

Your Best Friend Cooking Assistant and Educational Resource

By

Timothy T. Bair

Submitted to
the Faculty of the Information Engineering Technology Program
in Partial Fulfillment of the Requirements for
the Degree of Bachelor of Science
in Information Engineering Technology

University of Cincinnati
College of Applied Science

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Abstract

The ready availability of Internet access to most students and professionals in the United States, combined with the organizational and retrieval capabilities of database storage, provides an optimum environment in which to present time- and money-saving tools for use in vegetarian cooking. There are few effective and intuitive Websites available on the Internet that provide a combination of tools that include recipe storage and sorting capabilities, meal-planning, generating shopping lists, and informational resources for cooking and vegetarianism. Busy students and professionals would greatly benefit by saving time and money, as well as furthering their knowledge on the noted topics, from Web-based tools that provide the functions described. This paper documents the development and implementation of the *Your Best Friend Cooking Assistant and Educational Resource (YBF Cooking Assistant)* Website that is especially tailored to Vegetarians. The paper describes the requirements and logistics of the project; it presents development tools and protocols used; and, it provides reflection and analysis regarding the development process.

Your Best Friend Cooking Assistant and Educational Resource

1. Statement of the Problem

This project was conceived through a personal realization that available technology could greatly enhance the process of meal planning and grocery shopping through the availability of Web-based tools that can be integrated into these processes to aid in organization and provide time- and money-saving devices. A thorough analysis of available tools led to the conclusion that existing solutions do not provide all the desired functionality in a single site. Additionally, the available solutions require improvements in the form of intuitive navigation and more simplistic page design.

Both college students and professionals face a difficult task in balancing their numerous responsibilities from day to day. When the daily tasks increase, they can become overwhelming, and at some point, sacrifices will likely need to be made. These sacrifices can include doing away with obligations altogether, even though this may cause other adverse effects, or simply not fulfilling responsibilities to the best of one's abilities. Often, one of the aspects of everyday life that can suffer is that of maintaining a balanced, nutritious diet. With respect to the issue of time constraints and preparing meals on a daily basis, dinning out is a quick fix for busy individuals. However, generally speaking, it is neither healthy nor cheap. The nutritional content of foods eaten at home, which has improved more over the past several years, proves to typically contain less saturated and unsaturated fat, but more fiber, calcium, and iron when contrasted with foods eaten away from home (2). This is disturbing due to the findings of a study conducted by the United States Department of Agriculture's Economic Research Committee (ERS). "The frequency of eating away from home rose by more than two-

thirds over the past two decades, from 16% of all meals and snacks in 1977-78 to 27% by 1995,” with the trend expected to continue (2). Equally, if not more surprising, is the finding that “in 1970, 34% of the food dollars were spent on food away from home; today, it has risen to 46%” (2). With these facts in mind, deductive reasoning tells us that we are paying more for less. A clear need exists for the development of practices that increase the amount of meals prepared in the home.

As an additional issue, some college students and professionals, whether for moral, ethical, health, or other reasons, have vowed to maintain a vegetarian diet. Vegetarianism is the practice of subsisting on a diet composed primarily or wholly of vegetables, grains, fruits, nuts, and seeds (2). While becoming a vegetarian is a respectable decision, it can also further complicate matters for many reasons: it further limits selection at the supermarket, which can mean extra time spent shopping; those new to the diet will have to come up with new recipes to follow for their meals while still attempting to remain properly nourished and it can be time consuming to gather and organize the recipes; meal planning will also take more time in the previous situation; finally, the need for specialized ingredients, which can sometimes be new and mysterious to new vegetarian cooks, can raise questions about how to select these items at the grocery store and how to prepare them. Many times the result is any or all of the following: lengthy, expensive trips to the grocery store; poor and/or undeveloped recipes; an exorbitant amount of time spent planning meals; and, confusion about new ingredients and preparation techniques.

Busy individuals should not have to sacrifice health or compromise their convictions in any way. Nor should they need to spend an outrageous amount of time

shopping, organizing their recipes, or planning their meals when there are ways their time could be more effectively spent. These people need a comprehensive tool that can aid them in each of these tasks and, ultimately, make them more knowledgeable about cooking and vegetarianism and help them save time, effort, and money.

2. Description of the Solution

The *Your Best Friend Cooking Assistant and Educational Resource (YBF Cooking Assistant)* is a Web application that is in the form of a Web site accessible to members of the general public. The main components of it are a database that retains a store of information and a user interface in the form of a series of intuitive Web pages which draws information from the database. This Web application provides time- and money-saving tools for meal planning, grocery shopping, and cooking, in addition to offering information on general cooking tips, ingredient information, and vegetarian resources.

While assessing the shortcomings of available tools and with the goal of providing a useful and effective tool, the following characteristics were deemed necessary and adhered to in the design of the *YBF Cooking Assistant* Web site:

- *User Friendly* – The interface with which the user interacts is intuitive for ease of navigation. Since this tool is meant to be a time-saver, it quickly begins to streamline planning for meals and shopping with the period of adaptation to the environment being minimal to none.
- *Informational as well as Multi-Functional* – This tool is meant to provide an informational resource in addition to its planning capabilities. The user can easily access the information without inhibiting access to the functionalities of the tool. The functional portion of the aid provides several features that act to enhance one's cooking experience. The user can utilize as many or as few of the features as he or she desires.
- *Personalized Configurations* – This attribute acts in hand with the idea that end users are able to access only features applicable to their specific

task. Users are able to create personalized accounts, designate favorite recipes, create meal plans and grocery lists, and save work under a profile to be accessed at a later time.

- *Ease of Access* – Users are able to access the resource from various locations. With the proliferation of the Internet into everyday life, accessing an account on the *YBF Cooking Assistant* Web site is easy at home, work, or school, from the house of a friend or colleague or even on the site of an event as a caterer.
- *Cost Effective* – Although my project design offers increased functionality compared to what is currently available, some great online cookbooks already exist for free use. Therefore, design costs were kept to a minimum to avoid either recreating the wheel or spending an unacceptable amount of time on developing resources that are already available.

2.1 User Profile

Three categories of users exist for the *YBF Cooking Assistant* Web application. Users do not necessarily require any specific qualifications, but can be anyone from the general public seeking more information about cooking, vegetarianism, or wanting to find out more about the features of the *YBF Cooking Assistant* Web application and find out how to create an account. Essentially the only requirements are a basic knowledge of browser usage and general Web navigation.

The unregistered user is most basic type. An unregistered user, or any user who has simply not logged into their account yet when accessing the site, can be anyone seeking recipes, cooking advice, links to other related sites, or to find out more about creating an account. These users have several options, although they may customize their environment in any way. Unregistered users are able to access the general cookbook index of recipes and perform searches in it, navigate through cooking tips and ingredient information, and access a page containing hyperlinks to other related Web sites that have

been researched. Any unregistered user also has the option to create an account and become a registered user so that he or she can login and save customized content.

Registered users are those who have already entered their personal information, setting up an account and creating a login. This can be anyone, but they must go through the account setup process. Users login by entering their e-mail address and password. Once logged in, users have access to all the general site features in addition to several enhancements. One additional feature to which they have access is an indexing of recipes they can save and manage. Second, registered users have access to a meal planning tool where they can layout and save meal plans for weekly periods using chosen recipes. Finally, from these meal plans, the registered user is able to generate a grocery list to aid in shopping.

