Final Report

COM553 and COM559 Major Project

Bsc Hons Interactive Multimedia Design

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Contents **Page**

1.0 Introduction

This report will finalise all aspects of the Major project in question and is structured to represent the methodology used during the software development cycle. Each stage is introduced and all choices are justified. The first section looks in depth at the project background, purpose, overall aim and objectives.

1.1.Background

Hobby bakers struggle to cost baked goods correctly and therefore undercharge frequently. Through research it has been proven that this is one of the largest issues within the cake community.

Many hobby bakers simply use the old fashioned method of writing down the cost of ingredients and totalling them to find out the overall cost of baked goods, however the majority forget to factor in for the time spent on their creations and therefore fail to make any profit.

The idea of costing baked goods is not an original one, there are two ios apps that also help solve the this process, however the idea of searching and comparing supermarket prices in this context is new.
One of the apps (Cost a cake) requires the user to manually enter and update the price of ingredients, the other app, which is done very well is Cakeulator, yet it only exists in mobile apps (both ios and android). The developer states within the description that the prices are updated monthly therefore the prices aren't completely accurate.

Calc-a-bake aims for accuracy in solving this widely existent problem by offering a web based application, which allows the hobby baker to calculate the cost of cakes, cupcakes or any other baked goods online.

As Calc-a-bake is unique and the first web application of its sort, it caused some doubts initially as competition is healthy- it suggests there is a need for the service. Therefore it was important to research the topic in-depth to seek if there was a demand for the service. Cake central (the world's largest cake forum) suggested that there was a demand for the service as a lot of posts/threads were based around pricing cakes.

Initial research shows bakers basically estimate the cost of their cakes and have learnt from experience how much to charge however the majority stated that when breaking up the costs and time for their work they were earning well under the minimum wage for their time. Initial background research can be found in the appendices on page **60**.

1.2 Aims & Objectives

The main aim of Calc-a-bake as discussed in the background is to provide a web based application which will accommodate a solution to the widely existent problem within the cake community which is to cost baked goods, taking all factors into consideration and to still make a reasonable profit from it.

The project's objectives have changed throughout its life cycle due to new research, challenges and unforeseen barriers. The final objectives can be seen below;

1.2.1 Objectives

-A web application that visually integrates and displays results for the ingredients searched in both Tesco and Sainsbury's. The results can be filtered by price and allows users to compare prices and brands.
-A web application, which allows the user to create quotes online and send them to the client via email, storing their information and quotes to their profile.
-A web application that has the ability to upload images to the users profile, recipes and quotes allowing the user to personalise their profile and upload images to recipes and quotes.
-A web application, which allows the user to create, save and edit recipes.
-A web application that is easy to use and simplifies the costing process in baking.
-A web application that facilitates the creation of user accounts.

The evolvement of these objectives can be found within the overview of work section available below.

1.3 Overview of work undertaken

A login system was created with the ability for new member signup to allow users to fully interact with the web application, a database was created to facilitate this alongside the use of member areas where users can create and save recipes and quotes.

The ability to search both Tesco and Sainsbury's was included to allow users the ability to compare ingredients and ultimately build a quote. Moreover forms were created with validation to ensure that users input the correct information, which will ultimately allow them to build a more specific, accurate quote and recipe.

Image upload features were included to allow users to personalise their profile via a profile image and also add images to recipes/quotes.

The web application uses HTML5 as the core mark-up language to allow for semantic content and cleaner code.
The main login functionality was created via a master login system found on github, using a bootstrap theme however the system was amended hugely to suit the purpose of the project.

Calc-a-bake makes use of a database in order to allow users to create and save recipes and quotes that are unique to their account. Relationships were made between data to allow data to be found in relation to the userid, which ensures each user can only access their own information.

The project parses data through supermarket site URL's using the parse_url() function which returns an array containing components of the URL that are present. Variables have been created to get the search term entered into the search box. Moreover the variable is placed on the end of the set url to allow the results to return. The echo function is used to allow the system to return the information within the stated tags.

PHP has been used widely throughout Calc-a-bake to allow for image upload, saving and editing recipes and creating quotes. It is used in conjunction with the MySQL database in order to post send and receive data to and from it.

Ajax is also apparent within the project to create sessions within the Calculate section of the website throughout the various steps before it is posted to the database.

Jquery is also used throughout the web application allowing users to add ingredients to a summary, reloading is used within the calculate pages to allow the subtotals to update within the calculate page. JQuery is also used for form validation ensuring the correct data is entered eliminating human error.

1.4 Report overview

The remainder of the report will describe the work undertaken at each stage and show how it was verified and validated. Tools that aided in the process will be acknowledged and the project will be critically appraised. The project will be evaluated against initial goals and objects to determine the overall success.

2.0 Concept definition and testing

This section explores the evolvement of the project, using various methods to evaluate the target audiences' responses to the initial idea, initial design choices and branding.

2.1 Idea generation

The idea of Calc-a-bake came to light when the founder accumulated quite a bit of unexpected interest on her hobby of baking when posting success stories to social networking sites. Friends and followers began to approach her about creating them a bespoke cake for special occasions; this is when the problem became apparent.
The founder had no idea of how to price the goods and still make a profit from it. Furthermore through research it became evident that there were no web-based applications to aid the cake costing process.
More research was carried out through Cake Central in order to seek how the members felt about the concept. The idea was well received and proved its usefulness.
Another reason the idea was taken forward is due to its potential for expansion, which can be explored in more detail within page **57**.

2.2 Requirements specification

This section lists and explains clear and concise requirements for the web application to work successfully. These will be referred back to at the testing stage to verify that the system satisfies the requirements on evaluation.

ID's have been used to identify each requirement; each is prioritised in terms of importance. The greater the importance of each requirement the greater the risk when evaluating the project, explaining requirements in detail ensures they are specific, realistic and create measurable criteria for evaluation.

Functional Definitions
Functional requirement= F
Non Functional requirement= NF

Priority Definitions
The following definitions explain the priority of each requirement.
Priority 1 – The requirement is a "must have" failure to meet this will seriously affect the success of the project.
Priority 2 – The requirement is needed for improved processing, and the fulfilment of the requirement will create immediate benefits.
Priority 3 – The requirement is "nice to have" but not essential.

Req ID	Priority	F/NF	Description	Comments
2.2.1 Visitor Interaction				
R#01	1	F	A web application that visually integrates and displays search results for supermarket products.	The web application will make use the http_get function in order to pull search results from the supermarket sites. The data will be parsed through the url search criteria. When the page has pulled the information it will then integrate the results into the web application.
R#02	1	F	A web application that will have the ability to save both results (quotes) and entries (recipes).	The web application will store all quote and recipe information in a database depending on the user id. It will make use of the $GET function in order to retrieve the data from the database.
R#03	1	F	A web application that will calculate the cost of selected ingredients alongside the profit and delivery cost (if applicable).	The web application will calculate the cost of all the ingredients selected, the profit margin and delivery cost (if applicable), through JavaScript. The use the add function in order to do so; this data will be parsed through the price data pulled from the external supermarket sites.
R#04	3	F	Newsletter Sign Up	The web application will include a newsletter signup to allow the founder to keep in contact with the target audience, thereby building a relationship with them
R#05	3	F	Surveys	In order to receive quick feedback from the audience the website could include a vote function on the proposed web application. This could be used as a form of market research to improve the application.

R#06	2	F	Cookies	The website will use cookies to distinguish users in order to provide increased functionality.
R#07		F	Call to action buttons	Call to action buttons will be used within the web application in order to draw the users attention, the use of them will allow the user to interact with the searching and calculating processes within the application.
R#08	2	NF	Blog	A blog is something that website could benefit from, as it would help the site to increase credibility with the cake community by posting relevant stories, perhaps recipes or tutorials along with the broken down price generated from the application. The use of a blog would allow help build and increase site traffic.
R#09	2	NF	Social Media	Calc-a-bake will have social media platforms as another method of interacting with users. The website will include social media links in order to allow users to access them. It is vital that Calc-a-bake stays active on these channels.
R#10	1	F	A web application that will facilitate user accounts and profiles.	On visiting the site, the homepage will present the visitor with a sign in/ sign up form. On signing in they will be able to fully interact with the site, calculating costs of cakes, saving recipes and editing their profile. A database will hold user profile information, alongside login information. This requirement will be fulfilled using a my sql database and some PHP scripting.

R#11	1	F	Search feature	The main requirement of the web application is for the user to search for the ingredient of the recipe, they will do this through typing in the ingredient name into a search box. The data within the search box will be pulled into the query and it will preform a search to all the supermarket sites, the results will then be pulled into the results field.
R#12	1	F	Check boxes	Select boxes will appear on the results shown from the supermarkets based on the search criteria, The user will then have the ability to select which item they will to calculate in the quote.
R#13	2	F	Image upload functionality	There will be an image upload function when creating a quote to allow the user to customise it as necessary. This function will be carried out using both HTML and PHP.
R#14	2	F	Clearly display the source from each ingredient.	On feeding through the data from the external supermarket sites an IF statement will be present to display the supermarket logo which the product is belongs to.
2.2.2 Editing and Updating				
R#15	3	F	Ability to edit saved quotes	Users will have the ability to edit saved quotes, which they can access when they have logged in. The quotes will be found using a database connection and using a php statement based on finding recipes belonging to that particular user.
R#16	3	F	Ability to send quotes.	On entering all quote details the user will then be able to send the quote via email, they will be required to enter a valid email address before doing so. The web

				application will make use of php in order to validate the email address entered
R#17	1	F	Ability to create and update recipes	Within the recipe area the user will have the option to both create new and update recipes. Again the web application will make use of PHP to connect, write to and update the database.
R#18	2	F	Ability to upload photos to recipes or quotes	Within the recipe area there will be an image upload function, which will enable the user to upload an image from their computer and assign the photo to a quote or recipe.
R#19	2	F	Ability to brand invoice via image upload	Within the users profile they will have the option to upload their brand logo, which will be generated onto the invoice. This will allow for customization and professionalism.
R#20	1	F	Ability to update profile	Users will have the ability to update their profile as necessary; The application will include a user table within the database in order to hold user information.
R#21	2	F	Ability to choose between metric/imperial units.	During the costing process the user will be required to state how much of each ingredient they need, there will be the option to choose from metric or imperial units to ensure complete accuracy. An IF and ELSE statement will be used with the appropriate calculations to switch between units.
2.2.3 Site Map & Navigation				
R#23	1	NF	Easy to navigate	It is essential that the web application is easy

				to navigate around, it is important that users can access any point of the site with minimal clicking, in order to meet this requirement the website will include links within the footer. All navigation will be consistent throughout and links will be grouped into sections. Consistency will enable website visitor to find patterns within the design of where things should be.
R#23	3	NF	User friendly	It is important that the web application is user friendly particularly as it is aimed at non-technical people. The layout will be simple to ensure that even ICT illiterate users will be able to use the application with ease. The brand will have a persona, which will allow it to communicate with the users through a character.
R#24	1	F	Global website Navigation	Global website navigation will be used within the site which will show the top-level sections/pages of the web application. The navigation will be available on each page.
R#25	2	NF	Breadcrumbs	The application will use breadcrumb navigation at the point when the user is calculating costs to allow the visitor to understand the path they have taken within the site and the page/step they are currently on.
R#26	2	NF	Named anchors	Anchor links will be used within pages to direct users either to a section within the current page or another page within the site.
2.2.4 Tracking				

R#27	2	NF	Google analytics -Gmail email -Create analytics account	A Gmail email account will be created for Calc-a-bake, which will allow for a google account for the project. On setting up the account within analytics the tracking code will be pasted into the header of each page within the site to allow each page to become known to search engines.
2.2.5 Search Engine Optimization (SEO)				
R#28	1	NF	Semantic markup	It is important that the application consists of semantic mark-up to allow web crawlers to quickly find the information they are looking for and deliver the site in the search results.
R#29	3	NF	Back links on baker sites/blogs	It is important that the site is credible, perhaps bakers will reference it on their websites or blogs. If this is done it could help with the SEO.
R#30	1	NF	Title tags	Effective title tags will be created that incorporate my target keywords to ensure that the site appears when associated terms are searched via search engines.
R#31	3	NF	Keyword research	Relevant key terms will be chosen and used to try and get the web application ranked high on search engines for the relevant terms.
R#32	3	NF	Sitemap	A sitemap will be created to help increase traffic to the site.
R#33	2	NF	Meta data	Relevant meta tags will be created in order to allow search engines to find the web

				application when similar terms are searched for.
2.2.6 Accessibility				
R#34	1	NF	Alt attributes	Alt attributes will be used on image tags throughout the application, this is important as it will provide a clear text alternative for screen reader users.
R#35	2	NF	Keyboard inputs	Keyboard accessibility will be considered within the site to allow users with disabilities using assistive technologies to be able to use and navigate throughout the website.
2.2.7 Styling & Design				
R#36	1	NF	Wireframes	Wireframes will be created to allow initial testing and feedback before taking the design to a more detailed state. it will allow for content layouts to be seen on the page and will also allow for evaluation of the effectiveness of the page layout.
R#37	1	NF	Typography	Calc-a-bake will be an easy-going, easy to use efficient web application and the typography will reflect it. A simple font will be used in both headings and body copy, varied in size, weight and colour to achieve an information hierarchy.
R#38	1	NF	Colours	Calc-a-bake will consist of both bright and natural colours to convey a sense of fun and humor, the colours will be slightly de-saturated to add a vintage, homely feel.

R#39	1	NF	Brand	The Calc-a-bake brand will be based around a mascot, which will welcome users and make them feel comfortable. It will be an illustration, which will offer users a fun, informal experience.
R#40	2	NF	Persona	A fun brand will be achieved, which will allow users to feel at home and at ease, this will be achieved through a variety of various design elements. The system will seem fun as opposed to a laborious task of filling out forms, which it technically will be.
R#41	1	NF	Button hierarchy	A button hierarchy will be created, ensuring the call to action buttons more prominent than regular buttons.
2.2.8 Security				
R#42	1	NF	SSL certificate	A SSL certificatie will be purchased in order to protect visitors and earn their trust, this will ensure all their information is secure.
R#43	1	F	Password encryptions	In order to add security to the site strong passwords will be encouraged to users when creating an account. Validation will be applied ensuring that each password has both letters and numbers and is at least 8 characters.
2.2.9 Hosting				
R#44	1	F	Domain	Research has been carried out for potential domain names and www.calc-a-bake.co.uk,

				has been settled on which is pretty cheap, costing just £6.98 for 2 years.
R#45	1	F	Hosting	The domain and hosting will be purchased from soulhosting. This will ensure the project can get online.
R#46	1	F	cpanel	The Hosting control panel will with the maintenance the web application as access will be given to administrative commands.
R#47	1	F	My sql database	SQL files will need imported to the hosted phpmyadmin section of the control panel to hold user data and login details.
R#48	2	NF	Email accounts	Email accounts will be created from the sites domain.

