigger for users, who may have difficulty reading recipes, plus did form validation - I also included 'required' inserted in forms as JS can be disabled for some people's browsers. Got 'add' to work for the databases, so a user has to log in and add entries into database tables: favourite items, blog, and cakes table.

Post 4 Implemented an insecure log-in system to start with (will improve this later) plus I made a lot of improvements with the site: formatting, text, and layout. Fixed up some issues I found and added abbr tags where I thought appropriate. I made a start on the deletion feature for the site (deleting database entries), which inspired me to create the self-testing table in preparation for self-testing stage of release 2.0. Finally, I made user improvements from release 1.0 and had users test out the website - especially on mobile.

Post 5 Worked a lot more on the site in general: fixing up small issues, making the text more readable, and made features look better on mobile. Implemented a log-in system using PHP scripts and finished the deletion feature of the website. I completed the site's functional features fully.

[18] *POWr*. `https://www.powr.io/`. Accessed: 2017-03-22

Gantt Chart - as seen previously

The Schedule of Implementation - as seen previously

Little Cake Box Implementation Plan										
Use Case	pre-release 0.1	pre-release 0.2	pre-release 0.3	Release 1.0	release 1.1	release 1.2	release 1.3	Release 2.0	Client	User
Navigation system	✓			✓				✓	✓	✓
View images	✓			✓				✓		✓
Read text	✓			✓				✓		✓
Additional buttons (social media, etc.)		✓		✓				✓		✓
Database available			✓	✓				✓		✓
Forms inserted			✓	✓				✓		✓
Guestbook inserted		✓		✓				✓	✓	✓
Log in system					✓		✓	✓	✓	
Add/update/delete DB						✓	✓	✓	✓	

In the end, the process went smoothly: I followed the schedule/chart accordingly and completed the site as planned. There were, however, times I was ahead of schedule, plus the final feature (deletion) held me back a little but in the end the implementation was completed on time.

During the implementation process, I would use W3Schools[19] for inspiration (CSS), the code is owned by Refsnes Data[20].

A section of code was also taken from HTML Comment Box[21] (see apendix for raw code). Plus used Wickham's XHTML & CSS tutorial[22] for inspiration: it helped when creating the forms to send data to an email address without using a viewer's email client.

I used code from Zubrag.com[23], this is a site that provides free PHP scripts. I have used their password protect script which allows me to create a log in syste for the client.

I used an external style sheet (CSS) for my project, however I did also use 'inline' styles as they can alter the style for a single element. The W3C Validator gave some warnings about inline styles, and suggested using the external stylesheet however I figured using inline styles[24] sparingly would help (altered one paragraph in About to be placed in the centre).

---

[19] *W3Schools Online Web Tutorials*. `https://www.w3schools.com/`. Accessed: 2017-04-03

[20] *About Refsnes Data*. `http://w3schools.sinsixx.com/about/about_refsnes.asp.htm`. Accessed: 2017-04-03

[21] *HTML Comment Box*, op. cit.

[22] *Wickham's tutorial; Form to send an HTML email from a web form without using a viewer's email client*. `http://www.wickham43.com/tutorial-php-xhtml/formhtmlemail.php`. Accessed: 2017-03-22

[23] *Zubrag.com — Web Page Password Protect*. `http://www.zubrag.com/scripts/password-protect.php`. Accessed: 2017-04-20

[24] *W3Schools.com; CSS How To...Three Ways to Insert CSS*. `https://www.w3schools.com/css/css_howto.asp`. Accessed: 2017-04-05

Pivoting Throughout the implementation stage, I had to Pivot (change direction with some features/design) a few times: changes I made were from my own initiative or feedback from beta testers.

- I included a SiteMap and FAQs. These additional pages would make the web system a lot more useful.

- I changed the map from an image to a Google Maps[25] embedded feature and decided to put it in the booking page rather than contact details page - I made this decision because people who wanted to book a meeting had the reminder that the client was based in Liverpool.

- The Social Media button was put in the footer rather than just blog/contact page, this way users always could see it.

- I decided against a database table for recipes in the end: users from beta-testing didn't like the layout and suggested it to be improved. I left it text based and added a pagination feature - I didn't want the content in the site to seem too repetitive.

- I used a simple PHP log in system rather than create a database table for users. From the site, Zubrag.com (as mentioned earlier) they provide free PHP scripts: I downloaded and used the password protection zip folder and implemented it into my website. Originally I created the system with JavaScript but it was insecure.

- Combined JavaScript validating scripts plus HTML 'required' in forms; used both as some individuals may disable JS in their browser (JS was used in simpler forms: contacting the admin to ask a question/report an issue/provide feedback).

- I dropped the 'price' and 'URL' column of favourite items table in the database, the price wasn't consistent and would leave NULLs in the table. The URL section made the table look like it was designed badly.

- Decided against letting the client edit separate database entries; I decided to only give the client options to add and delete the records. I thought this method was better as the database has tables which are quite basic: the client's data is simple information that won't particularly need editing.

[25] *Google Maps Embed API; Google Developers.* `https://developers.google.com/maps/documentation/embed/`. Accessed: 2017-04-05

Issues I created PHP files with UTF-8 in Notepad ++ however, I had to encrypt files to be UTF-8 w/out BOM (Byte Order Mark): W3C[26] was useful plus StackoverFlow[27] helped.

W3C Validators W3C Markup Validator[28] errors with formatting tables (forms, sitemap, gallery). Did have a few issues with using CSS in the HTML. W3C CSS Validator[29] but they are mostly warnings (in regards to the CSS I included for different browsers).

Some errors are still mentioned on the validator, however they aren't big issues: they say that using CSS in the file (instead of the style sheet) is obsolete. Also I used a placeholder for date types in forms because Firefox doesn't show the option to choose a date. Overall, these aren't major issues - some popular sites like Wikipedia[30] also have errors.

[26] *W3C; The byte-order mark (BOM) in HTML.* `https://www.w3.org/International/questions/qa-byte-order-mark`. Accessed: 2017-04-03

[27] *stackoverflow; HTML validation error, non-space characters found before DOCTYPE.* `http://stackoverflow.com/questions/8051941/html-validation-error-non-space-characters-found-before-doctype`. Accessed: 2017-04-03

[28] *W3C Markup Validation Service.* `https://validator.w3.org/`. Accessed: 2017-04-04

[29] *W3C CSS Validation Service.* `https://jigsaw.w3.org/css-validator/`. Accessed: 2017-04-04

[30] *Wikipedia, the free encyclopedia.* `https://en.wikipedia.org/wiki/Main_Page`. Accessed: 2017-04-15

7 Achievements

This web development project was very successful. There are many good aspects, specifically the CSS: the end product has resulted in a very attractive site. I achieved the main functionality components plus met all aims the client requested. The site worked as planned, there were no issues - all works appropriately.

The website promotes the business: images throughout are clear and attractive. I followed guidelines that would make it a site which could appear high on a list of search results (search engine optimisation[31]): the web structure is very organised showing a natural flowing hierarchy with file/directory names appropriate so the URL result will be understandable. I included a sitemap plus easy-to-read text (no duplicated words) which is aimed for the users. Header tags were used appropriately, as well as alt tags: these have been used in case some images do not display, especially when images are click-able/used as links.

The client wanted the ability to communicate with her customers; I met this requirement and successfully achieved it as the blog and other social aspects allows potential communication. The discussion forum, despite not made from scratch, was an important feature of the site, which was implemented.

As more users are using mobile devices these days, the site was created for the purpose of mobile users. I produced a responsive design: images on the index/home page, the footer, and navigation system all adjust to a screen size. The navigation system was a major achievement: I created one to be displayed to be suitable on a mobile device - a horizontal layout for a desktop whilst a vertical layout for a mobile device works best: this is backed-up from my user tests (the positive feedback I gained). Other CSS aspects were very successful, the colour contrasts used: pink and navy (dark blue). Links were formatted so they are easy to spot, pagination design is bold, and the style of the forms are appropriate: the fields were increased plus placeholders were used.

The PHP scripts all operate as they are meant to. The web system connects to the database as planned and displays all appropriate data. PHP was also used for adding and deleting data using POST rather than GET so the data is much more secure. The log-in system is also produced with PHP and permissions are set appropriately so no unauthorised access can occur. The forms were also created with PHP: the ordering, bookings, and contacting forms - all use PHP to send the data straight to the addresses specified in the code rather than requesting to open the user's email client. This was what the client requested:

[31] *Google; Search Engine Optimization Starter Guide.* `http://static.googleusercontent.com/media/www.google.com/en//webmasters/docs/search-engine-optimization-starter-guide.pdf`. Accessed: 2017-04-23

rather than a database system for orders, she wanted user form entries to send to her email address directly.

I believe the site as a whole was a major achievement and success, I will expand further below and explain points that back-up my claim.

Navigation System In this section, images of the navigation system can be observed - the system works well for both desktop and mobile versions. The drop down operates successfully, I personally believe this was a great achievement as I was able to make this arranged system run as planned for mobile users.

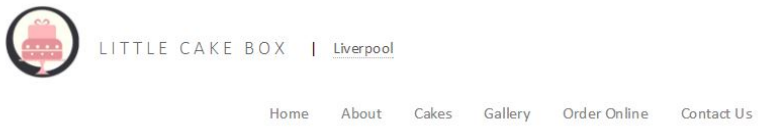

Figure 55: Image of navigation system in desktop

Figure 55 shows an image of the navigation system in a desktop version, as you can see, it is below the logo plus title; the system is quite small so the main pages are on display.

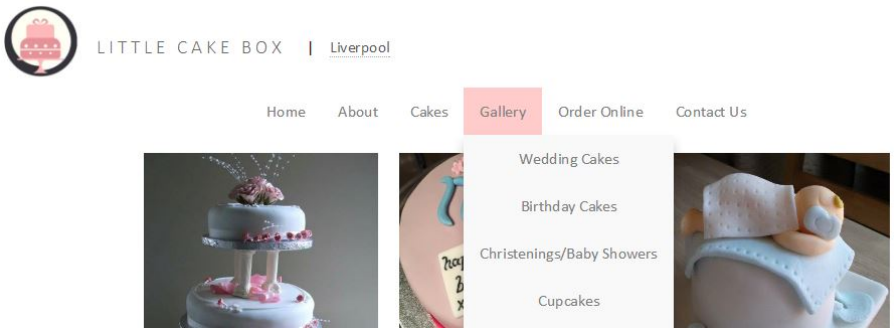

Figure 56: Image of navigation system drop-down system

Figure 56 shows an image of the drop-down system when on a desktop - the links display appropriately.

