UNIVERSITY OF HERTFORDSHIRE

Faculty of Science, Technology and the Creative Arts

Modular BSc Honours in Information Technology

6COM0284 – Web-based Systems Project

Final Report

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AN ACCESSIBLE WEB APPLICATION FOR TECHNOPHOBES

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Abstract

Use of the internet in all areas of our lives is on the increase but while many of us are already online regularly and confident using the technology, there are still many who are not, and these users are being excluded from our digital world. This project looks at the users who are not online, asks why and investigates what could be done to encourage these users to embrace the technology available to them to enhance their lives and reduce the digital divide.

Acknowledgements

Thank you to my friends and family for their support in terms of babysitting, encouragement and advice.

Contents

Introduction

The rapid growth in the use of the internet makes the lives of many easier providing fast and simple access to vast amounts of information, empowering us to make knowledgeable decisions in many areas of our lives and allowing us to shop around for the best deals from the comfort of our homes. The resulting benefit is that the average household saves £560 per annum shopping and paying bills online (The Royal Geographical Society, 2011). However, there are people who cannot or will not access the internet, for example, 39% of the people in the UK without internet access are 65 years or over (The Royal Geographical Society, 2011) and many of these people avoid internet use due to a fear of the internet and technology (Oxford Internet Institute, 2011).The division between those who are and who are not online is known as the 'digital divide'. The government are making attempts to reduce the digital divide with various initiatives such as 'Digital Champions' where the public are encouraged to volunteer to help somebody get online. However, making this change is going to take time and often it is not simply a case of providing technology or knowledge to all, websites need to be developed to ensure they are fully accessible, and users given the confidence and desire to use them.

This project sets out to investigate the use of the internet by a range of people who would fit, to some degree, the description of 'technophobe'. I will explore reasons these people are finding themselves excluded from the online world thus contributing to the digital divide and explore solutions to enhance the online experience and rate of internet participation within these groups.

Project Aim

To develop a fully accessible prototype web application, suitable for technophobes. The application will try to increase user confidence regarding use of the Internet, helping to reduce the digital divide. The application will aim to put users at ease, provide a friendly environment where users can ask 'stupid' questions and learn how to carry out simple internet related tasks. Recommendations for future development will also be offered.

Motivation

Accessibility is an area which I knew very little about but which caught my attention and interested me greatly. The measures the government are introducing in an attempt to reduce the digital divide presents opportunities for education of those currently resisting the internet, and the development of projects to encourage these people to embrace the internet. This is an area I am keen to work in.

Prior to this project my level of knowledge regarding accessibility was very limited, and although I knew of the existence of accessibility guidelines, my understanding of the reasons for them was minimal. I was also unaware of the benefits of keeping content, functionality and style separate. I also had limited Hypertext Preprocessor (php) knowledge, an area I have worked hard to improve in order to develop my application. My JavaScript and Style Sheet knowledge was also limited, and again I have worked hard to gain an understanding in order to use these technologies.

Appendix 1 shows my project proposal form for reference.

Methods

Secondary research: Literature Review

My literature review was performed using carefully resourced reputable and current material. The literature was critically analysed, limitations considered and findings reviewed objectively.

This research led to a clearer understanding of user requirements and the information was used to devise a survey for primary research. The results were then compared and evaluated and used to set objectives for the Web Application.

Primary research: Questionnaire

Ten detailed responses were required. In devising the questionnaire I referred to the secondary research carried out and advice from Creative Research Systems (2011) who stressed it was important to first ascertain the knowledge required from the questionnaire.

The questionnaire was completed during the course of a brief interview. This ensured the user had understood the question correctly and that answers provided were relevant and accurate. Also, due to the nature of the target market I felt a short informal interview was the most suitable way of presenting and explaining a survey regarding the subject matter in question.

Data gained is qualitative and provides information such as user views of the internet, use of websites, concerns, likes and dislikes and what would make online experiences more satisfying. Interviewees were also asked to comment on icons and menus.

Appendix 4 shows ethic approval received and Appendix 5 details the questionnaire development more fully and shows the questionnaire used.

Objectives

Questionnaire Objectives

The objectives of the questionnaire were:

- To discover the main ‘fears’ of users and how these could be alleviated
- Assess thoughts regarding various page layouts offering different levels of ‘clutter’ and distractions.
- To review commonly used icons and assess how well these were understood.
- To review various menu styles to understand the requirements of my target users.

After analysing all research carried out I set further objectives defining development of my project:

Application Objectives

Core :

1. Enable users to increase font size by switching style sheets to ensure accessibility. Allow users to make the site their homepage to alleviate need for users to remember the URL.
2. Allow user registration in order to access restricted areas of the site. Also to develop a backend 'administration area' for management of the site.
3. A 'Try something new' area containing tutorials to increase web knowledge and confidence, available for registered users only.
4. A simple forum allowing users to discuss various topics in a friendly non-intimidating environment. Users who are not logged in to be able to view comments but not contribute.

Desirable:

1. Allow users to store shortcuts to their favourite websites which will be shown in a personalised area of the site.
2. Add a simplified search facility to show only a manageable number of relevant results, and if possible ensure only reputable sites are displayed.
3. Provide a local health care information search based upon postcode entered.
4. Allow users to search for maps and directions and to save these in a personalised area on the website for ease of recall.

Achievements

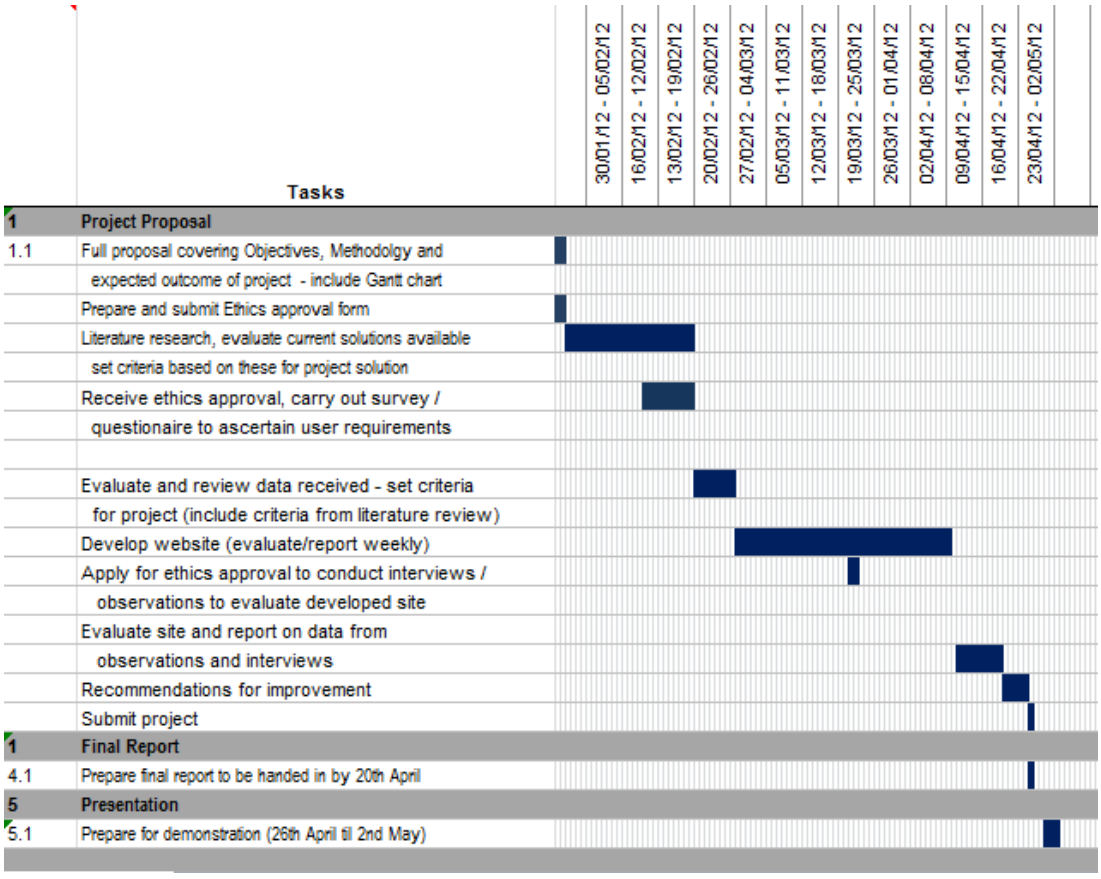
Core Objectives:

Objective	**Stage of completion**	**Comments**
1. Switch style sheets. Save site as home page	Complete	Could be improved to ensure better cross browser compatibility. The style sheets for increased font sizes require improvement.
2. User registration, log-in and administration area	Complete	Complete but without password encryption.
3. Encourage users to try something new online and improve their computer / internet confidence.	Functionally complete. Content required	Further content required. Either text based or with extra functionality such as games to improve mouse skills and videos of common web based transactions.
4. Forum to enable users to discuss topics. Must be registered to post, but viewable by all.	Complete with limited functionality	Improvements to allow users to edit/delete posts and to allow multiple threads for various subject areas.

Desirable Objectives:

Objective	Stage of completion	Comments
1. Allow users to set links to their favourite websites	Area started	Administrators and logged-in users are able to add recommended websites. Further work to allow registered users to select their favourite sites and to have these appear in a personalised area of the site required.
2. A simplified search	.co.uk only search implemented via Google	Researched use of Google to build personalised search for site. See *Appendix 12*
3. Health care information and provider search based upon postcode.	Not yet started	According to my research I would expect functionality in both of these areas to be popular additions for my target market.
4. Map and direction search and store	Not yet started	

Gantt Chart



Structure of Report

Chapter one contains a literature review and details of primary research carried out in order to determine the target user group for the project and their key requirements.

Chapter two prepares for project implementation with information architecture models and discusses development, design and icon selection.

Chapter three evaluates the project against the initial goals set, usability requirements and various heuristic principles. User thoughts are analysed and testing carried out.

Finally Chapter four reviews the project, my performance, achievements and makes recommendations for further work.

Scope of project

Physically impaired users may not be able to use a mouse or access key navigational methods and require assistive technology in order to navigate the site. These people are outside the scope of this project. Also due to the lack of technical abilities of the target group mobile phone access will not be discussed.

The needs of users aged 60 years and over whom need encouragement to embrace the web will be the main focus. The focus on this age group is due to time constraints, although it may well be that measures taken to make an accessible site for the users selected will also be of benefit to those users considered outside the scope of this project. (For example; by making the site accessible users of screen-readers will automatically be able to use the site).

I will also focus primarily on the female segment of this demographic. This is because my research shows these users tend to be less confident than their male counterparts, and are therefore more likely to benefit from a ‘nurturing’ site.

Chapter One: Research

1.1 Literature Review

1.1.1 Digital Exclusion in the UK - Who is excluded?

The Oxford Internet Institute (2011) reported one third of UK homes did not have internet in 2009 and 39% of individuals without internet access were aged 65 years and over while the HM Government (2008) reported that just over half of non-internet users were over 65. However, the use of the internet by older users is on the increase as confirmed by eMarketer (2010) who cite the IABUK as reporting 1 million UK residents aged 55 or older went online for the first time during 2010 and the Office for National Statistics (2011) reported that 77% of homes in the UK had internet access (as of August 2011). The Australian Library and Information Association (2010) who surveyed internet users also found that users aged 55 and above were embracing technology at a greater pace than the rest of the adult population (in Australia) but that many were hindered by lower incomes, isolation (social and geographical) cogitative impairment (dementia / illiteracy) or physical disabilities. It appears the situation in the UK is much the same with The Guardian (2010) reporting those members of the public who are less 'web savvy' tend to be older people, those with mental illness, the unemployed and those from certain ethnic minorities, often these people live in more deprived communities. eMarketer (2010) reminds us however that it is not just those who cannot access the internet who avoid it, but in the UK 18% of adults have never been online and do not wish to; 60% being 65 or over and 55% being adults with little education while a relatively low 39% of these people have a disability which affects their ability to carry out such activities.

1.1.2 What are the 'excluded' missing?

Members of the UK population who are digitally excluded are missing out on benefits such as access to learning, sources of advice, online health records, communication tools and e-government services and are contributing towards greater inequality within society with these people being shut out from what is becoming the 'backbone of the modern knowledge economy'. (HM Government, 2008). This has a significant impact on the social, economic wellbeing and quality of life of older people. (Nahm and Resnick 2001 cited by Hill et al 2007). Ofcom (2006) report how this is a key message which needs to be portrayed and that solutions to enhance older peoples digital engagement should be sought. Hill et al (2007) tell us the benefits of inclusion include helping the elderly live more independently for longer through the use of technology, a view shared across member groups of the EU who recognise how ICT can improve the quality of life for individuals with the access to the information and autonomy it provides, with improvement of ICT access for the elderly and disabled being particularly important. (EU AT, 2006).

1.1.3 Why are these individuals excluded?

In some cases individuals find themselves unable to access information on the web due to disabilities and the lack of accessibility considerations on the website in question. W3C (2010) tell us how accessibility issues overlap issues regarding the digital divide as not everybody who is not online has a disability. However statistics reviewed above lead us to believe the majority of those who are digitally excluded are older people. Davis (1996; cited by Williamson et al 2000) states that of the (approximately) one million people who are registered as blind or partially blind in the United Kingdom, nine out of ten are over the age of 60. A figure confirmed by Suttie et al (2011) who tell us that worldwide more than 82% of all blind people are 50 years of age and older. It could therefore be argued that many users over 50 are increasingly likely to have some form of disability in the form of a visual impairment meaning their online experiences would be enhanced by availability of accessible websites. Arch et al (2009) report age related visual impairments affect factors such as changes in contrast sensitivity (colours merging), loss of peripheral vision, and decreased ability to focus on near objects and Waddell (1998) wrote that of all the communities concerned by inaccessibility on the web, people with visual disabilities probably rank first while the RNIB (2012) report that in the UK, the number of registered blind and visually impaired people is set to rise over the next twenty years due to an ageing population increase. The Australian Library and information Association (2010) carried out a study which highlighted issues experienced by older users (55 years and above) as including, use of mouse, small font sizes, screen colours not contrasting enough and inconsistency of terminology used across sites. Also, the perception among the older users themselves that due to their age they simply would not be able to use the internet effectively deterred many. They reported that 30% of participants had problems reading the screen.

Arch et al also report older users can experience various cognitive issues affecting their ability to use a web page, interpret navigation or understand varying interfaces as they visit different sites. Users with cogitative impairments may include those in early stages of dementia. Mind (2012) state early state dementia leads to loss of concentration and short term memory loss (5% of those over 65 suffer from dementia, rising to 20% in those over 85). Users with cogitative impairments have memory problems and difficulties recognising and retrieving knowledge from memory, perception problems including difficulties understanding sensory information, problem solving impairments and conceptual difficulties meaning users have difficulties sequencing and comprehending information. The lack of intuition regarding understanding a website which these users would experience means they would benefit from simple, repetitive and consistent layouts and navigation. These users would be unlikely to remember details from one session to the next so the site should be instantly obvious and not rely upon familiarity through regular use (Edwards 1995). Hearing loss is another age related impairment, but generally is not seen as a condition which affects web use significantly (Arch et al).

1.1.4 What are older users who are online doing?

Madden (2010) reported the use of social network sites by users aged 50 and older was increasing, with users logging into these sites to share updates and keep track of friends and family while email remained the primary method for keeping in contact among these users. Williamson et al (2000) reported the key information requirements of my older users included health and also financial information, followed by housing, care, consumer, government and recreational details. However, the older user group were found to turn to family and friends in the first instance for advice, using interpersonal skills above media such as TV and newspapers (and presumably the Internet). Dinet & Vivian confirmed these preferred sources of information above the internet and stated that searching for health information was a major reason for the use of the web by older users. Their study also found that older users were less successful than younger users when it came to finding information online, but this was put down to less web experience and ineffective search strategies rather than age. However, it was mentioned that the normal aging process affects a person's cogitative ability and causes memory decline. These factors affect a user's ability to plan a search and assess the success of different search terms.

Appendix 3 shows user activity in greater detail.

1.1.5 What do older users think of the internet?

McDonald et al (2000) reported results from a research group where elderly visually impaired users were studied to assess the difficulties they experience when using the internet. They found users who could not see hyperlinks on a page had difficulties understanding how to use them, and also found that elderly users have trouble remembering sequences of actions they have previously performed. These users were also afraid they would break something and the concept of trying different things to learn how to use the interface was very new to them.

Hill et al (2007) carried out a study which was sponsored by the Welsh Assembly and found that older people need to perceive the internet as non-complex, and have confidence in their skills and levels of experience. Confidence was generally lacking as was experience of internet technology and difficulties understanding technical jargon prompted perceptions of the internet as being technically complex.

Interviewee comments included:

- *"'It's complicated".*
- *"I get so far and I don't know what buttons to press".*
- *"I don't know if I would remember [how to locate a web page]. I would have to do it quite a few times before I would remember".*

The study also found resistance to change was also discernible, indicative of technophobia.

Comments included:

- *"I'm of that age where I'm frightened of these high-tech, modern innovations".*

- *"Usability of the internet amongst older people was hindered by typing errors and difficulties operating the mouse".*
- *"The only trouble is, the older you get the thicker you get, and the more difficult the internet gets".*

Hill et al (2007) recommend the encouragement of 'Meta-cognition' the self-monitoring and regulation of one's IT abilities, involving individuals' recognition of the strengths and weaknesses of their abilities in order to more effectively manage the development of their IT skills resulting in a greater confidence of skills. This forms the basis of the 'try something new' area suggested for my application.

1.1.6 Primary Target User Analysis table:

Characteristic	**Profile**	**Design Needs**
Age	60 +	Simple navigation - both text and icon based.
Gender	Both, although primarily female	To relate to the general interests and fit skill levels of older females.
Physical Limitations (relating to use of system)	Visual impairment Cognitive impairment	Ability to increase font size. Strong tonal contrasting colours. Clear, simple, easy to navigate. Use of understandable icons
Education	Not particularly highly educated / unfamiliar with internet.	Simple language, instructions, easy to follow system, logical order of procedures
IT experience	The majority of users will have limited IT experience	Include a help facility and use clearly marked buttons to guide users
Needs	Low confidence	Simple and straightforward navigation. Minimal number of mouse clicks to destination to reduce confusion. Do not offer too many options and overwhelm users.

1.1.7 The Target Users

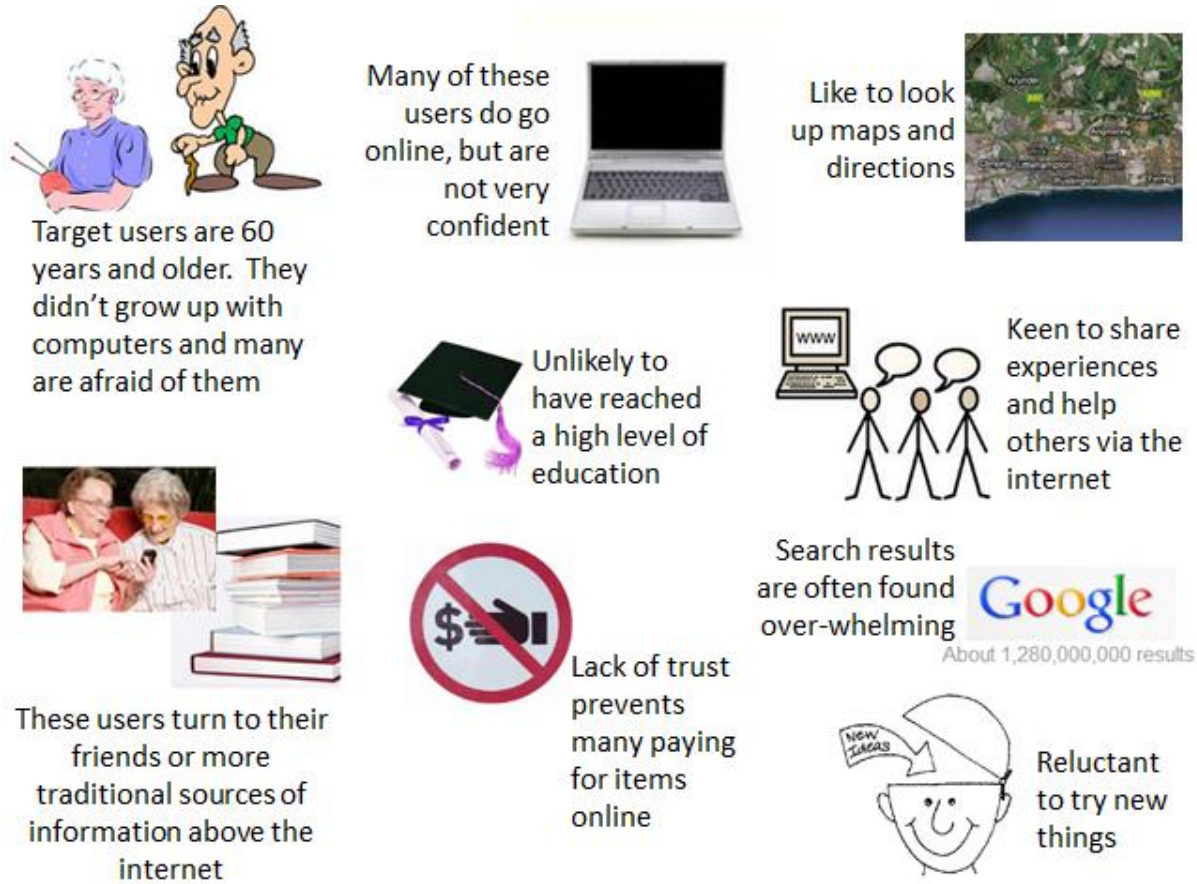


Figure 1: Rich picture of my target users

1.1.8 Reducing the digital divide - What can and what is being done?

Digital exclusion is an issue which has been of concern for some time. Which? (2011) write that according to the government the UK would be £22 billion per year richer if everybody was online while Wærn et al (2000) predicted a third of the world economy would be conducted online by 2010. I could not find evidence to confirm this prediction but have no reason to doubt its accuracy meaning those without internet access are missing out both on a personal level, and at a financial cost to the government and businesses. The latter of these consequences, along with the Equality Act (2010) (Appendix 2) are likely to be the main incentives behind the resources and investment being ploughed into various initiatives and guidelines which aim to reduce the digital divide and make the internet accessible to all.

In 1997 the UK government set up a Social Exclusion Unit and one of the key issues is access to online services. They quoted (regarding the internet) that it is "the most significant digital provider of information and means of access to information for socially excluded groups" (Social Exclusion Unit, 2005). Arch et al (2009) report on a study undertaken by the W3C WAI which reviewed over 150 articles. Key issues among older users which were found include information overload (cluttered pages, moving/distracting images) and the difference of layouts from one site to another. They reported that the key usability requirements include presentational aspects and navigation. It was concluded that standard Web Content Accessibility Guidelines (WCAG) 2.0 covers nearly all of the requirements of older web users. These standards state that a site should be Perceivable, Operable, Understandable and Robust. Key factors listed for consideration when developing an accessible web application fit the needs identified by older users in my research and include:

- Simple, repetitive and consistent layouts and navigation.
- Work with assistive technologies (screen readers).
- Text to be readable and resizable.
- Avoid over-fussy and distracting layouts. Offer fewer choices.

However, users are already able to overcome some of these issues via their browsers. Some browsers allow switching to more suitable style sheets, use of screen reading technology, increasing font size via the browser and colour changes. However untrained, technophobic users new to the internet will be unaware of these browser features meaning it will be up to the developer to ensure the website is accessible. Computer Weekly (2012) tells us how under the Disability Discrimination Act it was the responsibility of a website owner to resolve any access issues which made it impossible or unreasonably difficult for a disabled user to access a service. Now, under the Equality Act (2010) the threshold has been lowered so that a person with disabilities must not be put at a substantial disadvantage. This puts the obligation on website owners to make reasonable adjustments to ensure accessibility. The BBC (2010) reported that according to the W3C only 19% of websites met the minimum accessibility requirements and common issues which arise show the recommendations listed above have not been adhered to. The e-Accessibility Forum, created by Ed Vaizey (Communications Minister) includes an initiative named 'Fix the Web' which encourages users who have trouble accessing particular websites to report them. The site owners are then advised regarding improvements to site accessibility (Citizens Online, 2012). However some aforementioned factors may be losing importance, at least for users without disabilities. McDonald et al (2000) reported websites needed to be operable by less web savvy, less educated and less affluent users (who are more likely to be female). However,

twelve years later, the BBC (2012) reported how the ageing population are increasingly web-savvy. These users are also keen to use the internet to share their experiences to help others and are more likely than their younger counter-parts to share information with strangers with a view to offering advice. This of course refers to those older users who have taken the plunge into the online world, there are still many who have not.

In June 2006 Member states of the EU adopted the EU Riga Declaration which sets out targets such as; increase availability of broadband, halve the gap in internet usage and exclusion by 2010 and ensure compliance of public websites for accessibility by 2010 (Ofcom, 2006). Gheorghiu et al (2009) reviewed the progress of the Riga policy. It was reported that the groups at risk of exclusion (from the internet) including 65-74 year olds and those with low education was closing very slowly and those in these groups were unlikely to reach the Riga targets.

Warman (2011) reported in The Telegraph that a new government initiative Race Online had been launched, the aim to encourage all UK adults to get online. Research by the BBC showed new users would benefit from having a friendly face show them how to use the internet and the initiative works by encouraging internet users to volunteer to become 'Digital Champions' helping non-internet users to get online. The goal is to reduce the 9 million citizens who have never been online by 50% by the summer of 2012.

1.1.9 Conclusions from Secondary Research

My research led me to conclude various groups of users may find themselves excluded from the internet for various reasons:

- Older users
- Those with visual impairments
- Illiterate users
- Users with Cogitative impairments
- Physically disabled users
- Users with Hearing impairments
- Technophobes
- Less affluent users

My project cannot possibly cover requirements of groups listed so will focus on older technophobic users with unfavourable attitudes towards computers, caused by fear according to Which? (2011) who asked whether it was the hardware that causes older users problems with getting online or the content of websites themselves? The opinion is it is the not unfounded fear of the online world putting these users off, a view shared by Brosnan (1998) who stated that psychological factors such as anxiety could prevent interested individuals from utilising new technology, with females experiencing higher levels of anxiety due to the 'masculinity' of the technology.

1.2 Primary Research

1.2.1 Primary Research Results

I produced a questionnaire (See Appendix 5) and due to the nature of the target user group, and their expected lack of knowledge regarding the Internet I decided to hold a short interview with each participant, where an informal chat was carried out to gain the answers required to complete the survey. Copies of the completed questionnaires are included in Appendix 6 (hard copy only) and Appendix 7 contains a write up of the interviews conducted. I interviewed ten people over 50 years of age. Details of these users are shown in Appendix 8 and survey results in Appendix 9.

In summary, the survey results showed a distinction between the confidence levels and ease of internet use between the under 60s and those over 60. Those aged 60+ were more likely to respond to my questions as I had expected following my literature research, whereas the under 60s often surprised me. One example is where participants of my survey were shown four screen shots from various sites. I expected the users to prefer Saga and the BBC My Web My Way sites as these have been specifically designed with the older user in mind. The HMRC and BBC sites meanwhile go against recommendations regarding designing for older users in various ways, including the offering of many options, a factor expected to confuse older users. As expected, the 70 years plus users found Saga and BBC My Web My Way the sites to have the simplest appearance, whilst the 60-70 year olds agreed these sites appeared clearer, but considered the HMRC and BBC sites simple enough for use. Meanwhile the 50-60 year olds surprised me by generally finding the HMRC site clearer than the BBC My Web My Way site. One reason given was that with the HMRC site required information would be reachable with just a few clicks as many options were visible. The volume of options did not confuse the people questioned from this age group as it did users from older groups.

I concluded the variations between these results and my expectations occurred because my expectations of users aged between 50 and 60 were based on research carried out up to 10 years ago. These people have now grown older and the individuals now in the 50-60 age bracket were previously in a younger age group. Therefore I decided my target user group would be 60 and above.

1.2.2 Design of the site and Navigational tools

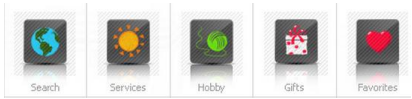
My survey asked participants to review five menu samples and to rank them from the easiest to hardest for use. My results showed no single clear preference in the navigational styles I presented, however a preference away from pure text menus was indicated.

The images below show the menus in order of least to most popular in terms of simplicity.

7 of the 10 people questioned voted this menu to be the least easy to understand and one further person placed it among their least favourite 3.

7 respondents placed this in their bottom 3 choices

This menu was placed in the bottom 3 by 6 respondents, but one person preferred it over all the others



This menu received a split response, 5 putting it in the top 3, and 5 in the bottom 3

8 people placed this menu in their top 3

All respondents places this menu in their top 3

1.2.3 Icons

Interviewees were then presented with various icons, displayed without text and out of any context. Some interesting points were raised for consideration regarding icon selection for my site, namely:

-  The conventional search icon (magnifying glass) used by many sites, including Google, was described as a zoom icon by 9 of the 10 people questioned.
-  The home icons where clearly identified and understood by the majority.
-  9 of the 10 questioned recognised this icon as 'information' while one suggested it meant 'help'. However, you could argue that information and help share the same meaning.
-  7 out of 10 people did not even attempt to guess what these 'T's represented.
-  Some icons produced a variety of responses (these included: good, ok, correct and like). However, the responses given in these cases were all of similar meaning, and when on a website and within context, the meaning should become clearer to users.
-  Some of the icons shown produced a variety of suggested meanings from those questioned. This emphasises a requirement to also include text.
-  The binoculars, often used to zoom, were actually labelled as search by 5 of those questioned, and zoom by 4.

1.2.4 Why do people fear the Internet and what would help allay these fears?

My survey reflected the findings from my literature review with males generally being more confident with using the internet and more interested in doing so than females. Comments from females included:

> *'I find the internet boring, it is rather dull'*
> *'I'd probably use the computer more often if 'he' wasn't always on it'*

My interviewees did not feel their age would exclude them from using the internet at all, and nobody strongly felt sites excluded older users. One female aged over 70 positively wanted to embrace the technology, feeling it was up to her to 'keep-up'. Maybe she was an exception; my sample size is too small to draw definite conclusions.

How to allay user fears is the question this project hopes to answer. My personal view is that a lack of interest and confidence in ability is holding many of my target users back from using the internet to their fullest potential. Many view the internet as 'boring', possibly because they are unaware of the wealth of information that could be available to them. Some users lack confidence in their skills and get scared when things go wrong, are happy with actions they know and understand, but are hesitant to try new things.