2.2.10 Dependencies

Below lists the dependencies that affect the requirements:

- The application will hugely rely on the supermarket sites to pull the price and product information from, if any of these sites are down due to traffic or maintenance it will drastically affect the main requirement for the application which is to visually integrate and display the top results for the ingredient searched for in the 2 supermarkets.
- The application will require an Internet Connection in order to firstly allow the user to access the site and secondly to integrate with supermarket sites.
- Internet is also required in order to send invoices via email.
- The user will be required to create an account in order to access the system.
- The web application will depend on the database connection to ensure it can retrieve user information.

2. 3 Paper Prototyping

Paper prototyping is a widely used method within the User Interaction design process, particularly for systems with complex functionality as they allow the designer to understand how the various processes will interact with the user.
It is an inexpensive way of usability testing as it can provide useful feedback from the target audience and allow the designer/developer to recognise potential problems early on in the project and create solutions for these problems.

6UP designs were created for Calc-a-bake addressing the calculate challenge which helped to provide a solution to the existing problem which was to make the calculating process to seem as minimal and fun as possible, although the process is basically filling out forms it cannot be betrayed as laborious as this. The process must be quick and straightforward.

It was important that the designs were well thought through to ensure that the calculate process seems as minimal as possible and it doesn't betray the sense that users are doing all the hard work themselves, otherwise they may just revert to working out costs themselves with old fashioned pen and paper which was found through research is what most hobby and professional bakers do.

The method of prototyping was extremely useful as it allowed exploration of different aspects within the project, which at the initial stages hadn't even been considered. Working through the different solutions the project's functionality and design became a lot clearer which led to a one up which basically took the best elements of each design within the 6UP's.

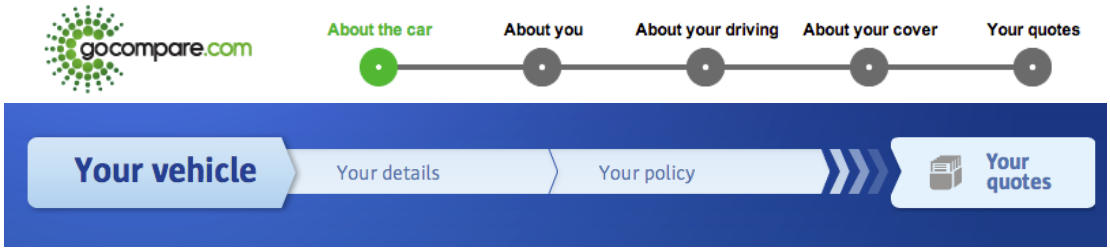
2.3.1 6UP Designs

Through experimentation it was decided that it was best to split the calculating process into 3 different steps as opposed to having a lengthy page, which may put the user of straight away. The 3-step process is shown on the different set of designs with annotations of the process throughout. The 6UP design's and 1 UP can be found within the appendix on page **61**.

2.3.2 Design Choices

Similar scenarios were researched where users were required to input quite a lot of information before receiving a quote such as compare the market and go compare. Both went for the same approach of using a progress timeline. When users see progress in the timeline style they will feel a sense of achievement that they have completed steps, this will give them the initiative to complete the remainder of the task.

Figure 1: Similar scenarios using stepping-stones technique throughout the process.



2.3.3 Searching for ingredients

The first process of the calculating task is to search for ingredients, through experimentation within the 6UP designs it was decided that the search box was best positioned on the left hand side of the page immediately after the branding. Again throughout research it was found that the majority of retailers placed their search boxes in the same position, therefore this is where users would expect to find it.

2.3.4 Displaying results

On searching for an ingredient/product the system then searches and gets the information from each supermarket site. As there is quite a bit of information to return and display it was decided that it was best to display the results in a table format.

The information is broken down into relevant sections: supermarket, image, description and price. There is also checkbox's to allow users to select the products they wish to base the quote around; they can select the products based on their own judgement of price or brand.

It was initially decided within the paper prototyping stages that a scroll bar would be used within the results section of the results, however on pagination has replaced this descision to allow for a better design.

On selecting a product via the checkbox it then appears within the summary box, from here the user can remove it if required, the summary box will then calculate the cost of the ingredients selected. On selecting all ingredients the user will then proceed to the next step via the 'next' button, which will bring them to the second step in the calculating process.

2.3.5 Create Quote

The second stage of the calculating process is creating the quote; at this point the user will enter their profit margin and delivery cost if applicable alongside client information, which will be saved for the user to revert back to if the quote is translated into a sale. The email

field is validated to ensure the correct data is entered, as this is what is used to send the email.

In order to ensure the web application remains consistent the search box has been replaced with an ingredient summary to allow the user to remove any unwanted items from the ‘create quote’ page without having to revert back to the first step.

Again ‘quick links’ is consistent in terms of layout, as it is important that the page structure stays the same within the different process’s as the layout must portray the feeling of a new ‘step’ rather than a new page.

At first it was decided upon creating a tabbed menu within this page to allow content to be kept to a minimum, however it may have confused users and may be a burden to them if they need to switch between tabs to compare information. Therefore it was decided upon using two different panels to gather information on both the client and order.

On completing both content areas the users will then be able to go to the next step, which allows them to review the quote, save and send it.

2.3.6 Save and send

The last step in the calculating process is ‘Save and Send’, within this process everything is taken into account and calculated. All fields are generated with calculated or previously entered data.

Again the main layout remains the same. This time the summary on left of the page includes ingredients, delivery and profit costs, showing a whole summary of all processes taken so far. This almost acts as a breadcrumb trail to allow users to understand what steps they have taken and what stage they are at.

If the user decides to select the save quote option, they will be notified with a success message and can decide on what action to carry out from there.

2.3.7 Main layout

As the audience is quite broad is it important that the layout factors for all, this means that the web application needed to be easy to use but not simplistic.
White space has been made use of to develop a basic layout that is easy on the eye. It is important that all users regardless of gender, age, or computer literacy feel comfortable in using the application and are not overwhelmed by the amount of elements or contents on the page.

A mascot has been made use of within the application it is used sparingly throughout to guide users throughout processes and rewards users when tasks are complete.

As seen within the one up design the users name is shown within the logged in section, the use of this allows the experience to become more personal to the user and will aid the application in helping them feel comfortable.

The one up design shows the use of icons throughout the website, icons add visual interest to content and will help grab users attention, particularly on call to action elements.

Although the layout on different pages changes it was decided upon keeping mutual elements consistent throughout, this is essential, as users will expectantly become familiar with the site and will understand where they are positioned.

2.3.7 Gathering initial user feedback.

It was decided upon carrying out some initial user feedback In order to seek their thoughts on the design.

3 people who were unfamiliar with the project took part in the task. They were asked to look through the proposed designs in order to seek if they understood its purpose and how it would work. The research was conducted by asking the participants set questions on the design and recording their responses The main aim of the surveys was to discover as many flaws as possible in the design early on to allow time for it to be refined before taking it to the build stage. The initial designs can be found within the appendices.

The questions were as follows;

1. Please start by looking at the login page, is it apparent from here that you must be a member in order to gain access?
2. Looking at Carrie the Cupcake does she distract you from the main content of each page?
3. On looking at the dashboard what strikes you about the overall appearance, what do you think you are most likely to click on first?
4. How do you think you would update your profile information- HINT: the ability to do so is on every page.
5. On selecting the ‘Calculate’ option from the main navigation is it apparent that the process consists of three steps?
6. Is it apparent that the search feature to the left of the page brings up results within the summary box when both the ingredient and quantity is entered?
7. Is it apparent that exclamation marks will appear if none or incorrect data is entered into these input fields?
8. Looking at the quick links section, does each icon represent each link well?

9. Explain how you imagine from the design how you would find a saved quote(s).
10. What, if any aspects of the design seem confusing?
11. Is there anything about the appearance or layout of the website that seems in anyway unprofessional or unusual?
12. If you could describe the website designs in three words what would they be?
13. If you could change any aspects of the design what would they be?
14. Have you any other points you'd like to comment on?

	Participant 1	Participant 2	Participant 3
1	Yes	Yes, If I had an account I would use the top right to enter my details if not I would sign up using the sign up form.	Yes
2	No, she is cool but not too distracting.	No, she is eye catching but does not distract me in any way.	I love Carrie she looks fun!
3	I like the layout of the page, I would click on the calculate option within the navigation first as a new member I wouldn't have any saved quotes or recipes.	Calculate or How to located in the navigation bar.	It would depend on what I would want to do, but for now my recipes to make my mouth water.
4	Click on the dropdown arrow beside the username- because I have seen this method used before (facebook).	Top right arrow or profile picture.	The name beside the profile picture or the arrow. Also My profile within the side menu.
5	Yes	Yes	Yes

6	Yes	Yes	Yes
7	Yes, the validation seems appropriate.	Yes	I get the exclamation marks but would there be a comment to tell me where I'm going wrong? Perhaps Carrie would guide me?
8	Yes	Yes	Yes
9	I would click on 'my quotes' located within the main navigation of the site.	My quotes option at the top of the page.	My quotes within the sidebar.
10	The metric and imperial select buttons seem confusing can I convert metric to imperial or will I click on one based on the measurement I am working with?	How can I select the quantity for each product?	Do I select the I'm finished searching button after every search or when I have searched for all ingredients?
11	I think it looks well.	Unusual because there are no other baking websites that I know of that look like this on the web.	I love the branding and the light colours used.
12	An aesthetically pleasing design	Eye-catching, different, professional.	Trustworthy, honest, helpful
13	None	I wouldn't change anything.	More instructions.

14	Can I get a date with Carrie?	No.	No.

The general consensus of the initial designs was that the overall brand and design was aesthetically pleasing. One comment that was made was that perhaps the validation within the search box on the 'search' page should be explained more than just the exclamation marks; This was considered within the interim designs and feedback was used to allow the user to understand that the input field is required.

Do I select the "I'm finished searching" button after every search or when I have searched for all ingredients?"
This was also a valid point, which has been removed from the designs; a next button is in place as apposed to this to allow the user to proceed to the next stage.

2.4 Feasibility testing

Feasibility testing is an approach which evaluates an idea which can help identify if it is viable or not, aid decision-making and provide alternative approaches and solutions to putting the idea into practice.[1]

On generating the idea for Calc-a-bake it was important to carry out some initial research to ensure the concept was feasible and had a purpose.

Researching technologies that addressed similar problems was important; it is healthy to have some fierce competition as it illustrates the fact that there is a need for the technology. On carrying out some initial research 2 technologies were found in the form of app's Cakeulator and Cost a cake. Cakeulator is an ios and android app, which costs £2.99 to download on the app store. The design of it has been well considered however the app is difficult to use and ingredient prices are only updated monthly therefore the app is not 100% accurate, it also does not account for current deals or new pricing schemes. Again it is only available in app form and cannot be accessed through the browser, which limits its audience hugely.

Cost a cake is available for free download on the app store, the design is poor and the user is required to input ingredient prices which defeats the purpose.

Initially there were doubts as there were only 2 technologies addressing the costing a cake problem, which may have indicated that there wasn't a strong relevance for the service, therefore more research was required. Gathering some first hand research through

emailing local bakers as well as posting to Cake Central threads to gather more varied responses from bakers throughout the globe was essential in order to explore the idea further and seek if there was a need for the project. The response rate wasn't great however some interesting feedback was gathered which can be found within the appendix on page **62**.
The feedback suggested that there was in fact a need for the technology; due to the difficulties faced when costing the price of baked goods as most hobby bakers fail to take all costs into consideration and therefore result in undercharging for their creations.

2.5 Methodologies

A system development life cycle (SDLC) is a conceptual model used in project management that describes the stages involved in an information system development project, from an initial feasibility study through maintenance of the completed application.[2]

It was essential to use an SDLC throughout the system development of Calc-a-bake, to allow it to be executed correctly, Research was required in order to find the most suitable approach in structuring the project.

2.5.1 Waterfall Methodology

The first methodology looked at was waterfall; it became apparent immediately that this approach wasn't the one to use for the project, basically because it requires intensive upfront planning. Although their was a good scope of what needed to be done in order to meet the project aim the opportunity was seen as a learning curve and unforeseen problems were a likelihood, in that event the project may have needed to be adjusted midstream and this methodology approach did not allow for this.

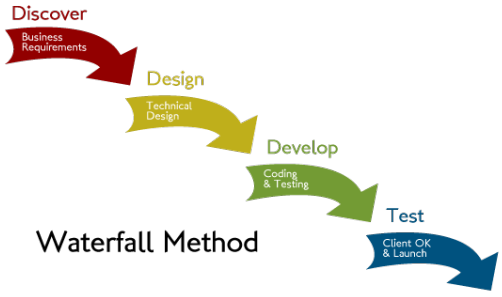


Figure 2: ***diagram showing the waterfall methodology.***

2.5.2 Agile Methodology

Agile is another widely used methodology, which was stumbled upon through research. It entails smaller delivery sets and allows for task prioritization, which immediately was more appealing for the Calc-a-bake project. Time was a huge constraint therefore it was important for the project to be broken up into small achievable prioritized milestones to ensure the most important elements were met and completed. Agile allowed for daily scrum

meetings to allow for status checks, this time was used within time with the project mentor to review the project.