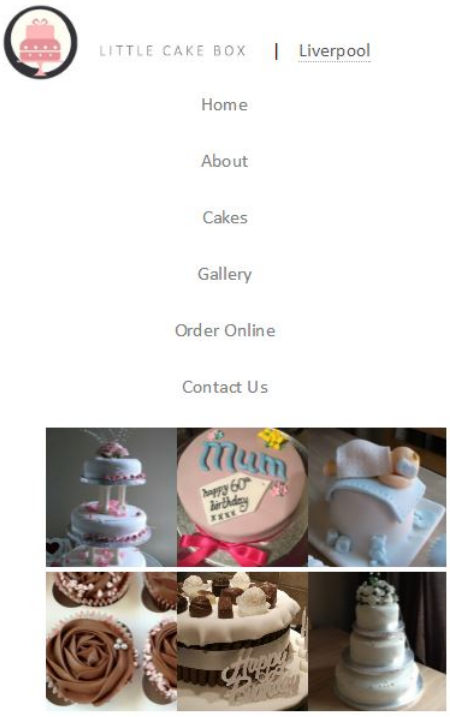

Figure 57: Image of navigation system in mobile

Figure 57 shows an image of the navigation system when using a mobile device, as you can see the layout changes: links become bigger and are vertical rather than horizontal - I did debate about adding a hamburger menu however the user response was more than positive about this current system so I decided to leave it. If more links were included in the navigation system, the vertical menu would've been longer so a hamburger menu would have definitely been included.

The navigation system is a very important aspect of any web system. This system for both desktop and mobiles keeps the audience in mind: to provide them a suitable way to get around the site.

Footer The footer was made with columns, in a desktop version there are two separate columns: on the left a list of pages, on the right the social feature: details of the client, Facebook icon, and links for social aspects such a link to the contact page, where users can fill in a form to ask a question.

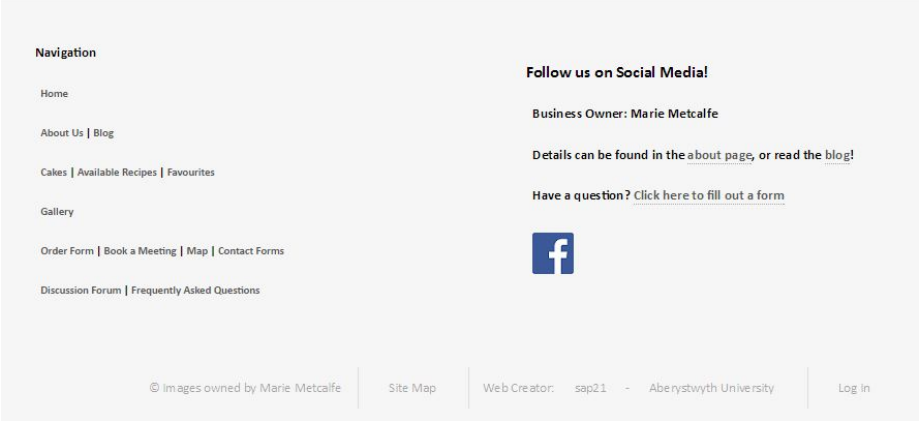

Figure 58: Image of footer in desktop

Figure 58 shows an image of the footer in the desktop version, the column gap decreases depending on the size of the window. As you can see, right at the bottom there is copyright information (how the images are owned by the client), the site creator and organisation it is linked with (Aberystwyth University), the link for the client to log-in plus the link to the site map.

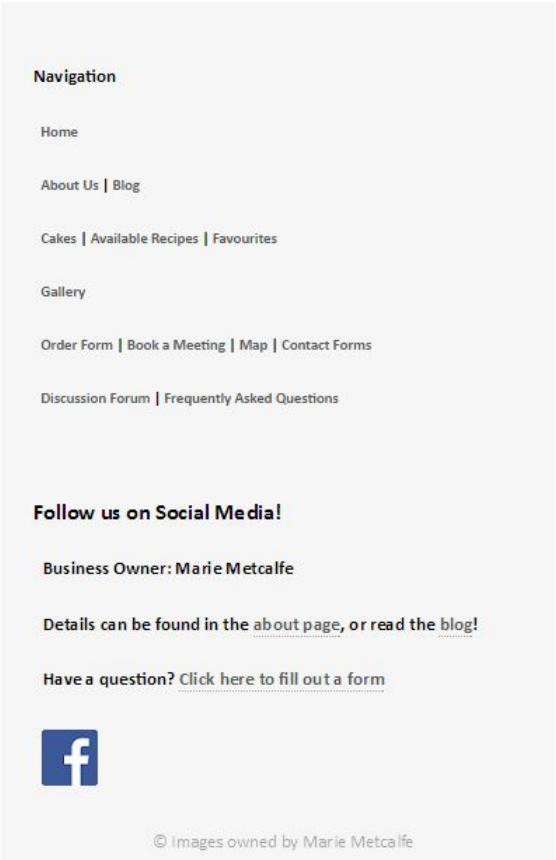

Figure 59: Image of footer in mobile

Figure 59 shows an image of the footer on a mobile. In a smaller screen size the columns merge as one and is still presented appropriately.

Footers are extremely useful for websites. Majority of popular sites today have some form of footer. Usually small footers are used in sites that have a lot of information; however for this site, having a somewhat reasonably sized footer was a good decision: the social media link/icon is not too large to annoy users yet it is always available to encourage people to 'like/follow' the social media page.

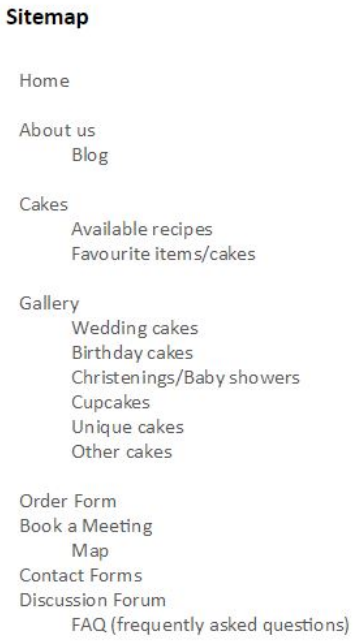

Figure 60: Image of the sitemap

Figure 60 shows an image of the sitemap, the sitemap is accessible from the footer. This page has links for all pages for the user (meaning the log-in page is not visible here). The list is presented in a particular fashion so the user can see the main pages plus sub-pages - the map isn't on a separate page however this was something that should be included in a sitemap.

Sitemaps are encouraged to be used for search engine optimisation - many state they are very important for users. By including a sitemap, I have not only benefited the site by making it more organised, I have helped the client and users: the client's potential customers will have a better understanding and knowledge of where to find web features.

Home Page The index page had to be bold: the aim for the site is to invite people. The images are in a table and are responsive so they adjust to the screen size. This page is attractive and is quite the achievement; a user, who is a computer science graduate, actually said they were surprised that this site was made from scratch: they were impressed by the skill and design.

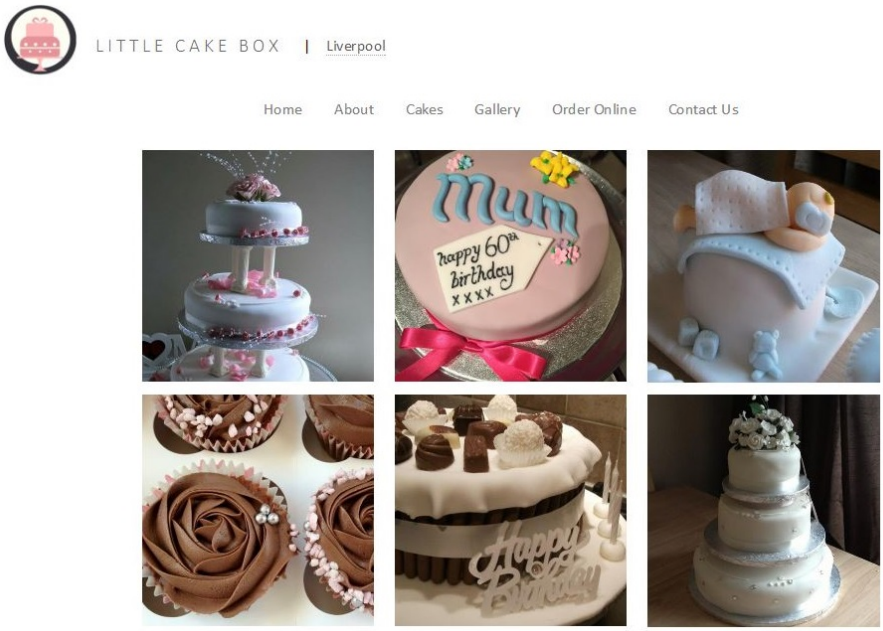

Figure 61: Image of home page in desktop

Figure 61 shows an image of the home page in the desktop version.

Figure 62: Image of home page in mobile

Figure 62 shows an image of the home page when on a mobile, the images scale: the gap becomes smaller depending on the screen size of the mobile.

About Page At first the about page had paragraphs of text, but after some user tests they were shortened down a lot. There are plenty of links available to direct users to the appropriate pages - the main text states information about the business and the guidelines (such as if a user wants to book a meeting they will pay a £10 deposit).

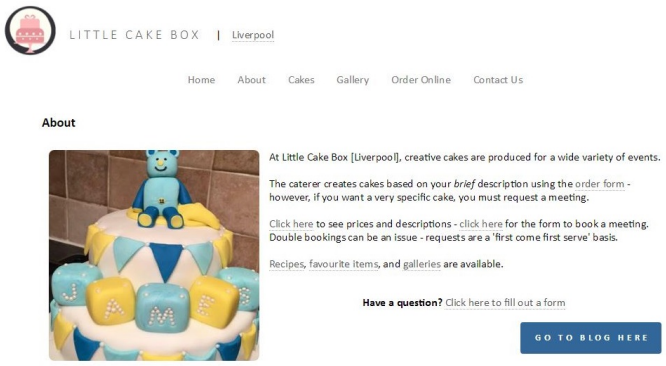

Figure 63: Image of the about page in desktop

Figure 63 shows an image of the about page in a desktop version, with a smaller screen, the text stays wrapped and to the right of the image, only when on mobile does the text move below the image.

Figure 64: Image of the about page in mobile

Figure 64 shows an image of the about page when on a mobile - images are very important to a site like this: you need to ensure the potential customers see the products.