The administrator is the third, and final, user type. Normal registered users are able to perform nearly all functions on the Web site. However, to shield the user from having too much control over interactions with the database and risking the introduction of bad data, an administrator account was created and this user has additional options to add and edit information in the database.

2.2 Design Protocols

The *YBF Cooking Assistant* Web application was created using the following software:

- Adobe Photoshop 6.0
- Visual Interdev 6.0
- SQL Server 2000

All graphics for the *YBF Cooking Assistant* Web site were created in Adobe Photoshop 6.0. This software was chosen due to its availability and ease of use. Adobe Photoshop was used to choose a complimentary color scheme to be used throughout the site, design buttons and other graphics, and modify images for integration into the Web site.

Microsoft Visual Interdev 6.0 was used for the coding of the Web application. This was chosen as the main development tool for several reasons: automatic coloring of various code types and intellisense helps to maintain valid HTML and scripts; drag-and-drop controls aid in generating code that is commonly used; site layout and structure can be easily defined; and, Web site flowcharts can be generated with minimal effort. The coding for the Web pages was done using HTML, ASP, VBscript, and JavaScript. The code used defines page layouts, validates forms, instantiates database connectivity, and retrieves and displays information from the database. See Appendix A for samples of the typical coding used.

Microsoft SQL Server 2000 was chosen as the tool for database development mainly for its reliability, performance, and scalability. In addition to providing the basic functions of creating and populating tables and defining relationships, the powerful capabilities of stored procedures were extensively used to enable the Web pages to interact with the database. Appendix B presents samples of the coding used in my stored procedures. Since most of the development was performed on my home computer, Data Transformation Services provided an effective method of continually updating the version of the project residing on the school's server.

The basic navigation of the *YBF Cooking Assistant* Web site is simple and intuitive. Few levels in the site hierarchy exist, such that nearly all pages can be accessed from one another by using the navigation bar at the top of the page. Further options for navigation are provided along the left-hand margin on each page. Specific pages also make use of bookmark links to ease navigation and limit the need to scroll.

2.2.1 Site Layout

Unregistered users are provided with most options that are available to registered users. However, they are not provided with customization options since they do not have an account with which to associate them. Figure 1 illustrates the flow of navigation for unregistered users.

In addition to the features available to unregistered users, registered users have additional customization options which include the ability to save favorite recipes, as well as to generate meal plans and grocery shopping lists. Figure 2 presents the site layout for normal registered users.

The administrator has access to all features available to other users, with the added capabilities of routine database management through pages that enable him or her to add, modify and delete specific data. Figure 3 displays the navigation options and site layout provided for the administrator.