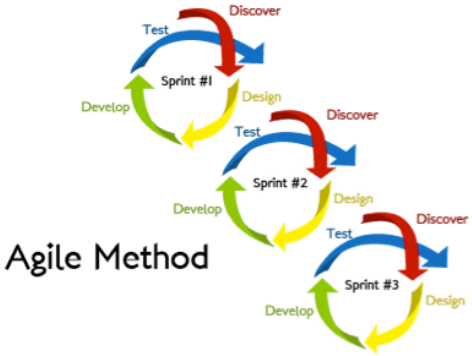


Figure 3: ***diagram showing agile method***

One negative aspect was that the agile method allowed for additional features, which could have caused problems, as the cycle can often become a never-ending loop.

2.5.3 Methodology choice and conclusion

The decision was made that combining both the waterfall and agile methodologies would be perfect for the project, through research it became apparent that this is seen as a hybrid approach.

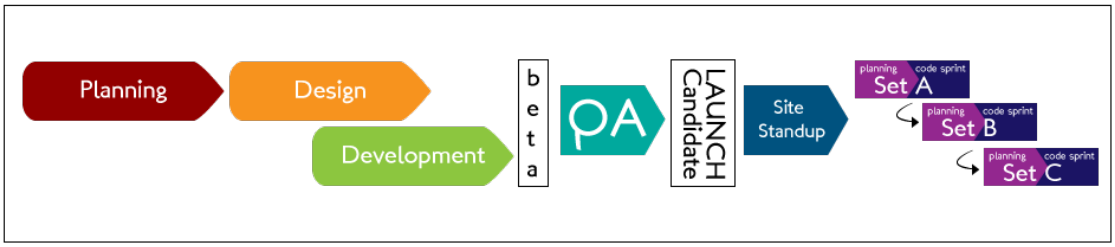


Figure 4: Diagrams showing an adapted method, which the project used throughout the system development cycle.

This approach allowed the long-term goals of the web application to become apparent and also allowed for some hiccups along the way, which were expected.

This approach best suits the scale of the project; the ability to change objectives and implement the system at any stage was highly advantageous.

On deciding upon the hybrid methodology the processes were then broken into the following sections, all tasks within each section are described in more detail and prioritized in chapter 2, section 2- which can be found on page 8.

Planning
Design
Development
Beta
Quality Assurance
Implementation

Release Candidate
Site standup (Site goes live)

3.0 Design

Within this section the design principles will be discussed for the project, the evolution of the design is also explained and justified.

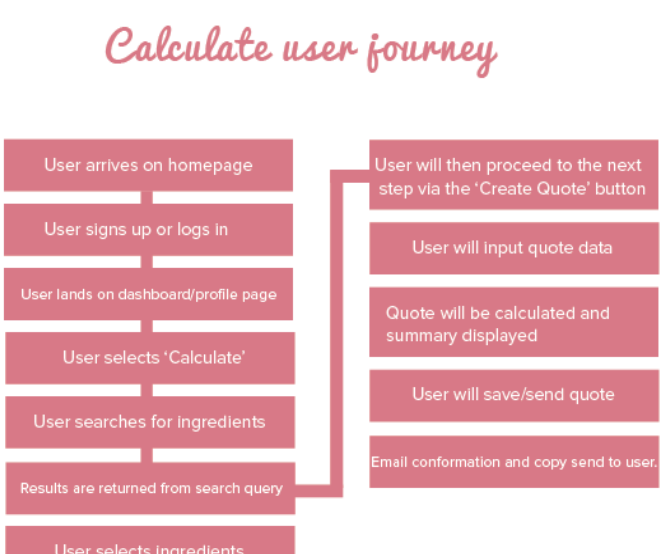
When creating a brand for Calca-bake it was important to take the target audience into consideration to ensure the plans for the project were solely designed to engage the audience and build brand loyalty. The target audience is quite broad therefore it was important to create something diverse. Initial research was carried to explore the audience's wants and needs in terms of costing their baked goods to ultimately help the project to fulfill them. Cultivating relationships early on was important to allow for an easy to use system to aid hobby bakers within the cake costing process.
Below shows the main points taken into consideration with regards to the target audience;

- Age (16-55)
- Gender (male and female, however mostly female)
- Hobby bakers
- Computing skills (users computing skills range from basic to advanced it is important that these factors were taken into consideration throughout the project to ensure the web application was easy to use).
- Physical environment (Mainly the home)

3.1 User journey

The user journey was something that was thought about initally; advanced layouts were created with well-considered interactions while taking the main user goals and motivations into consideration.

- Users goals- to calculate the cost of baked goods.
- Their motivations- seeking an answer to how much baked goods should cost to make and sell.



The user journey was looked upon as a series of steps leading up to the main process. It was spilt up into 3 steps basically so that users would not be put off on the offset when looking at all the data entry involved.

Fig 5: Main process (calculate) user journey.

3.2 Voice and Tone

Carrie the Calca-bake mascot gives the brand and application a sense of voice- again to allow users to feel comfortable and confident in using the application. Mailchimp as a brand was looked at when creating the mascot as they do this extremely well through the use of Freddie. Phrasing words the way humans speak such as don't as opposed to do not will allow a sense of personality to be included and will help build Carrie as a character. The use of sounds effects such as "uhh ohhhh", "hmmmmm" and "cha-ching" will also aid the website to empathize with and reward users based on their actions, again allowing a human like tone to shine through.

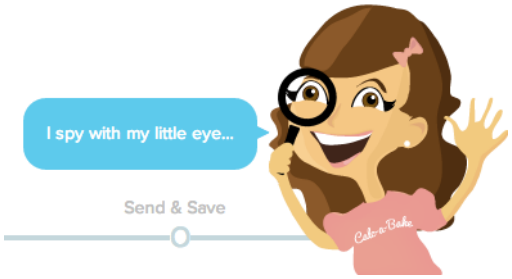


Fig 6: Humorous techniques used to allow users to feel welcome and comfortable creating a relaxed tone.

3.3 Overall Design

Throughout the design process the end users were always taken into account, as the target audience is quite broad this ranged from the novice user to the expert frequent user. It was taken into consideration that each type of user would expect the design to accommodate their desires. The ICT illiterate users needing extensive help throughout while expert regular users will just want to get to where they want to go as quick as possible. This has been achieved throughout the layout of the website which suits both, using global navigation to help the novice users while shortcuts within user profiles will allow the regular user to carry out their tasks quickly.

Consistency was strived for throughout the designs and consistent sequences were used within actions for various tasks for example creating a recipe and quote follows the same process with the same page layouts and interactions with exception of the search feature within the recipes section of the site.

Terminology remains the same throughout also using a light-hearted approach to prompts, error and success messages.

Reversal of actions is easy using remove, edit and delete buttons throughout to allow the user to undo actions simply. Steps have been taken to allow the site to become easy to use and follow by organizing the site and steps distinctively.

3.4 Branding

On creating a brand for Calca-bake it was important to take the target audience into consideration. The target audience is quite broad therefore it was important to try and create something diverse.

The main concept of the brand is to convince users to sign up to the site, calculate and create quotes. As the project is aimed at hobby bakers it was essential that the brand was fun.

On identifying the target audience a branding exercise was carried out. Logo concepts were created and feedback was gathered. The first design was the most popular, however in conjunction with the brand mascot it became quite over whelming, therefore It was decided that the logo would be simplified and made more simplistic.

Fig 7: Initial logos against the final logo.

It was decided upon only using the ribbon, typography and an illustrated calculator with a small bite out of it to allow it to look almost edible. The addition of the stitching within the ribbon allows the logo to almost portray a homemade feeling. The brand name has been split into three parts to allow users to understand exactly what it stands for and pretty much does exactly as it says on the tin. The words Calc and Bake have been capitalized to allow them to stand out and become easier to read.

3.5 Mascot

In the design stages the Calc-a-Bake brand was imagined as a set of human characteristics as opposed lifeless logo and series of graphics. It was important that it leaves a good lasting impression on users in the hope that they will continue to use the site. It was initially thought that the web application would also be aimed at professionals, however through research and discussion it became apparent that it wouldn't be as beneficial to professionals as they tend to get their ingredients from wholesalers, this allowed for a more laid back brand.

One brand that was explored during the design stages was that of Mailchimp, the use of *Freddie the Chimp as the embodiment of the brand personality is genius. "Freddie's stout frame communicates the power of the application, his always on the go posture lets people know this brand means business."*
"Freddie always has a kind smile that welcomes users and makes them feel comfortable and at home. The cartoon style lets people know that MailChimp offers a fun, and informal experience. Freddie like to crack jokes, but when the situation is serious, the funny business is out the window."
Designing for Emotion- Aarron Walter[2]

Initially it was decided upon creating a cupcake mascot for the Calca-bake brand to add character to the website and help aid users through the cake costing processes to reward them when tasks are complete and aid them when a mistake has been made. At first the mascot existed in the form of a cupcake, however on refining the brand and site it was decided that the mascot would be changed entirely as it looked quote childish and unrealistic. The illustrated look was kept, in keeping with the simple flat design of the site, however the mascot was transformed from into a girl as opposed to a cupcake. This allowed for a sense of realism and more depth to be added to the mascot.
The name Carrie was decided upon after Carrie Bradshaw in Sex and the City as this is how cupcakes became a huge craze- after she bit into one on an episode of the show. Warm tones have been used for Carrie's hair and skin to allow her to look inviting, the smile on her face allows her to look friendly and welcoming.
Carrie is used sparingly throughout the website to ensure she isn't annoying to the regular user. The illustration has been designed to show only the top half of her body to allow it to become versatile and easier to position as a full body illustration proved be quiet tall and difficult to locate within the designs.
Carrie gives the brand a light-hearted approach, allowing it to seem fun as opposed to a form filling out process, which is technically what it is within the 'calculate' section of the site.

3.6 Brand Traits

It was important to be realistic when selecting personality traits, as the brand must be honestly reflected to ensure the audience are not deceived. Brand traits were altered throughout the project as it evolved to ensure the traits were honest and a true reflection of the brand was portrayed. Below shows the finalized brand traits:

- Fun but not childish
- Powerful but not complicated
- Easy but not simplistic
- Intelligent but not complex
- Confident but not cocky

3.7 UX design evolution

Within this section the UX design evolution is discussed and design choices are justified.

3.7.1 Refined Colour Scheme

On receiving feedback from the design team on the initial designs it became apparent that the colours used initially where quite desaturated and needed to be a little stronger.
It was decided that the colour scheme would be altered to make some of the colours slightly bolder in order to allow elements to stand out more when used in colour, particularly against the white body.

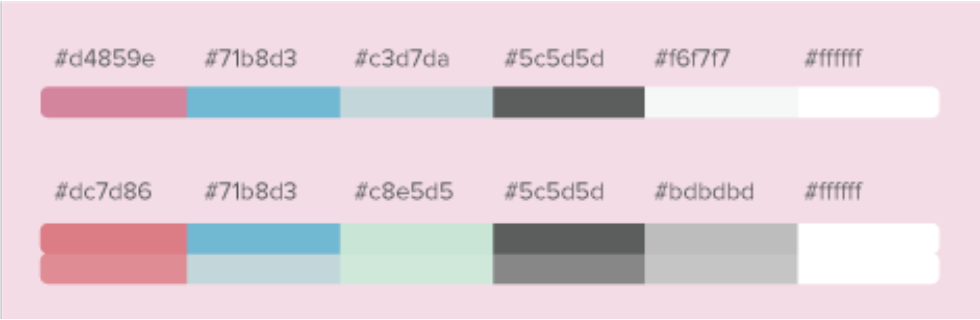


Fig 8: Minor tweaks to the initial colour scheme to allow colours to become more vibrant.

Above shows the initial colour scheme at the top of the figure against the interim colour scheme with slight variations of the main colours. A pale green was added to the palette to add more depth to the design.

It was important to get the colour scheme for the project right as it is essentially the first thing users notice. Through research it was learnt that colour schemes within designs could affect a users mood, perception and interactions within the webpage.

The colour scheme was changed again within the final designs to allow for a more vibrant website as general consensus was that the colours were still quite dull. Below shows the final refined scheme alongside their hex codes.

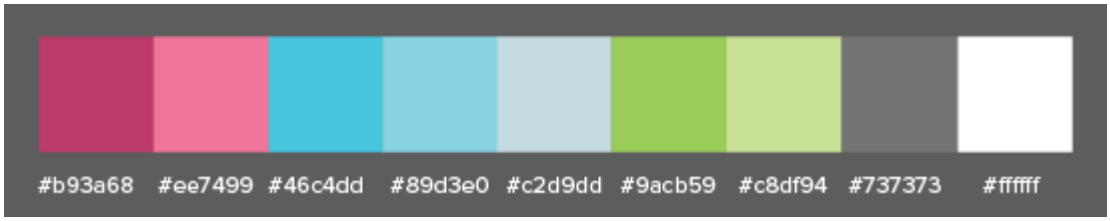


Fig 9: Final colour scheme.

3.7.2 Refined Typography

On receiving feedback from the initial designs it was mentioned that the Pacifico font used was difficult to read on lighter shades and that some characters were not recognizable based on appearance. Pacifico is a brush script handwriting font which can be difficult to read therefore it was initially decided to make some alterations to it in order to ensure that it

was easier to understand. The font was only used on headings and points of interest, therefore it was decided upon increasing the size of it from 16pt to 20pt, the tracking on the characters was also altered from 0 to 40 to allow each character to have more space which ultimately allowed for the text to become easier to read.

Fig 9: Minor tweaks to headings to avoid legibility within the typeface.

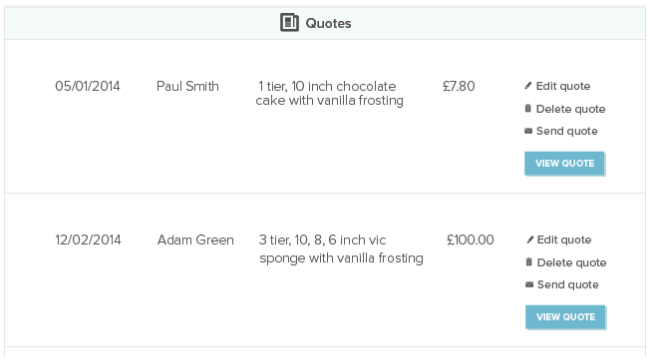
However after thorough consideration it was decided to remove the pacifico font from the design and only include it within the logo. Even through the minor adjustments helped slightly some characters still lacked legibility. Headings and points of interest were changed to Proxima Nova using the semi bold font weight. On headings the font was transformed into uppercase to differentiate it from body text.