There was a lack of trust expressed by the participants regarding provision of information over the web, particularly credit card and bank details. While this is not unfounded, and care should be taken, horror stories in the media and a lack of awareness of specific dangers could be leading my target user group to avoid using 'safe' sites and therefore limiting their online experiences unnecessarily.

2. Chapter Two: Implementation

2.1 Information Architecture

Wyllys (2000) tells us the term Information Architecture appears to have been coined by Richard Saul Wurman, who was an architect with an interest in how information was organised and presented. Wurman described Information Architecture as an emerging profession focussing on the science of organisation of information and sees information architecture as being very closely linked to the problems an architect faces developing a building, and says the architect must:

- Ascertain the needs
- Organise the needs into a coherent pattern
- Design the 'building' to meet the needs

The Information Architecture Institute define Information Architecture as 'the art and science of organising and labelling websites, online communities and software to support usability'. Wireframes are used as the blueprints of digital designs but other tools including taxonomies to classify content, use case diagrams and state charts are also useful in helping the designer get their ideas clear and confirm their application will contain well organised content and be operable to users before development begins. (Inside The Guardian Blog (2012)).

Kaur et al (1999) tell us how interaction modelling involves various approaches including process models describing interactions at higher levels of granularity, omitting lower level detail to allow for wider scope.

The next few pages show some of these methods as used prior to development of my application.

2.1.2 Site-Structure Diagram

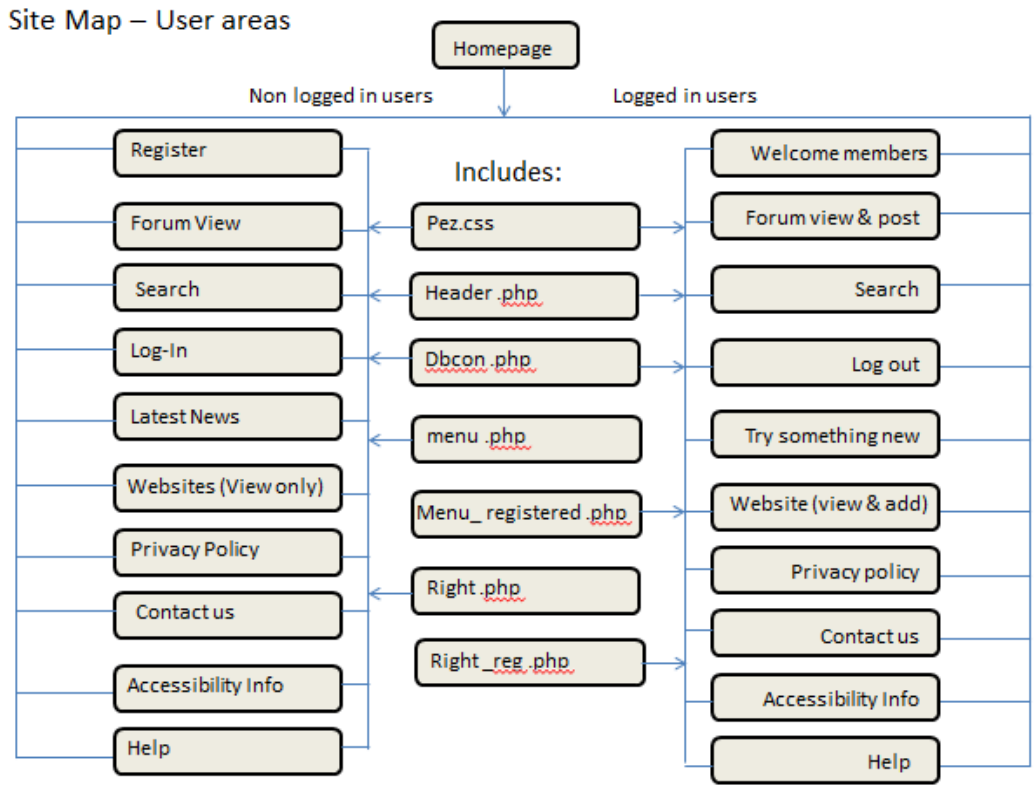


Figure 2: Site map, user areas

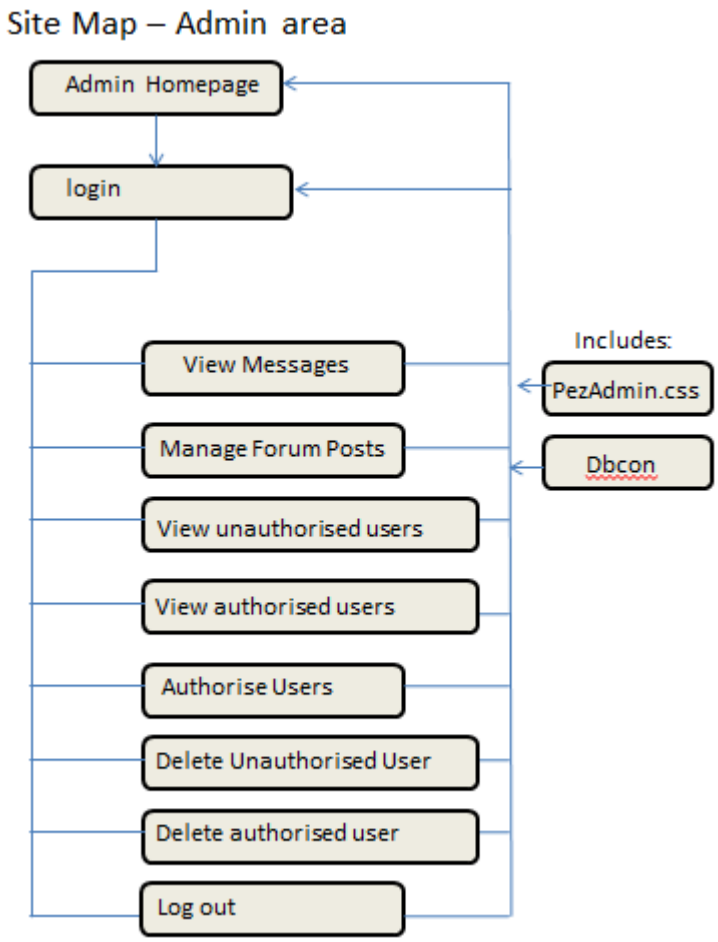


Figure 3: Site map, admin areas

2.1.3 Use Case Diagrams

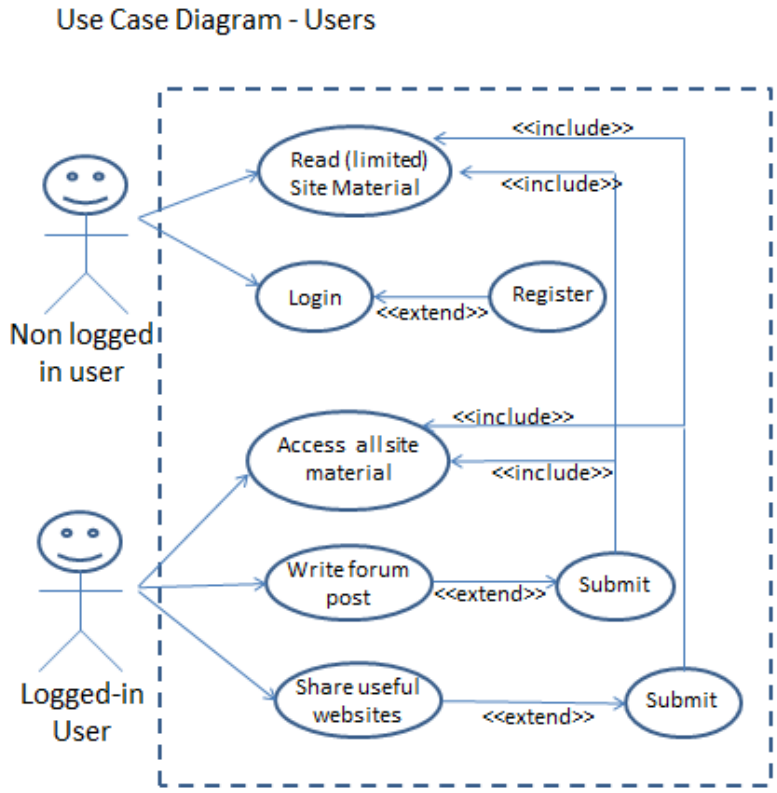


Figure 4: Use Case diagram - users

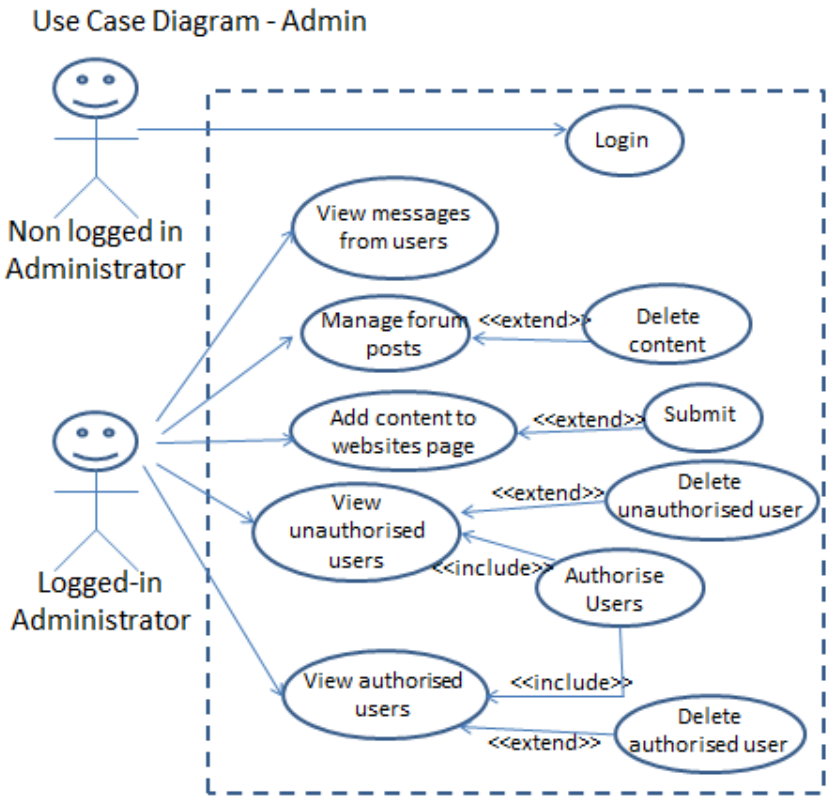


Figure 5: Use Case diagram - admin

2.1.4 Statecharts

A statechart models behaviour, activities and the resulting 'state' of the system. The basic elements include state, events (external events which change the system from one state to another), actions (internal behaviours of the system) and activities (what the system does). They attempt to model all behaviour of a system. (University of Hertfordshire, 1998).

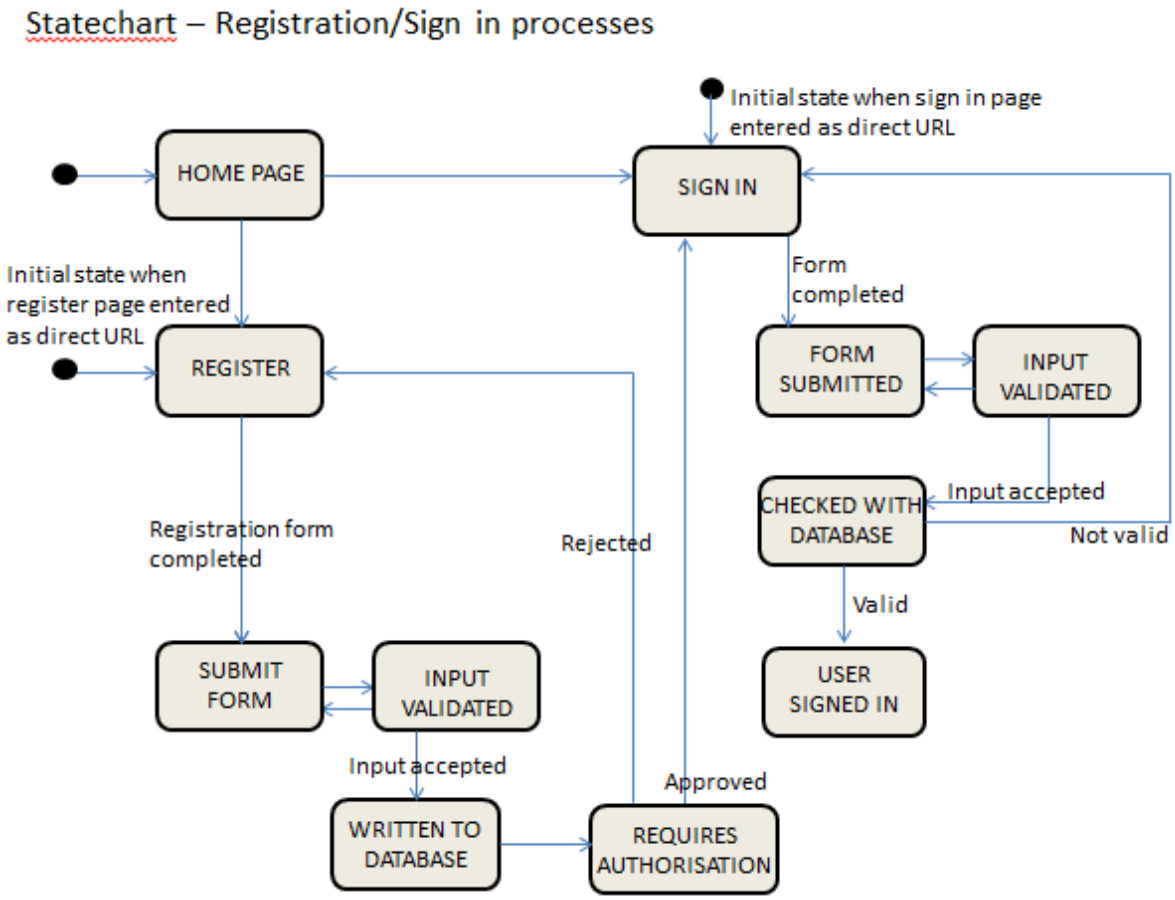


Figure 6: Statechart – Registration & Log-in

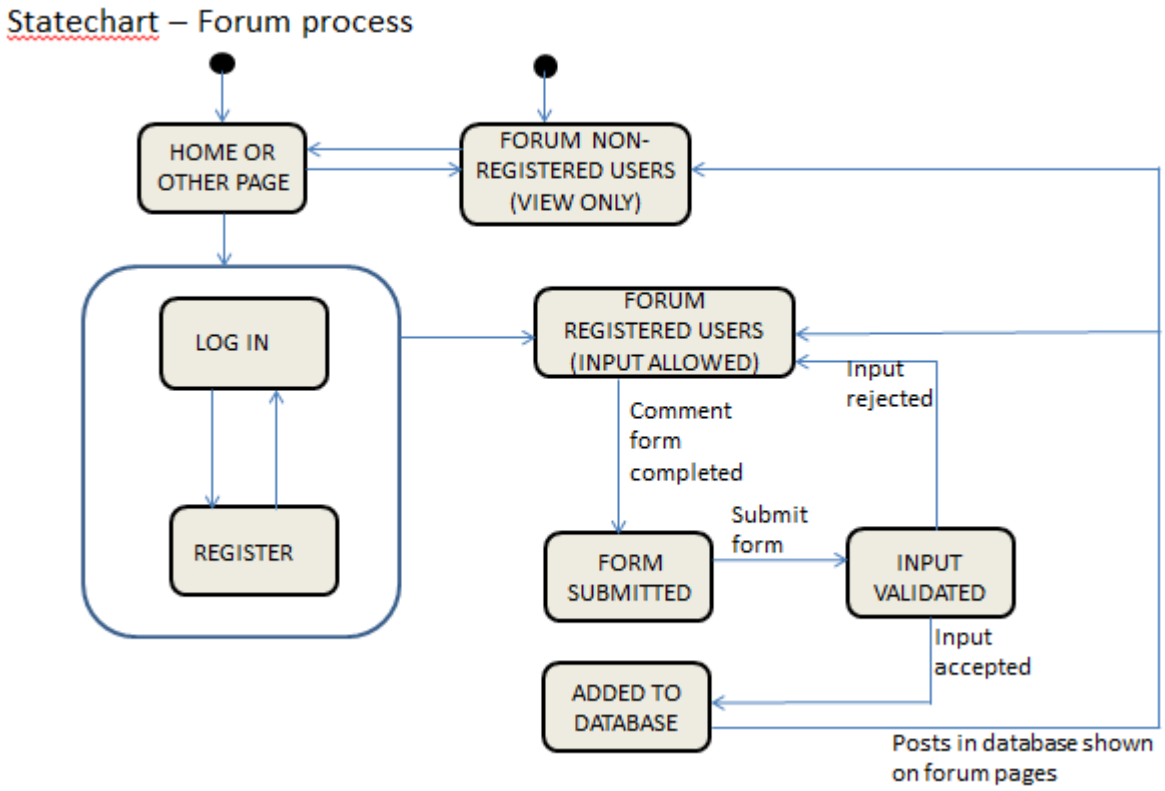


Figure 7: Statechart – Forum

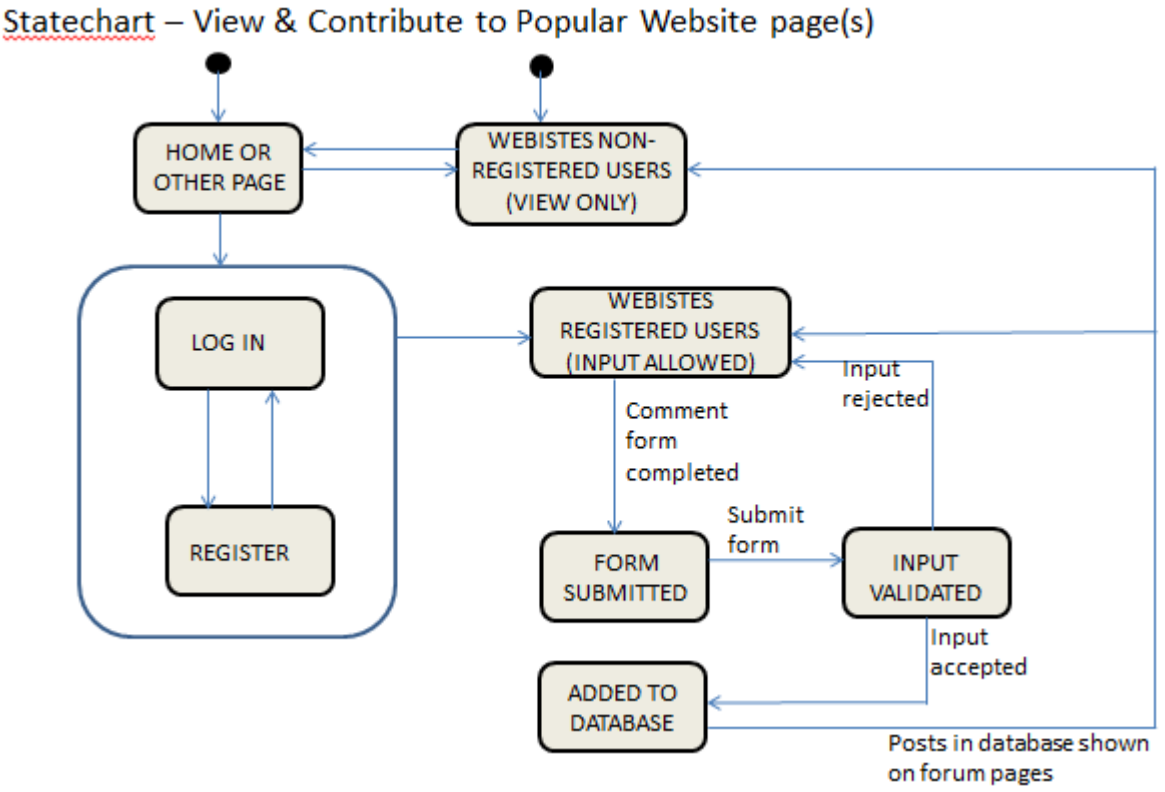


Figure 8: Statechart – Website contribution

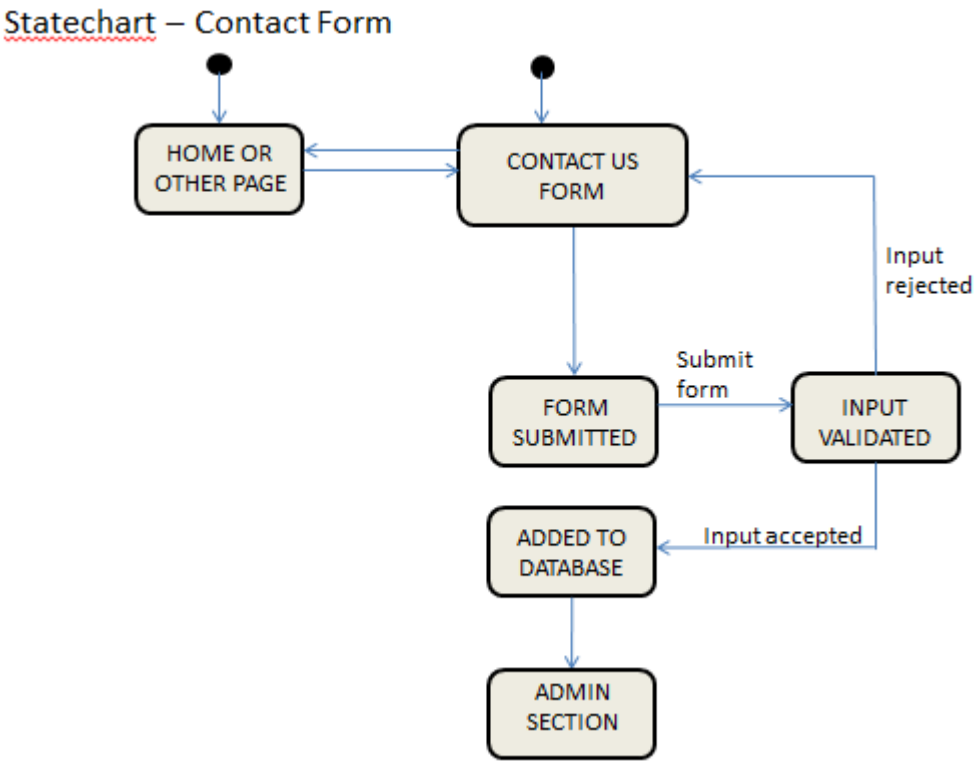


Figure 9: Statechart – Contact form

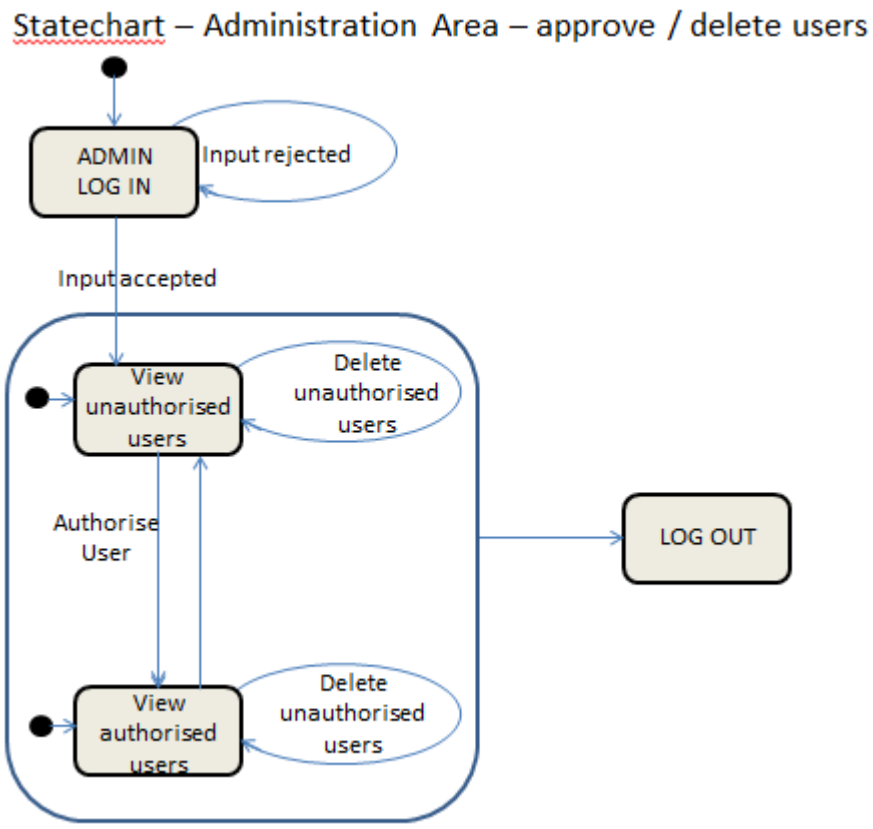


Figure 10: Statechart – Site administration – authorise / delete users

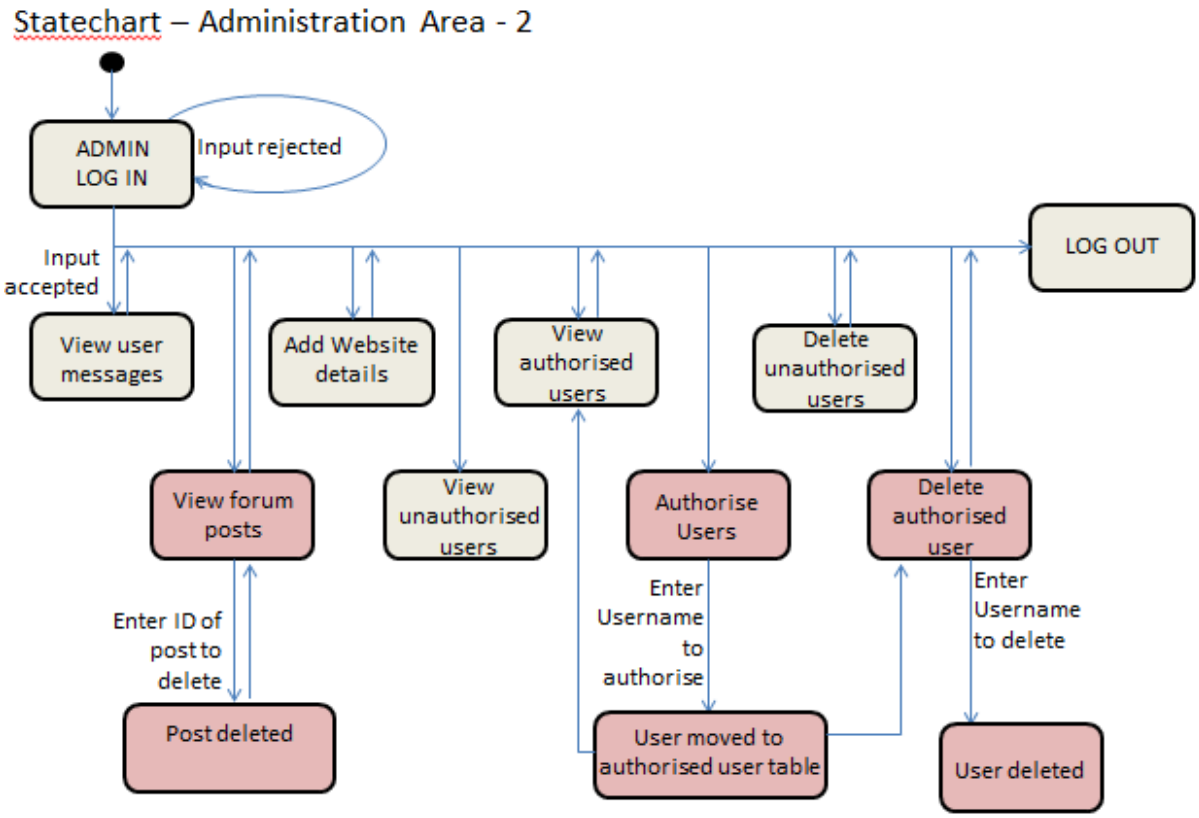


Figure 11: Statechart – Site administration (2)

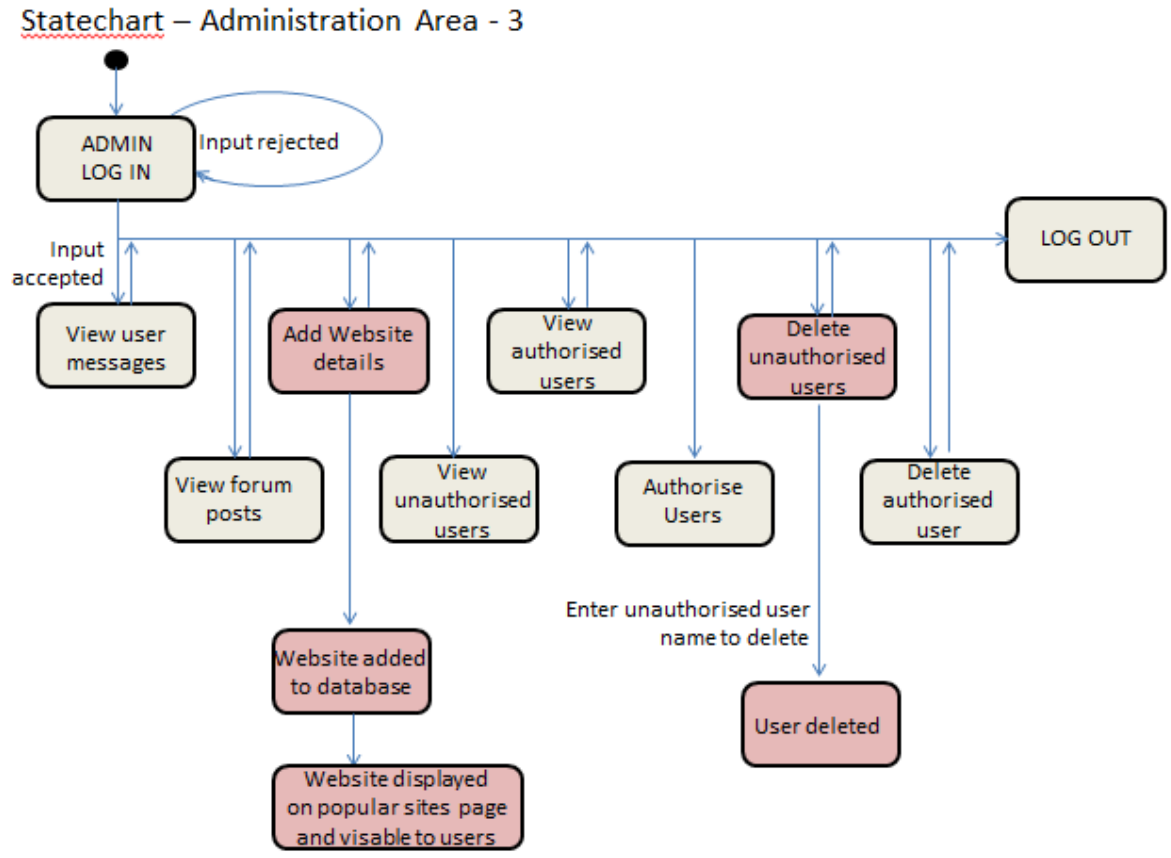


Figure 12: Statechart – Site administration (3)