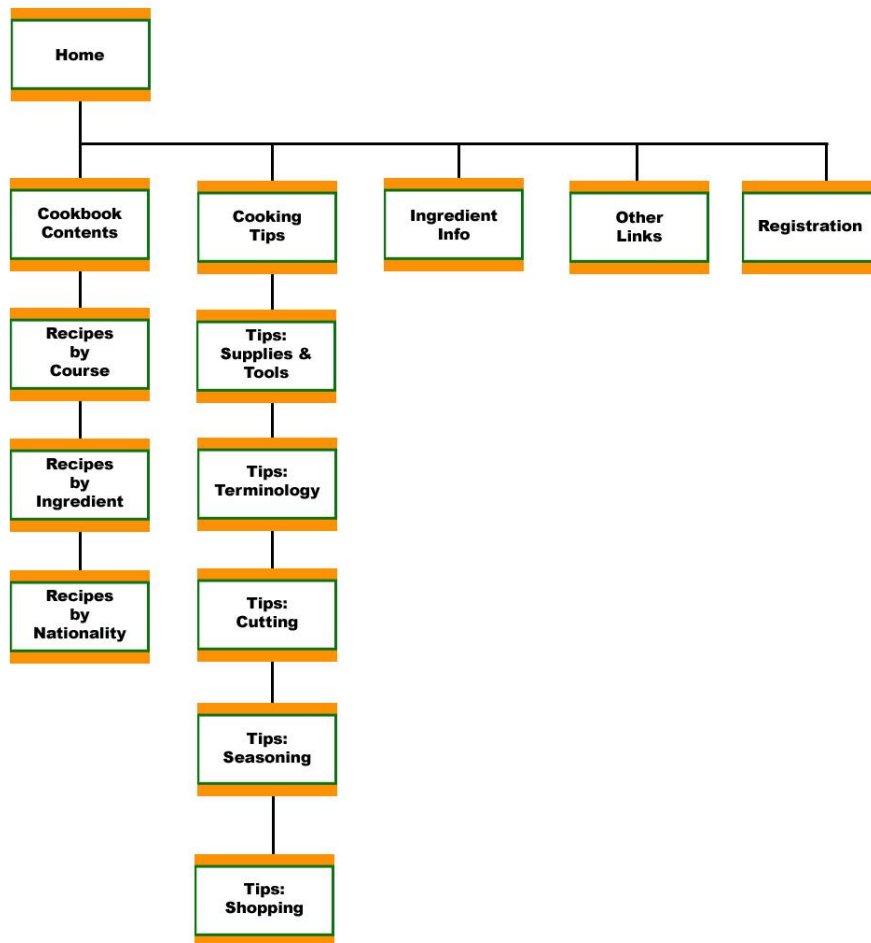


Figure 1. Site Diagram for Unregistered Users

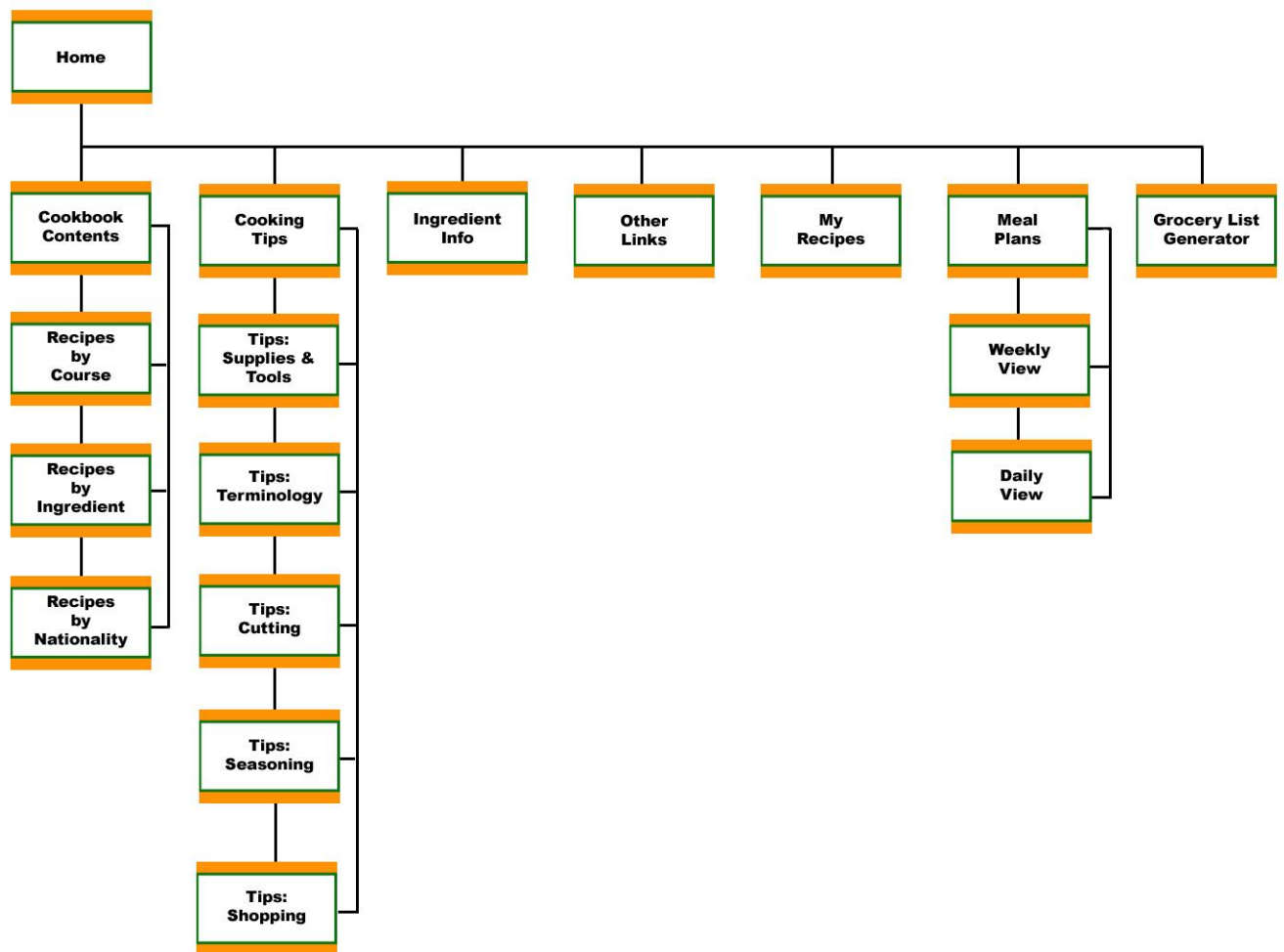


Figure 2. Site Diagram for Normal Registered Users

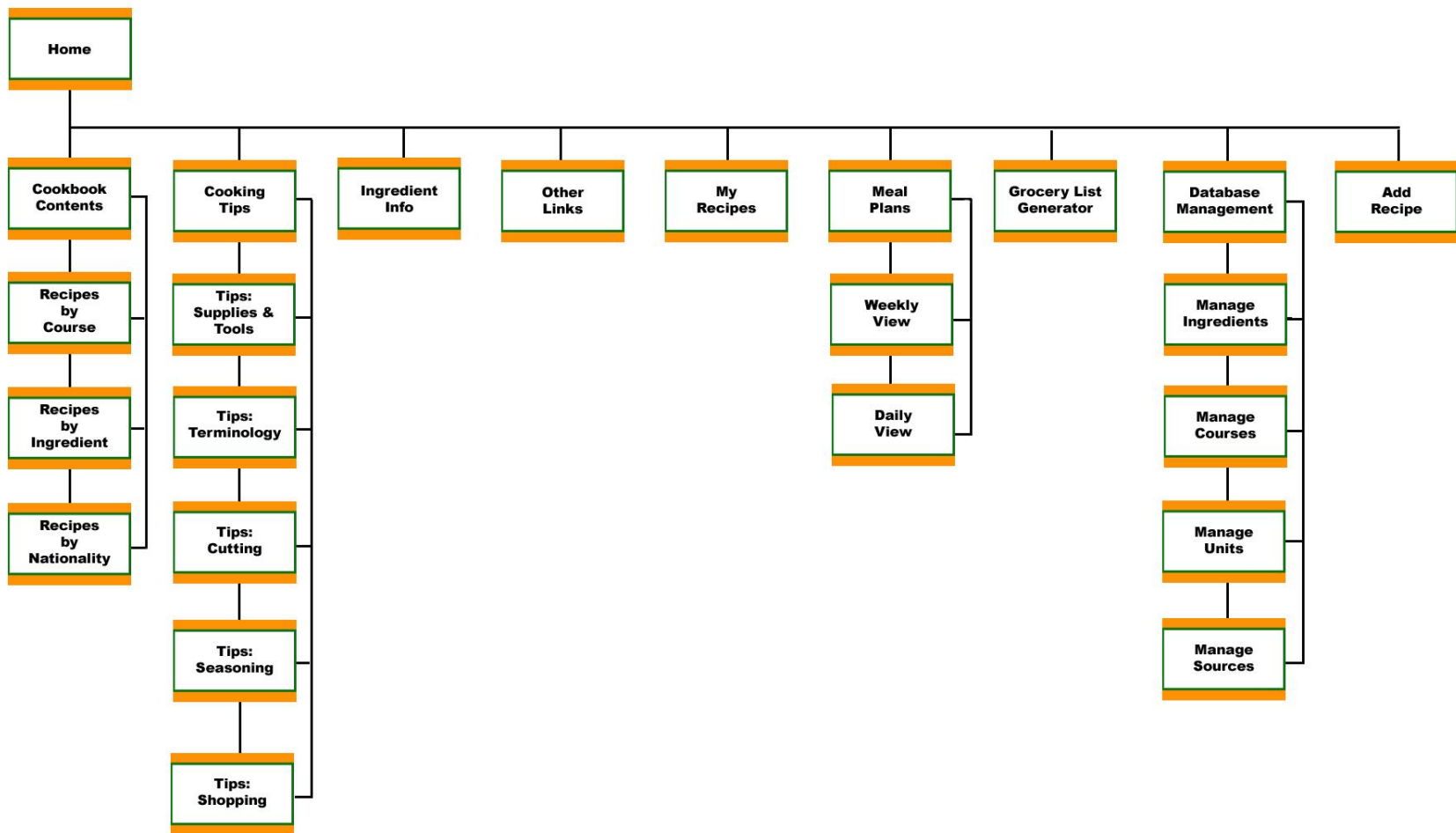


Figure 3. Site Diagram for Administrator

2.2.2 Appearance and Navigation

Web pages created for the *YBF Cooking Assistant* site maintain a cohesive look and feel, with consistent navigation options, page and text formats, and coloring scheme. The colors used were chosen for their complimentary appearance. Additionally, they are intended to be reminiscent of foods such as fruits and vegetables. Nearly every page in the Web site can be accessed from any other page. The main difference in this concept lies in the design of administrator database interface pages, with the contrast serving to capture and focus the administrator's attention for the important management tasks being performed.

All pages available to unregistered and normal registered users consistently adhere to a standard appearance and styling, being linked to style sheets containing font, color, and style designations (See Figure 4). A separate style sheet designates special styling of pages available to only the administrator (See Figure 5).