Body text was also refined in order to allow it to become more legible and comfortable to read. It was decided to go by the general rule of making the leading value 1.5 times the size of the font size (14pt) making it 17.5pt.

Fig 10: The difference in non-refined / refined leading value for body text.

3.7.3 Refined quotes/recipes excerpts

The quotes and recipes excerpts were modified to allow for a better user experience. Initially they consisted of a table, which lacked in design. Within the final designs it was decided that the layout of this would change to display the image of the recipe/ quote and show the excerpts in a tiled format as opposed to a table. The ability to edit, delete and send was removed at this stage and is only existent within the inner pages showing the full quote/recipe.



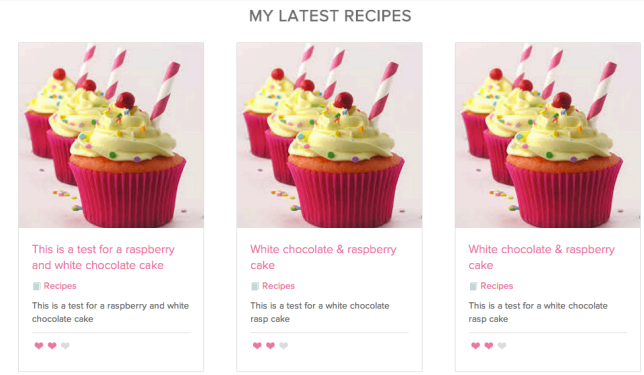
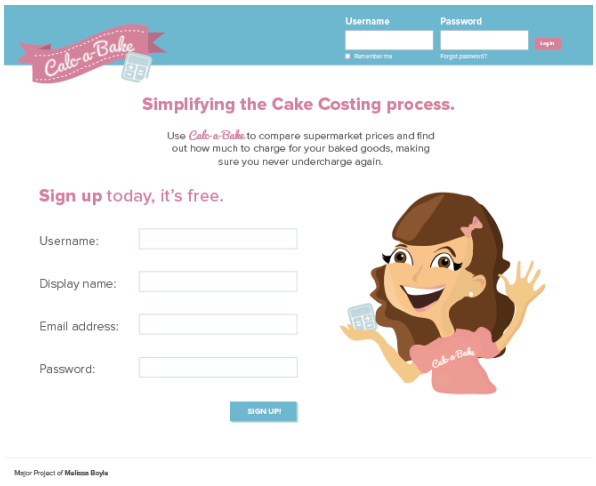


Figure 11+12: The interim design for the quotes/recipes excerpt section of the project

against the final design.

3.7.4 Refined index page

Within the final design stages more consideration was taken to the index page in order to allow the audience to understand exactly what the web application does before signing up. A full width image was used as a section image to allow for a modern slick look. Illustrations have also been used in order to personify each of the steps within the calculate process. Social media icons have also been made use of to help users find the social media platforms the brand is associated within.
The design of the landing page has evolved greatly and attention to detail has been paid to ensure a good first impression is made.



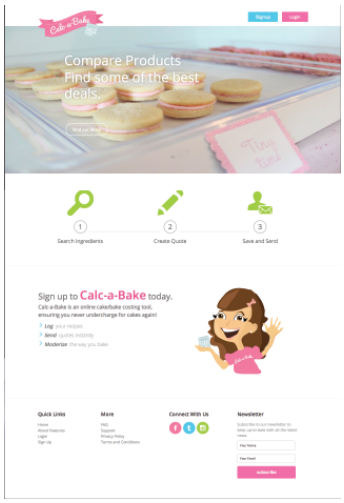
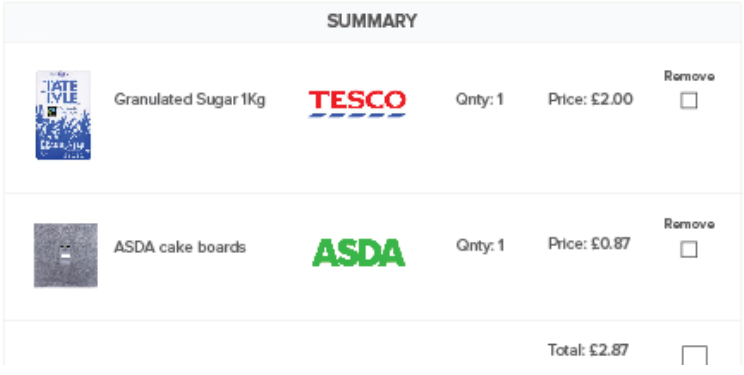


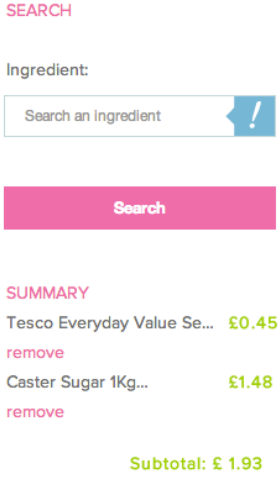
Fig 13+14: The evolvement in the index page clearly shown.

3.7.5 Sidebar refined

Based on previous conversations and general consensus the summary design for products added to a quote was relocated to the sidebar, previously the summary appeared under the search results however this caused the user to scroll to find if the item has been moved to the summary. Therefore it has been decided upon to place it within the fixed side bar under the search function. The summary will only contain the product name and a total price however a more detailed summary is provided when the full quote is calculated.

Fig 15+16 Summary box previous and current position





3.7.6 Mascot refined

Below shows the re-design of Carrie, making her human-like allows users to connect with her more on a personal level. She is more realistic and reflects the brand a lot better. The fact that she has a calculator resting in the palm of her hand illustrates the main focus of the website which is for hobby bakers to calculate the cost of baked goods.

Fig 17: Carrie's transformation from Cupcake to girl. Calca-bake mascot

4.0 System Design and Architecture

A system design was created for the Calc-a-Bake project in order to outline all aspects of the software. The quality of the system design was crucial to the success of the project as it ultimately helped build and complete the technology. The design and architecture was adjusted to suit new needs within the project.
The main functionality to the web application happens within the back end of the website throughout the use of PHP therefore it was essential for this to function without asking users for a large amount of interaction.

A site navigation plan was created initially in order to illustrate how the front end of the site would function; it has been modified throughout the software development cycle in order to keep in sync with new developments within the project. The main reason for creating a site navigation was to maximize usability within the site. It was decided that the web application would follow the path of Global website navigation which basically shows the top level of sections, within these the interior links or sections are then available. Top-level pages are apparent within every page of the website allowing the main pages to be accessed easily and directly.

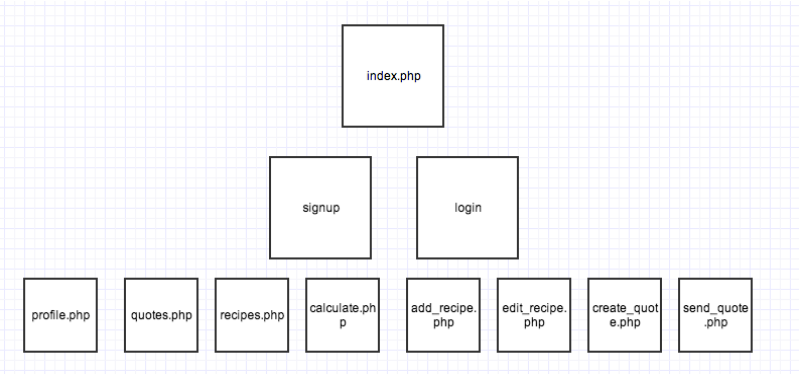


Figure 18: Sitemap

4.1 Logical Design

Logical design was also a factor to consider during the planning and implementation of Calc-a-Bake. The term basically enforces a logical structure to programming in order to make it more efficient and easier to understand and modify.

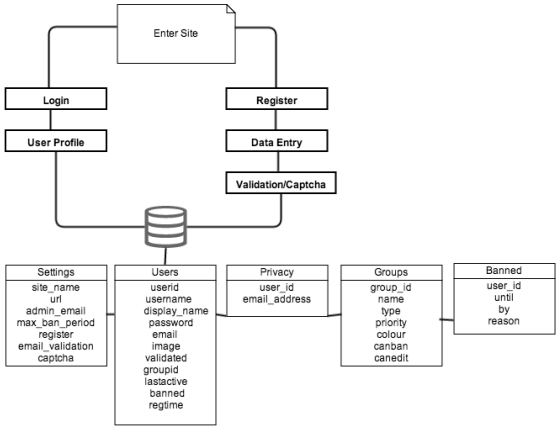
It was decided to develop a modular program structure to illustrate the relationships between aspects of the web application. This structure shows the functionality for the main aspects of the site, which are the user profiles, the calculating process and the ability to create, edit and save recipes and quotes. This architectural structure helped enormously during the creation of the database particular when creating relationships within the tables.

The initial system design was modified to allow the addition of the new table: ingredients to furthermore allow sessions to be created to allow the ingredient information to be displayed within the calculate_quote.php page. The addition of the recipe_image field was also added to allow an image upload of recipes to allow for a more user centred design as users can visualise recipes.

The structure has been spilt into two levels to convey various actions that will be taken within the website.

Figure 19:

Level one: Login/Signup



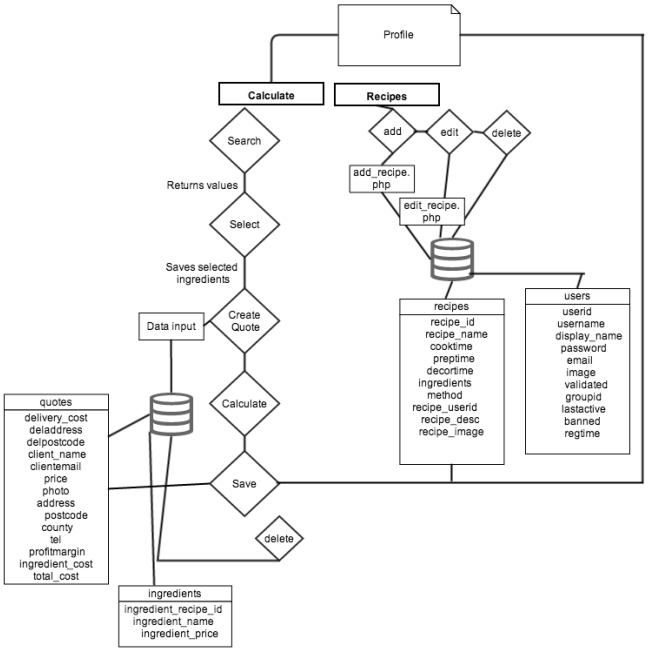


Figure 20: Level two: Calculate process

4.2 Database Design

Database design was something that had to be considered carefully when implementing the system; a data model was created to show logical design choices to help aid the creation of the database.

The database holds quite a bit of information and was vital to the overall success of the project. Identifying entities early on was important to allow understanding of what information would be held within the database.

On identifying entities, relationships were then considered to determine the connection between fields. Primary keys were also considered at this point to allow unique fields to firstly ensure they have a value and the obvious to ensure they are unique. This was vital for the project especially in terms of the user id field as this is how data is received to ensure users only have access to their own information.

The code statement below shows a select statement from recipes table where the recipe_userid is the same as the variable $user which is the user_id.

$recipes = $db->getAll("SELECT * FROM recipes WHERE recipe_userid = $usr ORDER BY recipe_id DESC");

An Entity relationship diagram was created to show the graphical overview of the database structure, which ultimately helped within the development process. It was broken down into basic terms to identify the relationships tables would have with each other.

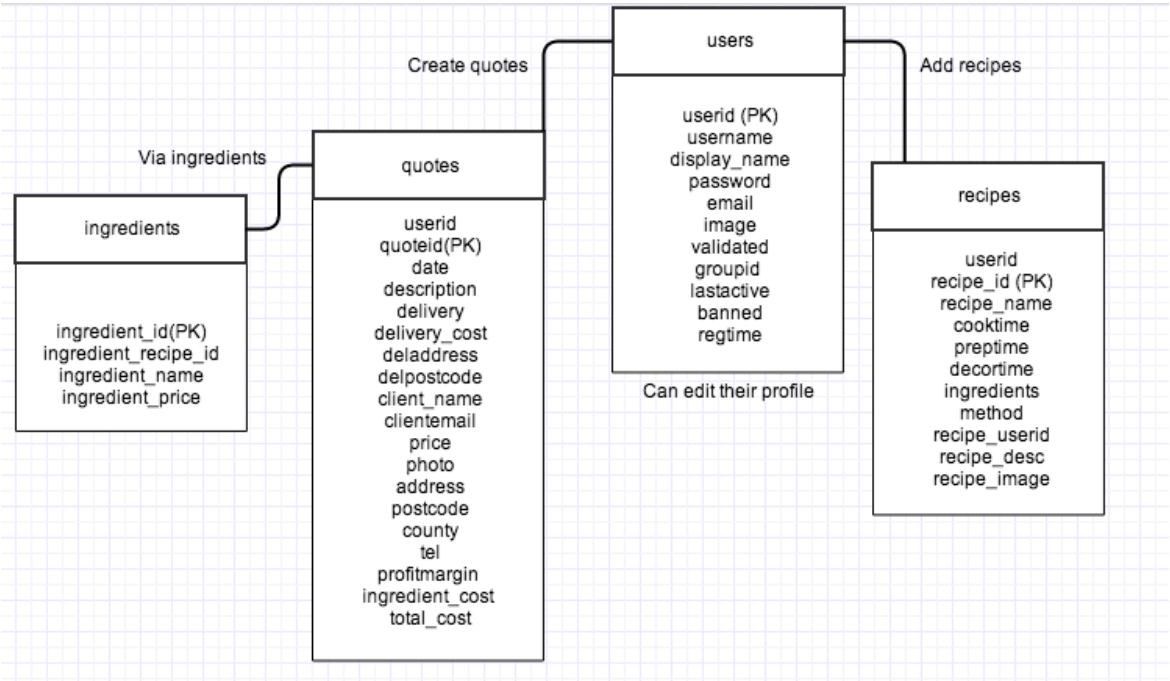


Figure 21: Entity relationship diagram

5.0 Development

This section explains the execution of the project plan, it encompasses all the processes required within the development stages of Calc-a-Bake. Technologies used within the project are explored and justified.