2.1.5 Wire Frames

User areas:

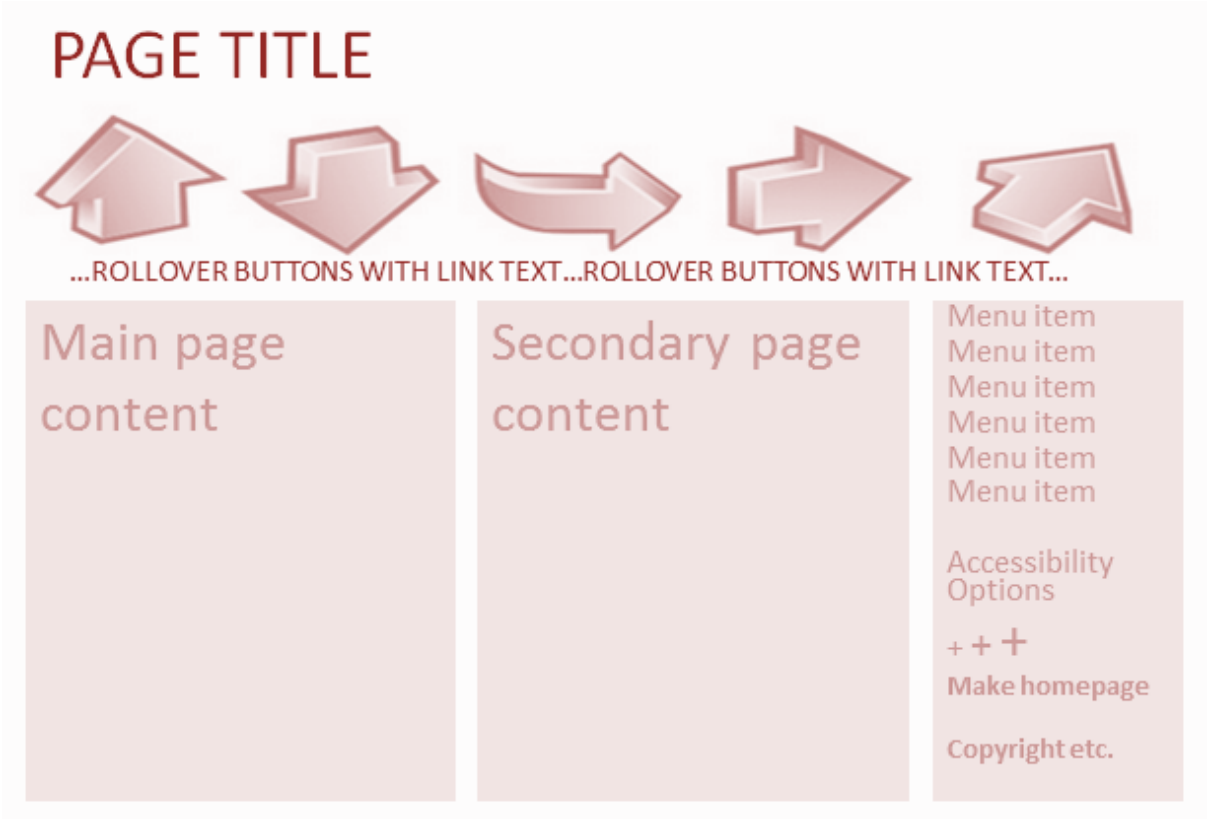


Figure 13: Wire Frame – user area

Admin area:

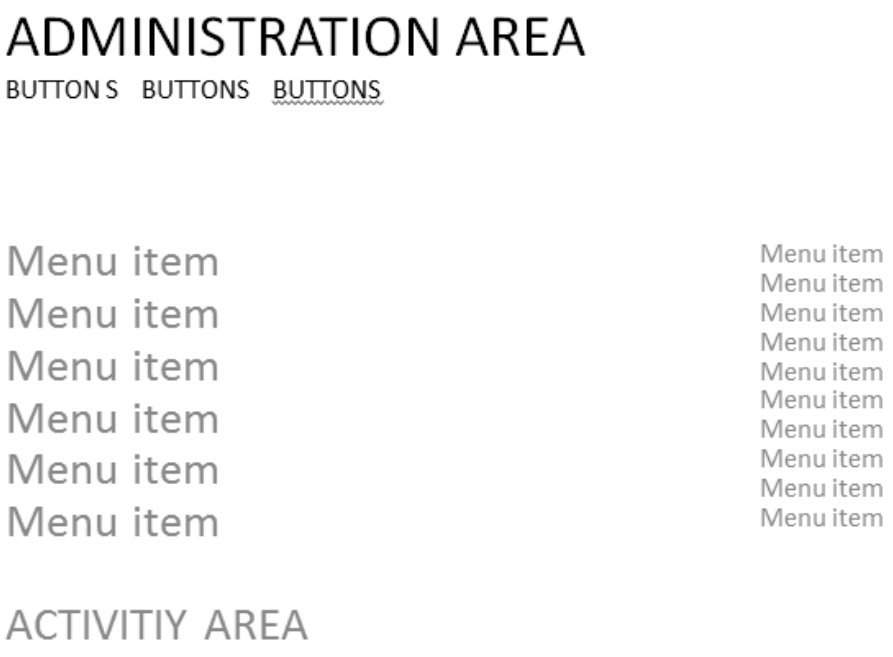


Figure 14: Wire Frame – admin area

2.1.6 Mood Board

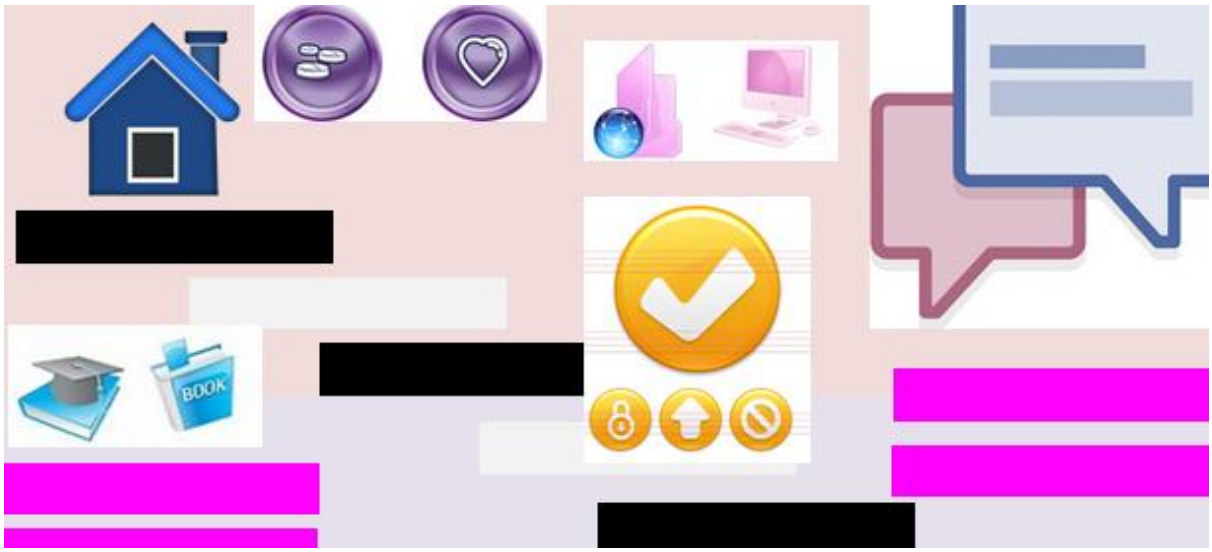


Figure 15: Mood board

2.2 Which Technology to use?

Webopedia (2011) explains how the nature of the application needs to be precisely defined, the target market identified and the exact functions the application will perform be decided before the developer is able to choose the best platform and programming language for the application. One of the main considerations is browser compatibility. By ensuring an application complies to W3C standards developers should be able to guarantee it will work across all browser platforms. However this is not always the case, Internet Explorer (IE) in particular is harder to ensure compatibility with. IE comes installed on Windows machines, and while W3Schools (2012) show IE's market share has reduced steadily over the past ten years, at least with regard to the users visiting the W3Schools website, this may not be the case with my target users who have very limited technical knowledge. I am therefore making the assumption my target users will use the default browser which comes installed on their PC, which will be Internet Explorer. (I am also assuming these users are unlikely to be Mac users). On reflection, I should have asked this question during my initial survey.

2.2.1 Programming/Scripting Language

The web application would use a mark-up language with JavaScript to handle events client side. ASP or PHP can be used for server side events and to access data from databases. PHP is ideal for smaller applications and integrates with most database systems and works across all platforms. Perl or Java could be used for larger more complex projects. Webopedia (2011) explains Ajax allows data to be exchanged with the server without delays displaying data into dedicated fields without redrawing the whole page, a process well-suited for Web applications. MySQL is an open source database management system, popular and sufficient for most applications. Snook (2011) mentions choices depend on the skill of the programmer, comfort zone, the hosting costs and performance.

Hammond (2012) warns us that the development of XHTML is largely being ignored and does not have good browser support, while many developers of the most popular browsers back the development of HTML and implementation of the latest HTML5 standards. Internet Explorer does not support XHTML and pages written in XHTML but parsed by browsers which do not support this are treated as HTML documents, which can lead to various page errors. Buckler (2010) tells us that although many browsers accept HTML5 now, Internet Explorer pre version 9, doesn't recognise the new tags. However, Internet Explorer's market share shrinks every month, but for reasons previously mentioned many of my target users are expected to still be using this default browser. HTML4 is future compatible with emerging technologies. The HTML5 Test (2012) scores available browsers on how well they operate with HTML5. The findings show that while Internet Explorer 9 has improved on previous versions and version 10 (beta) is set to make further improvement, previous versions have a very low compatibility score (scoring under 50 compared to other browsers assessed which score between 232 and 330).

Server side programming languages are interpreted (rather than compiled) and differ from mainstream programming languages as they are 'dynamically typed' meaning variables used need not always be associated with a certain type once they have been declared. In languages such as php, variables are added 'on the fly' and change from user to user. This dynamic typing goes hand in hand with interpretative implementation, which makes programs portable, allowing them to run on various different machines, run only the required part of the program and not generate machine code. Memory resources used are de-allocated when no longer required. Chapman and Chapman (2006) tell us many sites also use client side scripting (such as JavaScript). However, not all browsers can perform the client side scripting so scripts to identify if browsers can operate the code should be provided and alternative methods available if necessary. Also, when client side validation is used, for example to check data entered into a form is valid, the validation should also be carried out server side in order to the bypassing of client side checks designed to protect the application.

2.3 The Application

Nielsen (1999) tells us how poor user interface on a site can lead to usability meltdown, and Zhang (2000 p.1253) explains how important user satisfaction with a website is to web developers. Both opinions only touch the tip of an ice-berg of design factors a web-developer should take into account which include many more factors than those listed below but the factors shown here were considered during this project.

- Usability / Accessibility
- Simple navigational tools
- Interactivity to encourage visitors to come back
- Up to date and relevant content

Other factors to also consider include the screen sizes users will be viewing the website on and the user's connection and download times. Consideration of users with visual impairments is also important. These users benefit from large fonts, ability to enlarge font sizes, the use of suitable icons and a site which is intuitive. These users would be unlikely to benefit from embedded video files, but would benefit from sound and clear illustrations. (American Foundation for the Blind, 2009).

By avoiding colours such as red on green (or vice-versa) and ensuring colours used contrast (are high tonal) the developer can ensure pages are viewable by the majority of users. Information provided in colour should also be available without colour (WCAG 1.0), meaning for example a red asterisk against a field in a form should be labelled 'required information'. I used an online web filter (http://colorfilter.wickline.org/) to assist with colour selection during development, and to test how the application would appear to users with various colour blindness conditions. The results are show below:

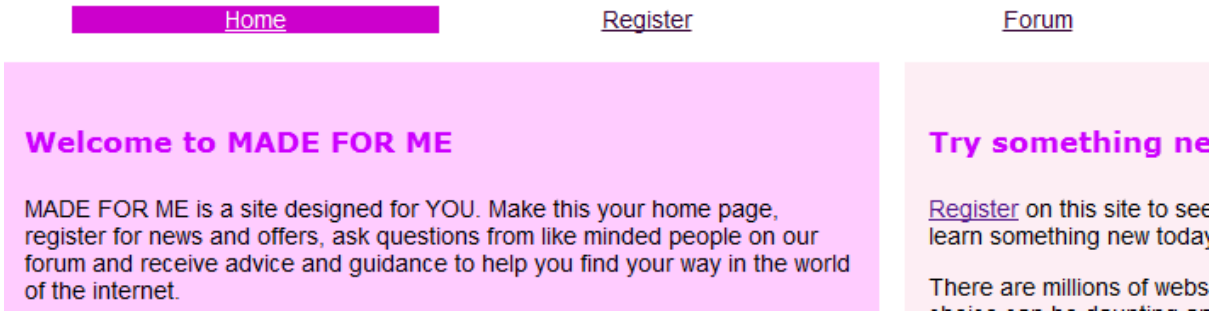


Figure 16: Site with no colour filter

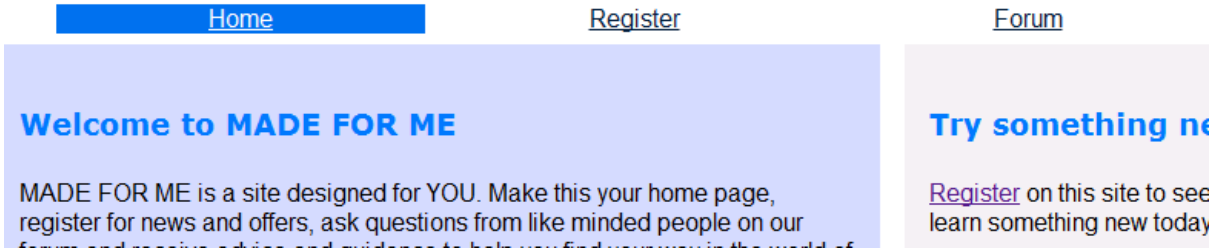


Figure 17: Appearance of site to users with Protanopia (red/green colour blindness – no red cones)

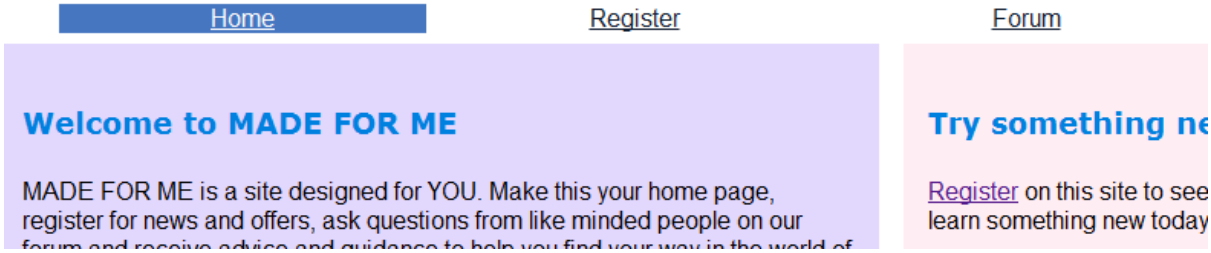


Figure 18: Appearance of site to users with Deutanopia (red/green, no green cones)

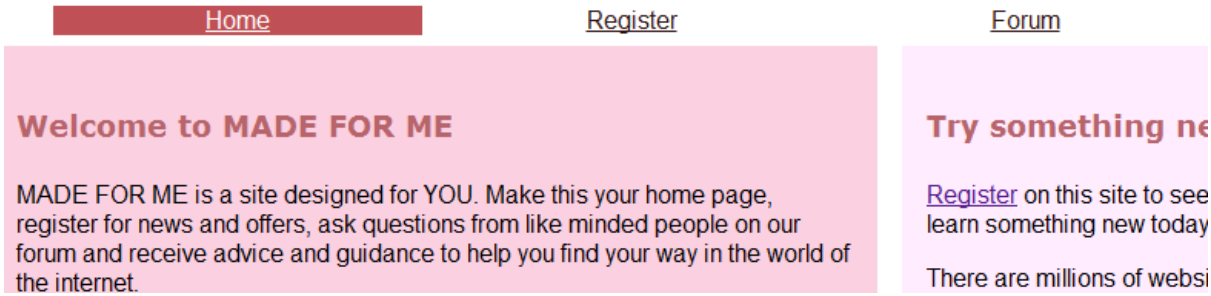


Figure 19: Appearance of site to users with Tritanopia (blue/yellow, no blue cones)

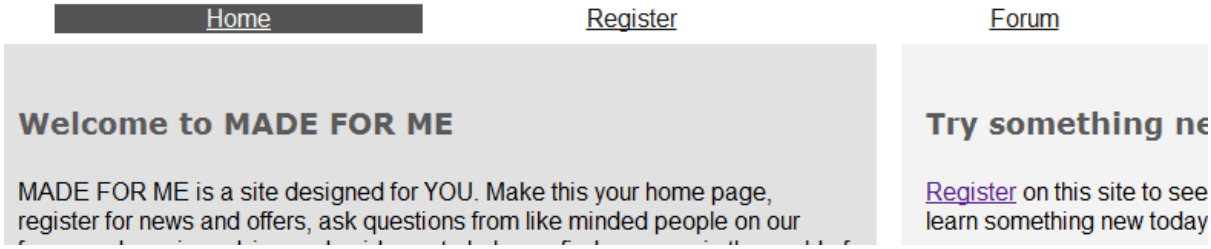


Figure 20: Site in Grayscale (used to check contrast for all colour blindness conditions)

The hyper-links used within the site are relative links meaning users are directed to a page within the same site using only folder and file names making things easier should the site be moved at any time. Any external links would be absolute (detailing full URL details and taking the user away from the site).

2.3.1 Security Issues

Risks to a website include phishing, SQL injections and cookie manipulation. OWASP (2011) explain how it is also important to estimate associated risks to business, not just in financial terms, but also in terms of loss of integrity, availability of the site, damage to reputation and privacy violation.

SQL Injections are where malicious code is entered into a form and sent to the database. For example a user could submit code which changes the administrator password providing unauthorised access to areas of a site resulting in damage, data loss or corruption. It is important sites are protected against such attacks and one method I have included in my application to do this is to instruct the system to 'strip slashes' from all user input.

Php (2012) advise that the encryption of password fields is strongly encouraged to prevent attack when using databases. Using a hash function such as MD5 to make input more secure is beneficial. W3C (1997) explain that the MD5 algorithm takes the user input and converts this to a 128 bit 'fingerprint' which is then stored on the database meaning the password is stored in an encrypted format for security. The same string entered by a user will always produce the same fingerprint, but it is not generally possible to determine the original string from the fingerprint. MD5 encryption however is not infallible. Daily Tech (2009) reported how SSL Certificates used to show a website as 'secure' are based on various algorithms including MD5 but can be exploited. Certificates based on MD5 were being replaced following this discovery. MD5 encryption is however considered sufficient protection for this application which does not store excessive amounts of personal data nor credit card details. However, if the site were to be used in the public domain and gather a large number of registered users I would strongly recommend this be reviewed. Personal data is becoming more valuable to scammers, with subscription lists being stolen for targeted spam. It is also important to keep users personal data secure in order to comply with the Data Protection Act. (See figure 21 for MD5 code snippet)

Are the public concerned about online security? Waern et al (2000) (page 8) report that the longer a person has been using the internet the more comfortable they become with the associated privacy and security hazards. This could be because due to their experience they are aware of how to check a site is using secure encryption and understand cookie technology. My target users are new to the internet so based on this research, plus results from my questionnaire I will assume my users will be hesitant about supplying personal data, and very reluctant to give credit card details. It is also important users feel comfortable and secure using this application, because it is aiming to be a gateway into the online world and to instil a sense of confidence encouraging users to relax and explore the web.

```
// here we encrypt the password and add slashes if needed

$_POST['Password'] = md5($_POST['Password']);
$_POST['Confirm_Password'] = md5($_POST['Confirm_Password']);
if (!get_magic_quotes_gpc()) {
$_POST['Password'] = addslashes($_POST['Password']);
$_POST['Confirm_Password'] = addslashes($_POST['Confirm_Password']);
$_POST['Username'] = addslashes($_POST['Username']);
}
```

Figure 21: Snippet of code used to encrypt the passwords using MD5

2.3.2 The Model-View-Controller

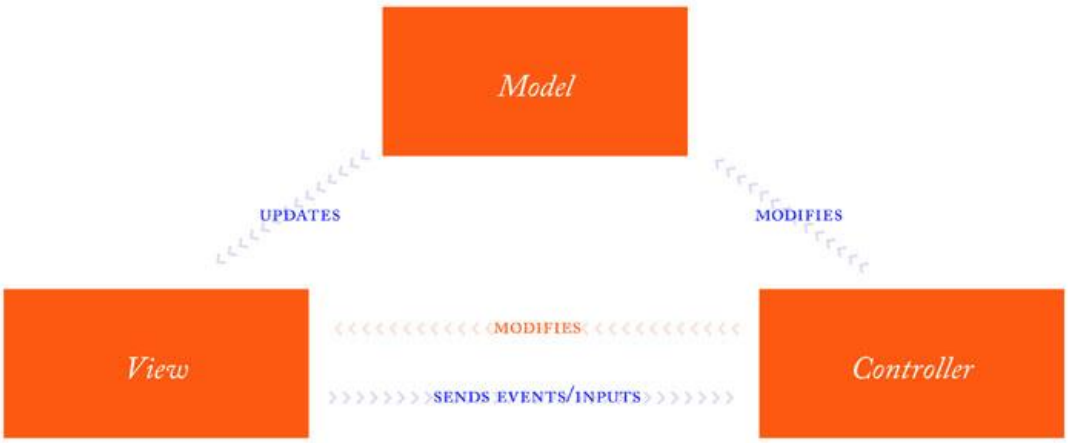


Figure 22: The MVC Model (Swinburne 2011) showing how data makes changes across the model as a user interacts with the application

My application follows the MVC model, which Swinburne (2011) explains is an architectural pattern used in software engineering. Successful use of the pattern separates form, content and action, isolating logic from design.

Model: Handles data storage and protocols used to manipulate data and permit log-ins and so on.

View: Handles the user interface, display and communication.

Controller: Handles the application logic and communicates the user actions to the model

InfoWorld (2012) explains how the MVC model fits a hosting environment with a web servers primary function being to pass static html pages from the server to the client across the network via HTTP while the application server deals with the data and the method calls and handles operations between the user and back-end application/database.

There are various sorts of servers on which a site can be hosted. Linux predominately operates PHP, SSI and CGI scripts and Windows servers working with scripts such as XML, ASP or ASP.NET. However, some servers can have software installed to run all scripting languages. While building my site I used a server installed on my hard drive called MoWeS Portable. This gave me access to PHPMyAdmin and MySQL. See Appendix 21 for database schema and attributes.

2.3.3 Server Side Includes:

During development I decided to develop repetitive areas of my site (menu and footer areas) as separate include files, meaning these areas would only be coded and saved once. The main advantage of this method is the ease of maintenance while disadvantages include repetitive calls to server for numerous files each time a page is loaded. Php (2012) tells of security risks associated with using include files with the .inc extension stating it is better to use an includable file with a .php extension. These should for extra security be stored in their own folder on the server with access protection enabled. Therefore the include files used were developed as .php files and are stored in their own directory.

It is also possible to load Java-Script from another location into a page using <script> tags and the 'src' attribute:

<script type="text/javascript" src="script.js"/> xxx </script>

TechTarget explain how this tag allows developers to get around the 'same origin' policy as this is not enforced for <script src> tags and allows cross-origin communication meaning that any page can run scripts from anywhere on the Internet. Care is needed if including script from another source to ensure users are not being sent off to download malware. TechTarget (2010) also go on to explain that the 'src' tag can be used to create data objects using JSON (Java-Script Object Notation). Again this could potentially be dangerous to a web-developer were a hacker to insert malware into the data being called upon. This is not a concern for my site although this information did lead me to question whether others potentially call upon scripts from my application and if so what would the implications be?

Another option, rather than include files, would have been to organise my website navigation via a database. This would have allowed all details of my webpages and the relationships between them to have been stored in one location, and allowed navigation bars to be dynamically generated. This would have made the updating of the navigation items and page locations very simple and ensured no broken links or errors occurred.

Chapman & Chapman (2006) explain the DOM (Document Object Model) which is something I would have liked to have had time to explore further but due to time constraints I did not. I have however, where possible, separated content and behaviour by placing scripts within the header of my pages or as separate files.

2.3.4 Cookies

Cookies are small data files which store session data and 'remember' information required to personalise the web experience. Cookies provide stateful interactions over Http which is otherwise a stateless protocol. A cookie can 'remember' a user has signed in successfully to a site as they move from page to page (as in my application), or can store items the user has placed in their virtual shopping cart from one visit to the next. Sometimes users switch off cookies in their browsers, largely due to unwarranted concerns over their privacy or fears over risks from viruses. These fears come from users not fully understanding what a cookie is.

Php scripts can be used to check if cookies are enabled. The developer can then decide how to handle users who have not enabled cookies if their site depends on them. A message asking a user to switch on cookies to experience the website at its best could be presented, or code for 'session handling' could be implemented to allow the website to function without cookies. After careful consideration I thought it reasonable to assume that my target users would be unlikely to know how to switch cookies off. Therefore, for this project cookies will be used and assumed to work. However session handling could be an area for future development.

2.3.5 Forms

Placeholders and labels can be used to populate form fields and are required for accessibility. These were used in my application for the user registration form. See Appendix 14 for details.

JavaScript was used to validate user input client side, however the use of placeholder text meant the client side checks to ensure empty fields were not submitted was overwritten because if the user didn't input data, the place holder text was submitted instead. See Appendix 19 for testing details.

This led me to add administrator functionality to monitor users who registered and approve or delete these as appropriate.

2.3.6 The Style Sheet

Each different browser comes with its own default settings which define which font, size, colours and so on will be used to display a webpage. However, a developer can redefine these settings either within the mark-up used to write the webpage, or via a separate style sheet. When used properly a Cascading Style Sheet (CSS) contains all the formatting and styling information of a website, while the site content is included in the HTML files. Keeping the formatting separate has many advantages in terms of design and site maintenance and ensures consistency across the site, and also allows users to use their own CSS to format the website to suit their individual accessibility needs if required. However I do not expect my 'technophobe' users to be able adjust their browser settings to do this and therefore it is important they are given the functionality to allow them switch between style

sheets provided. I have therefore included three separate style sheets and some JavaScript to allow style switching within the application. See Appendix 15. Most browsers support Style Sheets making them a good choice for web applications, however, the effects a designer can include via a style sheet can be limited, especially if the power of an application such as Flash is considered. However style sheets are satisfactory for use in this application.

The elements within the style sheet require careful consideration. Certain font types such as those from the Sans Serif font family which includes Times New Roman are recommended as they are easier to read on a screen. Another advantage of using common fonts which users will have installed on their PC rather than obscure fonts is that if a user does not have a font available it will be replaced by the browser and the developer then has no control over how text will appear. Using a common font the user will have installed elevates this issue.

Black font on a white background is also recommended for ease of reading. As users age their colour perception changes and yellowing of the cornea leads to colours appearing less vividly. Users also experience a worsening of blue vision and therefore blue text should be avoided. (Kurniawan & Zaphiris).

Finally, it is important to ensure a site still works if a user has style sheets switched off. Below is a screen shot of how my application would appear to such users:

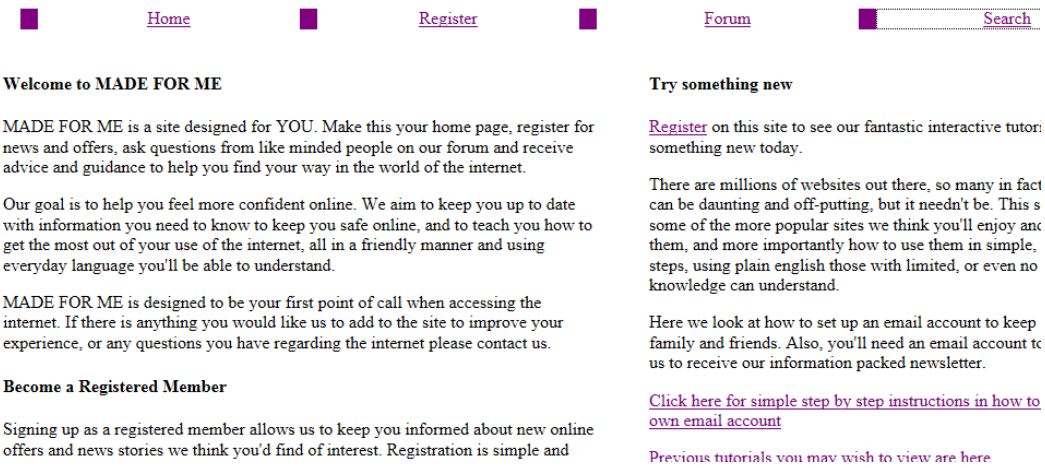


Figure 23: Appearance of homepage without CSS

2.3.7 Access Keys

The use of header tags allow users to skip through page headings to quickly reach an area they wish to read. Skip navigation links also to allow users to bypass menus which they'll encounter on each page. These shortcuts are inbuilt into the browser. However, a developer can also add their own shortcuts via access keys by adding some simple HTML code, but as Korpela J (2006) tells us, these can be more of a hindrance than a help. These developer added keys override browser shortcuts which a user may be familiar with, and as the developer is free to use any key combinations they choose, this could lead to confusion among users as they visit various sites. Also, for the few users access keys would benefit (who are not inside the scope of my project) it would seem following the recommendation to inform web users of the availability of these short cuts as soon as they enter a site would

prove more of an annoyance. McDonald et al (2000) also reported elderly users experienced difficulties understanding how use of access keys related to the resulting outcomes. I decided therefore not to add access keys to the application at this time.