Blog The client wished for a blog feature for the site: so instead of updating/rejecting certain features, the users can read some small snippets of the client's life to perhaps gain a better understanding of the situation - for example, the client recently had a baby and stated in her blog that communication may be slow. The blog was a major achievement: it is bold and presented in a professional manner.

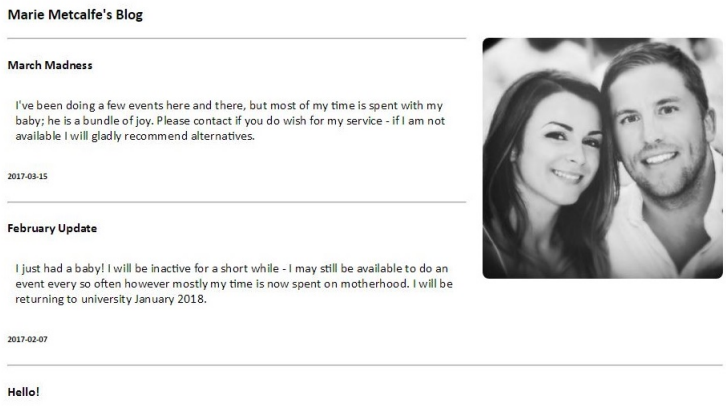

Figure 65: Image of blog on desktop

Figure 65 shows an image of the blog when on a desktop, the lines separate posts.

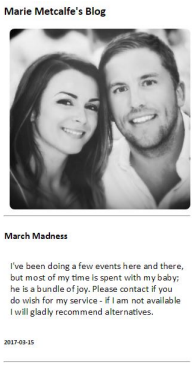

Figure 66: Image of blog in mobile

Figure 66 shows an image of the blog when on a mobile, the setup is very similar to the About page, how on a mobile device the text will appear underneath.

Database Pages Even though the blog is a database table, it is presented in a different way compared to these tables. These DB tables are literally outputted in HTML tables.

Type	Description	Price (£)
Base cake	Flavour of your choice	15
Extra layer	Add an extra tier or more	5
Cupcakes	Pack of 12 cupcakes	6
Toppings	Add candles, icing, or sprinkles	3
Specific Request	These require a meeting with a deposit	25

Figure 67: Image of cakes database

Figure 67 shows an image of the cakes database.

Favourites/Items	Description
Brown Sugar	For cookies, I have at times added brown sugar to the recipe to find the result makes a nicer cookie
Cake Pops	These are my new things I love to create - if you wish, you could request it and I may negotiate
Cutters	I use cutters for my icing designs, they really help and make pretty patterns
Hand Blender/Mixer	Very useful and I have found it saves a lot of time than hand-mixing, plus by hand can leave lumps
Silicone/Rubber Spatula	This utensil has been very useful when baking cakes: mixing ingredients plus applying icing

Figure 68: Image of favourite items database

Figure 68 shows an image of the favourite items database.

Recipes Recipes were originally intended to be a database table however it was decided to be dropped. There was no need to be in a table as the information didn't have to be changed, the recipes/data would've stayed the same. A pagination was added to the site for recipes so the page would not be cluttered with text.

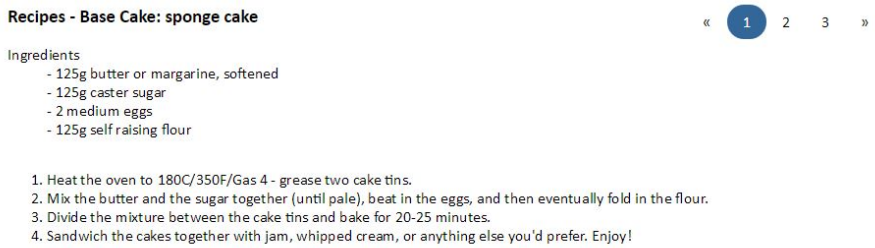

Figure 69: Image of recipes in desktop

Figure 69 shows an image of the recipes in a desktop.

Figure 70: Image of recipes in mobile

Figure 70 shows an image of the recipes when on a mobile, as you can see the pagination is above and closer to the lists.

Gallery The gallery gained positive feedback from the users who tested out the sites. People liked how they were presented on a desktop version - when on a mobile version (images still visible) the user must scroll left/right to see the other columns of the table of images. This idea was originally for the index/home page (though changed to responsive/scaling images) however for the gallery, people preferred that the images stayed in this style as the images were clear.

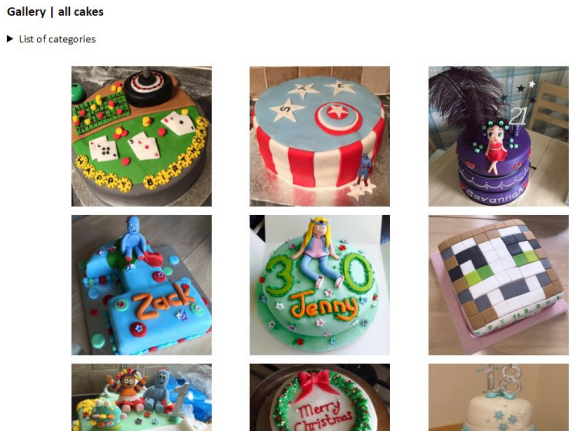

Figure 71: Image of the gallery on a desktop

Figure 71 shows an image of the gallery on a desktop version, the images are spread out with a gap in-between them. The images can be clicked to be enlarged/zoomed in.

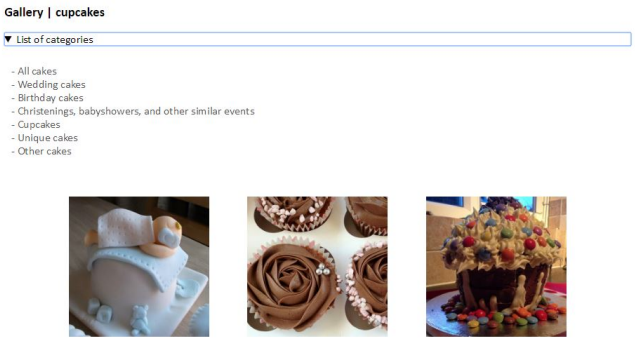

Figure 72: Image of gallery lists

Figure 72 shows an image of the gallery lists - it is a drop down system, the other categories are also available in the navigation system.

Figure 73: Image of gallery in mobile

Figure 73 shows an image of the gallery when using a mobile. As I mentioned above, the images are clear in this version, they can still be clicked to be zoomed in.

Ordering Form and Booking a Meeting The order form is a main link in the navigation system with the booking page in the drop-down list. The order form page also have a big button with text next to it reminding users that they should book a meeting if they want a specific design. These pages were a big success: the information sends straight to the email address specified in the PHP code rather than opening the user's email client.

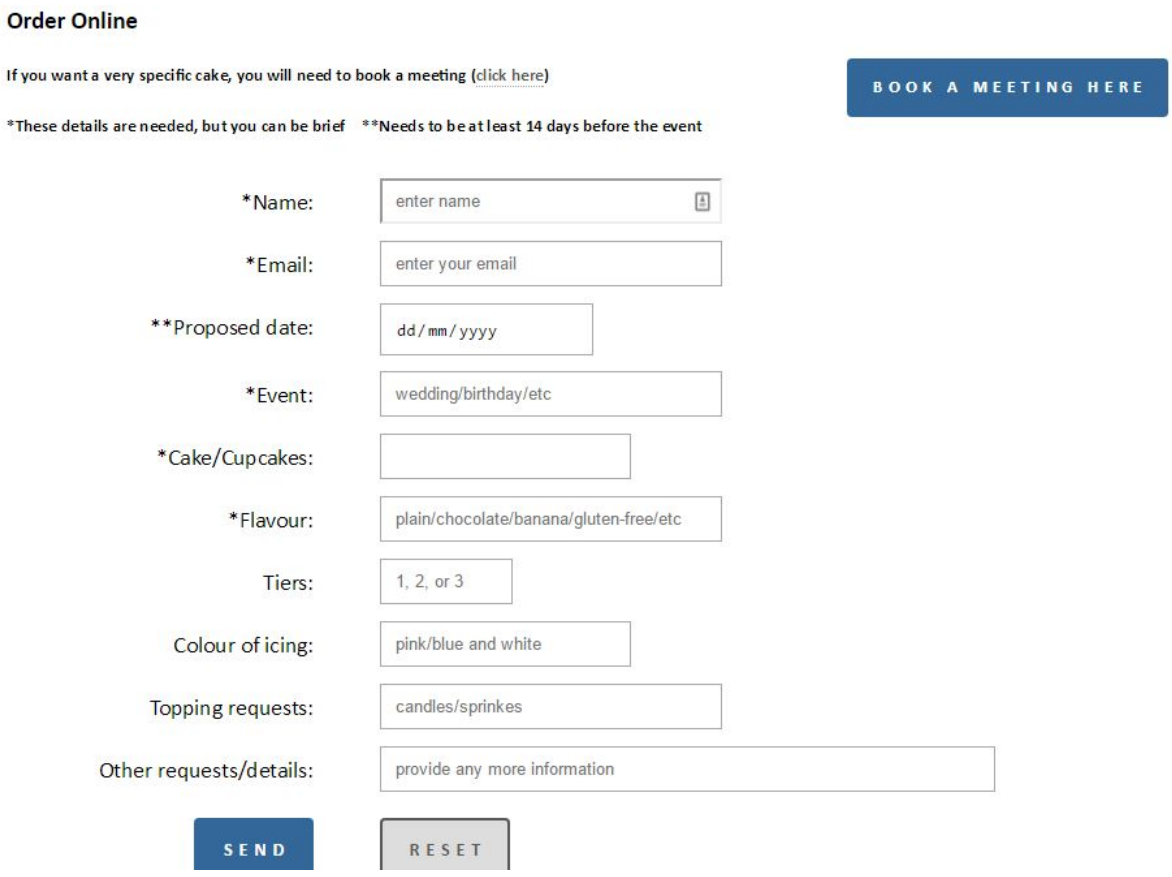

Figure 74: Image of order form

Figure 74 shows an image of the order form.