5.0.1 Technology selection

It was important to select the most appropriate technology for purpose in relation to the build of the project. All selected technologies are noted and decisions for using the technologies are documented.

HTML5- It was decided that HTML5 would be used as the core markup language for the Calc-a-Bake web application, mainly because the new elements allowed for enriched semantic content which ensures the website is future proof.
HTML5 also eases the process of creating accessible websites mainly through the semantic content with the addition of the new headings such as <nav>, <header>, <footer> etc. Screen readers now have tags to determine what kind of content is within each. This is important, as it ensures that screen readers are catered to allow the site to become fully accessible.
The project was initially built upon twitter bootstrap, some elements remain however a lot are over written with Calc-a-Bake styles. The reasoning behind this is that it allowed for functionality of login system within the prototype stage.
The use of building the website upon the bootstrap theme as a front end template to code the site, has enabled the site to become a robust and adaptable website.

CSS3 has been used to control the style and layout of the pages within the site, CSS3 is the latest standard for CSS and offers a lot of new features which have saved time when preparing assets for the website as properties were applied via CSS as opposed to implementing designs in illustrator. Aside from the crucial point of saving some precious time the use of the styling language has also allowed for a cleaner mark-up.
Another benefit to using CSS3 is that it has enabled the website to perform a lot better as it ensures faster download and less HTTP requests, which is important for mobile devices, which is a future contingency.

Php has been used to parse data through the supermarket site URL's, the parse_url() function returns an array containing components of the URL that are present. A variable has been used to get the search term entered into the search box and place it onto the end of the url as this is how supermarkets carry out their searches.

http://www.tesco.com/groceries/Product/Search/Default.aspx?searchBox=**icingsugar**
Bold="search term"

The echo function has been made use of to echo the required information and return it to the site. In order to allow this functionality to work two libraries were required LIB_HTTP which uses PHP/CURL routine for downloading web pages and automating form submission, this library basically allowed for the project to scrape the supermarket websites. The other library used was LIB_PARSE which is basically a collection of parsing routines which allowed the project to parse data in conjunction with the LIB_HTTP, it allows for the calculate section of the site to parse data through the supermarket sites URL which has been explained above.
Initially it was thought that the web application would calculate the cost of all the ingredients selected, the profit margin and delivery cost (if applicable), through JavaScript through the use the add function however in practice it was much easier to do so through PHP as this was the main scripting language in terms of retrieving the information from the supermarket sites. Each ingredient returned is given a value when looking to the element that contains the price a foreach statement is then executed adding each product price together and finally echoing the total via the $totalprice variable. Within the calculate_send.php page an if statement is present to find out if an ingredients session exists if this statement is returned as true it is added to the $overallprice variable . On gathering the $totalprice of the ingredients the statement then POST's the profit margin value entered from the database, which is divided by 100 and multiplied by the $totalprice in order to get the total as opposed to the percentage. A preg_replace function is used to return only numbers from the given string to ensure the % symbol is not taken into consideration when outputting the profit margin as a total. The profit margin is rounded to decimal places much like currency.

The delivery costs works similarly to the profit margin in terms of POSTing the value from the database.

The overall cost is then found by adding all three variables together, which can be seen below.

```
<?php $totalprice = 0;
        if (is_array($_SESSION['ingredients'])){
         foreach ($_SESSION['ingredients'] as $ingredient) {
             $totalprice = $ingredient['price'] + $totalprice;
         }
         }
          ?>
    <li>Ingredients: <span class="amount">£<?php echo $totalprice;?></span></li>
    <li>Profit: <span class="amount">£<?php
         $profit = preg_replace('/\D/', '', $_POST['profitmargin']);
         $profitvalue = ($profit / 100) * $totalprice;
         echo round($profitvalue, 2);
    ?>
</span></li>
    <?php $deliveryprice = ($_POST['delivery_cost']);?>
    <li>Delivery: <span class="amount">£<?php echo $deliveryprice;?></span></li>
    </ul>
    <?php $overalltotal = $profitvalue + $totalprice + $deliveryprice;?>
    <p class="total">Total: <span class="amount"><strong>£<?php echo round($overalltotal,
2);
?>
</strong></span></p>
```

PHP has also been used to allow the web application to connect to the database and to POST and GET information from it, if statements have been used to improve the user experience throughout, for example when no quotes or recipes are apparent the statement returns an alternative message to allow users to get started.

My SQL was used to create the database for the system to hold user information, quotes and recipes. The Entity relationship model can be found on page 36.

JQuery was also used throughout the development of the system in order to add both functionality and interactivity. The main area in which it was used was that of the adding ingredients to the summary box within calculate.php.

The function below simply appends the input type checkbox with the class .chkbox to the #addedto list div within a unordered list, if it is checked. It gathers both the name and price and posts the information through AJAX in order to create a session to carry the data to the next step.

```
$(document).ready(
 function () {
    $('.chkbox').change(
    function () {
        if ($(this).is(':checked')) {
            text = $(this).val();
            price = $(this).data('price');
            $('<li />').appendTo('#addedtolist ul').text($(this).val());
            //console.log($(this).data('price'));
            $.ajax({
                type: 'POST',
                url: 'ajax.php',
                data: {
                    'name': text,
                    'price': price
                },
                success: function (msg) {
                }
            });
        }
    });
 });
```

jQuery is also used to paginate the results from the supermarket sites as some search terms return quite a lot of results. This is done through table sorter, which is a jQuery plugin for turning standard HTML tables into sortable tables without page refreshes. The reason this plugin was used over others was because of its ability to successfully parse and sort linked data within a cell, which was essential for this project as data is scraped from supermarket webpages.
The code below shows the function used to allow the plugin to function, it simply calls the table via its id and outputs the pagination functions into the div with the id of pager.

```
    $(document).ready(function () {
                    $("#keywords").tablesorter({
                        widthFixed: false,
                        widgets: ['zebra']
```

```
        }).tablesorterPager({
            container: $("#pager")
        });
    });
```

Sorter-false was used on all table headings with the exception of price to ensure they could not be sorted.

```
var reloading;
function toggleAutoRefresh(cb) {
    if (cb.checked) {
        window.location.replace("#autoreload");
        reloading = setTimeout("window.location.reload();", 1000);
    } else {
        window.location.replace("#");
        clearTimeout(reloading);
    }
}
```

Another function that operates through jQuery is the reloading of the page, this is not an ideal solution however it works for the purpose given. It is used to simply reload the page on selection of the checkbox to allow the subtotal to refresh when an ingredient/product had been added.

5.2 Beta

Following the hybrid methodology the project was then put to the BETA stage, which was to diagnose any problems and establish the need for any modifications within the software development. At this stage some fields within the database were disregarded, as they were no longer of use. This stage was completed before any testing in order to identify initial bugs on the live server. On uploading to the University server some amendments were made to allow the site to function correctly. The lib_http file was modified to redirect the cookie.txt file as access was not granted to the c:// drive on the servers.

5.3 Quality Assurance (QA)

Quality assurance is a way of preventing problems when delivering a solution to an audience. It was applied to the site in order to discover and rectify any issues that may have been unforeseen within the beta stage. It was almost the stage where the developer tried to break the site in order to find flaws. This approach wasn't ideal, as they knew the workings of the site and may not have carried out enough tests in order to find issues. Therefore it was decided that a small portion of people would carry out some functional

testing with the developer present to record results. This allowed for a more in-depth testing method and is discussed in more detail on page 44.

5.4 Implementation

This section explains the execution of the project plan, it encompasses all the processes required to see the completion of Calc-a-Bake including the testing, challenges faced and achievements made throughout the software life cycle.

System implementation was used within the software development cycle in order to achieve a high level of user involvement, ensuring that both the design and functionality was what they expected. It was essential that the relationship between the users and website was apparent and they could relate to the aim of the system and therefore use it effectively.

Many areas were explored within the implementation in order to get a more in-depth look at the system to seek if it delivered the service intended.

The system does deliver a solution to the cake-costing problem, it allows users to search both Tesco and Sainsbury's for products and factors for delivery costs and a profit as well as allowing the user to save all quote information. Members of the site can access their profile instantly from their computer, the create a quote process has been made as minimal as possible to keep users motivated. If the user has a good Internet connection supermarket results will return almost immediately. This was an extremely important element to factor for as Google engineers discovered that users give up on a page load after 250 milliseconds- putting that into perspective is less than a blink of an eye (400 milliseconds). Clean and simple style sheets were used within the application in order to reduce the load time, images were kept to a minimum also in order to allow for a quick loading of pages.

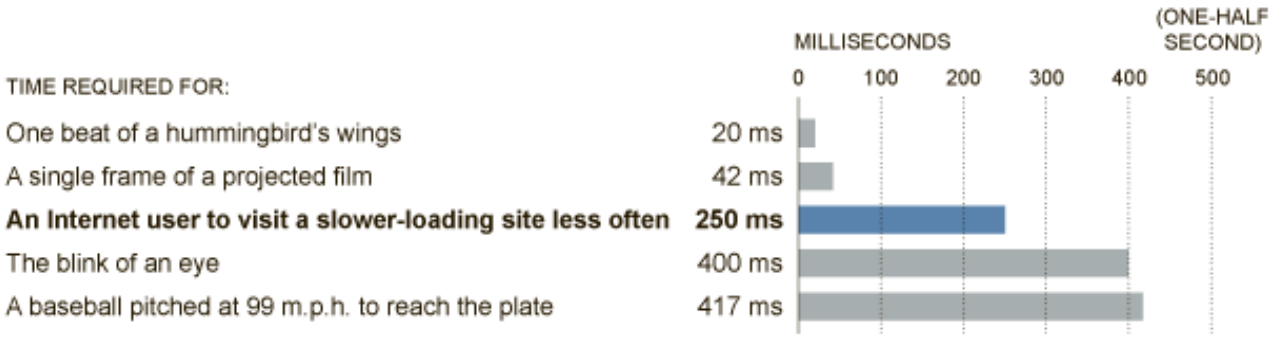


Fig 23: Research discovered from Google engineers [5]

5.5 Notable Challenges

Retrieving data from ASDA proved to be a huge challenge and one that was not overcome, it seems as though they have smartly used the method of detecting very fast visits via IP addresses. Since this seems to be case the server can differentiate a user from a site scraper and block the IP address it is coming from. Therefore the fact of using ASDA as a supermarket comparison on price and products had to be disregarded.
Another challenge was creating a structural database and interacting with it via PHP, joins were created within the database to allow the information to be found via the userid.

5.6 Notable Achievements

Retrieving data from Tesco and Sainsbury's was a notable achievement within the project and one, which was a breakthrough in the overall functioning of the software. It was important that this achievement was met to allow the project to proceed. There were some initial doubts as ASDA was the first supermarket explored and did not work.

Another notable achievement was that of creating user profiles and a structural database which data is posted and retrieved from.

6.0 Testing

Software testing is an important technique for accessing the quality of a software product; it ensures the project meets its functional requirements. This chapter will explore the approach used to test the technology alongside various test cases in order to seek if the requirements have been met.

Software testing is one of the verification and validation practises which is basically the process used to determine whether the software satisfies the conditions made at the start of the phase.

Through verification, we simply ensure that the product behaves the way that the user expects it to. The success of this will be testing through the user experience in order to verify that the project behaves correctly.

Through validation we check to ensure that there are no mistakes within the product build. The success of the validity of the project will be measure against initial requirements. [3]

6.0.1 Testing approach

It was decided that both black box testing and white box testing would be explored in order to seek which is most relevant for the project.

Through research it was learnt that black box testing allows all possible combinations of end-user actions, it assumes the tester has no knowledge of the code and is almost intended to break the software in order to ensure all areas are covered.

White box testing on the other hand requires the tester to have in-depth knowledge of the source code for the software. This type of testing basically looks at the code and not the front end of the site in order to detect any potential failure scenarios. White box testing usually results in using black box testing to test paths that were reviewed and possibly changed to ensure the functionality is working on the front end.

It was decided that Black Box testing was the best approach to use while carrying out testing for the main functionality within Calc-a-Bake as it allows for behavioural testing. The target audience varies from ICT literate to ICT illiterate users therefore it is essential to carry out all possible performances to ensure that the system reacts as expected when human error is preformed.

It is important that the tester of the software was not the same as the developer, moreover it was decided that a small group of people would preform the testing and the developer would be present to record the results.

It was also decided upon that some white box testing would take place in order to test and execute some code that an unknown user may not know to look for, such as IF statements etc.

6.0.2 Testing process

Test plans were created to systematically execute test cases, this allowed for identification of problems that existed to ultimately allow them to be removed from the project to ensure for a bug free application, taking the user interaction as the main consideration.

The Test plans below specify black box test cases; the test cases are based on the functional/non-functional requirements stated at the beginning of the project.