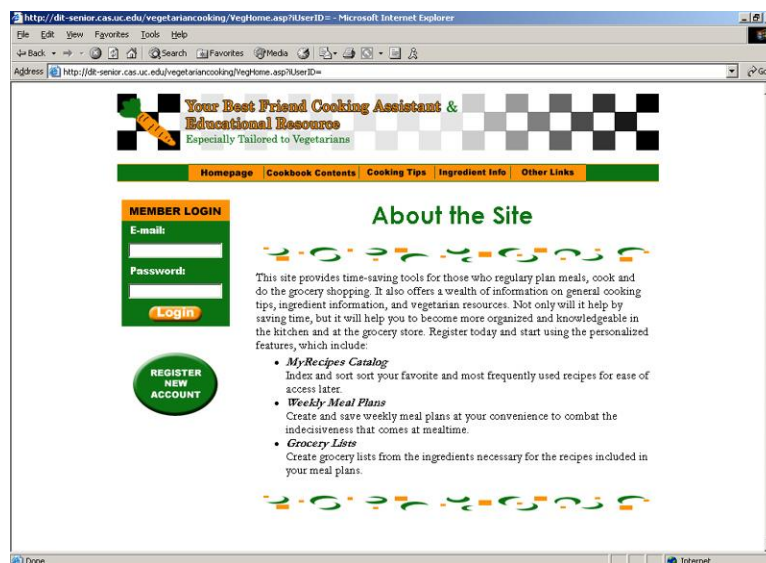


Figure 4. Sample of Typical Page Layout and Styling

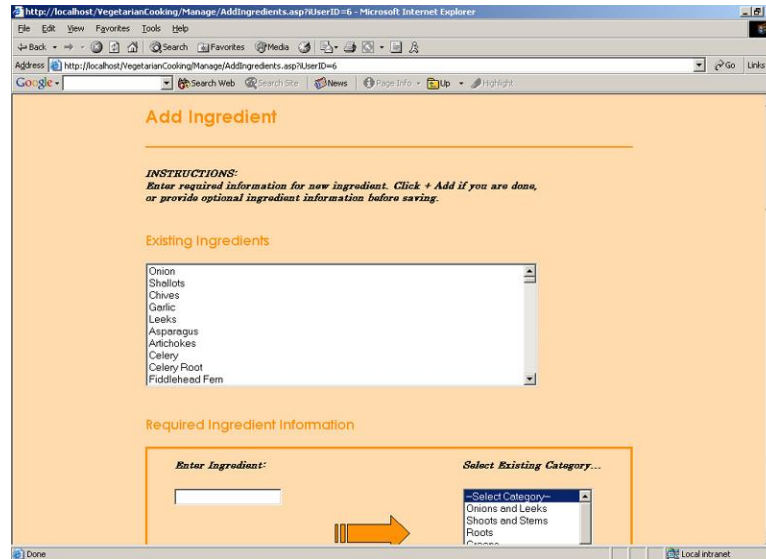


Figure 5. Example of Administrator Interface

2.2.3 Database Design

The database portion of the *YBF Cooking Assistant* consists of a SQL Server database with approximately 20 tables, and 70 stored procedures with which the Active Server pages interact. See Appendices B and C for additional information on the stored procedures used and to review table definitions. All database relationships are explicitly defined, with there being both one-to-many and many-to-many relationships (See Figures 6 & 7).