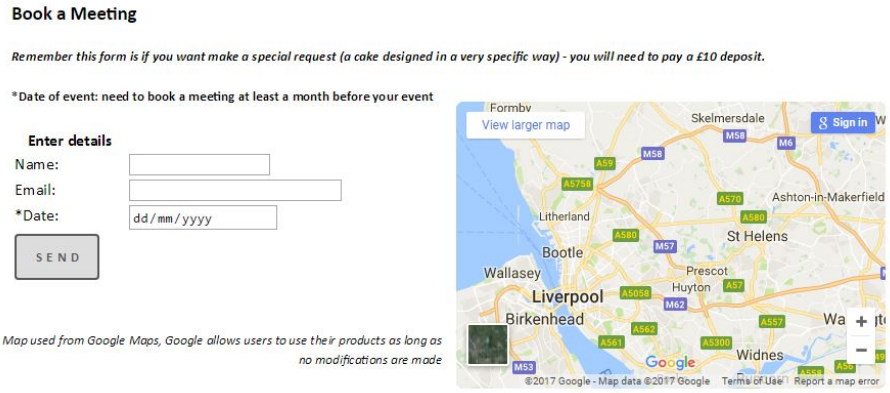

Figure 75: Image of booking system

Figure 75 shows an image of the booking system; as you can observe, this page has an embedded Google Map and the form.

Contacting: Forms, Discussion Forum, and FAQs When sending the contact forms, they also don't open the users' email client, they are simplistic and only request a comment/feedback: JavaScript is used here. These sort of pages were successfully created and meet the specification, the client requested a discussion forum and forms for users to contact them.

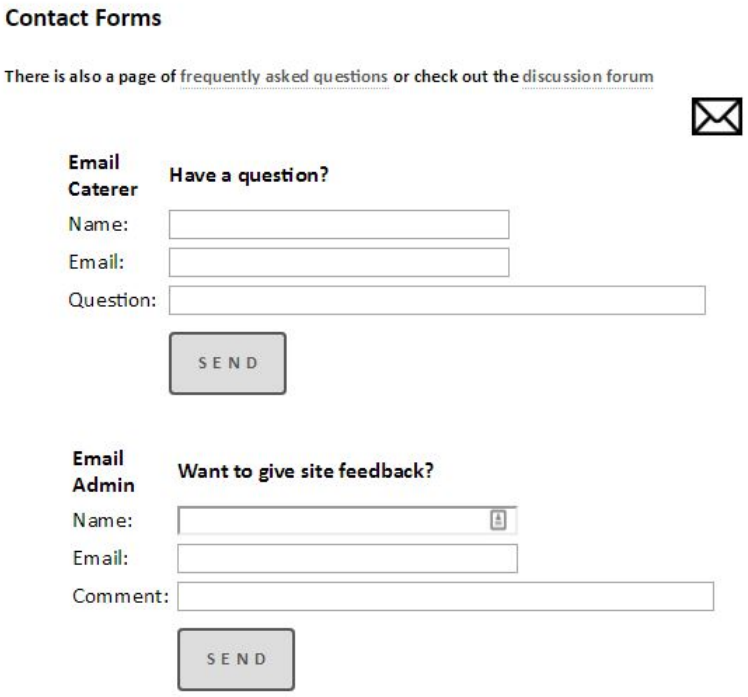

Figure 76: Image of contact forms

Figure 76 shows an image of the contact forms.

Figure 77: Image of discussion forum

Figure 77 shows an image of the discussion forum/guestbook. This images is on a mobile device showing how it'll still be easy to make a comment.

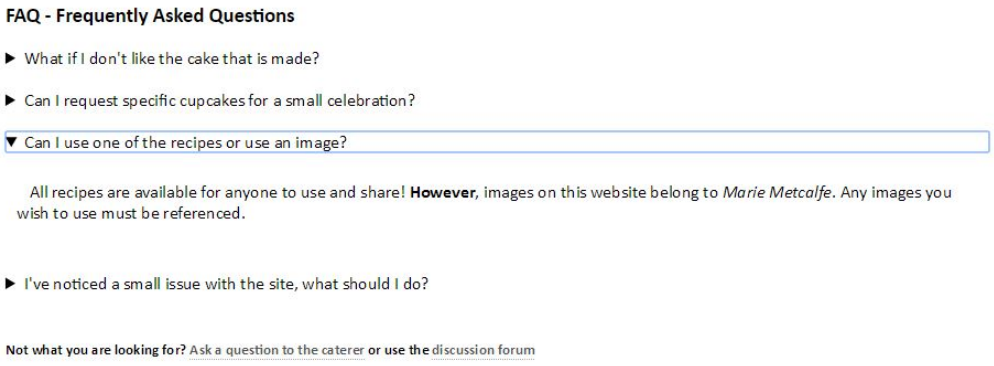

Figure 78: Image of FAQs

Figure 78 shows an image of the FAQs, they are in a list that the user must click on to see the answer.

Logging-in, Adding, and Deleting This section is very successful: I created a professional log-in system - for security reasons, the client must re-enter their details when for each section: so if they leave their computer/mobile unattended they won't risk someone gaining access to that session. When adding a new record into a table, the user is required to enter all form fields so there are no NULL entries in the database (all rows need to have data). When deleting records, a simple indication of the row is provided then a deletion button - for example, blog titles and dates are given then a button underneath; this system is simple yet efficient.

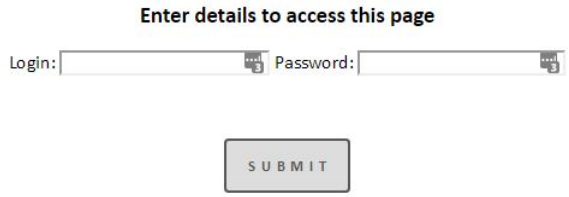

Figure 79: Image of the log-in system

Figure 79 shows an image of the log in system.

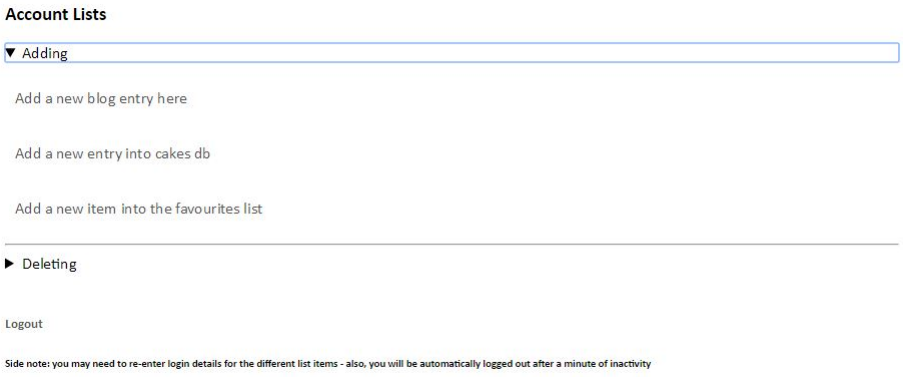

Figure 80: Image of lists of adding/deleting

Figure 80 shows an image of the drop down lists for adding and deleting. Once a user logs into the system they will see this list.

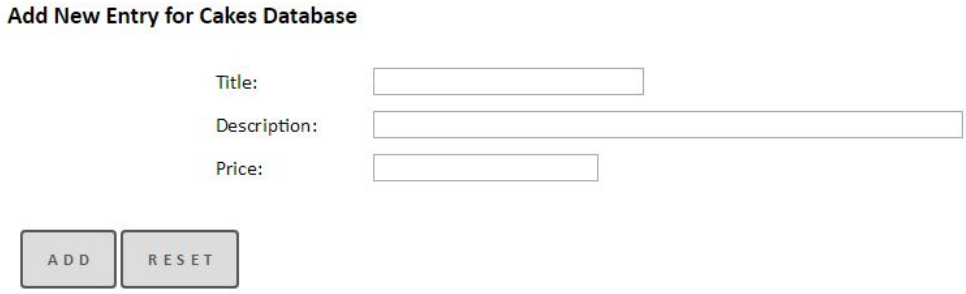

Figure 81: Image of adding content

Figure 81 shows an image of the form for adding an entry into the database; for this example (cakes database), the client is prompted to enter the title, description, and price - the client cannot add an new row if a field is empty, I used HTML 'required' for the input types.

Figure 82: Image of deleting content

Figure 82 shows an image of the entries and a button to delete a row from the database. This layout is very basic, which is the aim: we don't want a complicated system.

8 Testing and Evaluation

8.1 Testing

See appendix for raw data (self-testing tables)

8.1.1 Release 1.0

Self-testing: Only issue was that the navigation system responsiveness wasn't operating properly, which will be improved before release 2.0.

Beta-testers: This is the base site for users: they can observe all information and data. Release 2.0 is aimed to make UI improvements and to implement functions for the client/admin.

- Some users were testers from the UI design study: they say this site is much better to navigate; it's more simplistic. "It's easy and neat" plus "Very easy to navigate" - just some examples of feedback I gained.

- They like that images on the home page are clickable and takes to appropriate gallery

- They like the pages with text (recipes, FAQs) but the About page in particular could have less text or generally could be slightly improved; a user said though about overall layout/design: "professional presentation"

- Also suggestions that the Blog page could be improved: the table was too small (though more than half were indifferent)

- They like the uniqueness of the business and the method of ordering and servicing of product, however they said the order form was a little too small (the size of other forms were OK because of their specific purpose)

- They liked the social media rollover image at the bottom. Wasn't too bold, just a nice design

- They really liked the galleries: they say a gallery for a cake shop is very important and like that there are numerous categories

- They like the Google embedded feature: they say this is very useful for sites. They especially prefer the Google embedded features as people can interact with them

Improvements to make during Release 2.0

- About and blog pages could be improved.

- Recipes list could have a better design as suggested by users.

- Improve CSS of order form.

- Do more tests with the responsive design (from self-testing); will do a mobile testing period.

8.1.2 Release 2.0

Self-testing:

All tests passed and results were as expected. I had a testing section for the mobile versions of the site, I found some issues personally plus the same issues were brought up by the users. The navigation system on mobile gained a positive response, one individual said that perhaps look into making it a drop down system for mobile so I will look into this. Originally, all images in the site were placed in tables: users like the tables design for the gallery however didn't like the design for the index page.

I improved the about and blog pages: the blog was originally a table but I changed it so it views better on desktop windows plus mobile screens. The order form is designed better now for both desktop and mobile screens.

I used pagination for the recipes list, this system gain much better feedback: users preferred this and said it looked better than the original version (just text with a line in between different recipes).

Beta-testers:

- "It has clean design" users like the layout, especially after improvements

- "I like the display of the gallery" users liked the gallery on both desktop and mobile versions, however not the layout on the index page

- "mobile version is very nice" I had a separate period specifically for mobile testing: individuals tested thoroughly and told me their opinions. There are a few small CSS issues that can be easily fixed.

- "It's really nice overall...I like the feel of the site" this is exactly what I was aiming for: all users gave very similar feedback of saying they liked the design and they agree that it fits the purpose.