2.3.8 Images

Initially images which appeared on websites had to be of a small file size and therefore low resolution in order for the image to be downloadable at an acceptable speed to users with dial-up internet connects. GIF images used interlaced technologies, allowing images to progressively download, a row at a time, feedback to users who could see the image download as it progressed. Then with the introduction of broadband, larger and better quality images could be made available on the web and downloaded at an acceptable speed. However, with the introduction of mobile browsing and slower connection speeds as users connect and download information via their phones, again, smaller file sizes for images are required.

It is important to properly compress images for the most effective display. PNG images are better for photographs with high contrast, they are lossless images, although they form larger file sizes. Lossless compression means all original data remains and pixilation does not occur. JPEG images use lossy compression meaning some data which may (or may not) be irrelevant is lost during compression and images may become pixelated. An example is where some colours are removed from the image so only the most frequently occurring colours are stored. This can sometimes work well, especially where dithering (combination of two colours) is used. JPEGs have 16.7 million colours available rather than the 256 in a GIF image and are better used for more complex images such as photographs (without high contrast). As mentioned, GIF images consist of 256 colours which are called from a palette. When an image, for example a photo (containing thousands of colours), is converted to a GIF it is quantized or aliased (colour reduction compression) and will then contain only 256 colours. GIFs also allow animation and are usually best for simple images, such as logos and icons.

However, a shift away from such images is beginning. W3Schools (2012) write about Scalable Vector Graphics. These are open source text based images written in XML. This makes the images scalable without quality loss and ideal for detailed images such as maps. They are also accessible for people with visual difficulties due to the textual content readable by assistive technologies, and they are dynamically updatable. Plug-ins were initially required to view these images but since they have become a W3C graphics standard the majority of browsers support them. (Pearson Education, Informit, 2012).

Suda (2012) introduces Raphaël, a JavaScript library which can be used to render SVG graphics which work across all browsers (apart from Internet Explorer which uses VML (Vector Markup Language). These images also degrade gracefully although users must have JavaScript switched on in order to view graphics. Also, as HTML is the baseline for data, screen readers are still able to access data from the hidden tables increasing accessibility. SVG images are fully scalable, allowing zooming without pixilation.

W3Schools (2012) introduce the Canvas tag. This is a new tag introduced with HTML5. The canvas tag itself sets an area within which an image can be displayed and the image itself is ‘drawn’ using JavaScript code. As JavaScript libraries supporting the canvas

increase it is expected that this method of producing images will replace Flash which is unpopular due to the costs and its requirement for a plug-in to run. The canvas tag also looks to rival the SVG method. There are some advantages (such as the canvas tag requiring a less intensive DOM than an SVG) but the canvas tag produces images which are rasterized (and become pixelated on zooming).

Due to the nature of my users and the types of browsers and equipment I expect them to be using simpler and more traditional ways of displaying images are adequate for the purpose of this project and I decided that any images required would be simple GIF images with alt tags for accessibility purposes.

2.4 Site Development and Design

The source code from the application is included in Appendix 20 (electronic copy only).

I experienced a few issues with the development of the php scripts used. These are identified within the testing carried out in section 2.7.

Appendix 10 also shows information regarding the document type declaration used in the application.

2.4.1 Design Principles & HCI

There are various design principles and heuristics which were also considered. Factors such as visibility (ensuring meanings are obvious to the user), affordance (ensuring users know what to do) and feedback (particularly if an error is made) are all key.

In his design principles Norman tells us how using icons, buttons or menus helps us to remember things, while structuring the order of tasks makes the system easier to follow.

Schneiderman states that there are eight rules of interface design

1. Strive for consistency;
2. Enable frequent users to use shortcuts;
3. Offer immediate feedback;
4. Design dialogs to yield closure;
5. Offer error prevention and simple error handling;
6. Permit easy reversal of actions;
7. Support internal focus of control;
8. Reduce short-term memory load.

My application is evaluated against these principles in Chapter Three.

2.4.2 The Gestalt Theory

Bradley (2010) tells how according to the Gestalt theory humans see the ‘whole’ before the parts that make up the whole. Our brains will then look for patterns, meaning web pages will be easier to use if arranged according to gestalt theories, which are:

- Proximity - Grouping of related objects.
- Continuity – elements arranged on a line are perceived to be more related to one another than those which are not.
- Closure – we finish or create a pattern, even if there is not one.

- Common Region – elements are considered to be grouped together if shown within the same region.
- Similarity – All references to a certain topic should be the same colour / use the same image.

(Graham 2008)

Menu items can be made to stand out on a page by grouping them together with a particular style and by positioning them consistently throughout the site (Liquori 2011). This menu is based on continuity (items in a straight line) and supported by proximity (grouped closely together)

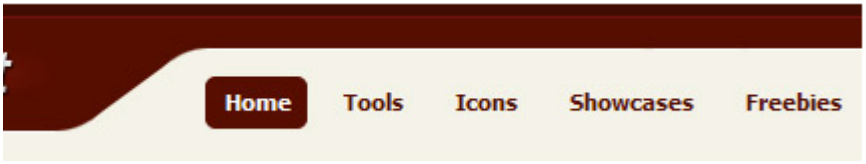


Figure 24: Menu sample

The similarity principle is used for weather reports:

Figure 25: Weather report image

I applied these principles to the navigational design of my application while also considering the following factors:

- Cheow Yu Yuan (2009) tells how us the homepage is the most important page of a site, how it needs to give a good first impression, show clear navigation and appear informative.

- Users can usually remember 5-9 items of information, recalling them effortlessly from their short term memory. Also, 'see and recognise' is easier than 'remember and hunt', meaning people can remember the locations of distinctive objects better than the location of words, and remember them through automatic processing (Kats Vision 2008)

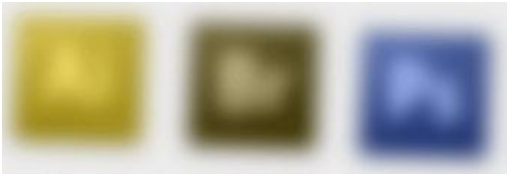
- It is generally thought that the older a person is the higher the possibility they are illiterate. This could mean users in my target group who come from a generation where it was the norm to leave school at age 14 may be functionally illiterate (limited reading skills) although I could not find any solid evidence to support this. However, assuming this is the case, and from looking at statistics regarding increased probability of these users developing a visual impairment, it would be sensible to use pictorial based navigation to convey information.

2.5 Icons

Selection of suitable graphics to represent actions is subject to semiotics. Semiotics refers to how we recognise and interpret a sign, and understand meaning. A signifier refers to the sign/icon/word which is trying to convey meaning and the signified is the meaning being referred to. An example is how on websites underlining of text means hyperlink, not emphasis while some icons, like a shopping basket/trolley or envelope can be used to convey meaning regardless of language (although, as shown in my survey, misinterpretation can easily occur). Cultural issues need to be considered, use of a UK no entry road sign only means no entry to UK users, and while post boxes are red in the UK, they are yellow in the USA and blue in France! Colour is also important for other reasons, red represents danger in many countries and on many sites red is used to represent sale items. Rogers et al (2002) tell us how most cultural constraints need to be learned and accepted before becoming universally accepted conventions, but once conventions are set it makes little sense to go against them. Preece et al (2002) tell us that good icon design should draw on existing standards and be perceivable and for my application I decided to use icons reflecting conventions my target audience would be most familiar with, while avoiding the use of red and green as these colours are those which people with visual impairments affecting colour have the greatest difficulty seeing. (Web Access 2010).

The WCAG 2 guidelines state that icons alone are not enough and should be accompanied by labels and be clear for all users including those with low vision and colour blindness. Nomensa (2010) show how icons can still benefit those with blurred vision if they are well designed:

These icons would still be understandable to users with blurred vision



Users with low visibility would not have any indication as to the meaning of these icons

Figure 26: View of blurred icons
Source: Nomensa 2010

When selecting icons for use on my site I considered the design theories studied along with information from my literature review and primary research. The icons selected follow:

Home page

The house icon was recognised and understood by the vast majority of those surveyed. In the right context and with accompanying text I am in no doubt that the meaning of this icon will be understood.

Image Source: *http://openclipart.org/detail/47197/home-icon6*

Figure 27: Home page icon

Increase font:

My survey included various 'increase font' icons, but users were generally unclear as to their meaning, while seeing the magnifying glass as the icon they would use to zoom/enlarge. I have however decided to use a conventional graphic (as below) with accompanying text. The text will ensure users know what the icon is for, while also showing them what sort of graphic they could expect to see to increase font size on other sites on the internet. I decided against using a magnifying glass even though to those questioned this would be the most obvious choice because I felt this would reinforce the incorrect notion that on the web the magnifying glass means zoom, whereas in reality, across many popular sites, it means search. However, to confuse matters further in popular applications, such as Outlook, the magnifying glass does represent zoom!

Appendix 16 describes how the image below was created.

Figure 28: Increase font size icon

Sign up / Register

During my survey, nobody suggested that any of the icons shown were for site registration. This lead me to believe that my users would not be used to signing up so the benefits of doing so need to be made clear to them, and the icon used must be clear.

I found it difficult to decide upon a suitable design for the registration icon, many of the traditional icons had been guessed by my interviewees as meaning 'email us'.

I selected two and thought I would get feedback from my users before making my final decision:

Image Source: *http://www.groutrevive.com/affiliates/?wp_affiliate_view=login*

Image Source: *http://www.freeiconsweb.com/free_software_icons.htm*

Figure 29: Register icons

Sign in

Image Source: *http://www.iconshock.com/icons/lumina/communications/sign_in-icon.html*

Image Source: *http://www.clipartillustration.com/wp-content/plugins/wp-affiliate-platform/affiliates/images/login_icon_128.png*

Figure 30: Sign in icons

Forum

The icon in my survey which received some 'chat' responses was mostly mistaken for a parent and child area. I selected a new icon to represent two speech bubbles which I hoped better resembled 'chat'.

Image Source: *http://logo-studio.blogspot.com/2011/08/facebook-chat-icon-vector.html*

Figure 31: Forum icon

Make my site their homepage

Figure 32: Make homepage icon

Search

Adapted from image: http://generic.pixmac.com/4/3d-green-guestion-mark-magnifying-glass-question-icon-84472764.jpg

Image Source: http://www.battersbys.co.uk/TourImages/question-mark1a.jpg

Image source: http://blogs.pctechmagazine.com/wp-content/uploads/2011/10/question-mark6a.jpg

Figure 33: Search Icons

Try Something New

I selected a teaching theme

Adapted from: http://www.ntushare.org/wp-content/uploads/2011/03/powerpoint-icon-300x281.jpg

Figure 34: Try something new icon

2.6 Navigation

I used the results from the survey carried out in the initial stages of this project to help determine the most suitable navigation style when producing my artefact, and selected a menu style which consisted of both iconic images and text. McDonald et al (2000) state it is difficult for designers to anticipate a user's navigation path and since not all users will enter the site via the same page then consistent navigation throughout the site is important. However, I have used slightly different menus for users who are logged in, and those who are not. The menus are consistent throughout all pages but change if the users status changes.

Figure 35: Menu for users before log-in

Figure 36: Menu for users after log-in

2.7 Testing / Validation

2.7.1 Black Box Testing

Black box testing is usually carried out by somebody other than the developer and aims to test the application without prior knowledge of the code behind it.

Test Navigation:	**Result & Comment**
Activities: 1. Ensure navigation operates before logging-in 2. Ensure navigation operates after log-in	 ✓ ✓

Ensure User Can Register:	**Result & Comment**
Activities: 1. Email address must be valid 2. Email and Confirm Email fields identical 3. Username and Confirm Username fields identical 5. Password must be entered 6. Password and Confirm Password to be identical	 ✓ Must contain @ & . ✓ ✓ ✓ ✓

Ensure User Can log-in and log-out:	**Result & Comment**
Activities: 1. Non-valid user names and password combinations are not accepted 2. User can log-in using valid log-in details 3. User is remembered as being logged in across all pages 4. User can log-out 6. Once logged out password required again to view registered user pages	 ✓ (lacks feedback) ✓ ✓ ✓ ✓

Ensure only logged-in users can post on forum – everybody able to view:	**Result & Comment**
Activities: 1. If not logged in posts viewable 2. If logged in user able to post comment 3. When comment submitted it appears on page?	 ✓ ✓ ✓ A blank post also appears. Error with php

Ensure only logged-in users can view 'Try Something New' section	**Result & Comment**
Activities: 1. If not logged in are not accessible 2. If logged in user able to view area	 ✓ ✓

Test 'Make Homepage' functionality	**Result & Comment**
Checked browsers: 1. Chrome 2. Firefox 3. Internet Explorer	 ✓ ✓ ✓

Test Contact Form	**Result & Comment**
1. User cannot send blank message 2. Message can be submitted 3. Email address entered must be valid	✗ Client side scripting required ✓ Feedback required ✗ Client side scripting required

Ensure only logged-in users can submit websites – everybody able to view:	**Result & Comment**
User Activities 1. If not logged in posts viewable 2. If logged in user able to add website 3. When comment submitted it appears on page?	 ✓ ✓ ✗ Details are not being added to database

Test style sheet switching:	Result & Comment
User Activities 1. Increase and decrease font sizes in all available combinations: - Standard to large - Standard to medium - Medium to large - Medium to standard - Large to standard - Large to medium	 ✓ ✓ ✓ ✓ ✓ ✓

2.7.2 White Box Testing

White box testing aims to test each element of the code.

See Appendix 19 for full testing specification.

Chapter Three: Evaluation

My project has taken me through various stages from establishing the goals of the application via a literature review and requirements elicitation via a survey to planning the information architecture of the site the consideration of the appearance, choice of images and functionality and development of an application to fit these requirements.

Have I succeeded?

To answer this question I needed to analyse my web application against various criteria, as defined during my objective setting, and the research I carried out, as well as considering how my project fits with well-known and tested theories.

Kaur et al (1999) describe Norman's general model of action used to describe virtual environments. This is a theory used for the development of models for evaluation. There are seven stages of interaction:

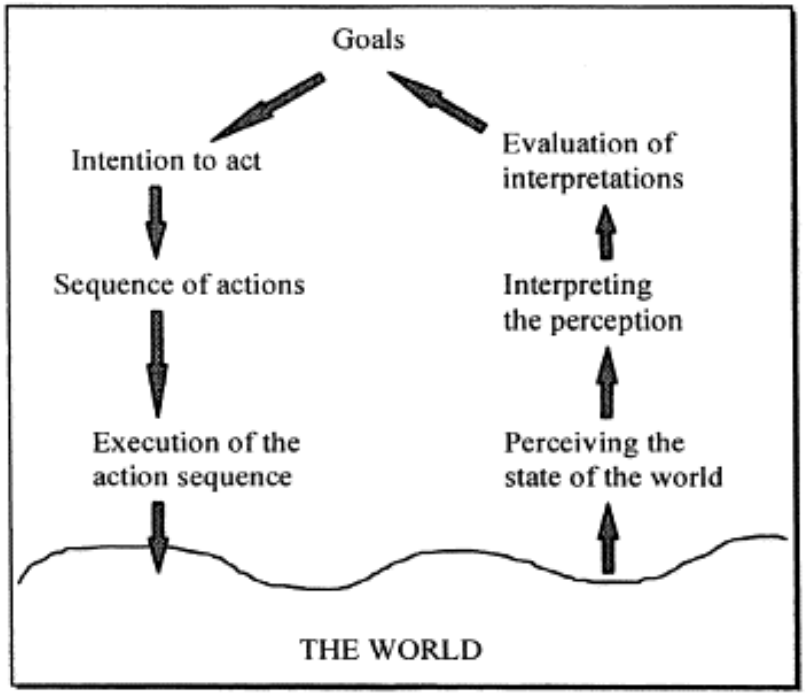


Figure 37: Norman's seven stage model of interaction

The stages to the left of the diagram) form the execution of the goal (intention to act and sequence of actions). The right of the diagram reflects the evaluation process. The diagram below from Imperial College London (2012) shows a gulf of execution which refers to the gap between the users' goals and the systems functionality, and a gulf of evaluation which refers to the amount of effort required to interpret how well the intentions have been met.

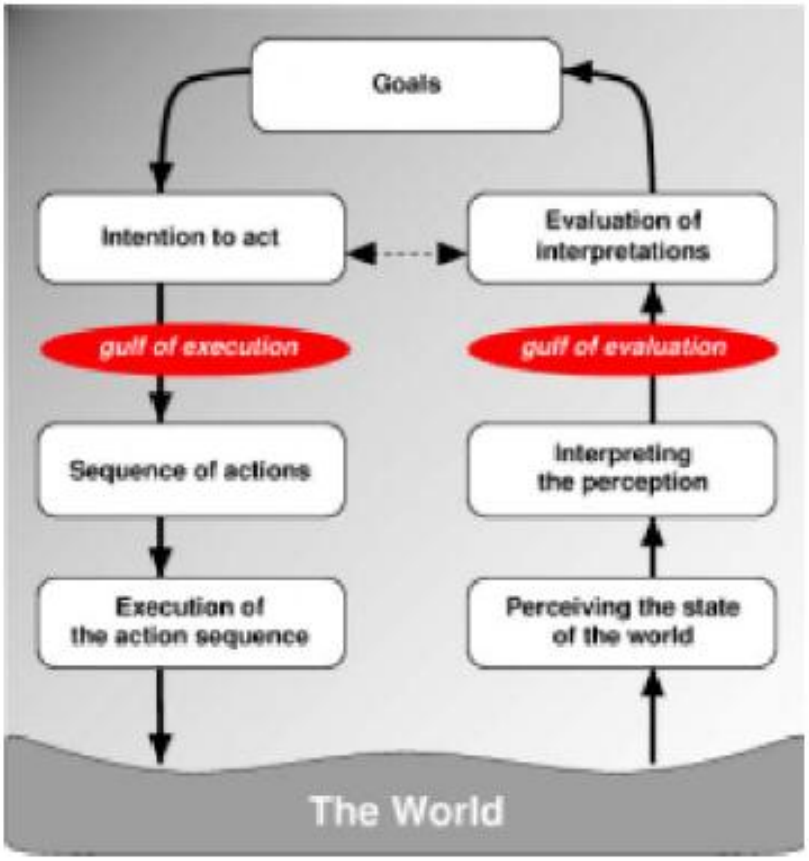


Figure 38: Norman's seven stage model of interaction with gulf of execution and evaluation

The model relates back to design principles in that visibility and feedback, reduce the gulf of evaluation, and that good affordance leads to reductions in the gulf of execution.

The abilities and types of users also affect the gulf sizes, which is why it has been so important to consider the needs and capabilities of my target users during every stage of this project.

3.1 Usability Requirements

3.1.1 Design Principles

The tables below assess the application developed against various design principles.

Useit.com (2005) lists Jakob Neilsen's Heuristics as shown below. I have assessed my application against these and comments reflect my opinions.

Heuristics	**Comments**
Visibility of systems status (feedback)	✔ via page titles and confirmation messages
Match between the system and the world (speak users language)	✔ non-technical language used
User control and freedom (undo and redo)	Area needs further work
Consistency and standards (follow conventions)	✔
Error Prevention	✔ form input validated (registration only)
Recognition rather than recall	✔
Flexibility and efficiency of use	✔ Text alternative for graphics / minimal clicks
Aesthetic and minimalist design	✔ Navigation bar stands out on page. Clear, simple design
Help and documentation	✔ (Incomplete for prototype)

Further design principles below are based upon Schneiderman's rules and Norman's Principles and again comments reflect my aims and opinion.

Design Principle	**Comments**
Visibility	✔ Use of both icons and text for menus ensure users will find meanings understandable.
Affordance	✔ The design aims to ensure users understand the application. There is also a help menu if required.
Simplicity	✔ The interface has been kept as simple as possible and tasks are broken down step by step with a new screen for each stage.
Structure	✔ The interface and processes are set up in a logical way
Consistency	✔ The Interface and menu position are consistent and makes the system easy to use. Two different menu variations, for users who are logged in, and for those who are not, but remainconsistent depending on user's status
Tolerance	✔ There are various checks in place within the forms to attempt to prevent the user behaving in an unexpected way.
Usability	✔ The system is set up to be user friendly for a range of users who are not familiar with the internet and is therefore designed to be easy to use and procedures repetitive for familiarity and the application will work efficiently.

The ISO 25010 also lists criteria for defining a successful web application. The points they list are already covered by the principles above, with the exception of security which was discussed in chapter 2.

This table compares the application against the most relevant Web Content Accessibility Guidelines

Guidelines	Compliance
General: -Consistency – navigation -Consistency – page layout -Group related links -Logical tab order through links -Navigation bars highlighted -key information at beginning of lists /paragraphs/headings -Organise documents so they can be read without CSS.	 ✔ ✔ ✔ ✔ ✔ ✔ ✔
Forms: -Place holding characters -Use form labels	 ✔ ✔
Images: -Avoid moving images -Provide text equivalent	 ✔ ✔
Links: -identify target of each link	 ✔
Structure: -Use elements to convey structure -Use relative not absolute units (for size) -Use style sheets to control layout and presentation	 ✔ ✔ ✔

Appendix 13 compares other popular sites against the criteria above.

3.2 What do my target users think?

Jakob Nielsen says that to test on a small number of users is sufficient (Useit.com) while others consider it better to test on as many users as possible in order to gain more valid results. However the costs and overheads of using a larger testing group may not always prove justifiable. For the purposes of the evaluation of this project I questioned 7 users, all of whom had also answered my first questionnaire. This was for consistency of user 'standards and knowledge' and to therefore allow reliable comparisons to be drawn from both sets of results.

UserFocus (2011) shows details of HCI ISO 9241 which defines usability as "the extent to which a product can be used to achieve specified goals with effectiveness, efficiency and satisfaction" The points below are considered and my application evaluated against them below:

Goals	*Comments reflecting user feedback*
Effectiveness: Understandable	6 of 7 users questioned agreed the site appeared easy to understand.
Efficiency: Easy to use without difficulties.	I was not able to ask users to try the site, but based on an image shown the majority felt the site would be easy to use.
Satisfaction: Pleasing to the eye	The majority like the appearance of the site

3.3 Evaluation questionnaire results

The evaluation questionnaire used is in Appendix 17. Detailed results are shown in appendix 18, but were generally very positive, and confirmed my choices of icons.

3.4 Evaluation against research

My design is focussed on user satisfaction and provision of an easy and stress-free experience. The criteria to define this is based upon my earlier research:

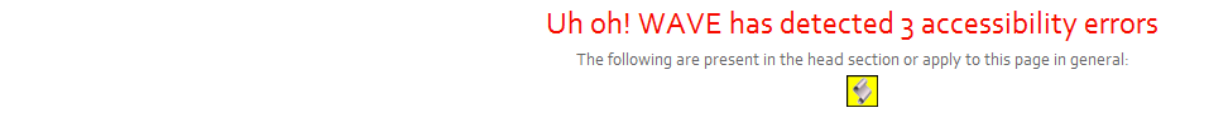
Criteria	
Effective use of colours	My design uses tonal contrasting colours.
Consistent page layout	Consistent design with menus remaining consistent throughout
User friendly language	Instructions are simple and kept to a minimum, using easy to understand language and familiar concepts.
Logical order	The information appears in a logical order.
Recognition rather than recall	The system allows the user to use recognition by keeping button icons and labels consistent, in the same locations on the screen, and using recognised icons.
Feedback to user	Progress shown via clear page titles Confirmation of actions / error messages are clear and friendly - my research shows that my target users do not like or understand some error messages.
User error prevention	Errors are prevented where possible via validation scripts and requests to repeat input for verification.
User help	There is a help file accessible from all screens should the user need to refer to this.

3.5 Code Validation

A website which is W3C compliant is beneficial in many ways. For one it is likely to be search-engine friendly, boosting site traffic. It is also more likely to work across a larger selection of browsers, survive browser updates and of course be more accessible to those with special needs.

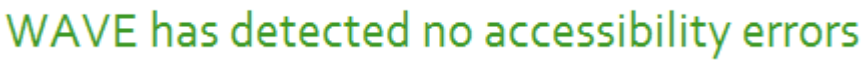
I validated my site through W3C's online code checker (http://validator.w3.org), the CSS was validated through http://jigsaw.w3.org/css-validator/ and I also used http://wave.webaim.org/about which offers a web accessibility evaluation service.

The three pages shown below initially had accessibility errors (missing form field labels). These were then corrected.



Contact.php
Forum.php
Login.php

No accessibility errors were detected in the remaining pages (pages which end in NR are not listed as these are the same apart from the menu include files they call upon).



- Access.php
- Forum.php
- Forumview.php
- Search.php
- Index.php
- Login.php
- Logoutmember.php
- Members.php
- News.php
- Somethingnew.php
- Register.php
- Terms.php
- Websites.php
- Help.php

4. Chapter 4: Discussion & Conclusion

4.1 Discussion

4.1.1 Time Management

I had an increased sense of urgency as I knew the Easter holidays would leave me with very limited time as my children would be off school. Therefore I worked hard to stay on schedule throughout the project although I did still feel I ran out of time towards the end and therefore my application is not as complete as I had hoped. I am however satisfied I management my time well.

4.1.2 What I did well

I spent longer than necessary with coding the back-end of my site. Learning and implementing php took more time than I had planned for, although I do feel pleased with the skills and level of understanding developed and am confident in being able to take this skill forward in the future.

4.1.3 What I could have done better

I would have benefited from being more organised in my report writing. I made a lot of notes while writing the report, by typing and highlighting text within a document which became too large to manage. I then had to move information about which was confusing and could have been avoided had I planned the structure and worked in a more organised manner. I am however generally very happy with the overall outcome of the project.

4.1.4 How my solution fits the problem

My research highlighted a lot of factors for consideration during the development of the site and I feel the site suits these requirements (these are listed within the evaluation section (chapter three) and results commented upon).

4.1.5 Further research suggestions

I would have liked to have presented the actual site to the users who completed the evaluation questionnaire and asked them to attempt to use and comment upon the functionality in order to gain a better understanding of the success of the site and future requirements for improvements.

4.2 Further work

4.2.1 Achievements & Recommendations

Switching Style Sheets

Currently the switching of style sheets is a simple procedure requiring a click of the mouse to enlarge text with three size options.

Recommendations

Going forward cookies should be added to ensure that once a user selects an alternative style sheet, their selection becomes the default for each page on the site, and remains so for subsequent visits to the site, especially once the user has logged in. Currently the user needs to change the style sheet each time they visit a new page.

User Registration

This is a simple form which the user must complete to register on the site. The user must then be approved via the administration panel. This is to prevent non-genuine users registering. Users can also be deleted if they behave inappropriately.

Cookies are used to remember users once they have logged in while they navigate through the site.

Recommendations

Going forwards an automated 'forgotten password' function could be set. Users would then enter their username and new password would be emailed to the email address stored for them. Functionality to allow users to update their details once logged in (change their email address for example) would be beneficial.

Try Something New

This is simply a series of pages containing information accessible to registered users only.

Recommendations

Going forwards further information could be added and more interactive functions included, for example, games to practice mouse skills, a dictionary of common technical terms users may encounter, and so on.

Dev.Opera (2009) have a tutorial on how to create a HTML5 Canvas painting and provide code for an application which allows users to draw (with limited functions) on the screen themselves. They point us to Paint web (2009) which is an open source project which allows integration of the paint feature into a web application. This interested me and I thought it would be a great feature to add to my site, to enable uses to 'practice' their mouse skills. Time restrictions prevented me exploring this further but I think it would make a great additional feature to the application. The feature also runs with HTML5 (using the new canvas tag) and requires references to the DOM (document object model).

The Forum

Posting comments to the discussion area of the application could be a one off activity for some users, or a regularly activity for others. It is a straightforward activity which users who have logged in can perform individually (non-registered users are able to view but not contribute to discussions).

Recommendations

Going forward the forum could be further developed to include various subject boards to divide topics into different subject areas, and to allow users to edit or delete their own posts after they have been submitted. This would enhance the functionality, but would increase the complexity of this task.

Add session handling code to check for cookies to ensure that users who do register and log in may use the site effectively. Alternatively, and as a minimum add code to check cookies are enabled and display a 'please enable cookies' message if necessary.

Further recommendations

WebAim (2010) informs us that users surveyed in USA showed there was an increase of 550% in mobile screen reader usage between January 2009 and January 2011 and The Telegraph (2012) informed us that rates of smartphone adoption was rocketing for 55-64 year olds. This could indicate a need to make a mobile version of this site available.

4.2.2 Other projects from this?

Further projects could look into technologies, new or existing, which could be used in order to encourage more digitally excluded users into the digital world. Further research into how various online environments reach out to various groups of people, and how to be most effective in gaining the confidence of older users and encouraging their development with regards web use could be explored.

4.3 Conclusion

The field of accessibility helps, but does not solve the problem of ensuring every user group is digitally included and while developing an accessible website has many advantages there is no guarantee that just because a site is fully accessible all users will wish to access it.

Older users may not like to admit it, but many generally find it more difficult to grasp new technological concepts and therefore have different requirements to younger people. Also, the internet is a new and unfamiliar area which many of these users fear. Developers wishing to encourage technophobic users to embrace the internet need to consider their lack of web familiarity and lower confidence in order to reassure users, gain their trust and enhance their online experience, only then, when all users feel happy online, with the digital divide really cease to exist.

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Appendices

Appendix 1

Project proposal form

Detailed Project Proposal (IT)

Tracy Pez

09211239

Project Title

An Accessible Web Application for Techno-Phobes

Project Aims

The aims of this project are to:

Review available technologies for people who have little interest in computers or the internet, but who require safe, secure and easy access to perform tasks such as VOIP (Skype), email and online shopping.

Ascertain how these people feel about using computers and the internet to identify potential issues and desired solutions. Use this information to set design requirements for an augmented accessibility website which could potentially include solutions such as user chat forums for community support.

My challenge will be in developing a fully accessible site and coding solutions. The design solution prototype will then be tested to obtain user feedback to see if the identified issues have been resolved. The prototype will also be evaluated against relevant HCI criteria and other requirements discovered during research of the subject area.