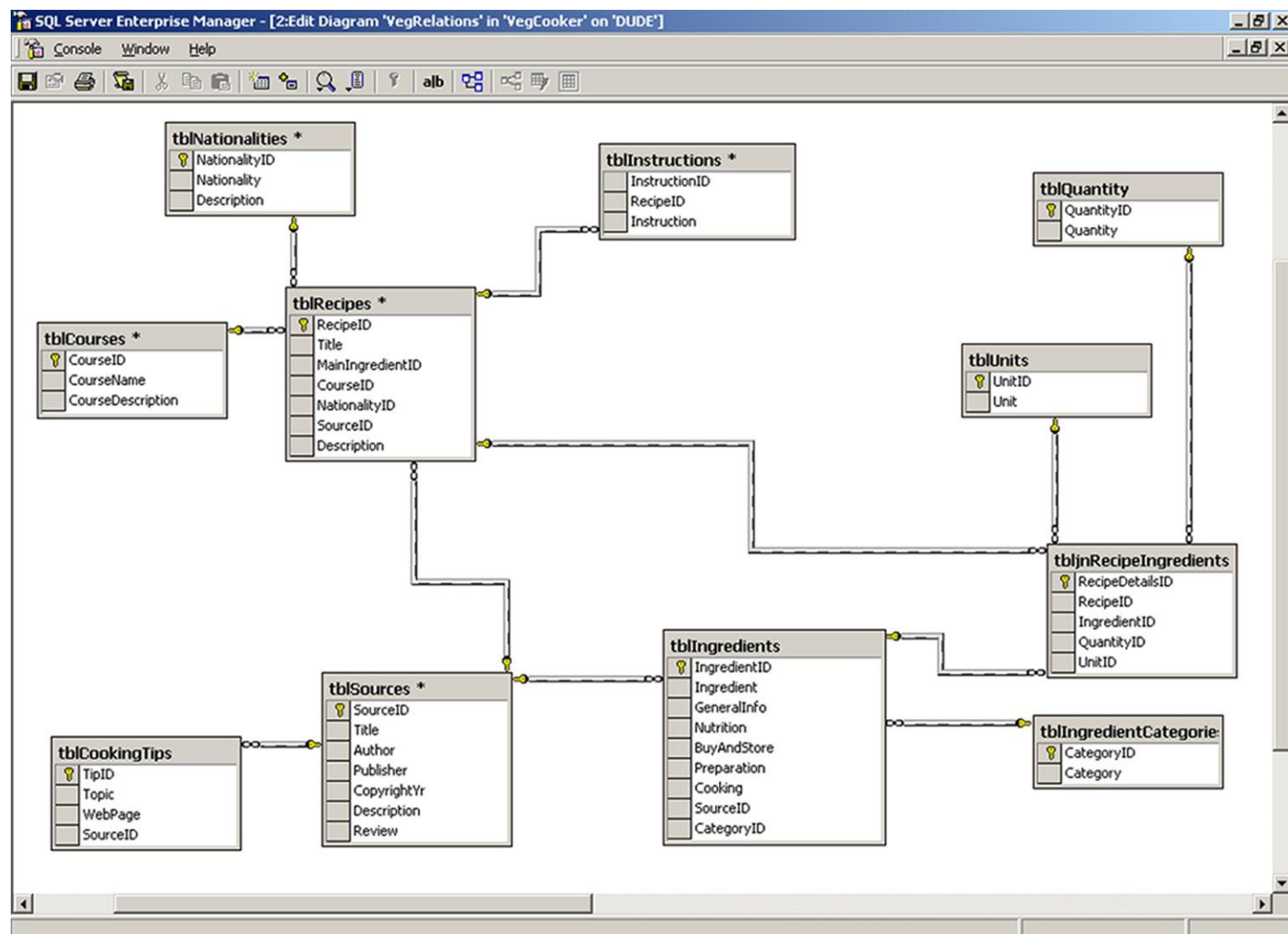


Figure 6. Layout of Cookbook Relationships

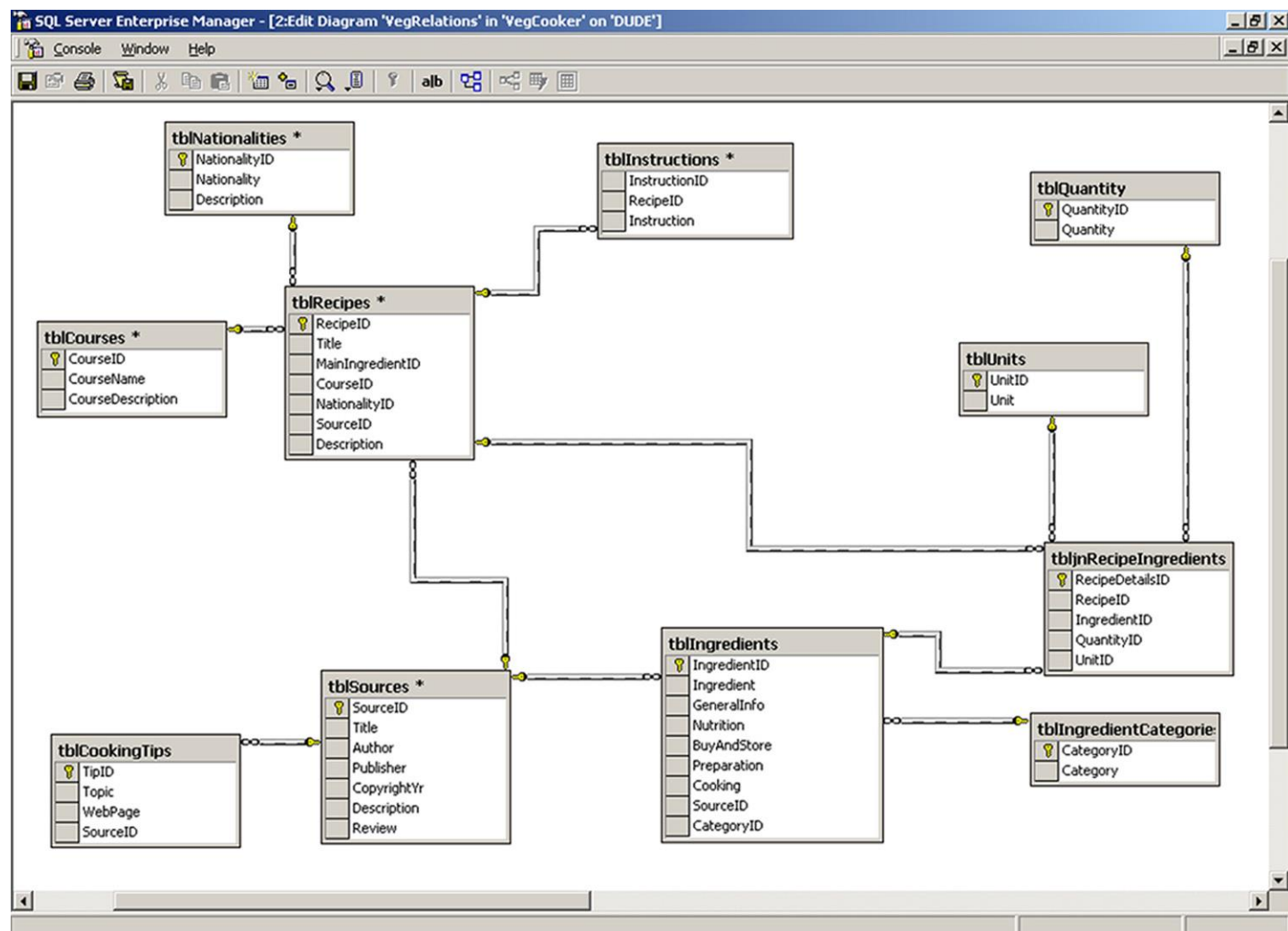


Figure 7. Layout of User Relationships

3. Deliverables

During the design and development stages of this project, several characteristics were deemed necessary to ensure the final Web application would be useful to a large audience. The deliverables for the final project were defined in the development stage during Senior Design II. I have ensured that the following aspects are present in the *YBF Cooking Assistant* Web application.

- Any user of the general public is able to use the site without registering, although he or she does not have access to registered user features.
- The Web application allows access to authorized users with registered login credentials.
- Invalid login information returns an error message.
- Any visiting user is able to set up a new account using an e-mail login that does not already exist in the database by registering and providing contact information.
- In addition to the general features, users who are logged in have access to the following additional tools:
 - Favorite recipes saved and indexed from the general cookbook
 - Weekly meal plan generator
 - Grocery shopping lists created from ingredients necessary in the meal plan recipes
- The administrator is able to perform routine database management through Web interfaces that provide for data entry, modification, and deletion.
- The user interface is intuitive and understandable to users of varying experience levels.
- Users are able to use as many or as few of the site capabilities as he or she desires.
- There are two general interface layouts, one for unregistered and normal registered users and one for the administrator.

4. Design and Development

This section discusses the resources of time and money that were invested in the project to enable its completion.

4.1 Timeline

The aspects of the project such as research, determining feasibility, design and development, and documentation all required a considerable amount of time and planning. During each quarter of the three course sequence, a task schedule was devised to guide work and gauge progress. The following sections present the major milestones during each term. See Appendix D for a graphical representation of the overall project timeline.

4.1.1 Milestones in Senior Design I

Senior Design I was largely comprised of the tasks of planning and documentation. The following are the major milestones achieved during the quarter.

- Defined the problem and a loose definition of the solution
- Performed an analysis of available solutions, determining a new product could more completely address the problem
- Researched topics of nutrition, diet, and vegetarianism to formulate a sound argument of need for the project to commence
- Gathered and reviewed resources such as programming and database references and cookbooks
- Began preliminary design of database and page layout
- Completed the project proposal and presented to fellow students, faculty, and staff

Senior Design I was challenging because I had a clear realization that a well-designed and supported proposal would provide the best guide for subsequent work

throughout Senior Design II and III. Therefore, a reasonable amount of time was invested in researching Web sites and developing the appropriate skills to aid in development. During this time, I also began on the preliminary design of the website. While researching existing tools, I kept a journal documenting both useful features and aspects in which they were lacking. In doing so, I was able to create a definitive list of traits that my site should embody. These exercises also help me in studying the physical appearance of Web sites. Finally, I began sketching pages in their preliminary form and laying out the skeletal structure of the database and, specifically, how recipes would be stored.

4.1.2 Milestones in Senior Design II

The largest portion of the development process occurred during Senior Design II. The main tasks and milestones I achieved during the term are as follows:

- Installed and configured all necessary software
- Developed a consistent color scheme and styling for the Web pages
- Created the majority of all graphics and buttons
- Achieved database connectivity through ASP pages
- Coded approximately 75% of the ASP pages required for the project
- Created the majority of the SQL database and stored procedures
- Developed the Design Freeze, including concrete deliverables for the project and presented to fellow students, faculty, and staff

Senior Design II was the most challenging phase of the entire project because, while the plans were already laid out, numerous roadblocks were encountered when implementing them. I met the threshold of my skills on numerous occasions. However, this provided several invaluable lessons to further develop my research and problem-

solving skills. Development was the most stressful and time-consuming step in the process, but it was also the most rewarding because my efforts immediately became tangible in the form of my Web application's improving appearance and increasing functionality.

4.1.3 Milestones in Senior Design III

Senior Design III involved tying off loose ends, testing and refining design, and finalizing documentation. The milestones below were achieved during this period.