Test ID	**Test Description**	**Expected Outcome**	**Actual Outcome**	**P/F**
#T1	A web application that will facilitate user accounts	On visiting the site, the homepage will present the visitor with a sign	The actual outcome was the same as the	P

	and profiles.	in/ sign up form. On signing in they will be able to fully interact with the site, calculating costs of cakes, saving recipes and editing their profile. This will be achievable through the database, which will hold all user information.	expected outcome.	
#T2	A web application that visually integrates and displays search results for supermarket products.	It is expected that the web application will make use the http_get function in order to pull search results from the supermarket sites. The data will be parsed through the url search criteria. When the page has pulled the information it will then integrate the results into the web application.	The actual outcome was the same as the expected outcome as on typing search terms into the search box products were returned from Tesco and Sainsbury's.	P
#T3	The ability to save both results (quotes) and entries (recipes).	It is expected that web application will store all quote and recipe information in a database depending on the user id. It will make use of the $GET and $POST functions in order to add, save and retrieve the data from the database.	The actual outcome was the same as the expected outcome, users were able to save quotes and recipes on entering the correct data into fields, the	P

		On entering correct data into the fields the quote or recipe will be saved to the relevant tables, using the user id to identify them.	information is then available to view within the quotes/recipes pages, this ensures that the data has been written to the relevant tables.	
#T4	The web application will have a search feature to allow the user to search for ingredients.	It is expected that on typing a search term into the search box the data within will be pulled into the query and it will preform a search to all the supermarket sites, the results will then be pulled into the results table.	The actual outcome was the same as the expected outcome. The keyword within the search box was posted as the variable on the end of supermarket URL	P
#T5	Check boxes will allow the user to select ingredients from the returned results.	It is expected that select boxes will appear on the results shown from the supermarkets based on the search criteria, The user will then have the ability to select products, they will be added to the summary box and will be calculated into the quote.	The actual outcome was the same as the expected outcome.	P
#T6	Clearly display the source from each ingredient.	It is expected that on feeding through the data from the external	The actual outcome was the same as the	P

		supermarket sites the logo's will be displayed to allow the users to understand where the product is from.	expected outcome.	
#T7	Upload profile image via the profile page files must be (gif, pjeg, jpeg, png).	It is expected that the user will be able to select an image from their computer and upload it to their profile. Code has been used to create a session, set the upload directory of which permissions are set to 777, the code then checks the file type and size. If the file has no errors it will successfully upload to the uploads directory. An update query is then used to set the image field to the image field name where the userid matches that of which is logged into the session, from here the upload directory is specified within the image tag and the image field info is retrieved depending on the userid.	The actual outcome was the same as the expected outcome.	P
#T8	Ability to edit saved quotes.	It is expected that users will not have the ability to edit saved	This test failed as the ability to edit saved quotes was	F

		quotes.	not included, simply because sessions were created to carry ingredients across from the initial searching stage and therefore prices may not be accurate when editing.	
#T9	Ability to send quotes.	On entering all quote details the user will then be able to send the quote via email, they will be required to enter a valid email address before doing so. The web application will make use of php in order to validate the email address entered		P?
#T10	Ability to create and update recipes	It is expected that users will have the ability to both create new and update recipes. This functionality will work through GET and POST methods.	The actual outcome was the same as the expected outcome.	P
#T11	Ability to upload photos to recipes or quotes	It is expected that the user will have the ability to upload photos to the quotes and recipes table much like		P?

		the profile image.		
#T12	Ability to brand invoice via image upload	It is expected that users will not have the option to upload their brand logo, as this requirement was discarded when realizing that the system would be aimed for hobby bakers only.	This test failed as it was decided that the web application would be mainly used by hobby bakers and therefore will not require the ability to brand quotes as they may not have a logo or brand.	F
#T13	Ability to update profile	It is expected that users will have the ability to update their profile as necessary. Updating their profile images, email and username.	The actual outcome was the same as the expected outcome.	P
#T14	Ability to choose between metric/imperial units.	It is expected that that users will not have the ability to switch between metric and imperial units as this requirement was discarded due to time limitations.	The actual outcome was the same as the expected outcome.	F
#T15	Ability to signup to the site successfully	It is expected that users will be able to sign up to the Calc-a-Bake website on entry of all the required data.	The actual outcome was the same as the expected outcome.	P
#T16	Captcha code will	It is expected that the	The actual	P

	only accept correct characters.	captcha code on the signup page will only allow the user to signup when the correct values have bee entered.	outcome was the same as the expected outcome.	
#T17	Ability to log out of the web application successfully.	It is expected that the user will be logged out successfully on selecting the log out button.	The actual outcome was the same as the expected outcome.	P
#T18	Change of password	It is expected that users can update their passwords accordingly. On entering the correct current password alongside entering the same characters for the new password the password will be updated within the system successfully.	The actual outcome was the same as the expected outcome.	P
#T18	Pagination of supermarket results, which can be filtered by price.	It is expected that on returning the results from supermarkets they will be paginated on default to 10 per page, and that on clicking the price header the prices will be filtered from lowest to highest or vice versa.	The actual outcome was the same as the expected outcome. The jquery table sorter plugin has allowed for this functionality.	P
#T19	Calculations were correct and	It is expected that on selecting all products	On selecting ingredients that	P

	rounded to decimal places.	and entering in the values for profit margin and deliver (if applicable) that the total cost will be calculated correctly and echoed via the following statement. $totalprice = $ingredient['price'] + $totalprice;	totaled to £9.00, profit margin at 100% and delivery as £4.00 the total cost was £22.00, which was correct.	
#T20	Form Validation	It is expected that validation works as planned throughout the site via jQuery, this is essential in order to ensure the correct details are entered for quotes and recipes.	On leaving required fields blank, typing in email address's with no @ or (.) the validation for each field worked well.	P

The Test plans below specify white box test cases; these test cases are based on conditional statements that may not be apparent to the small group of testers who are not familiar with the code. Therefore the developer undertook these test cases and recorded the findings.

White Box Testing				
#T21	IF statements execute correctly on quote and recipes pages.	It is expected that on signing up to a new profile if statements will execute. New users with no recipes or quotes will see the message 'You have no recipes/quotes, lets get started".	The actual outcome of this test is the same as the expected.	P

#T22	If statement testing if the user is logged in. Log into the site then navigate away from the website totally. On entering the index page of the site the user should be directed to the profile page.	It is expected that the user will remain logged into the system on navigating away from the site and will be directed to the profile page as the following code checks to see if the user is logged in, if this statement returns as true they will then be directed to the profile page.
		if($user->islg()) { // if the user is already logged in redirect to the profile page
		header("Location: $set->url/profile.php");
		exit;
		}
			The actual outcome was the same as the expected outcome within this test.	P

6.0.3 User surveys responses

As mentioned above it was decided that a small selection of people would test the application while the developer was present. The developer asked the participants to carry out tasks, which determined the success of the initial requirements.

There were 3 participants in total ranging in age from 17 to 50 this allowed a broad scope of the audience to be explored. One participant was quite knowledgeable while the other two claimed they could just surf the net and send emails. Responses from the 3 participants were quite similar, as functional testing requires just a pass or fail.

On gathering feedback from functional testing it was then decided upon gathering some feedback on the UI to ensure users could actually carry out the functionality. Again 3 participants undertook the testing, the results can be seen below;

Test ID	Question	Participant 1	Participant 2	Participant 3
#T23	Please start by looking landing page, is it apparent from here that the website is a platform for hobby bakers to cost baked goods, create quotes and save recipes to their own personal space.	Yes, the animated images suggest this.	Yes, the page explains the website's purpose well.	Yes, I love how it is modern and clearly outlines the purpose.
#T24	Is it apparent from the landing page that you must sign up in order to gain access to the website?	Yes it is apparent that you must sign up in order to use the website.	Yes, the page states –Sign up today very clearly.	Yes
#T25	Please select the signup button, is it clear what information is needed in order to become a member?	Yes all fields.	Yes, username, display name, email address, password and code.	The fields are structured well, but none say if they are required or not.
#T26	On looking at the dashboard what are your initial thoughts about the site, are all actions outlined well. E.g. how to create a quote?	Yes the dashboard states all links well, I know some are deeper, to edit a recipe I must go into the recipe first but that makes sense.	Yes the sidebar and top navigation bar show all actions.	Yes all actions are named and shown as links.
#T27	On selecting the 'Calculate' option from the main navigation is it apparent that ingredients can be searched via the input box?	Yes it says 'search an ingredient' clearly.	Yes	Yes
	On returning the results for ingredients, how are they added to the	I clicked the tick box and it added the	The tick box for each product.	The tick box.

	summary?	ingredient to the summary box.		
#T28	Is the summary box located in an easy to find area?	Yes, it is easy to see what ingredients are being added.	Yes	Yes it is always viewable at the side.
#T29	Is it apparent that fields marked with (*) are required?	Yes I have seen this done before.	Yes, it makes sense.	Yes
#T30	Looking at the icons, do you feel they represent each section well?	Yes	Yes they are placed beside text therefore it makes them easy to identify.	Yes I like the icons.
#T31	Explain how you imagine from the design how you would find a saved quote(s).	My quotes from the top navigation bar.	My quotes or view all quotes in the profile section.	My quotes.
#T32	Is it obvious of how to log out of the system?	No, I had to look about for a second.	Yes, this is sort of the way twitter works.	Yes, from the dropdown menu.
#T33	What, if any aspects of the design seem confusing?	Perhaps the log out.	Within the 3 steps of the quote it doesn't have a back button, what if I need to add something else?	Seems fine to me.
#T34	Do you feel the application helps aid the cake costing process?	Yes I think the website is great saves me the hassle of having to write everything down.	Yes definitely also means I can always have my recipes on hand.	I think it's a great tool, what would be even better is it could do the washing up too!
#T35	Is there anything else you think the website should have which would aid	A diary to note all the cakes.	The ability to add in your own costs too, for	To include a price per hour too.

	hobby bakers.		cake boxes etc.	

Valid points were made from participants, some of which weren't even considered. On receiving the feedback amendments were made to the signup form to make it more obvious that all fields were required, this was done through the use of asterix's. A logout button was also added to the footer of the website to allow for a better UI design as one participant had mentioned that it wasn't apparent how to log out via the drop down menu. The addition of back buttons within the create_quote.php and send_quote.php pages to allow users to be able to go back and change information or add ingredients to the quotes, which was unforeseen within the designs however the use of the questionnaire allowed for this problem to be identified.

7.0 Evaluation

This chapter of the report is a systematic determination of the projects worth using the project requirements, aims and objectives to measure how successful it is.

Through testing it became apparent that 19 out of 22 functional requirements were met and only 1 of 3 requirements not met was of a medium priority while others were of low priority in terms of the site becoming fully functional.

The ability to brand a quote via image upload was not included within the application as when it became evident that it would only benefit hobby bakers this requirement was no longer essential as hobby bakers may not have logos or a brand identity as such.

The requirement to choose between metric or imperial units (R#19) was also not met. This was due to time constraints within the project as searches would have had to be a lot more detailed and further calculations would need to be carried out. The search functionality would have to take the amount needed into consideration e.g. 100g and calculate the cost of that amount rather than the overall price of the product. It was decided that the requirement was not compulsory as it is aimed at hobby bakers and they may not always have ingredients on hand. However this is something that could be implemented within the system to allow it to become more accurate and robust.
The final requirement that was not met through testing was the ability to edit saved quotes R#15. It was decided that again this wasn't a major priority basically because the calculating quote process was so fast. The fact that sessions were created to save ingredient prices also made this inaccurate as supermarket pricing fluxuates quite a bit and all ingredients would have to be searched for again.

Bot functional and non-functional testing results imply that the web application has met its overall aim, which was to 'Provide a web based application which would accommodate a

solution to the widely existent problem within the cake community, which is to cost baked goods, taking all factors into consideration and still make a reasonable profit from it.' Most aspects have been taken into consideration to allow for an accurate pricing scheme however the application may have benefited from a cost per hour option, although through initial research it was discovered that the amount of hours spent on creating cakes etc is always underestimated therefore this again wouldn't a complete solution to the problem either. The ability to edit recipes including prep time, cooking time and decorating time will allow users to update as suited, this will then allow them a better understanding of how long baking tasks will take and will be able to adjust their profit margin to suit.

Looking at the initial objectives all were met with the exception of the search results returning at least 3 supermarket results as explained above, a work around for ASDA wasn't discovered within the time scale given and therefore this initial objective was not met to its full extent. This is a huge constraint to the system as ASDA is within the top 3 leading UK supermarkets based on an article in November 2013[4]. Withal Tesco is the leading supermarket with Sainsbury's being second.

As retrieving data from ASDA proved to be impossible it affected the development direction hugely, this was the first supermarket incorporated into the search functionality and in the beginning left the project with very little hope as it wasn't apparent initially that the IP address was being blocked and instead was thought that perhaps the parsing of URL was not functioning.

7.1 Evaluation of methodology

The choice to use the hybrid approach as the methodology was a wise one. This approach allowed tasks to be prioritized and encountered for some hiccups along the way, which was in fact the case particularly when trying to integrate ASDA with the system.
The approach suited the scale of the project and the ability to implement the system at any stage was very advantageous as it allowed for aims and objectives to be altered and for components to be added throughout to allow for a better UX experience which were not thought of at the beginning of the project.
This approach best suits the scale of the project; the ability to change objectives and implement the system at any stage was extremely benefical.
A project plan was created within the initial stages of the project to allow an overview of what the project would entail. This worked alongside the hybrid methodology as it ensured all tasks with a high priority were completed first.
The project timeline was continually added to throughout the project and altered when unexpected tasks arose, again the methodology allowed for this.

The timeline consisted of a schedule for completing the project and identified important milestones and deadlines throughout. Due to the nature of the project it was broken it into

weeks. The use of a timeline allowed review throughout as opposed to having quantitative and qualitative evaluation criteria, which could only be measured at the end of the project.

7.2 Future contingencies

The need for a contingency plan is important within software development as it can help identify potential risks and plan for them if they do happen. A risk analysis was conducted at this stage to identify various risks that could potentially be threat to the web application.

Potential risks are noted to allow adequate preparation, which will ultimately allow the person responsible to respond quickly and effectively to any crisis situation that may arise. Only risks with a strong likelihood have been considered, as it is important not to over analyse for something that may never happen.

The main risk, which would have a huge negative impact on the web application is that if supermarkets change the structure of their websites, the likely hood of this happening is quite strong as the web is moving at a fast rate. The solution to this would be to change the code to look to the new tags or perhaps consider using the API's to retrieve data.

7.3 Conclusion

To conclude the web application has proven its relevance within the cake community and through testing has shown that it may not completely solve the problem which exists which is to cost baked goods and still manage to make a profit from it however it has proved to aid the process.

The main aim of the project was met as it visually integrates and displays the results for ingredients searched for in both Tesco and Sainsbury's, the results can be filtered by price and users can compare brands.

7.4 Reflection

Looking back at the journey of the project it is apparent that if the problem with retrieving data from Asda didn't get in the way of the development cycle the project could have benefited from a lot more functionality and more attention to detail could have been paid. However the project will continue to progress as this is a problem that genuinely needs rectified and doesn't just exist for the modules purpose. The journey has been an invaluable one with a huge learning curve.

7.5 Role

The role in taking the project from the initial idea generation to the site stand-up was definitely no walk in the park in fact it was quite difficult and the situation was pressurized due to time constraints. However the thorough planning of the project before any work

commenced was definitely beneficial. It enabled tasks to be prioritized and scheduled which ensured the project was finished on time.