Tasks & Deliverables

In my report, I intend to show that I have made an attempt at completing the following tasks:

Conduct a comprehensive literature review
Design, implement and analyse the results of a questionnaire to ascertain the requirements of users
Development of tools such as state-charts and information architecture methods which will help to shape the site
Development of an accessible web-based interface as defined via the above tools based on user requirements and research
Evaluation (throughout the project) against user requirements defined, various HCI principles and technical accessibility requirements.
Obtain user feedback of the completed 'product'
Critically analyse all elements of the project, based on findings from research and user opinion.
Make recommendations for improvements

I intend to produce the following:

A literature review with summary of key points
A questionnaire, associated results and analysis of results
Suggested criteria for an accessible site based on user requirements and research available
State charts, wire frames and site information architecture tools to aid development of site
Prototype website solution
User feedback analysis
Full evaluation and Critical analysis of project
Recommendations for taking the project forward

Assessment Criteria

Focus areas will be:

Defining the scope of the project and user requirements
Developing a prototype solution
Evaluating and critically analysing the project on an on-going basis and upon completion

Which practical skills will you be demonstrating? (List ALL that apply)

Data Analysis / Data Modelling	☐
Database Design / Database Construction	X
User Interface Design / Interface Realization / Interface Evaluation	X
Program Design / Programming	X
Requirements Elicitation / Analysis	X
Experimental Design / Results Analysis	X
Simulation / Emulation / Animation	☐
Defining Purpose and Scope of Systems	X
Survey / Questionnaire Design / User Observation	X
Design and Organisation of Information Architectures	X
Identification of Strategic / Operational priorities	☐
Others (specify below)	☐

Specialism (if any)

Web Based Systems (WS)

Pre-requisite modules

Which of the following Semester A core modules will your project work build upon?

Module Name	
DMV A: Data Mining and Visualisation A (Data Mining)	☐
SISPM A: Strategic Information Systems Planning & Management A	☐
DES A: Digital Entertainment Systems A (Digital Media Production)	☐
WAD A: Web Application Development A (Design)	X
PAWS A: Principles and Applications of Web Services A	☐
ADB A: Advanced Databases A	☐

Which other module(s) will you draw upon for inspiration/information?

PIC A & PIC B, WAD B, Internet Technologies, HCI, Research Methods

Background to the problem

- The 'Digital Divide' is growing. For example, more key government information is being placed online, online billing is replacing paper billing (with customers being charged to receive paper bills/given discounts for online billing), applications for benefits, insurances, school places and more are now expected to be made online and the use of the internet has become the focus for many businesses looking to recruit. However many people feel they are being left behind by technology they do not understand and cannot access and are therefore missing out on this valuable link to the outside world with a wealth of information which could be available at their fingertips.
- I enjoy working with others and would like to work with users to help alleviate any existing fears of technology. Also many businesses are becoming increasingly aware of requirements upon them to make reasonable effort to ensure their websites are accessible and I would like to work with these businesses in improving their sites and therefore increasing their potential market in the future.
- The topic of accessibility has interested me throughout my modules in Semester A and it is an area where I feel I can help make a difference to the lives of others.

Requirements

I will need to carry out a survey and literature review to discover user requirements and set the criteria my site will need to meet. This will be done via a user survey/questionnaire and an in-depth review of available literature available from as many sources possible.
I will develop a site using HTML5, CSS and PHP. The site will be developed using MoWes Portable server which can host a site on my memory stick, and allow use of a MySQL database (if required) while enabling the use of server side scripting. I will be able to develop this site using my laptop. The site is unlikely to be accessed via mobile devices due to the nature of the clients it is targeted it. I will do the coding by hand, testing it in various browsers, avoiding the use of any WYSIWYG tools. I will use validators (ie. W3C to test my code meets requirements).

Planned reading requirements for the project

I will need to expand my knowledge in the area of accessibility and user requirements. The Equality Act (2010) will set useful criteria and various sources both online and offline will be referred to in order to ensure I gain a wide view of any issues and possible solutions.

My coding skills for HTML5, CSS and PHP will need improvement also, and depending on the user requirements uncovered I may need to add various scripts to the site. I will refer to text books and the Internet to increase my knowledge in order to develop these skills.

Demonstration

During my demonstration I will show and explain the interface which has been developed, discuss the reasons behind various elements and the benefits/issues of each. I will cover the feedback obtained from potential users and explain why the project has (or has not) been a success.

I will highlight the areas where I have developed my knowledge and explain which areas I focussed on and how this improved my knowledge.

Appendix 2

The Disability & Equality Acts

The Home Office (2012) explains the Equality Act helps achieve equal opportunities both in the workplace and the wider world in order to make the law against discrimination simpler and to remove inconsistences while strengthening protection offered in some situations. The Department of Education (2011) tell us how the Equality Act replaces all previous equality legislation such as the Disability Discrimination Act, Sex Discrimination Act and Race Relations Act.

The Equality Act lists protected characteristics, and according to the Home Office (2012) at least one of these applies to everybody meaning the Act protects the whole population to some degree. Various forms of discrimination are listed. The RNIB (2012) explain how the act is 'anticipatory' meaning as a web-developer you should plan in advance to make your site accessible rather than waiting for somebody to complain they cannot access the information provided. They also point out the benefits of having an accessible site to businesses, including the increase in potential customers, the site being more robust and capable of working with future technologies, and increased professionalism and enhanced reputation.

The Office for Disability Issues (2011) go on to say that while the Disability Discrimination Act protected those with disabilities in the workplace, the Equality Act extends to protect these people in areas beyond employment, for example, in the supply of goods and services. The Equality Act also introduced a 'trigger point'; the point at which it is apparent a disabled person becomes disadvantaged compared to a non-disabled person if adjustments are not made. The range of impairments is also extended from those covered by the term 'disabled' to include those with a mental or physical impairment which results in an adverse effect on a person's ability to carry out normal daily activities.

Access 8878 inform us a new British Standard, BS8878 was introduced in December 2010 building on PAS78 in order to guide developers as to requirements regarding website accessibility. These standards reference the latest Web Content Accessibility Guidelines as defined by the World Wide Web Consortium (W3C).

The W3C guidelines

There are various accessibility checkpoints which a web developer **must** satisfy in order to ensure all groups of affected people are able to access information on a website which are set by the World Wide Web Consortium (W3C) under the Web Accessibility Initiative (WAI). The WAI includes guidelines such as the WCAG (Web Content Accessibility Guidelines) which help developers design for inclusion fully considering all accessibility issues.

Appendix 3

Online Activities of UK Internet Users, by Age, 2010
% of respondents in each group

	16-24	25-44	45-54	55-64	65+	Total
Sending/receiving email	88%	90%	89%	91%	87%	90%
Finding information about goods and services	64%	76%	80%	83%	72%	75%
Using services related to travel and accommodation	50%	64%	70%	72%	62%	63%
Internet banking	45%	63%	54%	53%	34%	54%
Reading or downloading online news, newspapers, magazines	52%	53%	51%	47%	40%	51%
Listening to web radio or watching web TV	59%	47%	45%	34%	24%	45%
Posting messages to chat sites, blogs, newsgroups, etc.	75%	49%	31%	19%	8%	43%
Playing or downloading games, images, films or music	61%	43%	32%	24%	17%	40%
Seeking health-related information	27%	42%	39%	44%	36%	39%
Uploading self-created content	50%	43%	28%	29%	22%	38%
Consulting the internet with the purpose of learning	47%	34%	34%	30%	27%	35%
Looking for information about education, training or courses	47%	36%	27%	19%	7%	32%
Downloading software	35%	34%	23%	27%	18%	30%
Looking for job or sending job application	38%	32%	23%	11%	1%	26%
Selling goods or services over the internet	16%	28%	20%	18%	9%	21%
Donating to charities online	10%	13%	15%	13%	7%	12%
Doing an online course	11%	8%	7%	5%	3%	8%

Note: among those who have accessed the internet in the past three months
Source: Office for National Statistics (ONS) - UK, "Internet Access 2010: Households and Individuals," Aug 27, 2010

119189 www.eMarketer.com

Source: eMarketer 2010

Appendix 4

Ethics Approval – Requirement Capture Questionnaire

UNIVERSITY OF HERTFORDSHIRE

FACULTY OF SCIENCE, TECHNOLOGY AND CREATIVE ARTS

M E M O R A N D U M

TO **Tracy Pez**

C/C **Colin Egan**

FROM **Dr Simon Trainis – Chair, Faculty Ethics Committee**

DATE **15 February 2012**

Your Ethics application for your project entitled:

An Accessible Web Application for Techno-phobes

has been granted approval and assigned the following Protocol Number:

1112/93

This approval is valid:

From 15 February 2012

Until 22 February 2012

If it is possible that the project may continue after the end of this period, you will need to resubmit an application in time to allow the case to be considered.

Evaluation Questionnaire

UNIVERSITY OF HERTFORDSHIRE

FACULTY OF SCIENCE, TECHNOLOGY AND CREATIVE ARTS

M E M O R A N D U M

TO **Tracy Pez**

C/C **Colin Egan**

FROM **Dr Simon Trainis – Chair, Faculty Ethics Committee**

DATE **28 March 2012**

Your Ethics application for your project entitled:

An Accessible Web Application for Technophobes

has been granted approval and assigned the following Protocol Number:

1112/156

This approval is valid:

From 28 March 2012

Until 12 April 2012

If it is possible that the project may continue after the end of this period, you will need to resubmit an application in time to allow the case to be considered.

Appendix 5

Requirements Elicitation Questionnaire

In order to prepare a good questionnaire, it is important questions be carefully thought out, be direct, clear and concise. There are three types of questions, multiple choice, numeric open ended and textual open ended. Rating questions (where uses can select suitable grades of answer) can fall into all of the three category question types and should be put in negative to positive order. They should be easy to understand, put into a logical order and hold the interest of the participant. Closed questions providing quantitative data make analysis easier to score. Open questions provide qualitative data which can be misinterpreted (Creative Research Systems 2011).

Questionnaire Design

The questionnaire was generated from an examination of the relevant literature. There were three sections. The first asked for information concerning computer use and self-perceptions of skill level. The second delved into Internet use, and was not completed by all participants. The third section asked for demographic data. Questions were both closed and open-ended, allowing for analysis of both quantitative and qualitative data.

Due to time constraints I couldn't print the questionnaires in full colour as my printer had run out of colour ink. Therefore, I condensed the questionnaire down, reducing (or removing) the sizes of images and showed participants the larger copies of the images in question on my iPad.

The Questionnaire

Questionnaire

Web Application for Techno-Phobes

University of Hertfordshire, Protocol Number: 1112/93

Objectives: To discover user's main 'fears' regarding the internet, find out how these could be alleviated, assess perceptions of different page layouts and review how commonly used icons are understood and whether icon or text based navigation is preferable. This survey will be conducted as part of a short informal interview.

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1. Personal information (individuals will not be identifiable).

Age range: <50 / 50-60 / 60-70 / >70	**Gender:** MALE / FEMALE
Do you have a visual impairment? YES / NO If so to which degree? SEVERE / NOT SEVERE	**Do you have any physical disability which affects your ability to use a computer?** YES / NO If so please provide brief details:

2. Do you use the Internet? YES / NO

Those who don't use the Internet:

Why not?

What would help persuade you to get online?

Did you know you can shop/book flights/access benefits information online?

Would you like to use email/Skype to say in touch with family members?

Those who do use the internet:

How often do you go online and where do you use the internet?

How confident do you feel about using the internet?

What do you do online? (email/shop/research health information/pay bills etc)

Is there anything you dislike about using the internet?

Is there any aspect of the web you find particularly annoying/difficult to use?

Do you feel websites cater for people of your age group? And cater for those with visual impairments / disabilities?

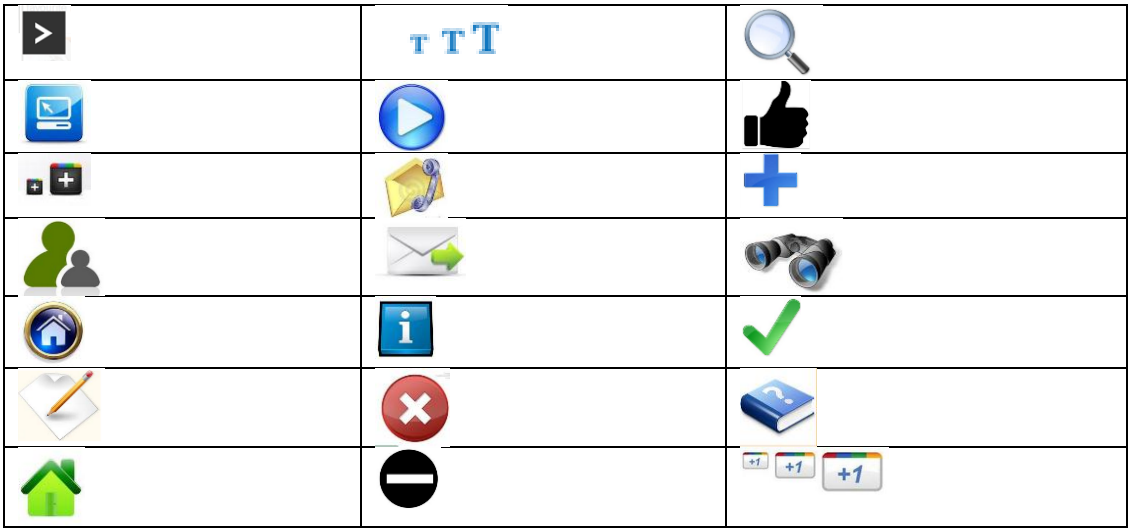
Do you experience problems signing up on sites? (ie. Captchas?)

3. Preferred look of websites:

You will be shown 4 screen shots. Please rate these from 1-5, with 1 being not clearly understandable/confusing and with 5 being recognisable/clear/appearance of being easy to use.

1.	HMRC:	O 1	O 2	O 3	O 4	O 5
2.	BBC My Web My Way:	O 1	O 2	O 3	O 4	O 5
3.	BBC:	O 1	O 2	O 3	O 4	O 5
4.	Saga:	O 1	O 2	O 3	O 4	O 5

4. What do these icons represent? (There is no right or wrong answer)



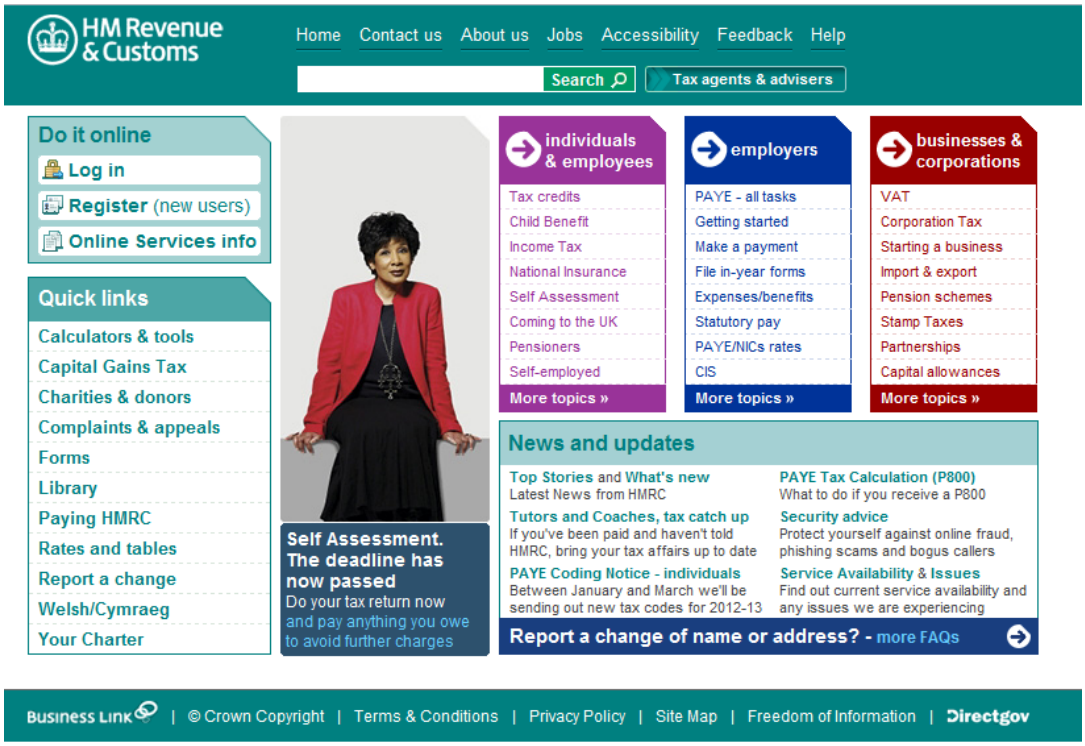
5. Put these menus into order from the easier to use to the hardest.

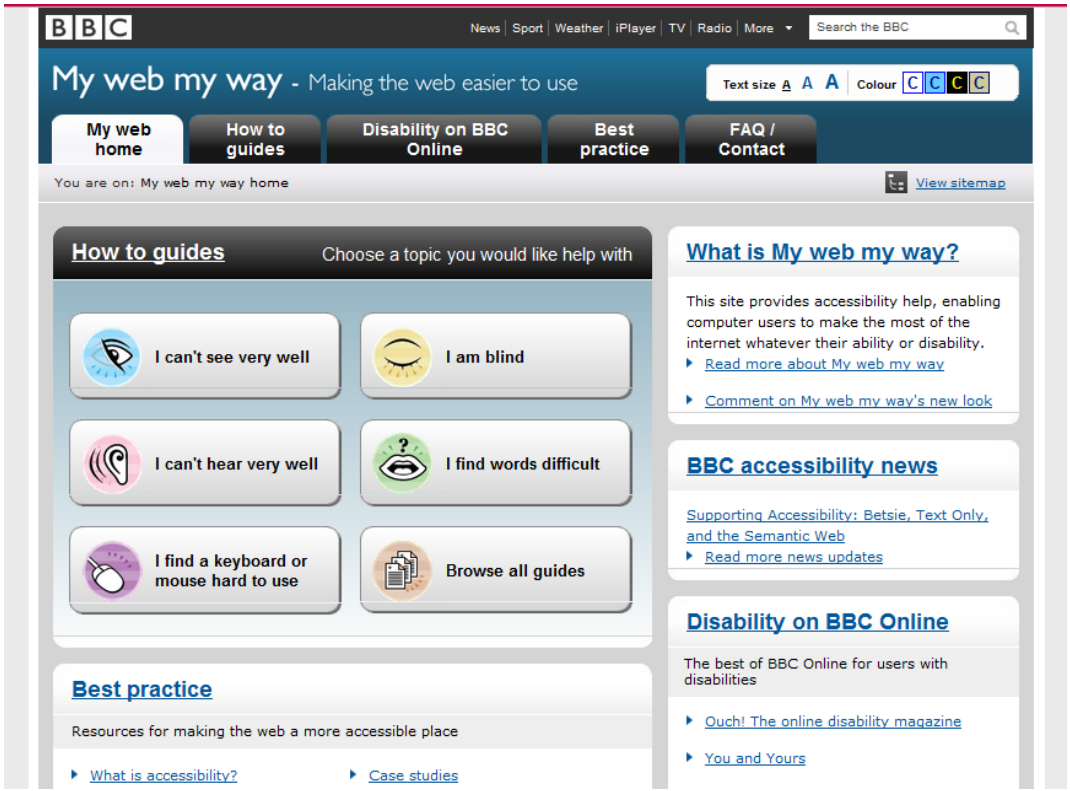
Thank you for agreeing to take part in this study.

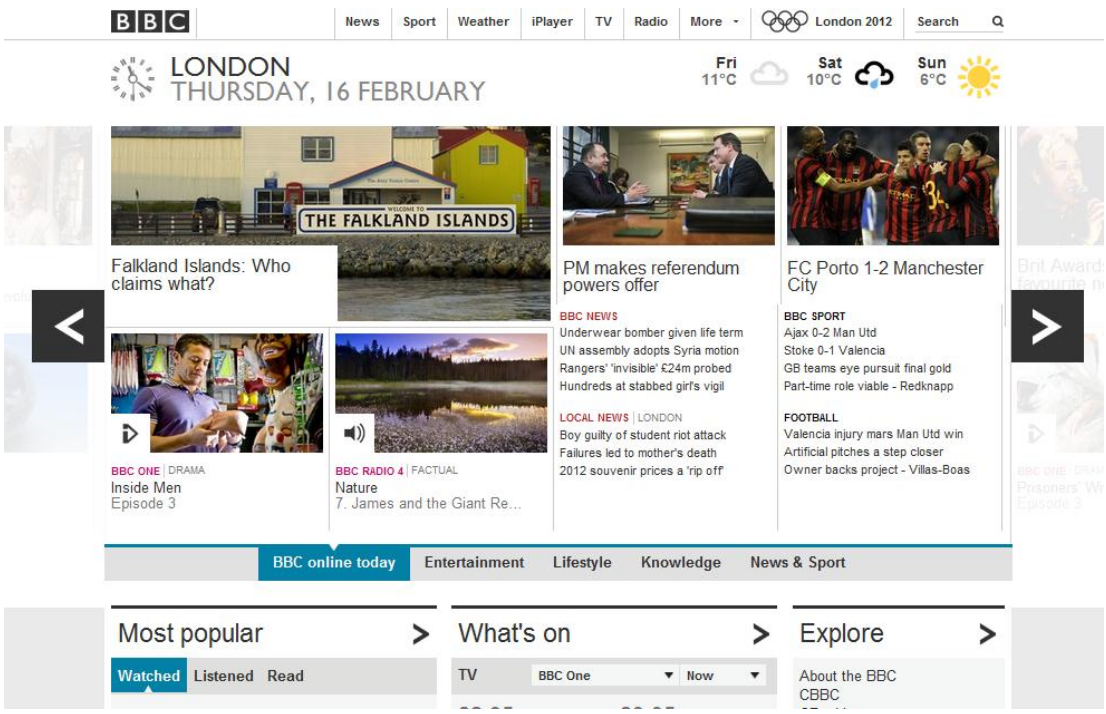
Regards

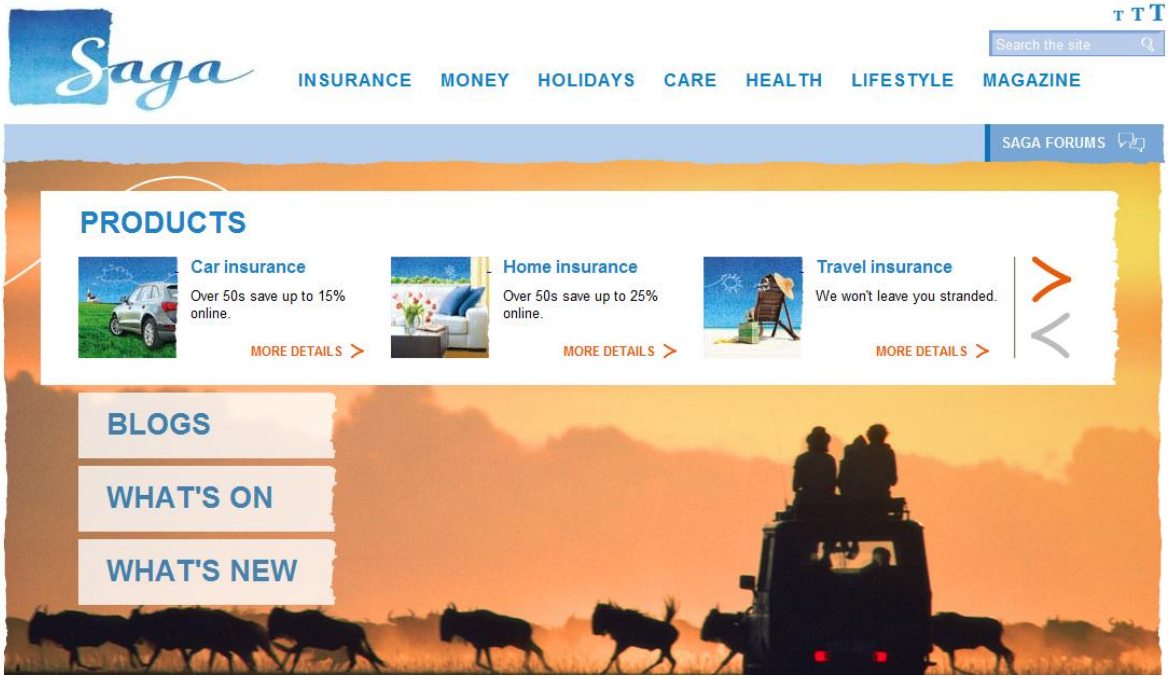
TRACY PEZ

The screen shots shown to users in question 3:






BBC
News
Sport
Weather
iPlayer
TV
Radio
More
London 2012
Search
LONDON
THURSDAY, 16 FEBRUARY
Fri 11°C
Sat 10°C
Sun 6°C
THE FALKLAND ISLANDS
Falkland Islands: Who claims what?
PM makes referendum powers offer
FC Porto 1-2 Manchester City
BBC NEWS
Underwear bomber given life term
UN assembly adopts Syria motion
Rangers' 'invisible' £24m probed
Hundreds at stabbed girl's vigil
LOCAL NEWS | LONDON
Boy guilty of student riot attack
Failures led to mother's death
2012 souvenir prices a 'rip off'
BBC SPORT
Ajax 0-2 Man Utd
Stoke 0-1 Valencia
GB teams eye pursuit final gold
Part-time role viable - Redknapp
FOOTBALL
Valencia injury mars Man Utd win
Artificial pitches a step closer
Owner backs project - Villas-Boas
BBC ONE | DRAMA
Inside Men
Episode 3
BBC RADIO 4 | FACTUAL
Nature
7. James and the Giant Re...
BBC online today
Entertainment
Lifestyle
Knowledge
News & Sport
Most popular
Watched
Listened
Read
What's on
TV
BBC One
Now
Explore
About the BBC
CBBC


Saga
T T T
Search the site
INSURANCE
MONEY
HOLIDAYS
CARE
HEALTH
LIFESTYLE
MAGAZINE
SAGA FORUMS
PRODUCTS
Car insurance
Over 50s save up to 15% online.
MORE DETAILS
Home insurance
Over 50s save up to 25% online.
MORE DETAILS
Travel insurance
We won't leave you stranded.
MORE DETAILS
BLOGS
WHAT'S ON
WHAT'S NEW

Appendix 6

Completed questionnaires

(hard copy only)

Appendix 7

Write up of interviews carried out while details are fresh in my memory:

1. This lady described herself as a technophobe but on questioning she felt comfortable using the internet and went online every day at home. She uses the web for emails, seeking information but doesn't 'trust' the internet for online bill payments or banking. She finds the warnings and T&Cs on sites annoying but generally feels that websites do cater for people of her age group.

I was surprised to find this person found the HMRC website, the page displaying the most links the easiest to understand. She said it was because she could identify the information she required, and get to the information quickly, without having to journey through various other pages in order to reach the desired information.

2. This gentleman is a regular user of the internet accessing it twice a day from home. He is quite confident although would not carry out any bill payments or make any holiday bookings online. He does however use the internet to find information, for maps and directions, to locate suitable holiday cottages (which he then books over the telephone). If a site didn't provide a telephone number for bookings, he would look elsewhere rather than book online.

He feels there are lots of 'rubbish' sites out there which do not provide any useful information. He does feel most websites cater for people of his age group.

On occasion he says he forgets which sites he has registered for and will try and register again. He'll be told his email address is already registered which surprises him, and he can then not remember his passwords.

He felt the HMRC site would be easier to use than the Saga site. Although there is a vast difference in the number of links each site displays, with Saga appearing simpler, he stated that in his opinion the Saga site would be harder to use as there were not enough options (links) provided and to get the information he required he would have to make too many clicks and travel via too many pages. He didn't feel the BBC My Web My Way site looked at all interesting and felt the BBC site was quite crowded and confusing and to him links didn't appear in any kind of logical order.

3. This lady did fall into the 'technophobe' category of user I was looking for. She goes on line once every fortnight, from her home. She felt fine about going online, although admitted she doesn't do very much on there. Because she doesn't go online very often she forgets things, for example, where photos are stored on her PC.

She uses the internet for emails, to seek information, compare prices and find holidays. However, her partner would do any online bookings, she doesn't like to do this, she just doesn't feel happy incase she makes a mistake.

She doesn't like the time being on the internet takes up. She said she could sit down to do something and before she knows it an hour and a half has passed by, she'd rather be doing something else.

She knows she has no technical knowledge and gets scared when things go wrong and she doesn't know what to do. This makes her feel panicky. She also finds the numbers of pages search engines return to her over-whelming – it is very confusing when search engines bring back so many options, she doesn't know which site to visit.

She'd like to use the computer more often but says her partner is always on it. She'd like to send more emails (social purposes) and look up more information relating to her hobbies and interests.

She initially said the HMRC website was very clear and understandable, but then after seeing BBC My Web My Way she changed her score from 5 to 4 as the BBC My Way site appeared much easier and far less confusing to her.

4. Participant number 4 goes on online daily at work, but does not use the internet at home. He feels 'pretty confident' about using it. He uses it regularly for work related purposes but surfs for his own purposes during lunch breaks. He visits sites relating to financial markets and also those relating to his personal hobbies.

He dislikes it when search engines bring back hoards of unrelated results and feels many websites are aimed at 'younger' guys, those in their 20's and 30's.

He said the HMRC site contained too many information, there were simply too many options and too many forms and it was all a bit over-whelming. He liked the BBC My Web May Way and Saga sites as they presented less options and appeared easier to use. He also liked the BBC site and said it was easily understandable. On questioning it transpired he was familiar with this site as he visits it often.

5. This gentleman uses the internet daily from his home. He is happy doing the stuff he knows but has no desire to try anything new. On questioning, this didn't exclude visiting new sites, he was happy to do that, he meant he didn't wish to learn how to perform other tasks on his computer, he felt his skills were sufficient for his desired use.

He dislikes pop-ups and finds it annoying that he cannot turn these off.

He uses the internet for email, online auctions (selling and buying via ebay), finding and purchasing insurance and seeking information. He has a Paypal account and is happy to put his credit card details online. He also happily logs into his bank to check his balance, but doesn't feel 'safe' doing online banking, ie. transferring money. He feels there is a difference, and would rather visit his bank in person to carry out any transactions.

He feels that websites do cater for people of his age group and likes the fact many sites allow him to make the text bigger if he wants to. He preferred the BBC My Web My Way and Saga sites. Of the Saga site he said 'This is much better as there are only three choices'.

6. Interviewee number 6 was female and aged over 70. She does use the internet occasionally, maybe once a week. However this will increase as she now has a new laptop which she plans to use to help her research her family tree.