- Finalized functionality of Web application
- Tested functionality and fixed any problem areas
- Refined design using feedback from usability surveys
- Developed final documentation on the project
- Presented the final product to fellow students, faculty, and staff

Senior Design III involved a great amount of difficulty and frustration. This is so because I arrived at the point of concentrating on the more advanced functionality of the Web application. However, at this point, I also became more confident in my programming skills, such that I did not panic or become quickly discouraged when encountering difficulties. Instead, I followed proven problem-solving formulas I devised and tested throughout the duration of Senior Design II.

4.2 Budget

The budget for the project is presented in the table below (See Figure 8). Note that the cost project was calculated based upon normal retail values. Most of the hardware, software, and texts were already in my possession prior to commencement of the project. Additional needed software was acquired under academic licensing and

through an educational use agreement between Microsoft and the University of Cincinnati.

Item	Cost
Software Requirements	
Windows 2000 Professional (1)	\$274.99
Microsoft Visual Studio 6 (1)	759.95
Microsoft SQL Server 2000 Developer Edition (3)	499.99
Adobe Photoshop 6 (1)	440.00
Hardware Requirements	
Development PC	2,000
Other Resources	
Cookbooks and References Texts (1)	200
TOTAL	\$4174.93

Figure 8. Budget

5. Proof of Design

This section presents each of the components of the *YBF Cooking Assistant* Web application that the deliverables encompass. The site essentially provides three levels of access. The options available depend upon the user type: unregistered user, normal registered user, and administrator. Since the capabilities increase with each level, the basic functions are described first, with the added functions provided to registered users and the administrator presented in the subsequent sections. Following is a thorough description of the individual components along with screen shots and a discussion of the functions each performs.

5.1 Unregistered User Options

Any users who access the *YBF Cooking Assistant* Web site for the first time or on subsequent times without registering have a reasonable amount of options available even with no login. With the main difference being these users cannot perform any type of customization, they still have the capability to view the entire contents of the cookbook database, review cooking tips, browse or search through ingredient information, or gain access to links related to cooking and vegetarianism. Additionally, new users have the opportunity to register an account to gain access to more features that enable them to customize their accounts and save information that is available upon return to the site. Following is a more detailed analysis of each option available to unregistered users.

5.1.1 Homepage

The homepage is the entry point for the *YBF Cooking Assistant* Web site. It establishes the general layout of the site to which all other pages adhere in appearance and styling, all being linked to a style sheet containing font, color, and style designations (See Figure 4). The site title and logo appear along the top of each page. Navigation was kept simple by maintaining a consistent flow. Directly beneath the graphic of the title and logo is the main navigation bar. This presents the general navigation options available to all who access the site: Homepage, Cookbook Contents, Cooking Tips, Ingredient Info, and Other Links. Second level navigation and functionality appears in the left-most column of the page. At this location on the homepage, users have the option of either logging in to an existing account or registering a new account. In fact, these options are presented on each page for unregistered users so they do not have to search for a particular page to perform these functions. The specific second level navigation and

functionality options available are discussed along with each component to which they pertain. Finally, the main content of the homepage conveys the site's purpose and provides a brief overview of the options available to registered users, encouraging those who have not yet created an account to do so and, in turn, gain access to additional features.

5.1.2 Cookbook Contents

The Cookbook Contents section is a key feature of the *YBF Cooking Assistant* Web application in that it provides the framework upon which several of the other features are based, specifically My Recipes, the Meal Planner, and the Grocery List Generator, each of which is discussed in the section describing registered user options. I refer to the data infrastructure that supports this as the cookbook database, although it is just a portion of the database that services the entire site. The Cookbook Contents section offers several options for browsing or searching through the entire store of available recipes (See Figure 9). Visitors have the ability to browse recipes by course, main ingredient, or nationality. The default view is by course. Alternative views are accessed by clicking one of the links in the colored box appearing beneath the overview and titled View Recipes By. Additionally a supplementary search feature, appearing in the left column, enables searches to be performed to find recipes in a specific course, main ingredient category, or nationality. If the user searches on a category that does not exist or if one is entered for which there are currently no associated recipes, an error message is displayed. Additionally, error checking is performed via JavaScript to ensure that users complete all necessary fields before they are allowed to submit a search (See Appendix A). If the user does not both provide a search term and select a search type, an

error message appears within a pop-up message box, informing them that a valid search was not submitted.



Figure 9. Cookbook Contents

From the Cookbook Contents section, users can access and view specific recipes. This is done by clicking on a linked recipe title after accessing a specific category within courses, main ingredients, nationalities, or by performing a search. The recipe view displays the recipe title, provides necessary ingredients and instructions for preparation, and gives the recipe's source (See Figure 10). All recipes used on the site were gathered from external sources in the form of cookbooks and recipes supplied by family and friends (See Appendix E).

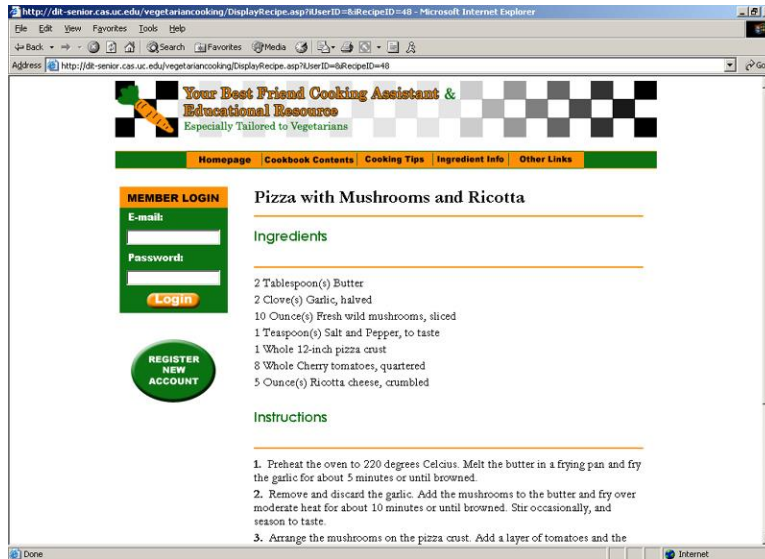


Figure 10. Recipe View

5.1.3 Cooking Tips

The *YBF Cooking Assistant* Web application aims to put information and time-saving tools at the finger tips of those using the site, with busy professionals and students being the target audience, though others are sure to find the resources useful as well. When the features were built, an additional goal was for the users to become more knowledgeable and efficient in the kitchen and supermarket. The Cooking Tips section serves the purpose of offering information on general topics such as kitchen supplies, cooking techniques and practices, and grocery shopping. The tips are geared more toward the beginner and intermediate cooks. Reviewing the information in this section would be a great place for these individuals to begin. More advanced cooks may find the content to be slightly elementary. However, it provides a useful reference even for this group. Were more time available for development, different Cooking Tips sections would be available depending upon the user's experience level. Regardless, one of the benefits of the main level of navigation imposed is that users who do not require such

information can easily disregard the section without it impeding their access to the sections that are useful to them.