Improvements to make during Release 3.0

- Fix the images on the index page - perhaps look into making them scale rather than just in a fixed table that cuts half of images (users need to scroll to view properly.

- Do more fixes with the CSS: make forms and blog even better with some slight changes.

8.1.3 Release 3.0

After Release 2.0 beta-testing period. I spent a bit of time finalising the site, I worked on all feedback/suggested improvements; I then tested everything as a whole.

Final self-testing:

The final testing stage was a collaboration of all releases: I tested everything thoroughly.

I fixed the images on the index page, I made them responsive to screen size. However, the gallery images do not scale as users preferred them a bigger size and liked scrolling. I fixed more CSS aspects: the blog is much better displayed in sections rather than a table.

Final user tests (scenario period):

- "clean and fast"

- "gets straight to the point of the site"

- "no clutter/pointless stuff"

- "all the information is very clear"

- "the pictures are great"

- "the ordering form is very simple and quick"

- "overall it is an absolute great website and informative - would absolutely recommend it to family and friends"

Research Ethics at Aberystwyth University[32], all users were informed that their data was confidential, what they were participating in (plus why), and what their data was going to be used for. I also included information (my email address[33]) regarding their chance to withdraw at any time.

[32] *Aberystwyth University Ethical Research Assessment; ID: 6378.* `https://www.aber.ac.uk/en/rbi/staff-students/ethics/ethical-research/`. Accessed: 2017-02-05

[33] *Samantha Pendleton (sap21) email.* `sap21@aber.ac.uk`. Accessed: 2017-04-07

8.2 Evaluation

I believe this project was very successful, the business analysis, designing, and implementation in addition to testing were all planned in a professional method that I could run through this project smoothly.

The business aspects were all well-thought out and assisted me in designing/production - I could look back over these sections and observe rival sites in order to be inspired what to do and what not to do (from the successful user forms). I also had the ability to re-read over the specification in order to ensure I am creating a site which meets the aims.

The design stage was presented at a high standard: both diagrams and the descriptions; the numerous use-case diagrams were designed in simplistic manner that made them helpful when creating the site; for each web page I was creating, I could look up the use-case diagram and know what sort of content will be included/available for users.

Obviously though, some aspects were changed to what I believed were the best choice for all involved (client, user, and admin): for example, I added a footer with the social media icon rather than having it only in the blog page.

The prototype (Wix) was also a very useful design to look back on: the design/layout I was aiming for.

The implementation schedule I created was useful for the creation stage: it played such a major role during the production resulting in finishing on schedule.

Back-ups to my claims of a successful project is the feedback gained from users. The feedback was overall positive with controlled critical comments at times - the comments were helpful in order to create a site that users would like.

I, plus beta testers, continuously tested the site throughout the implementation stage; only at the end of releases did I do an overall test stage: one final self-testing of everything thoroughly and having users use scenarios.

The only issue I found was the responsive navigation system for mobiles: when I was testing the site, I used small screen sizes on desktop windows - however when I did a final test (self-testing release 1.0) on a mobile device, I noticed how I did not use the correct CSS to make the system work for a mobile specifically. From that point onward I used Google Developer Tools[34] which allowed me to continuously check the site on mobile versions rather than having to open the project on a mobile constantly - though I did not neglect the use of a mobile: I would use a mobile device often.

[34] *Google Developers Web; Learn How to Develop the Next Generation of Applications for the Web.* `https://developers.google.com/web/`. Accessed: 2017-04-27

Testing is such a major aspect of a product: that being a website, software, or a physical object. My testing and implementation stage merged together, which resulted successfully: I would continuously test the site myself and had beta testers do it; this way I could work on constant improvements whilst alongside adding functions/features. Only when the implementation process was officially done, I briefly focused solely on testing (including a final user testing scenario period) - this method was very beneficial to the project.

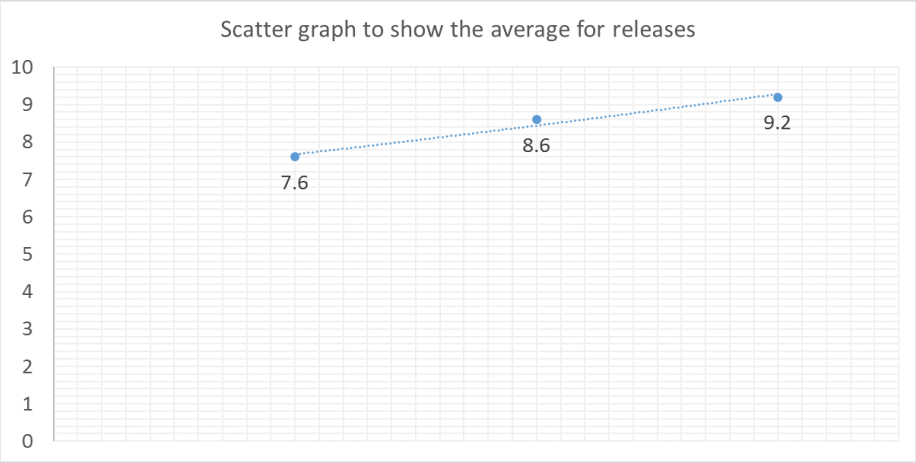

Figure 83: Graph of average user ratings of releases

Overall, my tests were ran appropriately and professionally: I would not only test them myself but would have beta testers continuously observe the site: after finishing a specific feature, like a form, I would ask a user to fill it out and try entering incorrect data or similar. Then during a release, the users would test out the whole site and specifically look for any issues.

The user tests were very successful, during beta testing they were provided with the site and asked to review it: they were told to test out features and give feedback. Users checked the site on their mobiles, desktops, and luckily one had a tablet. Different browsers were also used: Safari, Google Chrome for mobile, and Firefox for desktops. Though for the final tests we used scenarios to ensure the site fits it's purpose.

One example includes telling a user to order cake like a customer would: I asked if they thought there was enough information or if the form is presented clear enough. Some feedback (mentioned in the testing section) included how users thought this particular form was poorly designed and not enough information included. I was able to improve the design of my site: I used CSS to make it better and edited the HTML code (placeholders) provide more information.

During the final testing period, I briefly had users compare my site to the prototype (UI designs).

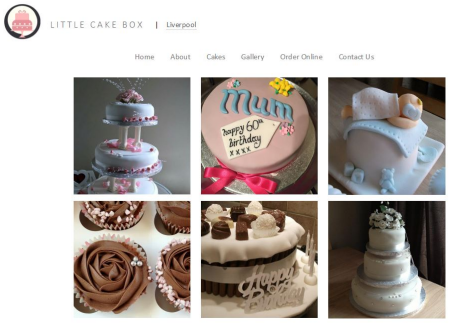

Figure 84: My created home page

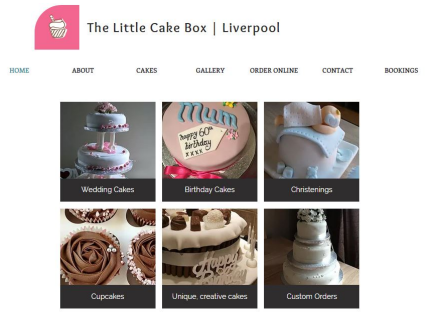

Figure 85: Prototype's home page

Figure 84 and 85 shows the home pages created for the prototype (with Wix) and the one I created: as you can see the designs are similar.

All users liked the placement of my logo/header and preferred the images design - they didn't particularly like the fact that the prototype had text over images. This is also links to the very few times my opinion was conflicted - for example, on a mobile version on my site originally the images did not scale (like the gallery). I thought this design was the best despite users saying they thought it wasn't attractive enough for a mobile (as noticed, I chose the option of the users' opinions).

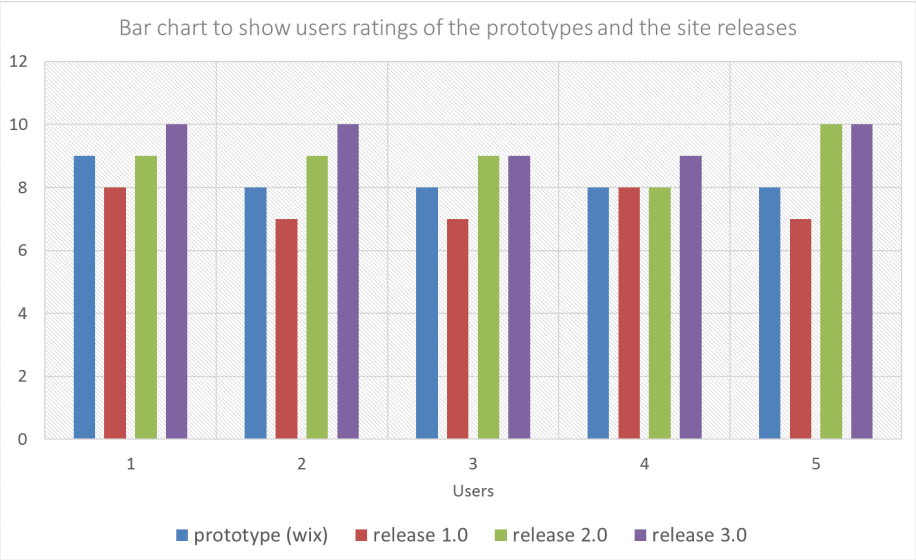

Figure 86: Graph of user rating of all releases including prototype

During each release (plus the prototype), I asked the client their opinion: they weren't particularly wanting to test it (she is currently quite busy) but was more the willing to check the front-end design and check features she requested were included.

The client stated that the site is focused on the business - she was very happy with the end product, especially the colours used and the images: all the content fits the purpose of the website - plus stated that she was glad regarding the minimal text (blocks of text can possibly drive away potential customers). She particularly liked all the links available to social media: Facebook plus really liked that the website creator information wasn't too bold or flashy (minimal information).

Here is essentially a checklist of all items/features that were aimed for. Some requests were specifically made by the client.

- Navigation system: this feature was an obvious must have for a website (along with a title/logo). I designed one appropriate for desktop and mobile: all pages are available though the system has only the main pages visible with the 'sub-pages' accessible with the drop-down when a user hovers over a link.

- View images (including gallery): all images available on the site were originally one size and users had to scroll, however from user feedback, they originally liked this but overtime said how the scrolling (left to right) on the home page was flawed. After altering this the index page now has the images

scaled. The gallery however has stayed the same: images are one size and big on screens, so users must scroll left/right to view other images (on desktop they are all visible on a screen). Users preferred this method and so did the client: images are much more clearer this way that they don't scale. Images are also links which individuals can click on them to zoom in.