She doesn't feel very confident using the internet, but hopes that will improve with practice. She has just got her own email address so is looking forward to using that. She finds the internet a useful information source, using it to look things up and find maps and directions. She doesn't trust it for bill payments or online banking.

There is nothing that she finds particularly difficult or dislikes about using the internet, she is very patient and will take the time to look at her book if she gets stuck. Having not used computers during her working life she does feel at a disadvantage, but she thinks that yes, websites do cater for people of her age group, but says she feels it is up to her and her peers to keep up with developments. She has not yet registered on any sites.

When looking at the screen prints of the sites I showed her she found the HMRC site to be difficult to understand – there was too much on there. She liked the BBC My Web My Way site, finding this much more sensible and not a messy. The BBC site she rated as 'medium'. She said it wasn't bad, but still a bit too busy and she found the Saga site very simple in appearance.

She was very unsure about the meaning of the icons I showed her. I explained there was no right or wrong answer and just to say what she may expect to happy if she were to click on the images shown. She found this difficult, possibly because the images are shown out of any context, and also because she has minimal web experience.

She preferred the icon and text based navigation bars above those showing just text or just icons.

7. This gentlemen is 70+ and was an accountant by profession. He still does some books for a few clients even though he is retired. He uses the internet everyday from his home. He says he is of medium confidence, being happy doing what he knows how to do, proud that he has taught himself new online skills, ie, online PAYE and VAT returns, but still hesitant to try new things. An example he gave me was that he had been given an iTunes voucher for Christmas but hadn't get got around to finding out how to use this.

He is happy to shop, find cinema and train times online. He will pay for tickets via his credit card but will not do online banking as he is not confident in the security provided. He is alo a member of LinkedIn, although rarely uses it as he is not looking to grow his business and

it is therefore not necessary. He dislikes that lack of human contact when using the internet. He finds it difficult to ask questions if he needs help. He is much happier on sites which allow him to speak to a person, ie, when booking a holiday he would prefer to be on the phone talking to an advisor while looking at the site and images online. He dislikes the sites which have no phone number, or which have hidden details to make it difficult to contact them.

He feels websites are getting better at catering for people of his age group. I questioned whether it was the sites getting better, or his familiarity and ability which was improving. He agreed it was both, but was clear sites are much better than they used to be.

8.This lady is over 70 and her eyesight is poor – she needs thick glasses to read and still finds small print a struggle. She doesn't use the internet very often at all, maybe once a month, occasionally more. She tends to leave it to her husband to use if they require anything.

She isn't particularly confident, she doesn't really under the internet and feels silly asking 'stupid' questions as she knows she should know the answer, so tends to avoid using it. She loves her garden and will look up information about plants on occasion. She also likes to send emails on occasion, but she says she doesn't really understand the point of the internet, she'd much rather talk to people or do her gardening.

She found the text on the HMRC site difficult to read, she could tlell there were lots of 'buttons' but couldn't make out what they were for. She found BBC My Way much less confusing, although she much preferred the Saga site in terms of simplicity. The BBC site had a lot going on and she thought is was confusing

9. This gentleman was 60-70 and a frequent internet user, logging on everyday from home. He feels quite confident about the internet, he is not scared to use it and will log on to email, seek information, read the news, check for holiday deals or check prices before buying goods for the home. He doesn't pay bills or do banking online and doesn't feel happy paying online and entering his credit card details. He finds sites with moving (drop down/flyout) menus tricky to use, otherwise there is nothing he dislikes and feels that yes, most sites cater for people his age group. He has problems remember his passwords as he is aware that passwords shouldn't be simple words/names and should be different for each site.

He preferred BBC My Web My Way and Saga over the HMRC and BBC sites feeling these sites were clearer and appeared easier to use. He wasn't keen on the BBC site saying he preferred how the site was present last year before they changed to the latest style.

10. This lady was 60-70. She uses the internet at home once or twice a week. She feels OK about going online although admits she doesn't do an awful lot once on the web, she just uses email and looks up news and information about her interests. She actually said she finds the internet boring. On questioning she admits she knows she doesn't use all the available sites that she could do, but still finds it all rather dull!

She is however happy with the few sites that she does know and use. She doesn't like to give away her personal information online so doesn't sign up to register with sites.

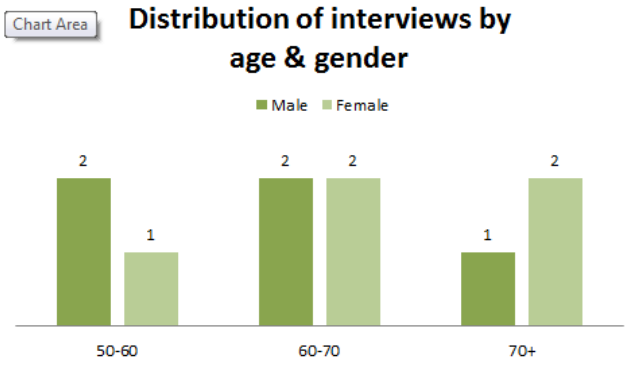
She also preferred the BBC My Web My Way and Saga sites as they looked less busy and more simple to use. She did quite well identifying the icons, although she had been present at the previous two interviews so this may have helped her.

Appendix 8

Requirements Elicitation Questionnaire

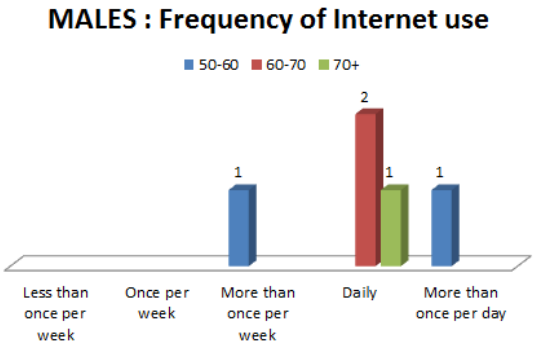
INTERVIEWEES BY AGE & GENDER

	50-60	60-70	70+
Male	2	2	1
Female	1	2	2

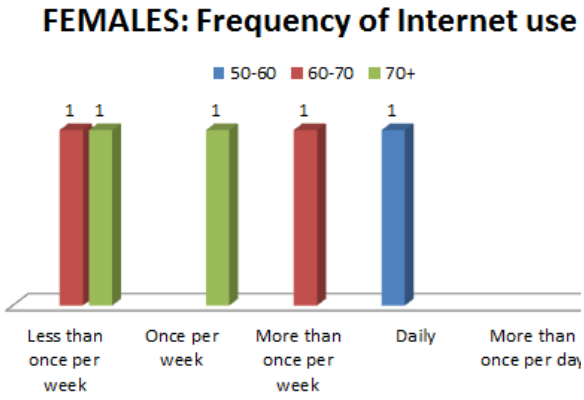


FREQUENCY OF INTERNET USE

MALES	Less than once per week	Once per week	More than once per week	Daily	More than once per day
50-60			1		1
60-70				2	
70+				1	



FEMALES	Less than once per week	Once per week	More than once per week	Daily	More than once per day
50-60				1	
60-70	1		1		
70+	1	1			



Appendix 9

Survey Results

Scores given to each site by age group of users. 5 meaning the site was considered easy to use and 1 difficult to use.

	50-60	60-70	70+
HMRC	5,4,3	3,3,4,3	2,4,2
BBC My Web My Way	3,3,3	4,4,5,4	4,4,4
BBC	3,2,5	3,3,4,2	3,3,2
Saga	4,4,5	4,4,5,5	5,5,5

Here I analyse what my interviewees made of the icons I presented to them during the interview:

ICON	**SUGGESTED MEANING AND NUMBER OF RESPONSES (In order of most common to least common response)**				
	Move forward / next **6**	Scroll page **2**	Go right **1**	Pass **1**	
	Pass **7**	Larger Print / font **3**			
	Zoom in/out **9**	More detail **1**			
	Pass **6**	Home page **2**	Switch on **1**	Move to top corner **1**	

	Move forward / next 5	Play 2	scroll 2	Pass 1	
	Happy with this/OK 7	Correct 2	Like 1		
	Enlarge / decrease size 6	Calculator 2	Pin-pointing something 1	Zoom 1	
	Phone or postal information 5	Contact us 4	Telephone banking 1		
	Pass 4	Blue cross 2	Calculator 2	Zoom 1	First aid 1
	Friends / chat 3	Pass 3	Parent & Child approved 2	For children 1	Parental control 1
	Send email 8	More information 1	Open something 1		
	Search 5	Zoom 4	Bring into focus 1		
	Home 9	Pass 1			
	Information 9	Help 1			
	Correct / OK 5	Yes 2	Agree 1	Like 1	Pass 1
	Edit/write 4	Send message 3	Written confirmation 1	Printing 1	New document 1
	Cancel/close 4	Incorrect 3	Delete 1	Switch off 1	Pass 1
	Dictionary 4	F.A.Qs 2	Information 2	Manual 1	Pass 1
	Home 8	Pass 1	Environmentally friendly 1		
	No entry 5	Pass 4	Minimise 1		
	Increase text size 6	Different window sizes 2	Pass 2		

In conclusion

Most of those questioned were happy to hazard a guess at what most icons meant – and many gave a sensible answer.

 However in the case of non-conventional icons just as the one shown to the left, which were not clear without accompanying text, ie. 7 out of 10 passed giving an opinion.

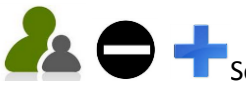
 The conventional search icon (magnifying glass) was described as a zoom in/out icon by 9 of the 10 people questioned.

 The home icons where clearly identified and understood by the majority.

 9 of the 10 questioned recognised this icon as 'information' while one suggested it meant 'help'. However, you could argue that information and help could mean the same thing on a webpage.

 7 out of 10 people didn't even attempt to guess what the 'make text larger' icon meant.

 Some icons produced various responses, ie. good, ok, correct, like. However, these are all of a positive and similar meaning, and when on a website and within context, the meaning should be clearer.

 Some of the icons shown produced a variety of suggested meanings from those questioned. Clearly pointing to the requirement to include a textual meaning to icons used also.

 The binoculars, often used to zoom, were actually labelled as search by 5 of those questioned, and zoom by 4.

And here I analyse what my interviewees made of the websites and menu options presented:

Sample Menu Style	1st	2nd	3rd	4th	5th	6th
Student Support | Social | News |			2	1		7
Search Services Hobby Gifts Favorites	2	2	1	5		
	1		3		3	3

	1	1	1	4	3	
	2	3	3		2	
	4	4	2			

Appendix 10

Document Type Declaration

This is the first thing that should be in a HTML document coming before the HTML tag – this tag tells the browser what version of mark-up language the page has been written in. It refers to the DTD (document type definition) which is where the rules for the markup language are found. This ensures browsers are able to render (show) the page contents correctly. (

The doc-type used by default for my application is:

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">

This is XHTML transitional and because Dreamweaver was to edit the code this was inserted automatically.

However the header tag was not supported, which caused validation issues. I then discovered this was because the header tag is a HTML5 tag and therefore should not have been used.

The name after DOCTYPE (html) identifies the root element (defines the kind of document the file is)

PUBLIC points to a URL where the DTD can be found (and downloaded by the browser if necessary). EN identifies the language (English) and from this the browser would also know that text should be displayed left to right of the screen.

<html xmlns="http://www.w3.org..**" xml: lang="en" lang="en">**

Xmlns stands for "XML namespace" and this tells the browser the names of the elements in the document are XHTML. Namespaces avoid potential name clashes when different markup languages are combined in a single document and should appear in every XHTML document.

Appendix 12

A Simplified Search via Google.

It was my intention to implement a simplified search mechanism which would search only UK sites (as my website is targeted at a UK market) and display only 5 key results per page.

I found I was able to set my personal search parameters within Google, but in the time I had available was unable to develop a search function which suited the requirements I would wish for it to. These were:

- Only UK based sites in the results
- Ensure only reputable sites returned
- Ensure relevant site (not advertisements) returned in the results
- 5 key results per page to reduce confusion

I found code to include a search on this website:
http://www.askdavetaylor.com/how_can_i_add_a_google_search_box_to_my_web_site.html

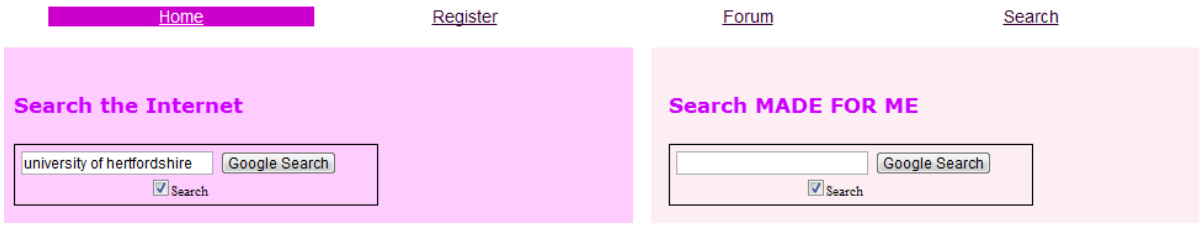
I adapted this code slightly to return results from Google .co.uk only, however, this really isn't the desired result. The results displayed are all those on the google.co.uk site, not from all .co.uk domains. I also added a second search box which is to return results from the MADE FOR ME site only, however as I have worked on the Mowes Portable server and not online to develop the MADE FOR ME site, the pages have not yet been indexed by Google and results are therefore not showing in the results, meaning I cannot test if this works correctly at this time.

The code used:

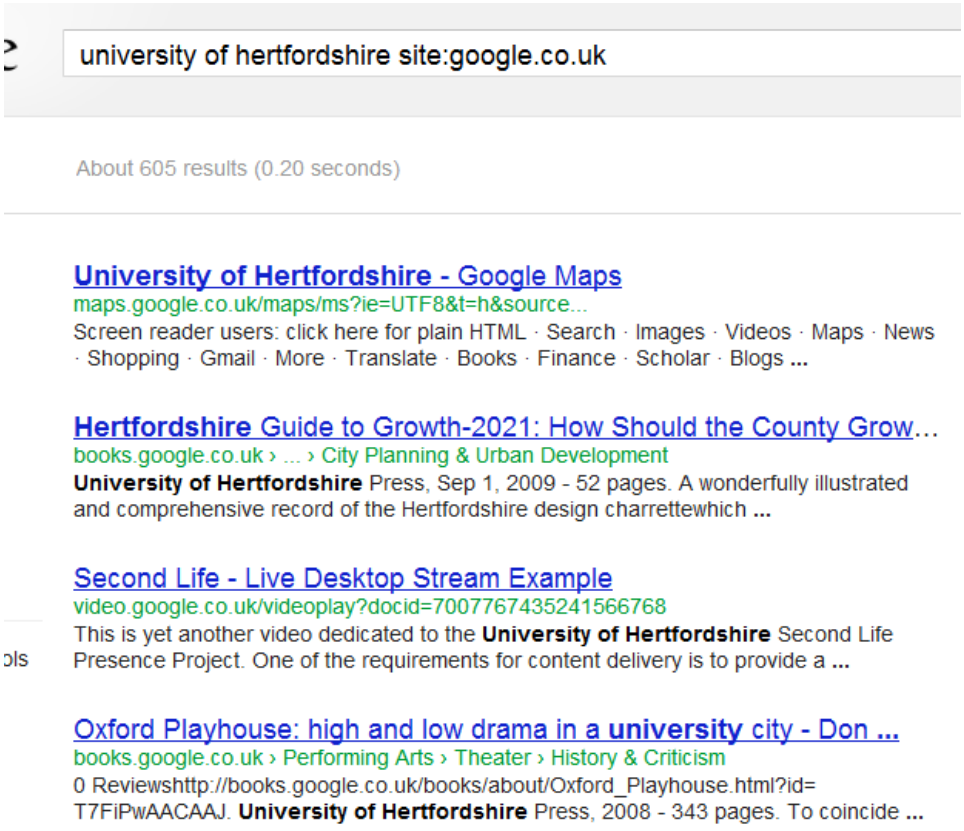
```
<form method="get" action="http://www.google.com/search">
<div style="border:1px solid black;padding:4px;width:20em;">
<table border="0" cellpadding="0">
<tr><td>
<input type="text"   name="q" size="25" maxlength="255" value="" />
<input type="submit" value="Google Search" /></td></tr>
<tr><td align="center" style="font-size:75%">
<input type="checkbox"  name="sitesearch" value="google.co.uk" checked />Search<br />
</td></tr></table>
</div>
</form>
```

Screen prints of the search page in action

Initial appearance with search term University of Hertfordshire entered:



Search results returned by Google after entering a search for University of Hertfordshire:



To search the Made For Me site for Accessibility:

The site is not indexed by Google so results are not currently available, but the screen shot below confirms that the pages held under my domain are the only ones being searched as expected.

Your search - **accessibility site:tracypez.co.uk/PROJECT** - did not match any documents.

Suggestions:

- Make sure all words are spelled correctly.
- Try different keywords.
- Try more general keywords.
- Try fewer keywords.

Appendix 13

Popular sites compared against Web Content Accessibility Guidelines

	www.amazon.co.uk	www.tesco.com	www.hmrc.gov.uk	www.facebook.com	www.saga.co.uk	www.easyjet.com
General:						
-Consistency – navigation	Y	Y	Y	Y	Y	N
-Consistency – page layout	N	N	Y(exc Home)	Y	Y	N
-Group related links	Y	Y	Y	Y	Y	Y
-Logical tab order through links	Y	Y	Y	N	Y	Y
-Navigation bars highlighted	Y	Y	Y	Y	Y	Y
-key information at beginning of lists /paragraphs/headings	Y	Y	Y	Y	Y	Y
-Organise documents so they can be read without CSS.	Y	N	Y	Y	Y	Y
Forms:						
-Place holding characters	N	Y	N/A	Y	Y	Y
-Use form labels	Y	Y		N	Y	Y
Images:						
-Avoid moving images	Y	Y	Y	Y	Y	N
-Provide text equivalent	Y	N	Y	N	Y	Y
Links:						
-identify target of each link	Y	N	Y	N	Y	N
Structure:						
-Use elements to convey structure	Y	Y	Y	Y	Y	Y
-Use relative not absolute units (for size)	N	Y		N	N	N
-Use style sheets to control layout and presentation	Y	Y	Y	Y	Y	Y

Appendix 14

Placeholders and labels can be used to populate form fields and are required for accessibility. These were used in my application for the user registration form.

The images below demonstrate placeholders in use within my application.

The place holder text disappears when the user accesses the field as shown.

1. view the form:

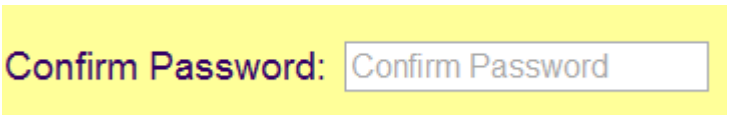
2. Click on First Name field:

3. Move to Last Name field:

However, this didn't happen when I used the value="value" attribute and in IE the user would have had to manually delete the placeholder text I'd entered! I used some JavaScript to remove this text automatically:

: onmouseout="if(this.value=='')this.value="Last Name"). This meant the placeholding text was put back if the user left a field blank, but only if they moused out, not tabbed out. I then changed the event to onblur.

I then added a placeholder to the password field:



This didn't work due to the encryption set and the placeholder looked like this:

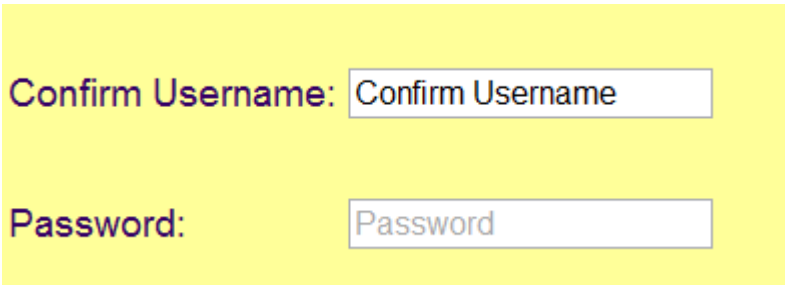
I tried the label element which is advised for use with many assistive technologies.

I used code from http://www.jimthatcher.com/webcourse8.htm to guide me.

<label **for="fn"**>First Name:</label>

<input type="text" name="fn" **id="fn"** size="20" />

I assigned an id to each input element of the form and while this didn't change the look or functionality of the form and didn't put 'placeholders' on the page, it did ensur the form was accessible. I then tried using placeholders, values AND labels. However the values took priority over the placeholders:



However, as nothing showed in the password and confirm password fields without placeholders being present I decided to leave placeholders in these 2 fields where I couldn't enter values due to the encryption.

Appendix 15

Style Sheets

My application uses style sheets and allows the user to switch between three to enlarge font size. In order to implement this I first defined the style sheets which are available for use within the header of the page:

```
<!-- sets style sheets available to page, Pez.css is the default -->
<link rel="stylesheet" type="text/css" href="Pez.css" title="main" media="screen" />
<link href="Pez2.css" rel="alternate stylesheet" type="text/css" title="alt1" media="screen" />
<link href="Pez3.css" rel="alternate stylesheet" type="text/css" title="alt2" media="screen" />
```

I then added JavaScript to change the CSS when the user clicks the relevant link:

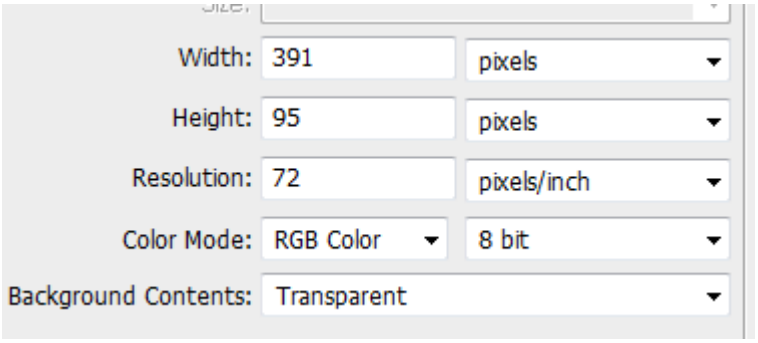
```
<!-- Script to change style sheets on-click function -->
<script language="Javascript" type="text/javascript">
function changeStyle(title) {
var lnks = document.getElementsByTagName('link');
for (var i = lnks.length - 1; i >= 0; i--) {
if (lnks[i].getAttribute('rel').indexOf('style')> -1 && lnks[i].getAttribute('title')) {
lnks[i].disabled = true;
if (lnks[i].getAttribute('title') == title) lnks[i].disabled = false;
}}}
</script>
```

The clickable links to change the style sheets appeared in the right.php include file which set the menu options to the right of each page:

```
<!-- hyperlinks to allow user to change style sheet if desired -->


<p><span onclick="changeStyle('main')">
<img alt="Standard font" src="../images/AAA.GIF" width="31" height="21" border="0"/>
Standard font</span><br>

<span onclick="changeStyle('alt1')">
<img alt="Medium font" src="../images/AAA.GIF" width="36" height="26" border="0"/>
Medium font</span><br>

<span onclick="changeStyle('alt2')">
<img alt="Large font" src="../images/AAA.GIF" width="41" height="31" border="0"/>
Large font</span></p>
```

Appendix 16

I created the above graphic in Photoshop. The properties were set as follows:



The resolution is sufficient for a web image as is the colour mode.

I selected Tahoma font as there are no 'feet' on this font style. I then cropped and resized the image ready for addition to my web application. I saved the imaged as normal row order rather than an interlaced gif. This is because the image is small enough to download in full speedily, and even without the image being displayed the accompanying text will ensure the user knows how to use the site.

Appendix 17

Evaluation Questionnaire

Evaluation Questionnaire

University of Hertfordshire

Protocol Number: **1112/156**

About you:

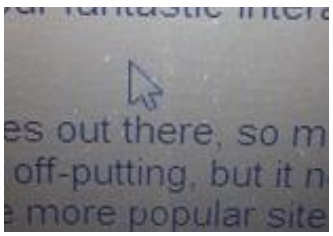
1. Personal information (individuals will not be identifiable).

Age range: <50 / 50-60 / 60-70 / >70	**Gender:** MALE / FEMALE

2. How often do you use the Internet?

3. You see the following on a website – what do you think would happen if you clicked on this?

4. Which mouse pointer arrow do you prefer / think would be easier to work with? Red or white?



5. Which of icons below do you think is most appropriate for each action listed? Each icon could represent more than one meaning, each meaning could be represented by more than one icon, and not all meanings necessarily have an icon shown to represent them.

5.1. Log-in to a site you have previously registered for (ie.type G here if you think the icon G is most appropriate – you may choose more than one)

5.2. Ask a question

5.3. Go to the home page

5.4. Chat with other users

5.5. Register on a site

5.6. Log-out

5.7. Search

5.8. Zoom

5.9. Learn something new

A

B

C

D

E

F

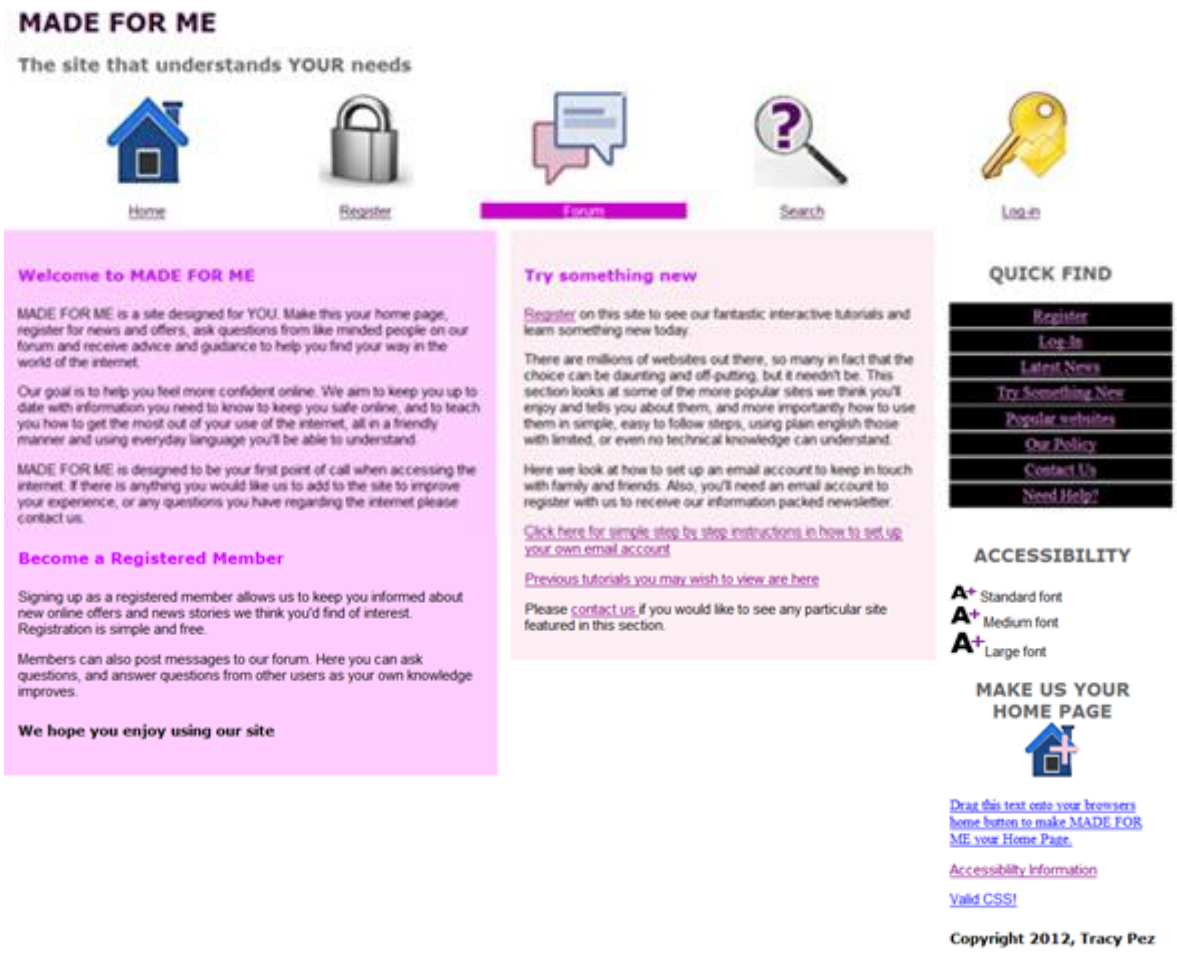
G

H

6. What do you think the icons below could represent?

7. What are your thoughts regarding the overall look of the site shown below?

(ie. does it appear user friendly and understandable?)



Thank you very much for completing this questionnaire

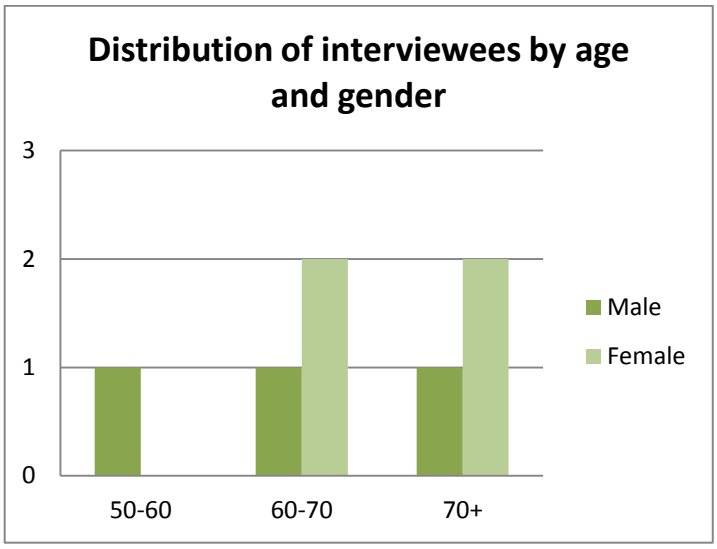
Tracy Pez

Appendix 18

Evaluation Questionnaire Results

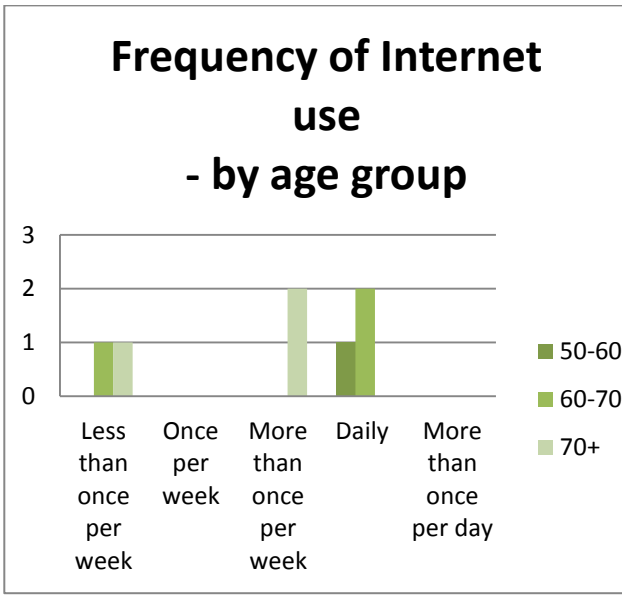
INTERVIEWEES BY AGE & GENDER

	50-60	60-70	70+
Male	1	1	1
Female	0	2	2



FREQUENCY OF INTERNET USE

	Less than once per week	Once per week	More than once per week	Daily	More than once per day
50-60				1	
60-70	1			2	
70+	1		2		



All Seven respondents identified this icon as meaning 'increase font size'

Did they like the red arrow?