Performance could have been a lot better within the project if knowledge was not as limited at the beginning, however this is all part of the learning process.

Performance was monitored regularly through sessions with the mentor of the project to ensure it was on track and was viable.

7.6 Future work

One of the main reasons the Calc-a-Bake idea was taken forward from the idea generation workshop was that it had so much ability to expand. One breakthrough for the future would be to take the exact measurements needed for the task in hand
in order to break the costs down to the exact penny.

Another suggestion for further work is that of including more supermarkets to allow users a wider scope of products, and perhaps incorporating a cake decorating store or eBay to allow further products to be explored and account for in the costing process. Altering the system for professional bakers would also be a great breakthrough however this would require the addition of wholesale stores which sometimes offer different prices for different customers.
Making the website responsive for mobile devices would also be a huge benefit to allow users to access the site on the go.
The web application could also benefit from a blog to allow it to gain credit within the cake community and help search engine rankings.

8.0 References

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8.0 Appendix A

Supporting target audience research and analysis.

It was decided upon gathering some first hand research through emailing some local bakers, the response rate wasn't great however some interesting feedback was received. The email and findings can be seen below;

Hi ___,
I'm in my final year at Uni and am working on some major project ideas. One that I have and am passionate about is an online tool that will help bakers to cost baked goods.
I plan to have a system, which will allow the user to enter the ingredients of the recipe and compare prices across supermarkets etc. I also want to factor the baker's time to ensure the order is profitable.
Before creating the tool I need to find if there is an actual audience for the web application. Do you have a particular system in place to help you cost cakes if not would you benefit from something like this?
Hope you can help,
Melissa.

Participant 1 data
Nik's Kakes
Hi Melissa, there is an iphone app called cakeulator which aids cake costing. It calculates ingredients etc, and you can add on a wage or percentage uplift for a wage.
Although I have used it once and must say I haven't used it again I tend to scribble my calculations with a good old pen and paper.
I know a lot of bakers use cakeulator so there certainly is a market for it especially if you can produce an improved version.
Hope that helps
NIK

Participant 2 data
The Tea Boutique NI

Melissa,
I just price according to ingredients, time and decorations. I probably wouldn't use it unless it was really, really simple to use as I hardly even have time to answer emails. My background is computers so I totally love this idea though there is already one online.
Check out Cake Baker on facebook, I think their app is called cakeulator.
Carrie

Participant 3 data
Wendys Cupcakes

I know there are a few apps out there but I haven't really tried them! What I do is make a list of the ingredients required for an order with prices then add a few pound on. Unfortunately I never take into consideration my time and effort!
Wendy

Cake Central
On creating a Cake central account I also started a thread to gather some thoughts on the concept and to seek how bakers currently cost their cakes. The feedback can be found below;

Hi Guys,

This is my first post so I hope I can get into the way of things.
Basically I am a hobby baker and love to bake in my rare free time.
Aside from baking my interests lie in web and graphic design and I am currently studying in my final year of Interactive Multimedia Design at Uni. I am currently working on ideas for a major project and am trying to create a solution to a problem that I know most bakers have... How to cost baking.

First I want to gather some research to see what current resources/techniques you all use to do this and how effective they are.

Also if you have any ideas or suggestions in what the solution should entail to make all our lives a bit easier I would love to hear them.

The idea as it stands will be a free web application which will allow the user to log in to their own account, save recipes, upload photographs, save and send quotes, search for product prices and compare them against other supermarket/sellers the system will also allow the user to set their personal hourly rate in order to find out the price of the task in hand.

All thoughts would be greatly appreciated,

Melissa

The Cake Witch

I cost baking through Excel, some people just need to learn.

Jason Kraft- Allergy Friendly Pastries Orange County, California

I think Excel is a great tool to help map out prices and certainly works for me, but if you present most people with a blank worksheet their eyes will glaze over. There's something to be said for building an interface to guide the user through the calculations step by step, especially if it includes portfolio management features and direct feeds from external data sources to automatically populate commodity prices. I think the web application is a great idea.

Building in overhead costs is also a critical piece many people leave out, but I think the most important cost component is usually labour.

Spireite North Hertfordshire, UK

Hello Melissa, I am only a hobby baker and have never charged for a cake, but I have made a gift of them a few times. The last time I made a wedding cake, I kept all my receipts and worked it all out on paper. It took me hours! I did buy all new ingredients for the project (it was for someone's wedding after all!), as normal when I bake I use up what is in the pantry first! I think my Mother did a similar exercise when she baked MY wedding cake 14 years ago!

HOWEVER, I didn't include the cost of utilities, dishwashing, prep maths research time to work out the number of servings per cake (should I include the cost of my home access to the internet?), shopping time, fuel in the car to go shopping, the use of my existing utensils, and the cost of me buying my new sized cake tins for that particular project.....and of course my labour time. If I were a professional I would have to have insurance premiums as well, Environmental Health certificates....the list goes on!

Should there be a stress fee??? I remember being a little stressed out at times!

If I were a professional wouldn't I have access to trade outlets for my ingredients....I know as a hobby baker that I am already paying a premium in buying my ingredients form the local supermarket chain.

Good luck.

Real Cake- USA

There are people like me that have already done the pricing research comparing multiple outlets for buying ingredients. I physically went cost comparing from company to company to find the best prices. I broke down the cost of each ingredient to the ounce. Than I came

to realize pricing fluctuates season to season. So you just take an average price for each ingredient and go with that.

I also realized (much to my distress) that the best over all prices came from Costco and Sam's Club. The wholesale suppliers I looked at didn't beat them. So it's a myth (in my opinion) that restaurants and bakery's are able to get better pricing. I talked to chefs about this and they agreed, Costco and Sam's are cheaper than what they can buy through wholesale sources. The ONE difference though is, you can get a better quality ingredients through wholesale sources.

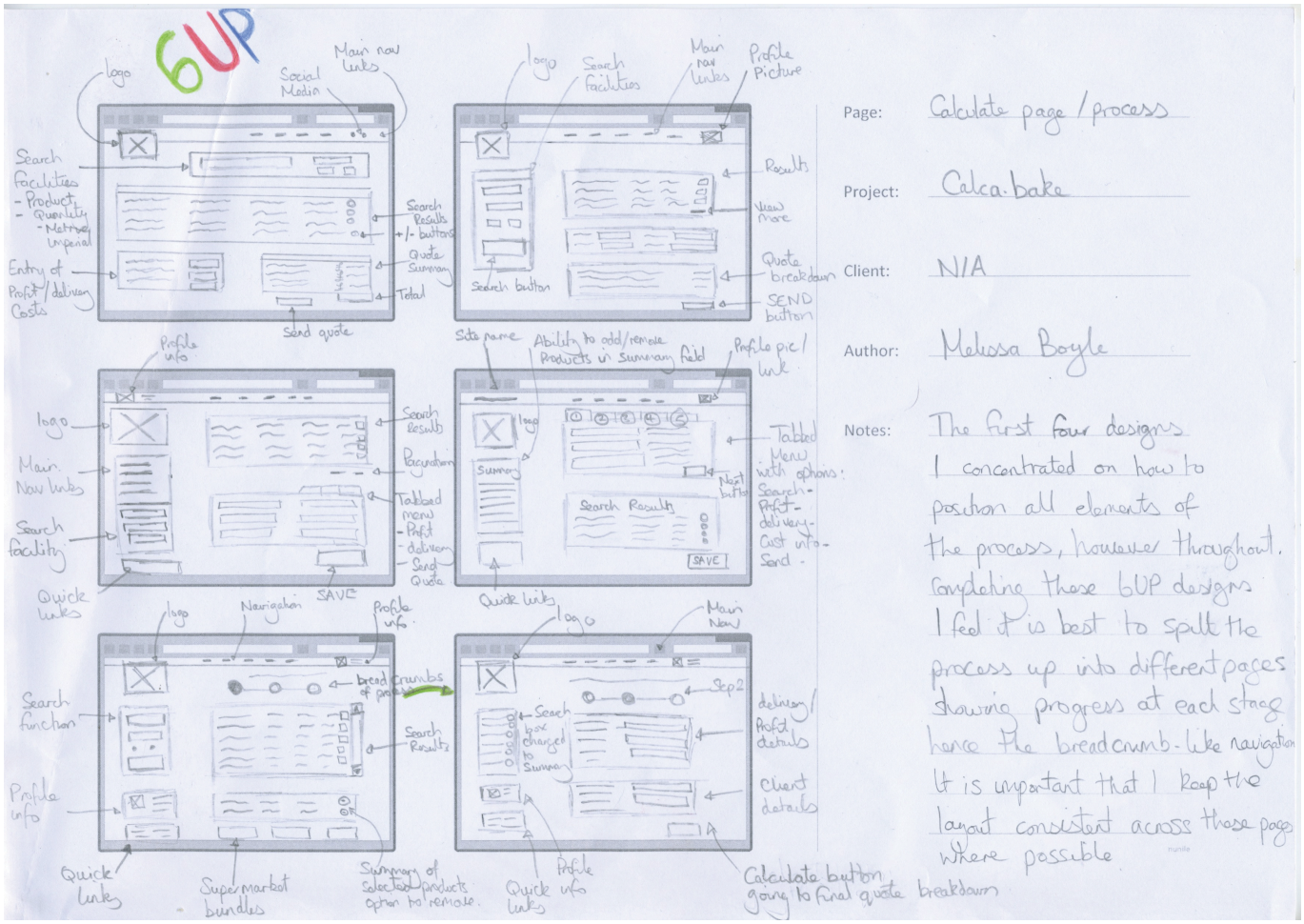
Pulling pricing data from supermarket sites didn't work for me. Their prices really varied seasonally and they don't list all the info. you need to break down ingredients costs completely. How can you account for that? If I was the OP, I'd pull data from the two big pricing clubs plus Restaurant Depot (who has supplies those two don't stock) and you could soundly come up with your pricing, in the US.

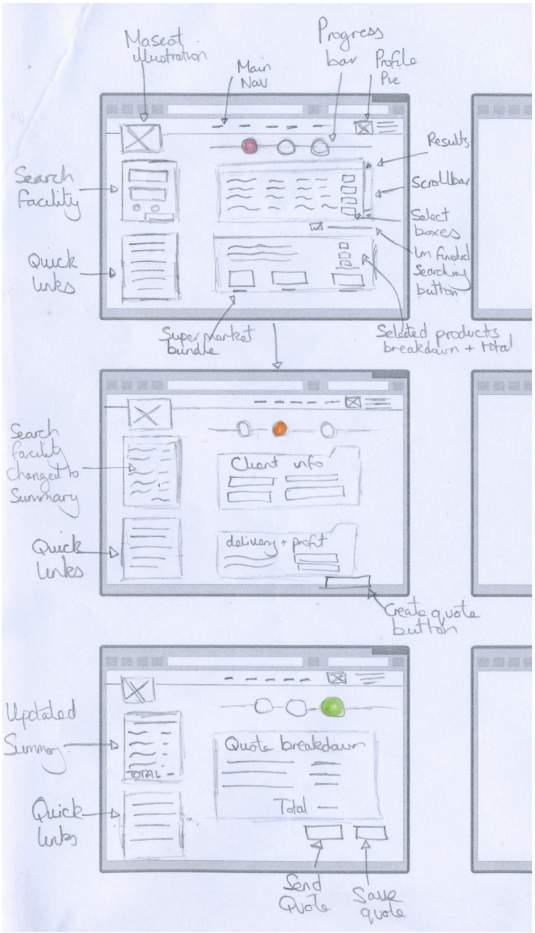
I can see how you could come up with an average over head pricing for retail and home bakeries.....that's just math. But I don't know how you'd account for the biggest mistakes decorators make when giving estimates- guessing how many hours it will take them to complete a design/cake. Would it work if decorators could keep a log of how many hours it took them to make each cake, as a reference when quoting?....with maybe an optional add 10% to your time estimate for a design you've never done before?

I'm not sure if I explained that well..... for example, we always run amuck on the "Price this Cake" threads here (in my opinion) because of the time involved per design. If you had a beginner, intermediate and advanced amount of time choices people could enter into the equation that averaged there per cake time you'd have a better idea of what your costs are or will be.

Appendix B

6UP's and 1 UP Designs exploring the Calculate process

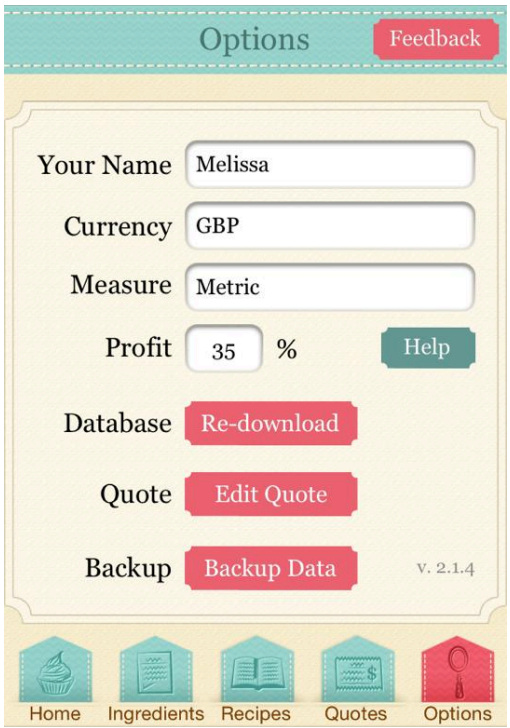




Appendix C

Technologies that address similar problem

Cost a cake



Cakeulator

Google Chrome

http://calca-bake.com/calculate

Calculate | Recipes | Quotes | How to | Blog

Logged in as Melissa
Not Melissa? Log out

Mascot Illustration

Calculate a Cake

1 **Search Ingredients** — 2 Create Quote — 3 Save & Send Quote!