This was something specifically requested by the client: she knows that for a site with this purpose, plenty of images available sells the product as users/potential customers can see a wide range of products made.

- Read text: as stated earlier from the client's opinion plus feedback from the user tests, the text available is short yet to the point: users originally didn't like too much text on the About page so I decided to limit this and then allow the blog to be filled up with paragraphs of text: each blog is sectioned/partitioned off.

Any other text on the site (order form/contact us) is mostly a simple sentence just to inform users of additional information: the overall aim of the text is to inform users in a precise and short way, this method is the best as it gets to the point/doesn't ramble.

- Additional buttons (social media, etc.): there are numerous buttons available in the site. Originally there were just bold links available with the only button being 'submit' or 'go to blog'. However I changed this for user benefit (plus client): there are buttons for 'go to blog' and 'go to bookings here' - there are also 'reset' buttons now available for some forms allowing users to reset major/big forms.

Social media buttons are still available (Facebook) which I made into a rollover icon so the image is clear and interests users. Social media implementation was something the client requested and it has successfully been included in the site.

- Database available: a database feature was included in the site for a blog, list of items/cake, and a favourite list. When the client asked for these features, she didn't know that a content management system being implemented was the most efficient method.

- Forms inserted: as the client refers emails for her requests or questions, I have made a variety of forms for the site with PHP that sends directly to the client rather than opening up the users' email platform - without the specific PHP code, the browser will prompt the user to open up a email platform for which it intends to send the email.

- Log in system: despite the client not specifically requesting this, a log-in feature is an important feature which needed to be included in the site. The database features of adding/deleting need to be secure otherwise any user can

just do anything with the data. The log-in system is made with secure PHP and a free script available on the public domain (as mentioned earlier).

- Add/update/delete from DB: in the end, I decided not to include an update feature as the information to be included in the database was small enough that an update feature was not necessary. Plus the site is aimed to be minimal so a lot of database content (which will be seen on the site) would just overload it.

However, the adding and deleting features for the database was successfully included as the client requested, with the ability to add and delete entries from the website. These features are protected by a secure log-in system.

Overall, in conclusion, the sufficent evidence supports that users reacted positively plus the client agrees the site is fit for purpose. There were no major risks/issues that I came across and the project as a whole ran smoothly. I built a report which was very useful throughout: business analysis helped during the design stage which led to the design stage helping during implementation, and moreover. All sections for a project like this are very important and as you can see (from the report as a whole) the final product of both the written and production aspects were finalised professionally.

9 Critical Analysis

Reflecting over the report, I have confidence in the idea that I did a very successful job. I accomplished my desired aim through gaining well-appreciated feedback that allowed me to create a fruitful website. The background research and self-made designs were worthwhile, my skills were presented through the hard-coded HTML, CSS, and majority of the PHP. Reflecting on the business aspects of the project, I researched well: knowing the aims/specification of the site and finding other related products which I compared and examined in preparation. The design stage was also a part of the report which were considered plus fully inspected before continuing: I made plenty of use-case diagrams and carefully planned the prototype - the database was systematically structured in a method that made it flexible: the content management system had no foreign keys (plus I used a helpful tool: JetBrains DataGrip, as mentioned earlier) so the tables could adjust easily if needed.

The implementation stage plus the testing was quite the achievement; I had produced such a well-thought-out development with plenty images yet kept the text at a minimum to keep customers interested: as told by users. My evaluation was in-depth and clarifies thoroughly why the project fits the purpose.

However, the evaluation section of the report, despite being sufficient of evaluating data, it could perhaps have been expanded in places.

I produced a report that was useful to reflect on as I progressed further through the development; I could endlessly look back over the sections to assist we with different parts, for example: the business analysis of related sites helped when designing the prototype. A major piece which went well was the constructive feedback from the users - the comments were very effective as they easily persuaded me to make alterations that benefitted the user. My forms and scenarios were created for relevant feedback to be returned; as you can see from release 3.0: in the end, I had no critical feedback, they were all positive comments regarding the site.

A part which didn't go too well was the involvement of the client. Earlier she provided insight, such as what features she wanted to be included. However, after the birth of her child, she contributed less: she did still help at times and provide some feedback but did not assist much (I had to rely on user comments). This issue is not particularly the client's fault or a major aspect that went 'wrong'; it was just a small factor that didn't go well because if she was able to be more involved there could potentially be different different features.

There are only a few areas which could be improved, personally I could improve my coding skills so different features could be added: e.g. a 'search' feature (however this doesn't seem necessary for a small site like this). Another personal improvement would be to check my code before compiling: I made a few mistakes by not checking it thoroughly and just assuming the whole code was wrong rather than the issue being a missed bracket in the script syntax -

forgot at times about @media for CSS.

For the project itself, I would improve designs: make more drawings. This way I won't feel the need to make the site look exactly like the prototype; with drawings, I can use these as layouts and make alterations that are beneficial. The prototype and the site do look similar this is because I used the designs precisely: however, if I were to make more drawings I could easily alter changes by drawing different designs.

As the site was hard-coded, I have confidence in (and stand by my judgement) that I had used the correct tools: Notepad++ and JetBrains DataGrip - I did use the web tool, Wix, though this was for the prototype. Notepad++ is a useful tool for web-building: it allowed me to show my code-building skills. JetBrains DataGrip was a very useful tool when building up the database: it provides such a pleasant interface that allows building tables to be easy.

In future, for a project like this I would potentially consider researching more information of competitors; despite looking at a few, there are a wider variety, which can be used to observe the features they offer. Originally, I only asked questions, like "What do you think of the layout?" I could improve this in the future by asking user opinions about the features too.

Overall, I feel accomplished and believe my project was very rewarding - the closing result of both the report and website was more than I had hoped, they are at a high quality.

I have shown my coding-based and business skills, which as evidence from the whole report shows my skills are at a high standard. The report and site are presented strikingly in addition to professionally. It shows my capability to create a site for a small business, which can expand and perhaps in future becomes a bigger business within Liverpool that needs a payment system implemented.

The site fits the purpose plus meets the specification provided by the client, I met my goals/aims of creating an attractive site with functionality, and the report/business aspect is well-informed with appropriate information.

10 Appendices

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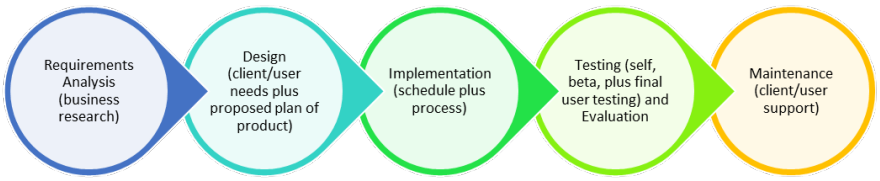
List of Figures

[**1**] Figure 1 shows a diagram of the Software Development Life Cycle in the form of a Waterfall Model.



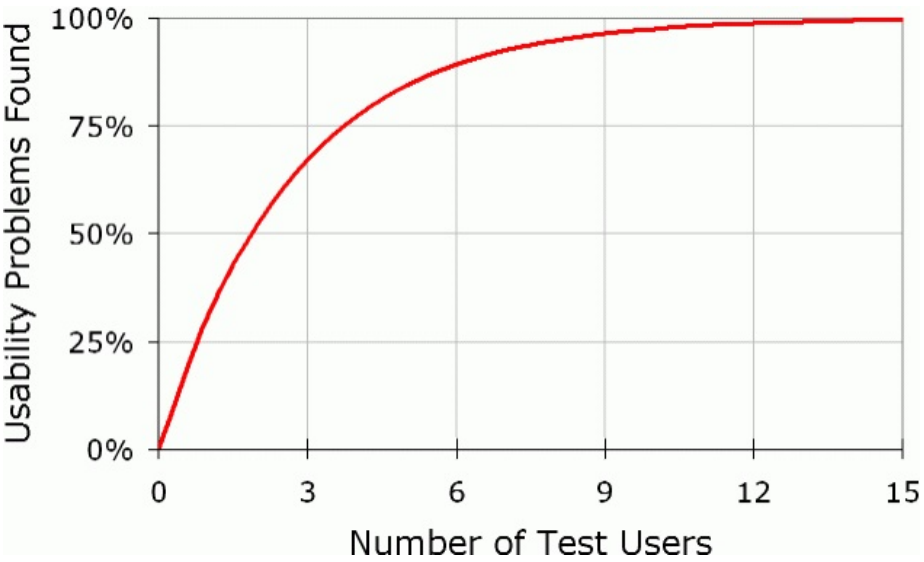
Software Development Life Cycle For coding-based projects, the method to follow is the software development life cycle. There are different stages for different understandings (some models separate/expand the stages more than others). For this project, I will be following the software development life cycle however, with a waterfall model combined.

As you can see from the model above, it includes the stages of this project in a waterfall model style: each step cannot be performed until the previous one is finished. However, the only two stages which could essentially be combined are the implementation and the testing stage as testing the site during production benefits the project.

[**2**] Figure 2 shows a diagram of the Gantt Chart I produced.

Guide: Gantt Chart This is the guide I will be following: showing the main stages and how much time will be spent on each. And you can see, the stages overlap and is quite varied - the business analysis and UI design overlap as both sections talk about client and user needs so I can use my findings and continue/expand on them. The coding aspect (implementation) overlaps with the previous task as the aim is to start putting a prototype together ready for the production stage.

[**26**] Figure 26 "A mathematical model of the finding of usability problems,"[35].



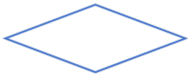
Nielsen Norman Group To test out my design, I produced a form for 5 users: The Nielsen Norman Group[36] state that: "The best results come from testing no more than 5 users and running as many small tests".

From the graph we can understand that having 5 users to test out UI is the best method: they can show us a high average problems: the more testers we use will just find more issues and they'll be repetitive.