5 respondents preferred the red arrow, 2 (both males) preferred the white arrow shown.

Here I analyse what my interviewees made of the suggested meanings and icons I presented to them: (Some respondents gave more than one answer. The number of responses received for each icon is shown in red)

SUGGESTED MEANING	**ICON AND NUMBER OF RESPONSES (In order of most common to least common response)**				
Log-in	 4	 1	 1	 1	 1
Ask a question	 7				
Home-page	 6	 1			
Chat	 3	 3	 2		
Register	 3	 2	 1	No answer 1	
Log-out	 3	 2	 2	 1	
Search	 4	 3	No answer 1		
Zoom	 4	 1	 1	No answer 1	
Learn something	 6				

Interviewees were shown the following icons and gave the following responses as to their meanings:

	**Lock / Unlock** 2	**Log off** 2	**Not secure** 1	**Log-on banned** 1	**Do not enter** 1
	**Home page** 3	**Don't know** 3	**Connected to home page** 1		
	**Learn something** 4	**Register** 2	**Log-in** 1		
	**Ask a question** 6	**Help** 1			

Comments regarding the site (from screen shot not actual use).

Positive:	**Comments for consideration:**
• The site looks user friendly • I think it looks easy to understand • I find icons with words underneath much better and like these • I like the text under the icons so I know what to do • It doesn't look overly complicated • It looks as if it might be interesting • Oh good, you can make the text larger	• Doesn't appear very clear for beginners. • The print looks too small, pages should be sequential not adjacent. • I'm not sure I would register, unless I can have a couple of 'look-see' items, to see if it provides anything of interest to me.

In conclusion

 The first icon was guessed as meaning lock/unlock or log-in. This icon wasn't suggested for any other uses and it's matching 'log-off icon (second image shown) was also equally recognised as meaning lock/unlock or log-out.

 3 respondents identified this icon to mean register, 2 to log-in and 1 to log-out. Considering these responses along with those for the key icons (above) I selected the lock and key theme to represent register, log-in and log-out for the site.

 7 respondents suggested this icon meat 'ask a question' while 3 people thought it could mean search which is its intended meaning

 As expected 6 of the 7 respondents identified the first icon as representing the homepage. However the second icon, meant to represent 'make this page your homepage' confused some users, however, I am confident that in context and with a textual label the meaning will become clear to all.

 3 people selected this icon to represent chat. However, it was also chosen to represent register, logout and zoom.

 This icon was one I was considering to use to represent registering on the site. However, no users selected this icon to represent that purpose. Instead, 1 person selected it to mean homepage, 1 to mean log-in, 2 to mean log-out and 3 for chat. I didn't use this icon in my application.

 This icon also gave a variety of responses and appeared to confuse users. I avoided using it.

 6 people identified this icon to mean 'learning or teaching'. However, 4 also selected it to mean search and 2 for register and 1 further person thought it meant log-in. However, when the icon was shown again without a possible meaning given, 4 suggested it meant to learn something, 2 to register and 1 to log-in and nobody suggested search on this occasion. Therefore I felt it would be safe to assume, that with text, this icon could be successfully used to represent the 'try something new' learning section of the site.

Appendix 19

White Box Testing

Cookies – included on all pages – sends user to alternative page if not logged in where alternative menus are displayed	**Result**
<?PHP //start session, checks user is logged in and if not redirects them to non-member homepage page session_start(); if (!(isset($_SESSION['login']) && $_SESSION['login'] != '')) { header ("Location: indexNR.php"); } ?>	

Style Sheet Switching, included on all pages.	**Result**
<!-- style sheets available --> <link rel="stylesheet" type="text/css" href="Pez.css" title="main" media="screen" /> <link href="Pez2.css" rel="alternate stylesheet" type="text/css" title="alt1" media="screen" /> <link href="Pez3.css" rel="alternate stylesheet" type="text/css" title="alt2" media="screen" /> <!--<script src="scripts/jquery.js" type="text/javascript"></script> -FAILED ATTEMPT TO ADD SCRIPT AS AN INCLUDE FILE-> <!--JavaScript to change styles --> <script language="Javascript" type="text/javascript"> function changeStyle(title) { var lnks = document.getElementsByTagName('link'); for (var i = lnks.length - 1; i >= 0; i--) { if (lnks[i].getAttribute('rel').indexOf('style')> -1 && lnks[i].getAttribute('title')) { lnks[i].disabled = true; if (lnks[i].getAttribute('title') == title) lnks[i].disabled = false; }}} </script> ***And from the right.php included file*** <!-- hyperlinks to allow user to change style sheet if desired --> <p> Standard font Medium font <img alt="Large font" src="../images/AAA.GIF" width="41" height="31"	 All Style sheets are available and switching successful.

border="0"/>Large font</p>	

Navigational include files – included on all pages – however calls alternative files dependent upon whether user not logged in or not.	**Result**
 <?php include("includes/header.php"); ?> <?php include("includes/menu_registered.php"); ?> <?php include("includes/right_reg.php"); ?> 	 Or menu.php if user not logged in Or right.php if user not logged in

Registration form – client side scripts to validate form input	**Result**
<!—Script to check input in form--> <script language="JavaScript" type="text/javascript"> function checkform (form) { if (form.First_Name.value == "") { alert("Please enter your first name."); form.First_Name.focus(); return false ; } if (form.Last_Name.value == "") { alert("Please enter your last name."); form.Last_Name.focus(); return false ; } if (form.EMail_Address.value == "") { alert("Please enter your email address."); form.EMail_Address.focus(); return false ; } if (form.Confirm_Email_Address.value == "") { alert("Please cofirm your email address."); form.Confirm_Email_Address.focus(); return false ; } if (form.Username.value == "") { alert("Please enter your username."); form.Username.focus(); return false ; } if (form.Password.value == "") { alert("Please enter a password.");	  Place holder text invalidated these checks regarding empty fields, but without placeholders in the form this code worked.

```
form.Password.focus();
return false ;
}
// require at least 6 characters be entered
if (form.Password.value.length < 6)
{
alert("Passwords must be at least 6 characters.");
form.Password.focus();
return (false);
}
// require maximum of 10 characters to be entered
if (form.Password.value.length > 10)
{
alert("Passwords must be a maximum of 10 characters.");
form.Password.focus();
return (false);
}
// check if both Email fields are the same
if (form.EMail_Address.value !=
form.Confirm_Email_Address.value)
{
alert("The two email addresses entered are not the same.");
form.Confirm_Email_Address.focus();
return (false);
}
// check if both password fields are the same
if (form.Password.value != form.Confirm_Password.value)
{
alert("The two passwords are not the same.");
form.Confirm_Password.focus();
return (false);
}
// check if both username fields are the same
if (form.Username.value != form.Confirm_Username.value)
{
alert("The two usernames entered are not the same.");
form.Confirm_Username.focus();
return (false);
}
// test if valid email address, must have @ and .
var checkEMail_Address = "@.";
var checkStr = form.EMail_Address.value;
var EMail_AddressValid = false;
var EMail_AddressAt = false;
var EMail_AddressPeriod = false;
for (i = 0;  i < checkStr.length;  i++)
{
ch = checkStr.charAt(i);
for (j = 0;  j < checkEMail_Address.length;  j++)
{
if (ch == checkEMail_Address.charAt(j) && ch == "@")
```

```
EMail_AddressAt = true;
if (ch == checkEMail_Address.charAt(j) && ch == ".")
EMail_AddressPeriod = true;
if (EMail_AddressAt && EMail_AddressPeriod)
break;
if (j == checkEMail_Address.length)
break;
}
// check both the @ and . were in the string
if (EMail_AddressAt && EMail_AddressPeriod)
{
EMail_AddressValid = true
break;
}
}
if (!EMail_AddressValid)
{
alert("The \"email\" field must contain an \"@\" and a
\".\".");
form.EMail_Address.focus();
return (false);
}
return true ;
}
</script>
```

Server Side form validation for registration	**Result**
<?php //connects to database include 'dbcon.php'; //This code runs if the form has been submitted if (isset($_POST['submit'])) { //This makes sure they did not leave any required fields blank if (!$_POST['Username'] | !$_POST['Password'] \| !$_POST['Confirm_Password']) { die('You did not complete all of the required fields'); } // checks if the username is in use if (!get_magic_quotes_gpc()) { $_POST['Username'] = addslashes($_POST['Username']); } $usercheck = $_POST['Username']; $check = mysql_query("SELECT Username FROM auth_users WHERE Username = '$usercheck'") //previously checked from register or die(mysql_error()); $check2 = mysql_num_rows($check);	  (although placeholder text acts as data if user does not add their own data) 

```
//if the name exists it gives an error
if ($check2 != 0)
die('<P>Sorry, the username '.$_POST['Username'].' is
already in use, please try registering again (click your back
button)');
}
// here we encrypt the password and add slashes if needed
// works for registration but caused errors for login page so
commented out
//$_POST['Password'] = md5($_POST['Password']);
//$_POST['Confirm_Password'] =
md5($_POST['Confirm_Password']);
//if (!get_magic_quotes_gpc()) {
//$_POST['Password'] = addslashes($_POST['Password']);
//$_POST['Confirm_Password'] =
addslashes($_POST['Confirm_Password']);
//$_POST['Username'] = addslashes($_POST['Username']);
//}
// now we insert it into the database
$firstname = $_POST['First_Name'];
$lastname = $_POST['Last_Name'];
$email = $_POST['EMail_Address'];
$confirmemail = $_POST['Confirm_Email_Address'];
$username = $_POST['Username'];
$confirmusername = $_POST['Confirm_Username'];
$password = $_POST['Password'];
$confirmpassword = $_POST['Confirm_Password'];
mysql_query("insert into register values
('$firstname','$lastname','$email','$confirmemail','$userna
me','$confirmusername','$password','$confirmpassword')");
?>
<!-- let them know if their registration was successful -->
<h1>Registered</h1>
<p>Thank you, you have registered - once an administrator
has approved your membership you will be able to
login.</p>
<?php
}
else
{
?>
<!-- This is what they see before they have registered -->
<form action="<?php echo $_SERVER['PHP_SELF']; ?>"
method="post" onSubmit="return checkform(this);">
<table border="0">
<tr><td><p><label for="FN">First
Name:</label></p></td><td>
<input type="text" name="First_Name" id="FN"
maxlength="30" value="First
Name"onfocus="if(this.value=='First Name')this.value=''"
onblur="if(this.value=='')this.value='First Name'" />
```

This code works to encrypt the password data entered, however, errors occurred with the log-in form and attempting to synchronise registration and log-in procedures so this is commented out.

```
</td></tr>
<tr><td><p><label for="LN">Last
Name:</label></p></td><td>
<input type="text" name="Last_Name" id="LN"
maxlength="30" value="Last Name"
onfocus="if(this.value=='Last Name')this.value=''"
onblur="if(this.value=='')this.value='Last Name'" />
</td></tr>
<tr><td><p><label for="E">EMail
Address:</label></p></td><td>
<input type="text" name="EMail_Address" id="E"
maxlength="30" value="Email Address"
onfocus="if(this.value=='Email Address')this.value=''"
onblur="if(this.value=='')this.value='Email Address'" />
</td></tr>
<tr><td><p><label for="CE">Confirm
Email:</label></p></td><td>
<input type="text" name="Confirm_Email_Address" id="CE"
maxlength="30" value="Confirm Email Address"
onfocus="if(this.value=='Last Name')this.value=''"
onblur="if(this.value=='')this.value='Confirm Email Address'"
/>
</td></tr>
<tr><td><p><label
for="U">Username:</label></p></td><td>
<input type="text" name="Username" id="U"
maxlength="30" value="Username"
onfocus="if(this.value=='Username')this.value=''"
onblur="if(this.value=='')this.value='Username'" />
</td></tr>
<tr><td><p><label for="CU">Confirm
Username:</label></p></td><td>
<input type="text" name="Confirm_Username" id="CU"
maxlength="30" value="Confirm Username"
onfocus="if(this.value=='Confirm Username')this.value=''"
onblur="if(this.value=='')this.value='Confirm Username'" />
</td></tr>
<tr><td><p><label for="P">Password:</p></td><td>
<input type="password" name="Password" id="P"
maxlength="30" placeholder="Password"/>
</td></tr>
<tr><td><p><label for="CP">Confirm
Password:</label></p></td><td>
<input type="password" name="Confirm_Password"
id="CP" maxlength="30" placeholder="Confirm Password"/>
</td></tr>
<tr><th colspan="2"><input type="submit" name="submit"
value="REGISTER" /></th></tr> </table>
</form>
<?php
} ?>
```

Log-in form and checks	Result
 <form action="<?php echo $_SERVER['PHP_SELF']?>" method="post"> <table border="0"> <tr><td colspan="2"> Login </td></tr> <tr><td> Username: </td><td> <input type="text" name="Username" maxlength="30" /> </td></tr> <tr><td> Password: </td><td> <input type="Password" name="Password" maxlength="32" /> </td></tr> <tr><td colspan="2" align="right"> <input type="submit" name="submit" value="Login" /> </td></tr> </table> </form> <?php include 'dbcon.php'; // Username and password sent from form $Username=$_POST['Username']; $Password=$_POST['Password']; // To protect MySQL injection $Username = stripslashes($Username); $Password = stripslashes($Password); $Username = mysql_real_escape_string($Username); $Password = mysql_real_escape_string($Password); $sql="SELECT * FROM auth_users WHERE Username='$Username' and Password='$Password'"; $result=mysql_query($sql); $count=mysql_num_rows($result); // If result matched $Username and $Password, table row must be 1 row if($count==1) { // Register $Username, $Password and redirect to file "members.php" session_register("Username"); session_register("Password"); //starts and identifies a session which is called on all restricted pages and checks user is logged in before that page is displayed $_SESSION['login']="1"; header("location:members.php"); }else { echo "<P>Please enter a valid Username and Password"; }?>	     

Forum	Result
<?php include 'dbcon.php'; // now we insert it into the database $ID = $_REQUEST['ID']; $name = $_POST['Name']; $message = $_POST['Message']; mysql_query("insert into contacts values ('$ID', '$name','$message')"); $name =mysql_real_escape_string($name); //To prevent SQL injection $message =mysql_real_escape_string($message); //To prevent SQL injection ?> Post Comment <!-- This is what they see before they have placed a post on the forum --> <form action="<?php echo $_SERVER['PHP_SELF']; ?>" method="post" onSubmit="return checkform(this);"> <table border="0"> <tr><td> Name: </td><td> <input type="text" name="Name" maxlength="30" /> </td></tr> <tr><td> Message: </td><td> <textarea name="Message" cols=35 rows=12></textarea> </td></tr> <tr><th colspan=2><input type="submit" name="submit" value="Post Message" /></th></tr> </table> </form> Messages Received <?php //connects to database include 'dbcon.php'; //selects fields from contacts table $result = mysql_query("SELECT ID, Name, Message FROM contacts"); if ($row = mysql_fetch_array($result)) { while ($row = mysql_fetch_array($result)) { $ID = $row['ID']; $Name = $row['Name']; $Message = $row['Message']; //displays fields selected echo " Name:"; echo $Name; echo " "; echo " Message:"; echo $Message;	   

```
echo "<br>";
echo
"<p>_____";
echo "<br>$nbsp<br>";
} }
else
{
echo "<p>There are no messages to view"; }
?>
</div>
```

User log-out	**Result**
<?php //calls the session and destroys/ends it. session_start(); session_destroy(); ?> You have logged out 	

Add website information to page	Result
<?php //connects to database include 'dbcon.php'; //selects fields from websites table $result = mysql_query("SELECT Site_Name, URL, Description FROM websites"); if ($row = mysql_fetch_array($result)) { do { $Site_Name = $row['Site_Name']; $URL = $row['URL']; $Description = $row['Description']; //displays fields selected echo "<p>Website:"; echo $Site_Name; echo " "; echo "<p>Website address:"; //echo ""$URL""; echo $URL; echo "<p>Description:"; echo $Description; echo " "; echo "<p>_____"; echo " $nbsp "; } while ($row = mysql_fetch_array($result)); } else { echo "<p>There are no websites"; } ?> <?php //This code runs if the form has been submitted if (isset($_POST['submit'])) { // now we insert website values ('$Site_Name','$Description','$URL'"); into the websites table in the database $Site_Name = $_POST['Site_Name']; $URL = $_POST['URL']; $Description = $_POST['Description']; mysql_query("insert into websites values ('$Site_Name','$URL','$Description'"); ?> //<!-- Now we let them know website was added	  displays information from the database  information is not being inserted into the database

```
successfully -->
<h1>Thank you</h1>
<h2>The website has been added to database</h2>
<?php
}
else
{
?>
<!-- This is what they see before website information is
entered -->
<form action="<?php echo $_SERVER['PHP_SELF']; ?>"
method="post" onSubmit="return checkform(this);">
<table border="0">
<tr><td><p>Site Name:</p></td><td>
<input type="text" name="Site_Name"
maxlength="30"></input>
</td></tr>
<tr><td><p>URL:</p></td><td>
<input type="text" name="URL" maxlength="60"></input>
</td></tr>
<tr><td><p>Description:</p></td><td>
<input type="text" name="Description"
maxlength="120"></input>
</td></tr>
<tr><th colspan="2"><input type="submit" name="submit"
value="SHARE WEBSITE"></input></th></tr> </table>
</form>
<?php
}
?>
```

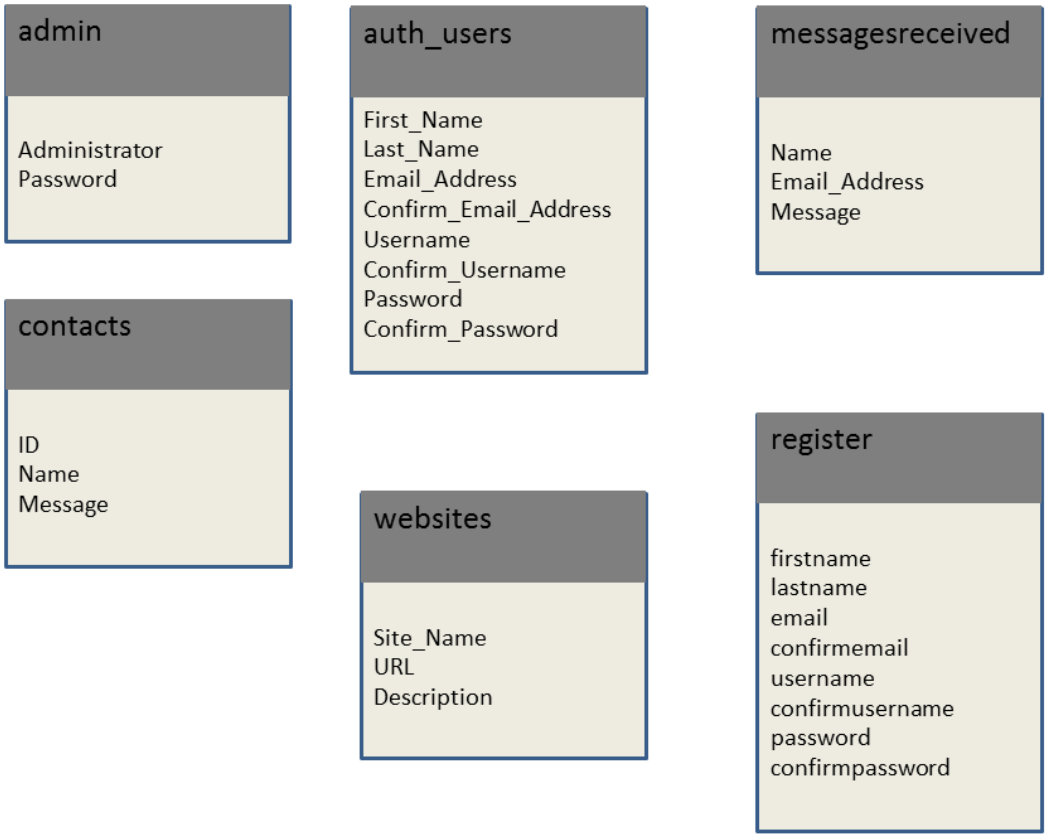
Appendix 20

Source Code

See page 120

Appendix 21

Database tables and their attributes as used for the application development



MADE FOR ME: SOURCE CODE

INDEX.PHP (Only differences between this and the non-member homepage are the include file for the menus - this is the case for all pages where only one version is documented.)

```
<?PHP
//start session, checks user is logged in and if not redirects them to non-member homepage page
session_start();
if (!(isset($_SESSION['login']) && $_SESSION['login'] != '')) {
header ("Location: indexNR.php");
}
?>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">

<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>MADE FOR ME</title>

<!-- style sheets available -->
<link rel="stylesheet" type="text/css" href="Pez.css" title="main" media="screen" />
<link href="Pez2.css" rel="alternate stylesheet" type="text/css" title="alt1" media="screen"
/>
<link href="Pez3.css" rel="alternate stylesheet" type="text/css" title="alt2" media="screen"
/>

<!--<script src="scripts/jquery.js" type="text/javascript"></script> -FAILED ATTEMPT TO ADD SCRIPT AS AN INCLUDE FILE->
<!--JavaScript to change styles -->

<script language="Javascript" type="text/javascript">
function changeStyle(title) {
var lnks = document.getElementsByTagName('link');
for (var i = lnks.length - 1; i >= 0; i--) {
if (lnks[i].getAttribute('rel').indexOf('style')> -1 && lnks[i].getAttribute('title')) {
lnks[i].disabled = true;
if (lnks[i].getAttribute('title') == title) lnks[i].disabled = false;
}}}
</script>

</head>

<body>
```

```
<div class="header">
<?php include("includes/header.php"); ?>
<?php include("includes/menu_registered.php"); ?>
</div>

<br />

<div class="right">
<?php include("includes/right_reg.php"); ?>
</div>

<div class="content">
<h4>Welcome to MADE FOR ME</h4>
<p>MADE FOR ME is a site designed for YOU.  Make this your home page, register for news and offers, ask questions from like minded people on our forum and receive advice and guidance to help you find your way in the world of the internet. </p>
<p>Our goal is to help you feel more confident online.  We aim to keep you up to date with information you need to know to keep you safe online, and to teach you how to get the most out of your use of the internet, all in a friendly manner and using everyday language you'll be able to understand.  </p>
<p>MADE FOR ME is designed to be your first point of call when accessing the internet.  If there is anything you would like us to add to the site to improve your experience, or any questions you have regarding the internet please contact us.

<h4>Become a Registered Member</h4>
<p>Signing up as a registered member allows us to keep you informed about new online offers and news stories we think you'd find of interest.  Registration is simple and free.<p>
<p>Members can also post messages to our forum.  Here you can ask questions, and answer questions from other users as your own knowledge improves.</p>
<h5>We hope you enjoy using our site</h5>
</div>

<div class="middle">
<h4>Try something new</h4>
<p><a href="register.php">Register</a> on this site to see our fantastic interactive tutorials and learn something new today.</p>
<p>There are millions of websites out there, so many in fact that the choice can be daunting and off-putting, but it needn't be.  This section looks at some of the more popular sites we think you'll enjoy and tells you about them, and more importantly how to use them in simple, easy to follow steps, using plain English those with limited, or even no technical knowledge can understand.</p>
<p>Here we look at how to set up an email account to keep in touch with family and friends.  Also, you'll need an email account to register with us to receive our information packed newsletter.</p>
<p><a href="index.php">Click here for simple step by step instructions in how to set up your own email account</a></p>
<p><a href="index.php">Previous tutorials you may wish to view are here</a></p>
```

```
<p>Please <a href="contact.php">contact us </a>if you would like to see any particular site featured in this section.</p>
</div>

</body>
</html>
```

REGISTER.PHP

```
<?PHP
//start session, checks user is logged in and if not redirects them to non-member register page
session_start();
if (!(isset($_SESSION['login']) && $_SESSION['login'] != '')) {
header ("Location: registerNR.php");
}
?>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">

<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />

<title>MADE FOR ME</title>

<!-- sets style sheets available to page, Pez.css is the default -->

<link rel="stylesheet" type="text/css" href="Pez.css" title="main" media="screen" />
<link href="Pez2.css" rel="alternate stylesheet" type="text/css" title="alt1" media="screen" />
<link href="Pez3.css" rel="alternate stylesheet" type="text/css" title="alt2" media="screen" />

<!-- Script to change style sheets on-click function -->

<script language="Javascript" type="text/javascript">
function changeStyle(title) {
var lnks = document.getElementsByTagName('link');
for (var i = lnks.length - 1; i >= 0; i--) {
if (lnks[i].getAttribute('rel').indexOf('style')> -1 && lnks[i].getAttribute('title')) {
lnks[i].disabled = true;
if (lnks[i].getAttribute('title') == title) lnks[i].disabled = false;
}}}
</script>

</head>
```

```
<body>

<div class="header">
<?php include("includes/header.php"); ?>
<?php include("includes/menu_registered.php"); ?>
</div>

<br />

<div class="right">
<?php include("includes/right_reg.php"); ?>
</div>

<div class="content">
<h2>You are already logged in</h2>
<p>Please log-out if you wish to re-register as a new user</p>
</div>

</body>

</html>
```

REGISTERNR.PHP (non registered users page to sign-up)

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">

<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>MADE FOR ME</title>

<!-- sets style sheets available to page, Pez.css is the default -->
<link rel="stylesheet" type="text/css" href="Pez.css" title="main" media="screen" />
<link href="Pez2.css" rel="alternate stylesheet" type="text/css" title="alt1" media="screen"
/>
<link href="Pez3.css" rel="alternate stylesheet" type="text/css" title="alt2" media="screen"
/>

<!-- Script to change style sheets on-click function -->
<script language="Javascript" type="text/javascript">
function changeStyle(title) {
var lnks = document.getElementsByTagName('link');
for (var i = lnks.length - 1; i >= 0; i--) {
if (lnks[i].getAttribute('rel').indexOf('style')> -1 && lnks[i].getAttribute('title')) {
lnks[i].disabled = true;
if (lnks[i].getAttribute('title') == title) lnks[i].disabled = false;
}}}
</script>

<!—Script to check input in form-->
<script language="JavaScript" type="text/javascript">
function checkform ( form )
{
 if (form.First_Name.value == "") {
alert( "Please enter your first name." );
form.First_Name.focus();
return false ;
}

if (form.Last_Name.value == "") {
alert( "Please enter your last name." );
form.Last_Name.focus();
return false ;
}

if (form.EMail_Address.value == "") {
alert( "Please enter your email address." );
form.EMail_Address.focus();
```

```
return false ;
}


 if (form.Confirm_Email_Address.value == "") {
alert( "Please cofirm your email address." );
form.Confirm_Email_Address.focus();
return false ;
}

if (form.Username.value == "") {
alert( "Please enter your username." );
form.Username.focus();
return false ;
}

if (form.Password.value == "") {
alert( "Please enter a password." );
form.Password.focus();
return false ;
}

// require at least 6 characters be entered
if (form.Password.value.length < 6)
{
alert("Passwords must be at least 6 characters.");
form.Password.focus();
return (false);
}

// require maximum of 10 characters to be entered
if (form.Password.value.length > 10)
{
alert("Passwords must be a maximum of 10 characters.");
form.Password.focus();
return (false);
}

// check if both Email fields are the same
if (form.EMail_Address.value != form.Confirm_Email_Address.value)
{
alert("The two email addresses entered are not the same.");
form.Confirm_Email_Address.focus();
return (false);
}
```

```
// check if both password fields are the same
if (form.Password.value != form.Confirm_Password.value)
{

alert("The two passwords are not the same.");
form.Confirm_Password.focus();
return (false);
}

// check if both username fields are the same
if (form.Username.value != form.Confirm_Username.value)
{
alert("The two usernames entered are not the same.");
form.Confirm_Username.focus();
return (false);
}

// test if valid email address, must have @ and .
var checkEMail_Address = "@.";
var checkStr = form.EMail_Address.value;
var EMail_AddressValid = false;
var EMail_AddressAt = false;
var EMail_AddressPeriod = false;
for (i = 0;  i < checkStr.length;  i++)
{

ch = checkStr.charAt(i);
for (j = 0;  j < checkEMail_Address.length;  j++)
{
if (ch == checkEMail_Address.charAt(j) && ch == "@")
EMail_AddressAt = true;
if (ch == checkEMail_Address.charAt(j) && ch == ".")
EMail_AddressPeriod = true;
if (EMail_AddressAt && EMail_AddressPeriod)
break;
if (j == checkEMail_Address.length)
break;
}

// check both the @ and . were in the string
if (EMail_AddressAt && EMail_AddressPeriod)
{
EMail_AddressValid = true
break;
}
```

```
}
if (!EMail_AddressValid)
{
alert("The \"email\" field must contain an \"@\" and a \".\".");
form.EMail_Address.focus();
return (false);
}

return true ;
}

</script>

</head>

<body>

<div class="header">
<?php include("includes/header.php"); ?>
<?php include("includes/menu.php"); ?>
</div>

<br />

<div class="right">
<?php include("includes/right.php"); ?>
</div>

<div class="content">
<P> </P>

<?php
//connects to database
include 'dbcon.php';

//This code runs if the form has been submitted
if (isset($_POST['submit'])) {

//This makes sure they did not leave any required fields blank
if (!$_POST['Username'] | !$_POST['Password'] | !$_POST['Confirm_Password'] ) {
die('You did not complete all of the required fields');
}