Ingredient

Metric

Imperial

Quantity

Search

Im finished searching

Quick Links

- My Profile
- My Recipes
- Saved Quotes

▼ Supermarket	▼ Image	▼ description	▼ Price	
Tescos		Description	£0.00	
Tescos		Description	£0.00	
Tescos		Description	£0.00	
Sainsburys		Description	£0.00	
Sainsburys		Description	£0.00	
Sainsburys		Description	£0.00	
Asda		Description	£0.00	
Asda		Description	£0.00	
Asda		Description	£0.00	

Twitter

Summary

Best Buys

	Flour	Tescos	1kg	£0.80
	Sugar	Asda	1kg	£1.10
	Eggs	Sainsburys	1kg	£1.00
			Total	£2.90

Select Best Buys

Supermarket Bundles

Tesco	Asda	Sainsburys
£3.10	£3.30	£3.35
View Bundle	View Bundle	View Bundle
Select Bundle	Select Bundle	Select Bundle

Create quote

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Mascot Illustration

Ingredient Summary

Eggs	£1.00
Flour	£0.80
Sugar	£1.10
Butter	£2.00
Total:	£4.80

Quick Links

- My Profile
- My Recipes
- Saved Quotes

Twitter

Create quote

1 Search Ingredients — 2 **Create Quote** — 3 Save & Send Quote!

Order details

★ Order

Profit Margin

Order Date:

Description:

Delivery: Yes / No

Address:

Postcode:

Cost:

Client

Client info

Client Name:

Mobile No:

Email:

Address:

County:

Postcode:

View Quote

Google Chrome

http://calca-bake.com/calculate

Calculate | Recipes | Quotes | How to | Blog

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Mascot Illustration

Save and Send

1 Search Ingredients — 2 Create Quote — 3 **Save & Send Quote!**

Summary

Ingredients	£4.80
Delivery	£2.20
Subtotal	£1.10
Profit	£2.00
Total:	£4.80

Quote

Order No: _____

Order Description: _____

_____

_____

Date: _____

Delivery (if applicable): _____

Client Name: _____

Price: _____

Attach photo: Upload

Send Quote

Quick Links

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Twitter

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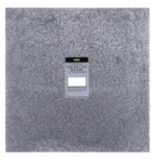
SEARCH

1 — 2 — 3

Supermarket	Description	Price	
TESCO	 Tesco Everyday Value Plain Flour 1.5Kg	£0.45	☐
ASDA	 Allinson Premium Bread Flour 1.5kg	£1.50	☐
Sainsbury's	 Sainsbury's Self Raising Flour 1.5kg	£1.10	☐

View more results

SUMMARY

	Granulated Sugar 1Kg	TESCO	Qnty: **1**	Price: **£2.00**	Remove ☐
	ASDA cake boards	ASDA	Qnty: **1**	Price: **£0.87**	Remove ☐
				Total: **£2.87**	☐ Select Best Buys

BUNDLES

ASDA	TESCO	Sainsbury's
£2.50	£2.90	£3.20
View bundle	View bundle	View bundle
Select ☐	Select ☐	Select ☐

CREATE QUOTE

Search

Ingredient:

Quantity:

Metric Imperial

I'm finished searching

SEARCH

Quick links

My Profile

My Recipes

Saved Quotes

CREATE QUOTE

Ingredient Summary

Eggs	£2.00
Sugar	£1.50
Flour	£0.48

Total: £3.98

Quick links

My Profile
My Recipes
Saved Quotes

1 — 2 — 3

Order details

Profit Margin:

Order date:

Description:

Delivery: Yes / No

Address:
Postcode:
Cost:

Client info

Client name:

Mobile no:

Email:

Address:

County:

Postcode:

SAVE QUOTE

SAVE AND SEND

Summary

⊖	Ingredients	£3.98
⊖	Delivery	£5.50
		Subtotal: £3.98
	Profit	£9.50
		Total: £3.98

Quick links

- My Profile
- My Recipes
- Saved Quotes

1 — 2 — 3

Order details

Order no:

Order date:

Order description:

Delivery:
- (•) Yes
- ( ) No

Client email:

Price:

Attach photo: Choose file...

SEND QUOTE

Calc-a-Bake

Username Password

Log in

Remember me Forgot password?

Simplifying the Cake Costing process.

Use *Calc-a-Bake* to compare supermarket prices and find out how much to charge for your baked goods, making sure you never undercharge again.

Sign up today, it's free.

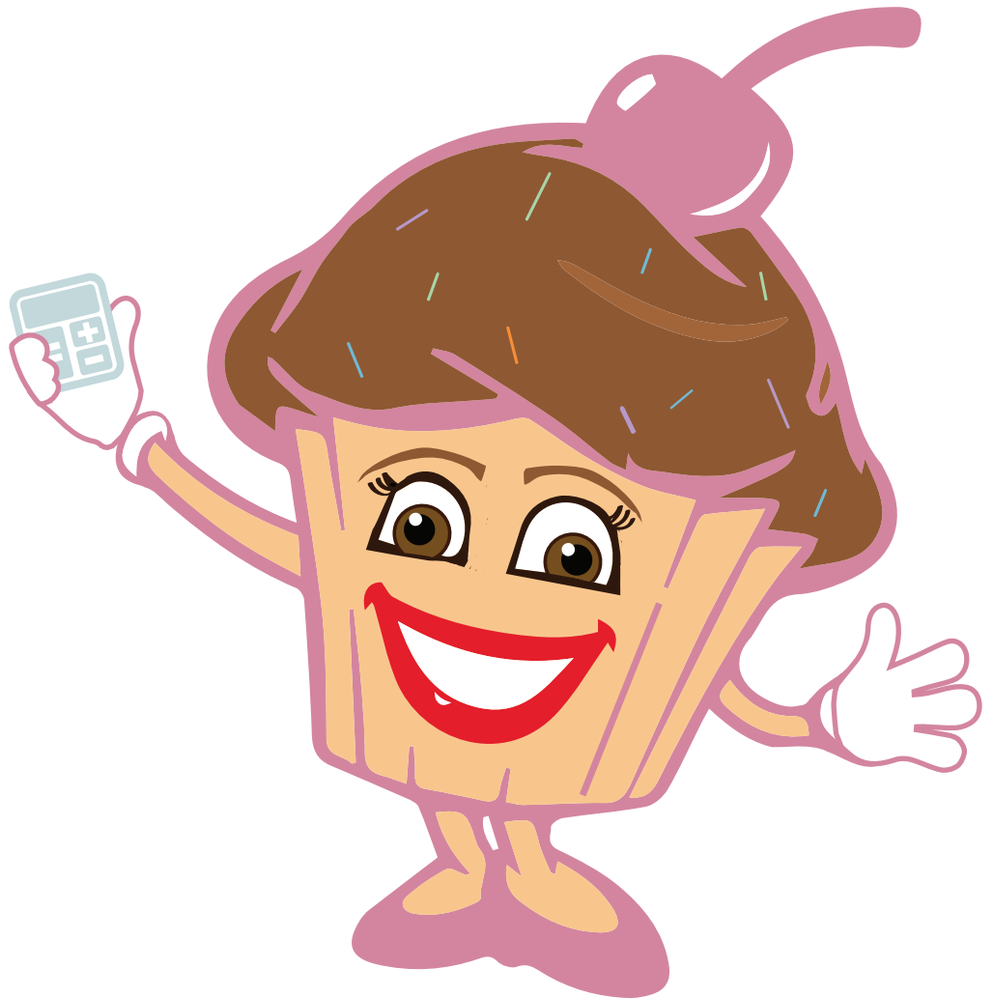
Username:

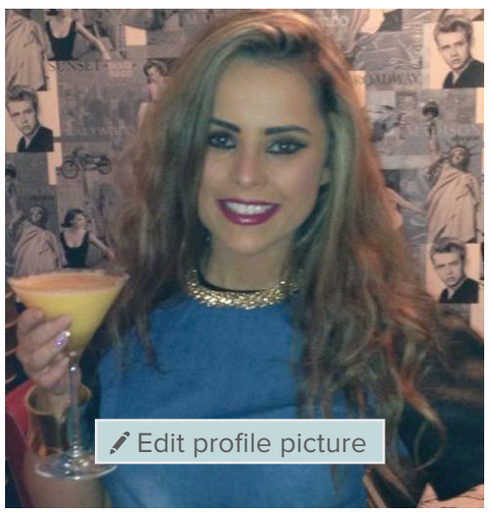
Display name:

Email address:

Password:

SIGN UP!




Edit profile picture

mboyle19

Last active: 2 hours ago

melissa.boyle@hotmail.com

Edit basic info

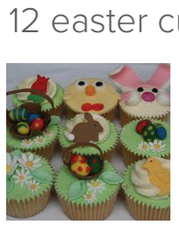
My Profile

- Edit Profile
- My Recipes
- Saved Quotes

Favourites

- Vanilla Cupcakes
- Double chocolate frosting
- 3 tier wedding cake

Quotes

05/01/2014	Paul Smith	1 tier, 10 inch chocolate cake with vanilla frosting 	£7.80	Edit quote Delete quote Send quote VIEW QUOTE
12/02/2014	Adam Green	3 tier, 10, 8, 6 inch vic sponge with vanilla frosting 	£100.00	Edit quote Delete quote Send quote VIEW QUOTE
29/04/2014	Mel Holland	12 easter cupcakes 	£14.00	Edit quote Delete quote Send quote VIEW QUOTE

Showing **3** results out of **12** →

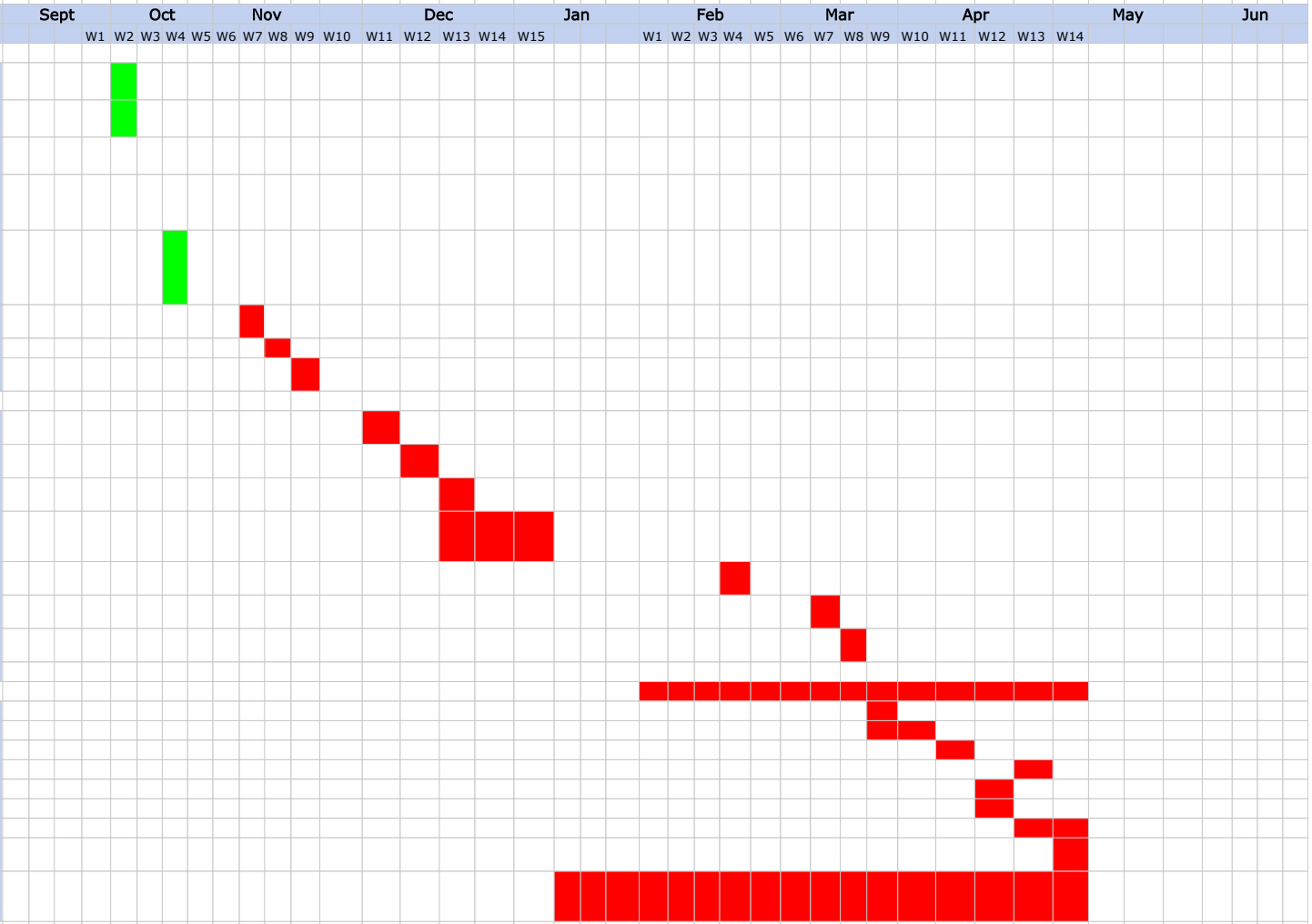
Recipes

Vanilla cupcakes 	Preheat the oven to 180C/350F/Gas 4 and line a 12-hole muffin tin with paper cases....	Edit recipe Delete recipe VIEW RECIPE
Fruit cake 	The day before place the dried fruits in a large bowl, add the tea and stir well...	Edit recipe Delete recipe VIEW RECIPE
Lemon cake 	Heat oven to 180C/fan 160C/gas 4. Beat together 225g softened unsalted butter...	Edit quote Delete quote VIEW RECIPE

Showing **3** results out of **20** →

Major Project Gantt Chart

	Project	Tasks
	Calcabake	
	Planning	
	Concept definition statement	-Identify 3 concepts for major project.
	Idea generation/Mind mapping	-Idea generation workshop
		-Narrow concepts down to one
		-Create mind map to generate name for the project
	Concept report	-identify concept, anticipated solution, aim, objectives and discuss methodology
	Requirements specification report	
	Paper prototype report	
	Technical feasibility report	
	Design	
	Initial system design report	
	Initial user experience design report	
	Functional prototype walkthrough	
	Evidence of participation and engagement	
	Interim user experience design report	
	Final system design report	
	Final user experience design report	
	Development	
	Beta	
	Quality Assurance	
	Implementation	
	Release Candidate	
	Site standup	
	Project report	
	Project demonstration and viva voce .	
	Evidence of participation and engagement .	



Annotations:

1 Deadline extended by aweek