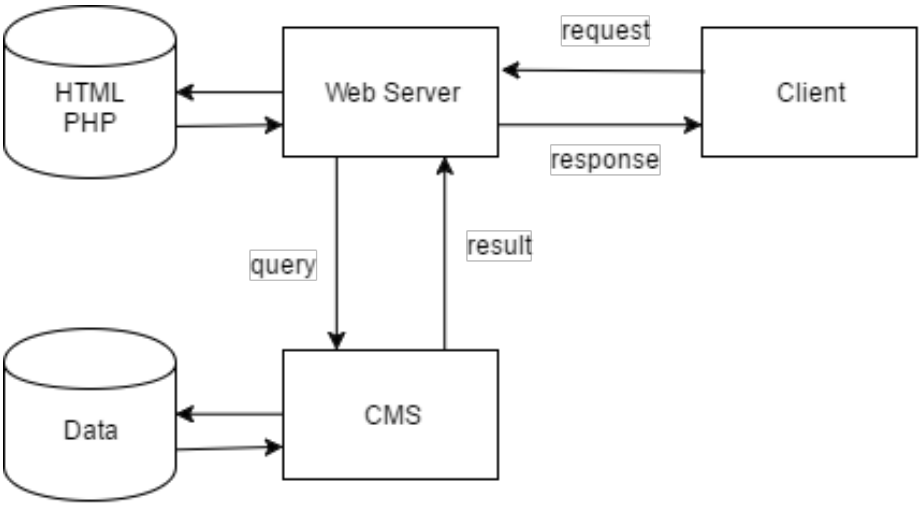
[35] *A mathematical model of the finding of usability problems.* `https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/`. pp. 206-213

[36] *NN/g — Nelson Norman Group.* `https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/`. Accessed: 2017-02-24

[**31**] Key for web structure

Key	
	Page with no interactions
	Interactive page
	Interactive element
	Database

[**52**] Figure 52 shows the processes which will occur when a client accesses the website.



Content Management System This is the Content Management System (CMS) displayed in a diagram. As you can see, a user will be displayed data from the server through HTML or PHP: PHP code will connect the server to the database, which will then display the result in the browser.

[**54**] Figure 54 shows the planned schedule: as you can see the pre-releases are set up appropriately.

Little Cake Box Implementation Plan										
Use Case	pre-release 0.1	pre-release 0.2	pre-release 0.3	Release 1.0	release 1.1	release 1.2	release 1.3	Release 2.0	Client	User
Navigation system	✓			✓				✓	✓	✓
View images	✓			✓				✓		✓
Read text	✓			✓				✓		✓
Additional buttons (social media, etc.)		✓		✓				✓		✓
Database available			✓	✓				✓		✓
Forms inserted			✓	✓				✓		✓
Guestbook inserted		✓		✓				✓	✓	✓
Log in system					✓		✓	✓	✓	
Add/update/delete DB						✓	✓	✓	✓	

Pre-release 0.1

Step 1 set up layout with navigation system

Step 2 include images (gallery) and text

Pre-release 0.2

Step 3 add all the important buttons (social media plus button to blog)

Step 4 guestbook/discussion forum inserted

Pre-release 0.3

Step 5 make the database visible for users

Step 6 have the forms created

Release 1.0 will be completed - onto stage 2

Pre-release 1.1

Step 7 get log in system working for client

Pre-release 1.2

Step 8 start on the code for adding/deleting data to the database

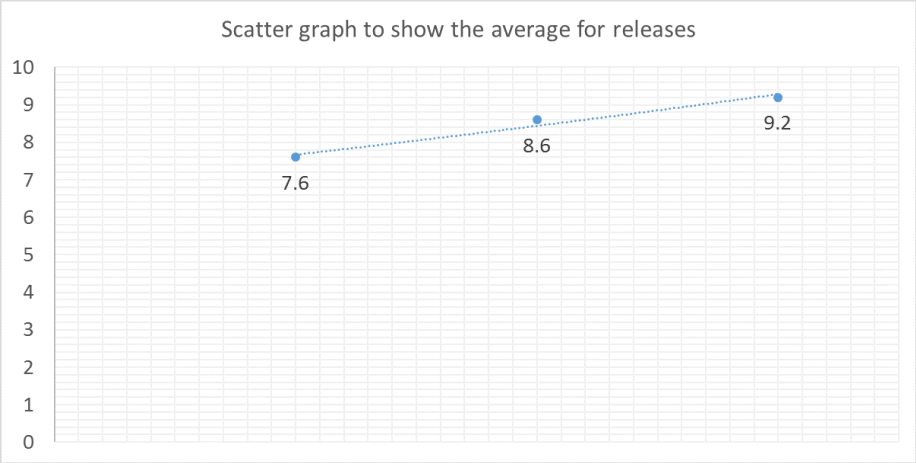
Pre-release 1.3

Step 9 keep working on steps from 1.1 and 1.2 to work together

Step 10 ensure everything works together well

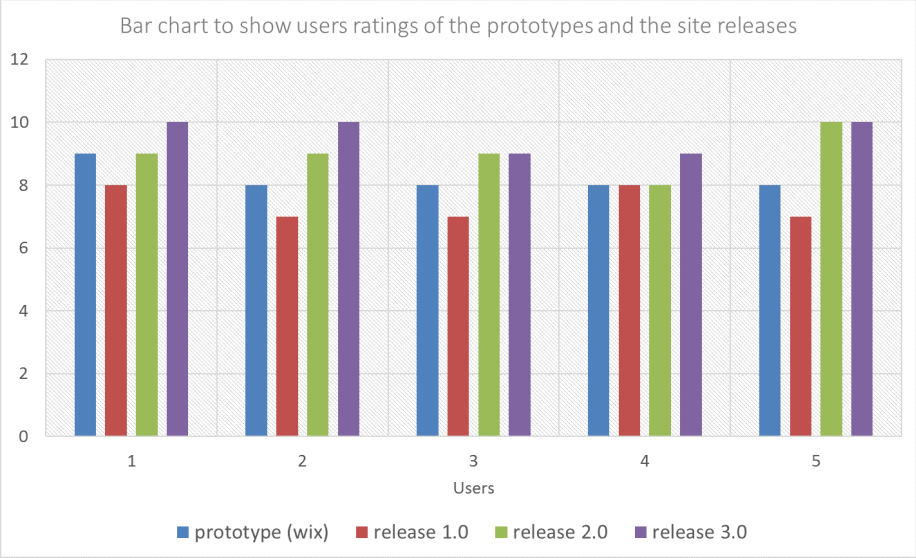
Release 2.0 will be completed - short period after to make minor improvements to finalise the site

[**83**] Figure 83 shows a scatter chart of the average user ratings of my releases



Scatter Graph As you can observe, there is a linear growth in likeness. To be in the top ten percent of likeness after the final release is a major accomplishment - it shows how by user testing and improving from user opinions, I can create a much better site and an attractive one for users.

[**86**] Figure 86 shows a bar chart of the user ratings of all releases including the prototype made in Wix



Bar Chart As you can observe there were 5 users, (linking back to Nielsen Normal UI technique) and colours in the chart differentiate the rating.

Most users actually liked the prototype more than release 1.0, however you can see a steady growth with each release with 3.0 rated highest. My site is much more simplistic and the ratings for my project were higher than the ratings for the designs.

Raw Data

[i] Score sheets

The Cake Shop Liverpool

	Colour	Images	Layout	Font
1	4	4	6	9
2	4	4	3	5
3	8	7	8	7
4	8	7	8	7
5	7	6	9	9
6	4	5	4	6
7	7	10	7	8
8	5	7	6	6
9	8	8	8	7
10	6	6	7	6
11	6	6	7	8
12	8	7	6	5

Liverpool Cake Company

	Colour	Images	Layout	Font
1	7	8	7	8
2	3	8	5	5
3	8	8	8	7
4	7	8	8	7
5	9	8	8	9
6	6	5	6	5
7	8	7	9	7
8	5	6	6	5
9	7	7	5	8
10	6	6	6	8
11	7	9	8	8
12	7	8	6	9

Naked Cake

	Colour	Images	Layout	Font
1	7	9	9	9
2	5	7	7	6
3	6	7	7	8
4	6	8	7	8
5	6	7	7	9
6	4	5	3	5
7	2	6	5	7
8	8	7	6	8
9	4	5	5	6
10	5	6	6	7
11	5	8	7	7
12	4	7	7	9

Terry Tang

	Colour	Images	Layout	Font
1	7	4	8	9
2	5	3	6	6
3	7	6	8	6
4	8	7	9	8
5	10	8	9	9
6	5	4	6	4
7	3	7	5	8
8	6	8	6	8
9	8	6	8	7
10	8	7	8	8
11	9	7	9	9
12	8	7	9	9

[ii] A user's response of my prototype/design

Scenarios - finding:

Gallery	Sub-gallery	Blog	Favourites	Order Form
5	3	5	1	5

Different Features - opinion:

Event booking system	Order form	Recipes/favourites list	Database for cakes appropriate?
4	5	5	Yes

Usability and Accessibility - ease of use:

Menu system?	Overall ease of use	Reading text?	Images used
5	5	5	5

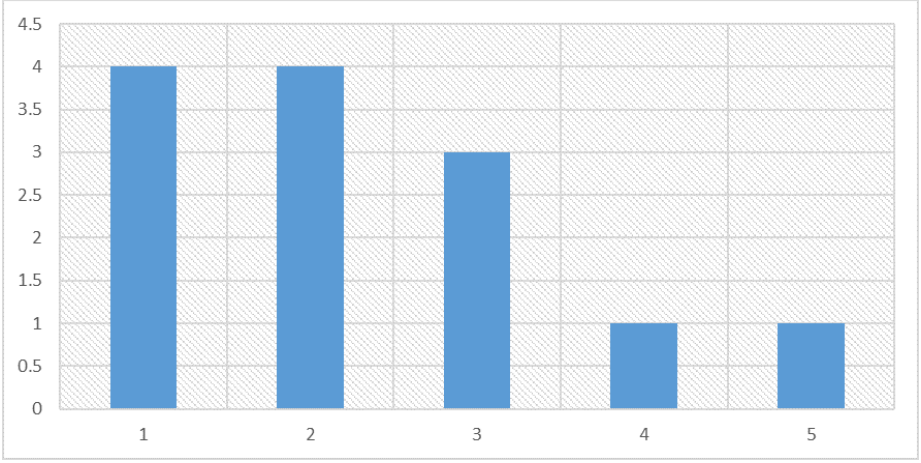
Responsiveness

Current browser	Rate	Other browser	Rate	Rate mobile version
Google Chrome	5	Mozilla Firefox	5	5

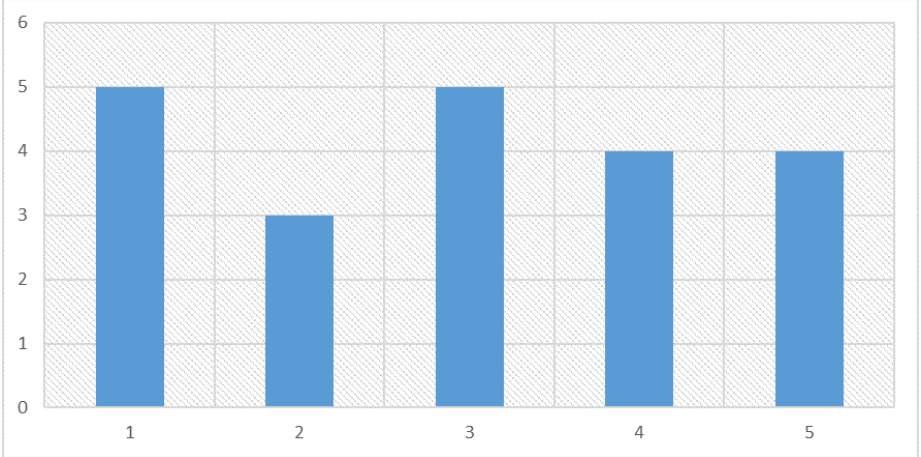
I provided plenty of opportunities for the user to provide feedback - I asked different types of questions, such as asking the user to rank different features, answer Yes/No, and allow them to type out a response. As you can see the user above did provide some very useful feedback which I will reflect on and improve the designs.