// checks if the username is in use
if (!get_magic_quotes_gpc()) {
$_POST['Username'] = addslashes($_POST['Username']);
}
$usercheck = $_POST['Username'];
```

```
$check = mysql_query("SELECT Username FROM auth_users WHERE Username =
'$usercheck'")

//previously checked from register
or die(mysql_error());
$check2 = mysql_num_rows($check);



//if the name exists it gives an error
if ($check2 != 0)
die('<P>Sorry, the username '.$_POST['Username'].' is already in use, please try registering
again (click your back button)');
}

// here we encrypt the password and add slashes if needed
// works for registration but caused errors for login page so commented out

//$_POST['Password'] = md5($_POST['Password']);
//$_POST['Confirm_Password'] = md5($_POST['Confirm_Password']);
//if (!get_magic_quotes_gpc()) {
//$_POST['Password'] = addslashes($_POST['Password']);
//$_POST['Confirm_Password'] = addslashes($_POST['Confirm_Password']);
//$_POST['Username'] = addslashes($_POST['Username']);
//}

// now we insert it into the database
$firstname = $_POST['First_Name'];
$lastname = $_POST['Last_Name'];
$email = $_POST['EMail_Address'];
$confirmemail = $_POST['Confirm_Email_Address'];
$username = $_POST['Username'];
$confirmusername = $_POST['Confirm_Username'];
$password = $_POST['Password'];
$confirmpassword = $_POST['Confirm_Password'];

mysql_query("insert into register values
('$firstname','$lastname','$email','$confirmemail','$username','$confirmusername','$pass
word','$confirmpassword')");
?>

<!-- let them know if their registration was successful -->
<h1>Registered</h1>
<p>Thank you, you have registered - once an administrator has approved your membership
you will be able to login.</p>
<?php
}
else
```

```
{
?>

<!-- This is what they see before they have registered -->
<form action="<?php echo $_SERVER['PHP_SELF']; ?>" method="post" onSubmit="return
checkform(this);">
<table border="0">
<tr><td><p><label for="FN">First Name:</label></p></td><td>
<input type="text" name="First_Name" id="FN" maxlength="30" value="First
Name"onfocus="if(this.value=='First Name')this.value=''"
onblur="if(this.value=='')this.value='First Name'" />
</td></tr>
<tr><td><p><label for="LN">Last Name:</label></p></td><td>
<input type="text" name="Last_Name" id="LN" maxlength="30" value="Last Name"
onfocus="if(this.value=='Last Name')this.value='' onblur="if(this.value=='')this.value='Last
Name'" />
</td></tr>
<tr><td><p><label for="E">EMail Address:</label></p></td><td>
<input type="text" name="EMail_Address" id="E" maxlength="30" value="Email Address"
onfocus="if(this.value=='Email Address')this.value=''
onblur="if(this.value=='')this.value='Email Address'" />
</td></tr>
<tr><td><p><label for="CE">Confirm Email:</label></p></td><td>
<input type="text" name="Confirm_Email_Address" id="CE" maxlength="30"
value="Confirm Email Address" onfocus="if(this.value=='Last Name')this.value=''
onblur="if(this.value=='')this.value='Confirm Email Address'" />
</td></tr>
<tr><td><p><label for="U">Username:</label></p></td><td>
<input type="text" name="Username" id="U" maxlength="30" value="Username"
onfocus="if(this.value=='Username')this.value=''
onblur="if(this.value=='')this.value='Username'" />
</td></tr>
<tr><td><p><label for="CU">Confirm Username:</label></p></td><td>
<input type="text" name="Confirm_Username" id="CU" maxlength="30" value="Confirm
Username" onfocus="if(this.value=='Confirm Username')this.value=''
onblur="if(this.value=='')this.value='Confirm Username'" />
</td></tr>
<tr><td><p><label for="P">Password:</p></td><td>
<input type="password" name="Password" id="P" maxlength="30"
placeholder="Password"/>
</td></tr>
<tr><td><p><label for="CP">Confirm Password:</label></p></td><td>
<input type="password" name="Confirm_Password" id="CP" maxlength="30"
placeholder="Confirm Password"/>
</td></tr>
```

```
<tr><th colspan="2"><input type="submit" name="submit" value="REGISTER" /></th></tr>
</table>
</form>

<?php
}
?>
</div>

<div class="middle">
<p>Sign up here to enjoy the full benefits of our site.  </p>

<p>By using the site you are accepting the practices described in our <a
href="../terms.php">Privacy Policy</a></p>
<p>In brief, our privacy policy states that we collect information about you when you
register.  This is personally identifiable information like your name, address etc.  This
information is only used for the purposes defined and will never be shared with 3rd
parties.</p>
<p>We are committed to data security and the information you provide to us is kept
secure. </p>
<p>By signing up you are also requesting to receive emails from us.  This emails will be
informative and we promise we will never email you more than once a week.  You will be
able to opt out of receiving emails from us at any time.</p>
</div>

</body>
</html>
```

LOGIN.PHP

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">

<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>MADE FOR ME - User Login</title>
<link href="Pez.css" rel="stylesheet" type="text/css" />
</head>
<body>

<div class="header">
<?php include("includes/header.php"); ?>
<?php include("includes/menu.php"); ?>
</div>

<br />

<div class="content">
<form action="<?php echo $_SERVER['PHP_SELF']?>" method="post">
<table border="0">
<tr><td colspan="2"><h1>Login</h1></td></tr>
<tr><td><p>Username:</p></td><td>
<input type="text" name="Username" maxlength="30" />
</td></tr>
<tr><td><p>Password:</p></td><td>
<input type="Password" name="Password" maxlength="32" />
</td></tr>
<tr><td colspan="2" align="right">
<input type="submit" name="submit" value="Login" />
</td></tr>
</table>
</div>
</form>

<?php
include 'dbcon.php';
// Username and password sent from form
$Username=$_POST['Username'];
$Password=$_POST['Password'];
// To protect MySQL injection
$Username = stripslashes($Username);
$Password = stripslashes($Password);
$Username = mysql_real_escape_string($Username);
$Password = mysql_real_escape_string($Password);
```

```
$sql="SELECT * FROM auth_users WHERE Username='$Username' and
Password='$Password'";
$result=mysql_query($sql);
$count=mysql_num_rows($result);

// If result matched $Username and $Password, table row must be 1 row
if($count==1)
{
// Register $Username, $Password and redirect to file "members.php"
session_register("Username");
session_register("Password");
//starts and identifies a session which is called on all restricted pages and checks user is
logged in before that page is displayed
$_SESSION['login']="1";
header("location:members.php");
}
else
{
echo "<P>Please enter a valid Username and Password";
}
?>

</body>

</html>
```

MEMBERS.PHP

```
<?PHP
//start session, checks user is logged in and if not redirects them to log in page
session_start();
if (!(isset($_SESSION['login']) && $_SESSION['login'] != '')) {
header ("Location: login.php");
}
?>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>MADE FOR ME - Members Area</title>

<!-- sets style sheets available to page, Pez.css is the default -->
<link rel="stylesheet" type="text/css" href="Pez.css" title="main" media="screen" />
<link href="Pez2.css" rel="alternate stylesheet" type="text/css" title="alt1" media="screen"
/>
<link href="Pez3.css" rel="alternate stylesheet" type="text/css" title="alt2" media="screen"
/>

<!-- Script to change style sheets on-click function -->
<script language="Javascript" type="text/javascript">
function changeStyle(title) {
var lnks = document.getElementsByTagName('link');
for (var i = lnks.length - 1; i >= 0; i--) {
if (lnks[i].getAttribute('rel').indexOf('style')> -1 && lnks[i].getAttribute('title')) {
lnks[i].disabled = true;
if (lnks[i].getAttribute('title') == title) lnks[i].disabled = false;
}}}
</script>

</head>

<body>
<div class="header">
<?php include("includes/header.php"); ?>
<?php include("includes/menu_registered.php"); ?>
</div>

<br />
```

```
<div class="right">
<?php include("includes/right_reg.php"); ?>
</div>

<div class="content">
<h2>Welcome to the Members Area</h2>
<p>From here you can access exclusive members only areas of this site</p>
<p> </p>
<p> </p>
</div>

</body>

</html>
```

FORUM.PHP

```
<!--cookie to check members are logged in-->
<!--location if not logged in for this page is Location: forumview.php" -->

<?PHP
//start session, checks user is logged in and if not redirects them to log in page
session_start();
if (!(isset($_SESSION['login']) && $_SESSION['login'] != '')) {
header ("Location: forumview.php");
}
?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>MADE FOR ME - Forum</title>
<link rel="stylesheet" type="text/css" href="Pez.css" />
</head>
<body>

<div class="header">
<?php include("includes/header.php"); ?>
<?php include("includes/menu_registered.php"); ?>
</div>
<br />

<div class="right">
<?php include("includes/right_reg.php"); ?>
</div>

<div class="middle">
<?php
include 'dbcon.php';
// now we insert it into the database
$ID = $_REQUEST['ID'];
$name = $_POST['Name'];
$message = $_POST['Message'];
mysql_query("insert into contacts values ('$ID', '$name','$message')");
$name =mysql_real_escape_string($name); //To prevent SQL injection
$message =mysql_real_escape_string($message); //To prevent SQL injection
 ?>
<h1>Post Comment</h1>
<!-- This is what they see before they have placed a post on the forum -->
<form action="<?php echo $_SERVER['PHP_SELF']; ?>" method="post" onSubmit="return
checkform(this);">
```

```
<table border="0">
<tr><td><p>Name:</p></td><td>
<input type="text" name="Name" maxlength="30" />
</td></tr>
<tr><td><p>Message:</p></td><td>
<textarea name="Message" cols=35 rows=12></textarea>
</td></tr>
<tr><th colspan=2><input type="submit" name="submit" value="Post Message"
/></th></tr> </table>
</form>
</div>

<div class="content">
<h2><a href="admin2.php">Messages Received</a></h2>
<?php
//connects to database
include 'dbcon.php';
//selects fields from contacts table
$result = mysql_query("SELECT ID, Name, Message FROM contacts");
if ($row = mysql_fetch_array($result))
{
while ($row = mysql_fetch_array($result))
 {
$ID = $row['ID'];
$Name = $row['Name'];
$Message = $row['Message'];
 //displays fields selected
echo "<p>Name:";
echo $Name;
echo "<br>";
echo "<p>Message:";
echo $Message;
echo "<br>";
echo "<p>_____";
echo "<br>$nbsp<br>";
} }
else
{
echo "<p>There are no messages to view"; }
?>
</div>
<p> </p>
<p> </p>
</body>
</html>
```

SEARCHPAGE.PHP

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/
xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />

<title>MADE FOR ME</title>
<!-- style sheets available -->
<link rel="stylesheet" type="text/css" href="Pez.css" title="main" media="screen" />
<link href="Pez2.css" rel="alternate stylesheet" type="text/css" title="alt1" media="screen" />
<link href="Pez3.css" rel="alternate stylesheet" type="text/css" title="alt2" media="screen" />

<!--<script src="scripts/jquery.js" type="text/javascript"></script> -->
<script language="Javascript" type="text/javascript">
function changeStyle(title) {
var lnks = document.getElementsByTagName('link');
for (var i = lnks.length - 1; i >= 0; i--) {
if (lnks[i].getAttribute('rel').indexOf('style')> -1 && lnks[i].getAttribute('title')) {
lnks[i].disabled = true;
if (lnks[i].getAttribute('title') == title) lnks[i].disabled = false;
}}}
</script>

</head>

<body>

<div class="header">
<?php include("includes/header.php"); ?>
<?php include("includes/menu.php"); ?>
</div>

<br />

<!--<div class="left"><p>
left</p>
</div> -->
<div class="right">
<?php include("includes/right.php"); ?>
</div>

<div class="content">
<h4>Search the Internet</h4>
<form method="get" action="http://www.google.com/search">
<div style="border:1px solid black;padding:4px;width:20em;">
<table border="0" cellpadding="0">
```

```
<tr><td>
<input type="text"   name="q" size="25" maxlength="255" value="" />
<input type="submit" value="Google Search" /></td></tr>
<tr><td align="center" style="font-size:75%">
<input type="checkbox"  name="sitesearch"  value="google.co.uk" checked />Search<br />
</td></tr></table>
</div>

</form>
</div>

<div class="middle">
<h4>Search MADE FOR ME</h4>
<form method="get" action="http://www.google.com/search">
<div style="border:1px solid black;padding:4px;width:20em;">
<table border="0" cellpadding="0">
<tr><td>
<input type="text"   name="q" size="25"
 maxlength="255" value="" />
<input type="submit" value="Google Search" /></td></tr>
<tr><td align="center" style="font-size:75%">
<input type="checkbox"  name="sitesearch"
 value="tracypez.co.uk/PROJECT" checked />Search<br />
</td></tr></table>
</div>

</form>
</div>

</body>

</html>
```

LOGOUTMEMBER.PHP

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>MADE FOR ME - Log Out</title>
<link rel="stylesheet" type="text/css" href="Pez.css" />
</head>

<body>
<div class="header">
<?php include("includes/header.php"); ?>
<?php include("includes/menu.php"); ?>
</div><br />

<div class="content">
<?php
//calls the session and destroys/ends it.
session_start();
session_destroy();
?>

<h2>You have logged out</h2>
</div>

<div class="right">
<?php include("includes/right.php"); ?>
</div>

</body>

</html>
```

WEBSITES.PHP

```
<?PHP
//start session, checks user is logged in and if not redirects them to non registered users page
session_start();
if (!(isset($_SESSION['login']) && $_SESSION['login'] != '')) {
header ("Location: websitesNR.php");
}
?>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />

<title>MADE FOR ME - Popular websites</title>
<link rel="stylesheet" type="text/css" href="Pez.css" />
</head>

<body>
<div class="header">
<?php include("includes/header.php"); ?>
<?php include("includes/menu_registered.php"); ?>
</div><br />

<div class="right">
<?php include("includes/right_reg.php"); ?>
</div>

<div class="content">
<h2>Popular Websites</h2>

<?php
//connects to database
include 'dbcon.php';

//selects fields from websites table
$result = mysql_query("SELECT Site_Name, URL, Description FROM websites");
if ($row = mysql_fetch_array($result))
{
 do
  {
   $Site_Name = $row['Site_Name'];
    $URL = $row['URL'];
    $Description = $row['Description'];
```

```
 //displays fields selected
   echo "<p>Website:";
   echo $Site_Name;
   echo "<br>";
  echo "<p>Website address:";
 //echo "<a href="$URL;">"$URL"</a>";
echo $URL;
 echo "<p>Description:";
 echo $Description;
echo "<br>";
echo "<p>_____";
echo "<br>$nbsp<br>";
 }
while ($row = mysql_fetch_array($result));
}
  else
{
  echo "<p>There are no websites";
}
?>
</div>

<div class="middle">
<?php
//This code runs if the form has been submitted
if (isset($_POST['submit'])) {
// now we insert website values ('$Site_Name','$Description','$URL'"); into the websites
table in the database
$Site_Name = $_POST['Site_Name'];
$URL = $_POST['URL'];
$Description = $_POST['Description'];
mysql_query("insert into websites values ('$Site_Name','$URL','$Description'");
?>

//<!-- Now we let them know website was added successfully -->
<h1>Thank you</h1>
<h2>The website has been added to database</h2>

<?php
}
else
{
?>

<!-- This is what they see before website information is entered -->
```

```
<form action="<?php echo $_SERVER['PHP_SELF']; ?>" method="post" onSubmit="return
checkform(this);">
<table border="0">
<tr><td><p>Site Name:</p></td><td>
<input type="text" name="Site_Name" maxlength="30"></input>
</td></tr>
<tr><td><p>URL:</p></td><td>
<input type="text" name="URL" maxlength="60"></input>
</td></tr>
<tr><td><p>Description:</p></td><td>
<input type="text" name="Description" maxlength="120"></input>
</td></tr>
<tr><th colspan="2"><input type="submit" name="submit" value="SHARE
WEBSITE"></input></th></tr> </table>
</form>

<?php
}
?>

</div>

</body>

</html>
```

Included Files:

Footer.php

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>footer</title>
</head>

<body>
<h5>Copyright 2012, Tracy Pez</h5>
<p>
<a href="http://jigsaw.w3.org/css-validator/check/referer">
   <img style="border:0;width:88px;height:31px"
      src=http://jigsaw.w3.org/css-validator/images/vcss-blue
      alt="Valid CSS!" />
</a>
<br />

<SCRIPT LANGUAGE="JavaScript">
<!-- Script to identify browser and to allow user to set this site as their home page -->
if (document.all){
document.write('<A HREF="javascript:history.go(0);"
onClick="this.style.behavior=\'url(#default#homepage)\';this.setHomePage(\'http://www.t
racypez.co.uk/PROJECT/index.html\');">');
document.write('<font size="5" color=6699FF face=arial>Click to set MADE FOR ME as your
homepage</font></a>');
}

// If Netscape 6
else if (document.getElementById){
document.write('<a href="http://www.tracypez.co.uk/PROJECT/index.html">Drag this text
onto your browsers home button to make MADE FOR ME your Home Page.</a>');
}

// If it's Netscape 4 or lower, give instructions to set Home Page
else if (document.layers){
document.write('<b>Make this site your home page:</b><br>- Go to <b>Preferences</b>
in the <B>Edit</B> Menu.<br>- Choose <b>Navigator</b> from the list on the left.<br>-
Click on the <b>"Use Current Page"</b> button.');
}
```

```
// If it's any other browser

else {
document.write('<b>Make this site your home page:</b><br>- Go to <b>Preferences</b>
in the <B>Edit</B> Menu.<br>- Choose <b>Navigator</b> from the list on the left.<br>-
Click on the <b>"Use Current Page"</b> button.');
}
</script></p>

</body>
</html>
```

HEADER.PHP

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>Header</title>
</head>

<body>
<h1>MADE FOR ME</h1>
<h2>The site that understands YOUR needs</h2>
</body>
</html>
```

MENU.PHP

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>Menu</title>
</head>

<body>
<table width="96%" border="0" cellpadding="0" align="center">
<tr>
<td width="207" align="center"><a href="index.php"><img alt="home"
src="../images/home.GIF" width="111" height="111" border="0" /></a></td>
<td width="205" align="center"><a href="register.php"><img alt="register"
src="../images/padlock.gif" width="111" height="111" border="0"/></a></td>
<td width="202" align="center"><a href="forum.php"><img alt="forum"
src="../images/chat.GIF" width="111" height="111" border="0"/></a></td>
<td width="219" align="center"><a href="search.php"><img alt="search"
src="../images/serach.GIF" width="111" height="111" border="0"/></a></td>
<td width="213" align="center"><a href="login.php"><img alt="log in"
src="../images/key.GIF" width="111" height="111" border="0"/></a></td>
 <td width="12" align="center"> </td>
</tr>
</table>

<ul id="menu">
<li></li>
<li></li>
 <li><a href="index.php"><a href="index.php">Home </a></li>
<li><a href="register.php">Register</a></li>
<li><a href="forum.php">Forum</a></li>
<li><a href="search.php">Search</a></li>
<li><a href="login.php">Log-in</a></li>
</ul>

</body>
</html>
```

RIGHT.PHP

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">

<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>Menu</title>
</head>

<body>
<h3>QUICK FIND</h3>

<ul id="menu2">
<li><a href="register.php">Register</a></li>
<li><a href="login.php">Log-In</a></li>
<li><a href="news.php">Latest News</a></li>
<li><a href="somethingnew.php">Try Something New</a></li>
<li><a href="websites.php">Popular websites</a></li>
<li><a href="terms.php">Our Policy</a></li>
<li><a href="contact.php">Contact Us</a></li>
<li><a href="help.php">Need Help?</a></li>
</ul>

<p> </p>

<h3>ACCESSIBILITY<br /></h3>

<!-- hyperlinks to allow user to change style sheet if desired -->

<p><span onclick="changeStyle('main')"><img alt="Standard font" src="../images/AAA.GIF"
width="31" height="21" border="0"/> Standard font</span><br>

<span onclick="changeStyle('alt1')"><img alt="Medium font" src="../images/AAA.GIF"
width="36" height="26" border="0"/>  Medium font</span><br>

<span onclick="changeStyle('alt2')"><img alt="Large font" src="../images/AAA.GIF"
width="41" height="31" border="0"/>Large font</span></p>

<H3>MAKE US YOUR HOME PAGE<br />

<img alt="make this site your home page" src="../images/make home.GIF" width="66"
height="66" border="0"/></H3>

<SCRIPT LANGUAGE="JavaScript">
<!-- Script to identify browser and to allow user to set this site as their home page -->
if (document.all){
document.write('<A HREF="javascript:history.go(0);"
```

```
onClick="this.style.behavior=\'url(#default#homepage)\';this.setHomePage(\'http://www.tracypez.co.uk/PROJECT/index.php\');">');
document.write('<font size="5" color=6699FF face=arial>Click to set MADE FOR ME as your homepage</font></a>');
}

// If Netscape 6
else if (document.getElementById){
document.write('<a href="http://www.tracypez.co.uk/PROJECT/index.php">Drag this text onto your browsers home button to make MADE FOR ME your Home Page.</a>');
}

// If it's Netscape 4 or lower, give instructions to set Home Page
else if (document.layers){
document.write('<b>Make this site your home page:</b><br>- Go to <b>Preferences</b> in the <B>Edit</B> Menu.<br>- Choose <b>Navigator</b> from the list on the left.<br>- Click on the <b>"Use Current Page"</b> button.');
}

// If it's any other browser
else {
document.write('<b>Make this site your home page:</b><br>- Go to <b>Preferences</b> in the <B>Edit</B> Menu.<br>- Choose <b>Navigator</b> from the list on the left.<br>- Click on the <b>"Use Current Page"</b> button.');
}
</script></p>

<p><a href="Access.php">Accessiblilty Information</a></p>
<p><a href="http://jigsaw.w3.org/css-validator/check/referer">
<img style="border:0;width:88px;height:31px"    src="http://jigsaw.w3.org/css-validator/images/vcss-blue"  alt="Valid CSS!" />
</a>
<br />

<h5>Copyright 2012, Tracy Pez</h5>

</body>

</html>
```

Style sheets:
(Main and admin only, Pez2 and Pez3 only differ from main CSS in font size)

```
/* External Style Sheet for 'Made For Me' by Tracy Pez */
body
{
background-color: #FFFFFF; /* site background colour is white*/
}

h1  /* Header 1  - specifications for font type, colour, decoration, size and weight */
{
font-family: Verdana;
color: #330033; /*header 1 text to be dark purple*/
font-size:22pt;
font-weight: bold;
}

h2   /* Header 2  - specifications for font type, colour, decoration, size and weight */
{
font-family: Verdana;
color: #666; /*grey*/
font-size:16pt;
font-weight: bold;
text-align:left
}

h3   /* Header 2  - specifications for font type, colour, decoration, size and weight */
{
font-family: Verdana;
color: #666; /*grey*/
font-size:16pt;
font-weight: bold;
text-align:center
}

h4   /* Header 3  - specifications for font type, colour, decoration, size and weight */
{
font-family: Verdana;
color: #C0F; /*mid purple*/
font-size:14pt;
font-weight: bold;
}

p   /* Paragragh  - specifications for font type, colour, decoration, size and weight */
{
font-family: sans-serif;
color: #000; /*paragraph text black*/
```

```
font-size:12pt;
text-align: left;
}

ul#menu   /* Unordered list */
{
margin:1em; /*menu starts from left*/
padding:0;   /*padding or space between items*/
list-style:none;
font-family: sans-serif;
color: #666; /*paragraph text grey*/
font-size:12pt;
text-align: left;
}

ul#menu li
{
display:inline
}

ul#menu li a
{
padding:0px 0; /*padding or space between items*/
width:15em;  /*each menu 'button' to be 15em wide*/
background:#FFF; /*background of menu button to be white*/
color:#303; /* menu text purple*/
float:left; /*menu position as a whole to start from left*/
font-size:12pt;
}

ul#menu li a
{
text-align:center; /*text to be centred within each 'button'*/
border-left:1em solid #FFFFFF /*border (to separate buttons) to be 1 em and match the
background colour*/
}

ul#menu li a:hover
{
background:#C0C; /*button background to turn purple on mouse rollover-hover*/
color:#FFFFFF /*text to turn white on rollover*/
}

ul#menu_registered  /* Unordered list */
{
margin:1em; /*menu starts from left*/
padding:0;   /*padding or space between items*/
```

```
list-style:none;
font-family: sans-serif;
color: #666; /*paragraph text grey*/
font-size:12pt;
text-align: left;
}

ul#menu_registered li
{
display:inline
}

ul#menu_registered li a
{
padding:0px 0; /*padding or space between items*/
width:15em;  /*each menu 'button' to be 15em wide*/
background:#FFF; /*background of menu button to be white*/
color:#303; /* menu text purple*/
float:left; /*menu position as a whole to start from left*/
font-size:12pt;
}

ul#menu_registered li a
{
text-align:center; /*text to be centred within each 'button'*/
border-left:1em solid #FFFFFF /*border (to separate buttons) to be 1 em and match the
background colour*/
}

ul#menu_registered li a:hover
{
background:#C0C; /*button background to turn purple on mouse rollover-hover*/
color:#FFFFFF /*text to turn white on rollover*/
}

ul#menu2  /*second menu, as seen to right of web-pages*/
{
padding:0;
list-style:none;
width:10em; /*menu width 10 em*/
}

ul#menu2 li
{
display:inline
}
```

```
ul#menu2 li a
{
padding:3px 0; /*padding or space between items*/
width:14em;  /*each menu 'button' to be 14em wide*/
background:#000000; /* background black*/
color:#FF99FF; /* text lilac*/
float:left; /*menu position as a whole*/
margin:1px;
font-size:14pt;
}

ul#menu2 li a
{
text-align:center; /*text to be centred within each 'button'*/
}

ul#menu2 li a:hover
{
background:#EEEEEE; /*button background to turn white on mouse rollover-hover*/
color:#000000 /*text to turn black on rollover*/
}

div.container
{
width:100&
text-align:left;
margin:0px;
border:1px solid gray;
line-height:150%;
}

div.header
{
padding:0.5em;
color:white;
background-color:#FFFFFF;
clear:left;
}
h1.header
{
padding:0;
margin:0;
}
<div id="wrapper" style="width:96%">

div.left
```

```
{
        float:left;
        width:50em;
        margin:0;
        padding:1em;
        background-color: #FFFF99;
}

div.middle
{
position:absolute;
left:37em;
top:18.5em;
width:29em;
padding:1em;
background-color: #FDEEF4;
}

div.right
{
position:absolute;
left:68em;
width:15em;
top:18.5em;
margin:0;
padding:1em;
}

div.content
{
position:absolute;
left:0em;
top:18.5em;
width:34em;
padding:1em;
background-color: #FCF;  /*pale purple*/
}

.links /*code for hyperlinks */
{
color: #FFFFFF /*white*/
}

div.footer
{
left:0em;
```

```
width:100%;
padding:1em;
background-color: #FCF;  /*pale purple*/
height:8em;
padding:0.5em;
background-color:#606;
}
```

PezAdmin.CSS

```
/* External Style Sheet for Admin area of: MADE FOR ME By Tracy Pez */

Body
{
background-color: #FFFFFF; /* site background colour is white*/
}

h1  /* Header 1  - specifications for font type, colour, decoration, size and weight */
{
        font-family: Verdana;
        color: #000000; /*header 1 text to be black*/
font-size:22pt;
font-weight: bold;
width:100%
}

h2   /* Header 2  - specifications for font type, colour, decoration, size and weight */
{
font-family: Verdana;
color: #CC66FF; /*purple*/
font-size:16pt;
font-weight: bold
}

h3   /* Header 3  - specifications for font type, colour, decoration, size and weight */
{
font-family: Verdana;
color: #FF99FF; /*purple*/
font-size:12pt;
font-weight: bold
}
p   /* Paragragh  - specifications for font type, colour, decoration, size and weight */

{
font-family: sans-serif;
color: #000000; /*paragraph text black*/
font-size:10pt;
text-align: left;
}

ul#menu   /* Unordered list */
{
margin:0px; /*menu starts from left*/
padding:0;   /*padding or space between items*/
list-style:none;
```

```
width:996px; /*menu width 996 pixels*/
}

ul#menu li
{
display:inline
}
ul#menu li a
{
padding:0px 0; /*padding or space between items*/
width:198px;  /*each menu 'button' to be 198 pixels wide*/
background:#000000; /*background of menu button to be black*/
color:#FFFFFF; /* menu text white*/
float:left; /*menu position as a whole to start from left*/
}
ul#menu li a
{
text-align:center; /*text to be centred within each 'button'*/
border-left:1px solid #fff; /*border (to separate buttons) to be 1 pixel and white*/
}
ul#menu li a:hover
{
background:#a2b3a1; /*button background to turn grey-silver on mouse rollover-hover*/
color:#000000 /*text to turn black on rollover*/
}
ul#menu2  /*second menu, as seen to right of web-pages*/
{
padding:0;
list-style:none;
width:150px; /*menu width 150 pixels*/
}
ul#menu2 li
{
display:inline
}
ul#menu2 li a
{
padding:5px 0; /*padding or space between items*/
width:130px;  /*each menu 'button' to be 130 pixels wide*/
background:#FFFFFF; /* background white*/
color:#FF99FF; /* text lilac*/
float:left; /*menu position as a whole*/
}

ul#menu2 li a
{
```

```
text-align:center; /*text to be centred within each 'button'*/
}

ul#menu2 li a:hover
{
background:#EEEEEE; /*button background to turn grey on mouse rollover-hover*/
color:#FFFFFF /*text to turn white on rollover*/
}

div.container
{
width:100%;
text-align:left;
margin:0px;
border:1px solid gray;
line-height:150%;
}

div.header
{
padding:0.5em;
color:black;
background-color:#FFFFFF;
clear:left;
}

div.footer
{
padding:0.5em;
color:black;
background-color:#FFFFFF;
clear:left;
width:100%
}

h1.header
{
padding:0;
margin:0;
}
div.left
{
        float:left;
        width:170px;
        margin:0;
        padding:1em;
        background-color: #FFFFFF;
```

```
}
div.right
{
float:right;
width:170px;
margin:0;
padding:1em;
font color:#F09
}
div.content
{
margin-left:0px; /* border-left:1px solid gray; */
padding:1em;
background-color: #FFFFFF
width:100%;
}

.links /*code for hyperlinks */
{
        color: #C3F;
}
```