Currently, the topics available in the Cooking Tips section are Basic Cooking Supplies, Cooking Terminology, Cutting Food, Seasoning Food, and Suggested Shopping List. Each main level topic is accessed by clicking a link in the box below the navigation bar. On each page, if subtopics are available, there are bookmarks beneath the page title. Each jumps to the corresponding subtopic where the user can digest the material and has the option of jumping back to the top of the page by clicking the Back to Top link (See Figure 11).

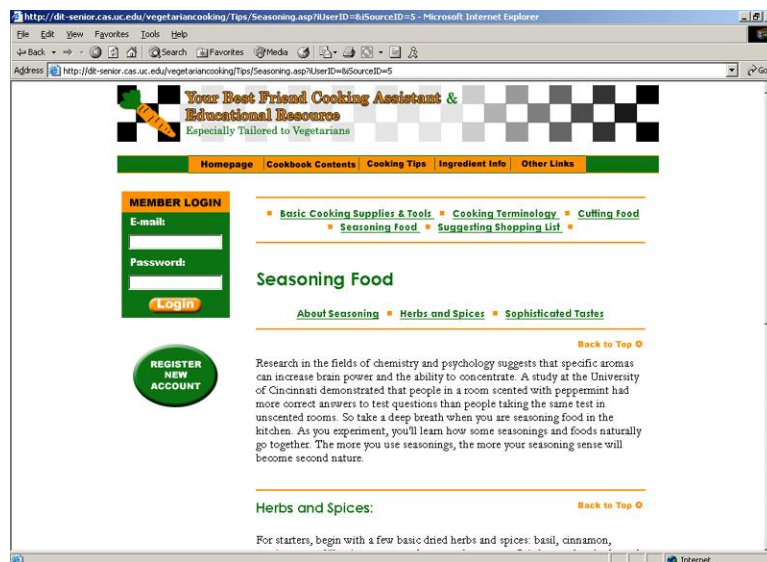


Figure 11. Cooking Tips

5.1.4 Ingredient Info

The Ingredient Info section of the *YBF Cooking Assistant* Web application also serves the purpose of delivering an informational resource to the user. Specifically, it presents information to the user pertaining to ingredients frequently used in vegetarian cooking. Particular topics of information on each ingredient provided on the basis of

availability include general ingredient information, nutrition, pointers on buying and storing the ingredients, preparation techniques, and suggested methods of cooking. Navigation in the Ingredient Info section is consistent with other portions of the site and is a combination of the methods found in the Cookbook Contents and Cooking Tips sections (See Figure 12). Visitors have the option of either searching for a particular ingredient or browsing the ingredients by ingredient category. These choices are found in the Search box near the top of the page beneath the main level navigation. A valid submittal is verified using JavaScript (See Appendix A). The user must either submit a search term or select an ingredient category from the drop-down box. If neither or both are done, a message box appears prompting the user to correct their mistake. Sub-navigation consists of bookmarks that jump to each ingredient, where the viewer can digest information pertaining to a particular ingredient. Again, as in the Cooking Tips section, the user has the option of jumping to the top of the page by using the Back to Top link appearing next to each ingredient displayed on the page.

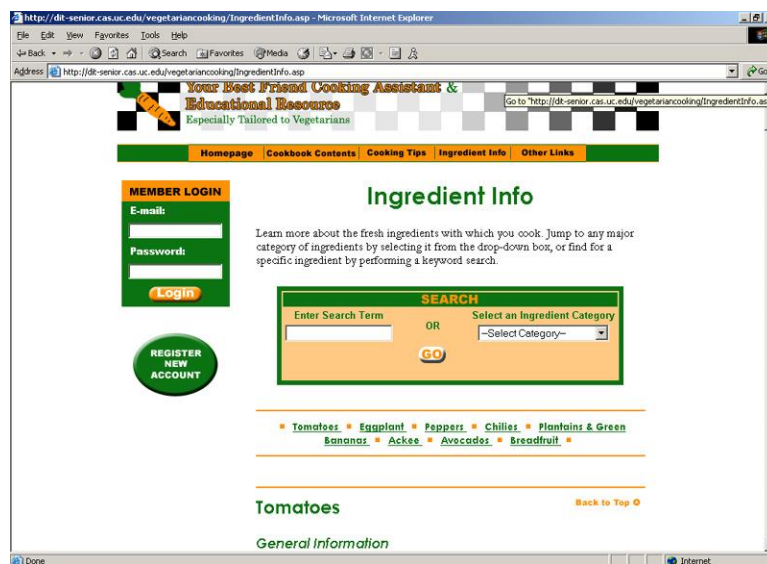


Figure 12. Ingredient Info

5.1.5 Other Links

While the *YBF Cooking Assistant* is intended to provide its users with a wealth of information on the topics of cooking and vegetarianism, as well as valuable tools to assist in meal planning and grocery shopping, the assertion is not being made that it answers all questions and serves all needs in this realm. Therefore, users are also provided with other researched and documented links to alternate Web sites for further information on certain subjects (See Figure 13). For each, a link to the site is presented, along with a description of the features of the site and key aspects that I found particularly useful.

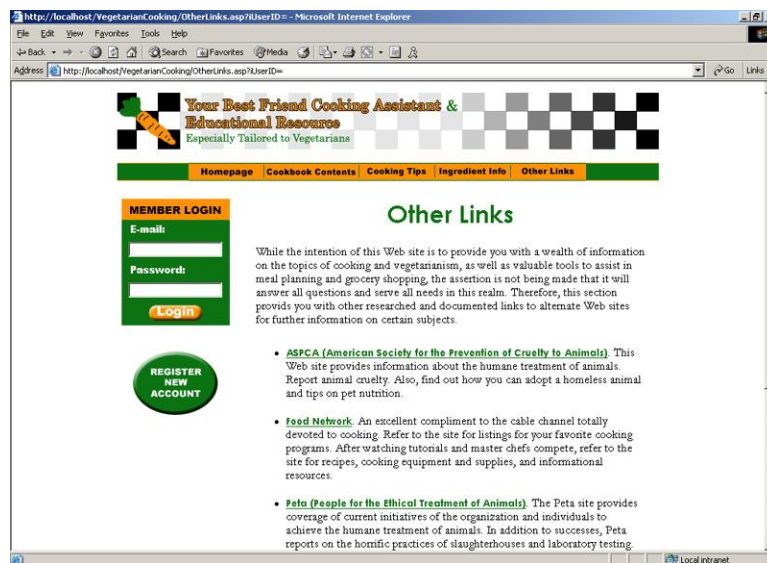


Figure 13. Other Links

5.1.6 Registration

The registration page enables new visitors to set up an account to access additional features that provide a degree of customization and login to their account upon subsequently returning to the site (See Figure 14). Registration requires the user to enter both registration, or account, information as well as contact information. I struggled with the amount of information that should be required to register. Currently, the required

fields are name, an e-mail address that serves as a unique user ID, a password also used for login, experience level, address, and telephone number. The logic behind requiring all this information is that it only needs to be entered once and, were further development to be done on the site, contact information would be helpful to gain feedback about strong and weak points of the site. Additionally, this information would be required if e-commerce sections were to be added to the site.