[iii] Graphs of user responses to the prototype/Wix design - high ratings are positive whilst low ratings show negative feedback

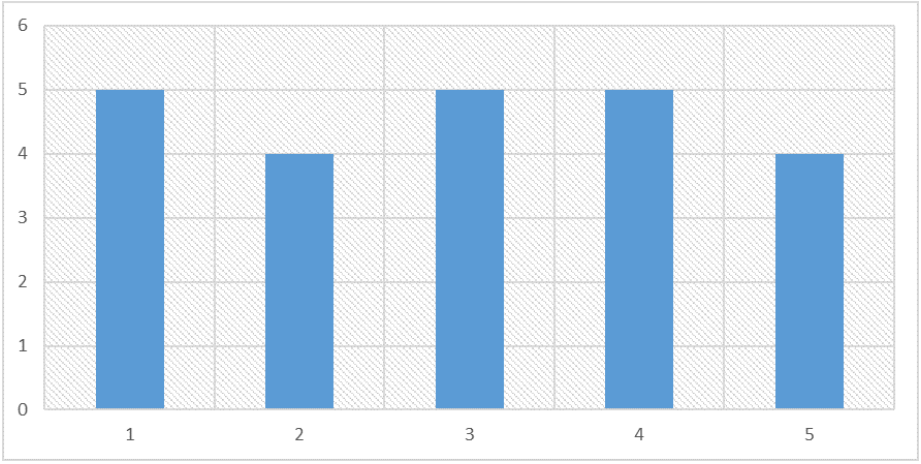
Finding the favourites list



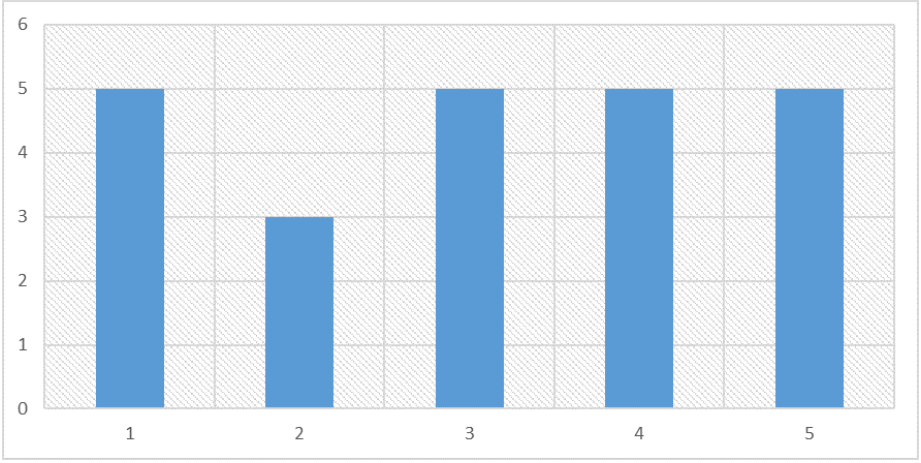
Opinion of the event booking system



Rating of the ease of use



Rating the site on a mobile device



The above quantitative graphs show each users' rating of the questions I asked; these are a professional form of representing and displaying results. As you can see from the first graph (finding the 'favourites' list), it backs up my claim of making the favourites feature more accessible and visible. The results from the graph of experience on a mobile device, I think this shows how the design could be improved, but only one user responded with a '3'. The feedback helps as I can back-up my claim of my site being appropriate: it is easy to follow plus accessible.

[**iv**] HTML Comment Box script for the guestbook/discussion forum

```
<div id="HCB_comment_box">
<a href="http://www.htmlcommentbox.com">Comment Box</a>
   is loading comments...</div>

<script type="text/javascript" id="hcb">

/*<!--*/

    if(!window.hcb_user){hcb_user={};}

    (function(){
       var s=document.createElement("script"),
       l=hcb_user.PAGE || (""+window.location).replace
       (/'/g,"\%27"),
       h="//www.htmlcommentbox.com";
       s.setAttribute("type","text/javascript");s.setAttribute(
           "src", h+"/jread?page="+encodeURIComponent(l)
           .replace("+","\%2B")+
           "&mod=\%241\%24wq1rdBcg\%24QeOCmNTsREFLg87NqnZSg\%2F"+
           "&opts=16662&num=20&ts=1492284452748"
       );

       if (typeof s!="undefined") document.getElementsByTagName
       ("head")[0].appendChild(s);
       })
   ();

/*-->*/

</script>
```

[v] Testing: self-testing tables

Test ID	Testing Release 1.0	Pass Criteria	Outcome
1	Header: links work	Pass	Sent to appropriate pages
2	Navigation system: links work	Pass	Sent to appropriate pages
3	Responsive navigation system	Pass	System adjusted
4	Responsive navigation system mobile	Fail	Responsive only works on desktop
5	Index page: images' links work	Pass	Sent to appropriate gallery
6	Footer: links work	Pass	Sent to correct page
7	Footer: social media icon rollover plus link	Pass	Image works and directs
8	Site map links work	Pass	Sends to correct page
9	About page: text appropriate	Pass	All readable
10	About page: links work	Pass	Sends to correct page
11	About page: 'blog' button works	Pass	Appropriate button and works
12	About, Blog: database visible	Pass	Visible
13	Cakes: database visible	Pass	Visible
14	Cakes, Recipes: text readable	Pass	All readable
15	Cakes, Favourites: database visible	Pass	Visible
16	Galleries: images/links visible/available	Pass	Gallery set-up and image links work
17	Order form send details directly to email	Pass	Inputs accepted/received
18	Booking: form sends details directly	Pass	Inputs accepted/received
19	Booking: map feature works	Pass	Embedded feature worked
20	Contact Details: form to client	Pass	Inputs accepted/received
21	Contact Details: form to admin	Pass	Inputs accepted/received
22	Discussion Forum maintenance	Pass	Processes allowed
23	Check appropriateness of FAQ page	Pass	All readable

This is testing table for Release 1.0 - as you can see, all passed except Test ID 4: Responsive navigation system for mobile. This will be improved during Release 2.0.

Test ID	Testing Release 1.0	Pass Criteria	Outcome
24	Add blog: need to have title	Pass	Requests data as expected
25	Add blog: need to have content	Pass	Requests data as expected
26	Add blog: need to have date	Pass	Requests data as expected
27	Add into cakes: need to have title	Pass	Requests data as expected
28	Add into cakes: need to have description	Pass	Requests data as expected
29	Add into cakes: need to have price	Pass	Requests data as expected
30	Add into favourites: need to have title	Pass	Requests data as expected
31	Add into favourites: need to have description	Pass	Requests data as expected
32	Adding for blog	Pass	Successful
33	Adding for cakes	Pass	Successful
34	Adding for favourites	Pass	Successful
35	Deletion for blog	Pass	Record was deleted
36	Deletion for cakes	Pass	Record was deleted
37	Deletion for favourites	Pass	Record was deleted
38	Login system	Pass	Works well however need to re-enter for each protected page

This is my testing table for Release 2.0 - as you can see, all passed, however I could look into the PHP code for the log-in system to make the sessions not need to request the client to log in for every protected page.

Test ID	Testing Release 1.0	Pass Criteria	Outcome
1	Header: links work	Pass	Sent to appropriate pages
2	Navigation system: links work	Pass	Sent to appropriate pages
3	Responsive navigation system	Pass	System adjusted
4	Responsive navigation system mobile	Pass	Responsive only works on desktop
5	Index page: images' links work	Pass	Sent to appropriate gallery
6	Footer: links work	Pass	Sent to correct page
7	Footer: social media icon rollover plus link	Pass	Image works and directs
8	Site map links work	Pass	Sends to correct page
9	About page: text appropriate	Pass	All readable
10	About page: links work	Pass	Sends to correct page
11	About page: 'blog' button works	Pass	Appropriate button and works
12	About, Blog: database visible	Pass	Visible
13	Cakes: database visible	Pass	Visible
14	Cakes, Recipes: text readable	Pass	All readable
15	Cakes, Favourites: database visible	Pass	Visible
16	Galleries: images/links visible/available	Pass	Gallery set-up and image links work
17	Order form send details directly to email	Pass	Inputs accepted/received
18	Booking: form sends details directly	Pass	Inputs accepted/received
19	Booking: map feature works	Pass	Embedded feature worked
20	Contact Details: form to client	Pass	Inputs accepted/received
21	Contact Details: form to admin	Pass	Inputs accepted/received
22	Discussion Forum maintenance	Pass	Processes allowed
23	Check appropriateness of FAQ page	Pass	All readable
24	Add blog: need to have title	Pass	Requests data as expected
25	Add blog: need to have content	Pass	Requests data as expected
26	Add blog: need to have date	Pass	Requests data as expected
27	Add into cakes: need to have title	Pass	Requests data as expected
28	Add into cakes: need to have description	Pass	Requests data as expected
29	Add into cakes: need to have price	Pass	Requests data as expected
30	Add into favourites: need to have title	Pass	Requests data as expected
31	Add into favourites: need to have description	Pass	Requests data as expected
32	Adding for blog	Pass	Successful
33	Adding for cakes	Pass	Successful
34	Adding for favourites	Pass	Successful
35	Deletion for blog	Pass	Record was deleted
36	Deletion for cakes	Pass	Record was deleted
37	Deletion for favourites	Pass	Record was deleted
38	Login system	Pass	Works well

This is my testing table for Release 3.0 - this is a big combined table of both Release 1.0 and 2.0.