The screenshot shows a web browser window with the address bar displaying <http://dit-senior.cas.uc.edu/vegetariancooking/Register.asp>. The page has a header with a logo and the text "Your Best Friend Cooking Assistant & Educational Resource" and "Especially Tailored to Vegetarians". Below the header is a navigation bar with links: "Homepage", "Cookbook Contents", "Cooking Tips", "Ingredient Info", and "Other Links". The main content area is divided into two sections. On the left is a "MEMBER LOGIN" box with fields for "E-mail:" and "Password:", and a "Login" button. On the right is a section titled "Enter Your Registration and Contact Information". It contains a paragraph explaining the benefits of registration: "Registering will allow you to access useful features such as being able to save a list of your favorite recipes. You will also have the capability to generate meal plans and grocery shopping lists. All fields are required to register." Below this is a "Registration Info" section with five input fields: "First Name:", "Last Name:", "E-mail Login:", "Re-type E-mail Login:", and "Password:".

Figure 14. Registration Page

5.2 Normal Registered User Options

Registered users gain an added level of functionality when logging in to their account. The specific features to which they attain access are the ability to save and index their favorite recipes, a meal planning tool that enables them to generate and modify weekly meal plans, and grocery list generator function that allows registered users to create grocery lists from the weekly meals plans in their accounts. The following sections provide a more detailed account of each of these three features in addition to a walk through the login procedure.

5.2.1 Login

The login procedure on the *YBF Cooking Assistant* Web site is intuitive. As previously stated, the login box appears on each page in the left-hand column for unregistered users, or those who access the site and have simply not logged in yet. When a user attempts to login, a stored procedure is triggered to scan the database table populated with user registration information to ensure that a user exists with a matching e-mail login and password (See Appendix B for stored procedure code samples). The login form submits to the page titled *LoggedIn.asp*, which executes this check against the database. If the stored procedure returns zero results, the user is redirected to *Home.asp* and an error message is displayed beneath the login box and registration button stating that they have entered an invalid e-mail login or password (See Figure 15).

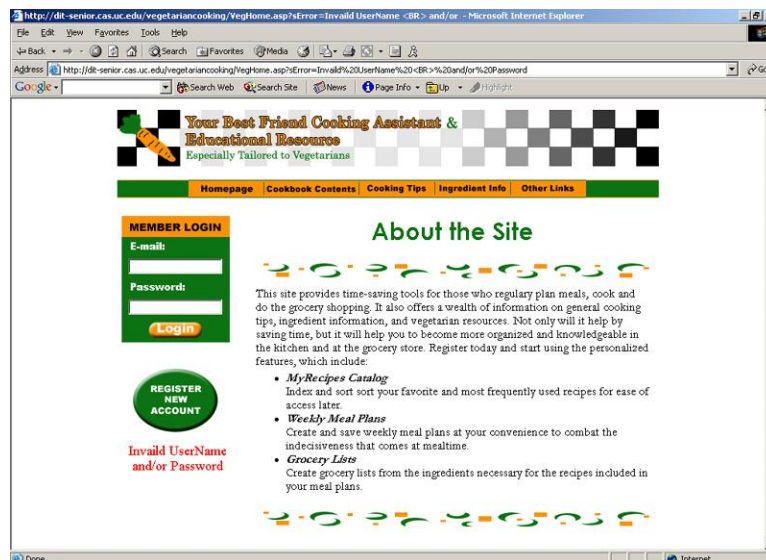


Figure 15. Invalid Login Error Message

When a user submits valid login information, *LoggedIn.asp* successfully loads (See Figure 16). This page is very similar to *VegHome.asp*. However, the instruction text is modified to reflect that the user can now begin using the additional features

offered. The login and registration box no longer appear in the column on the left of the page. Instead, they are replaced with an additional level of navigation in the form of a box titled User Options. This is where registered users access the features titled My Recipes, Meal Planner, and Grocery List. As further indication that the user is now logged in, the page title changes to a welcome message displaying their name.

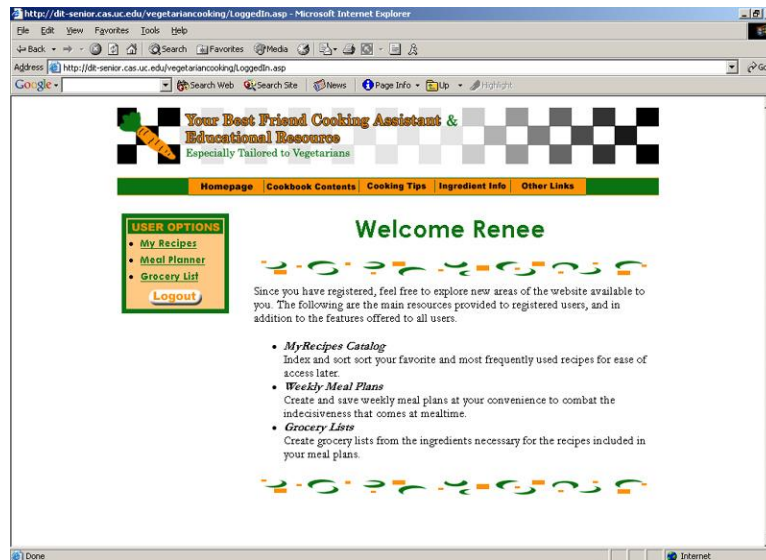


Figure 16. Successful Login

5.2.2 My Recipes

My Recipes provides a central storage area for a user's favorite and most-used recipes (See Figure 17). Registered users are able to save as many recipes from the general cookbook as they wish, and these recipes are made available to use when creating meal plans.

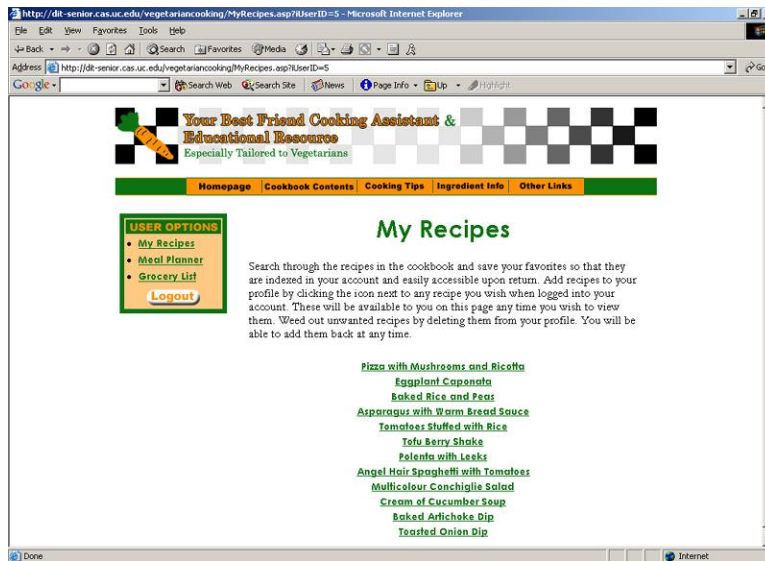


Figure 17. My Recipes

The method in which a user adds a recipe to their favorites is by viewing that particular recipe through the Cookbook Contents section. Though the option is not available prior to login, the user will notice a link in the upper right of the recipe display that reads Add to My Recipes (See Figure 18). If the recipe has already been added to their favorites, then they have the option to delete it.

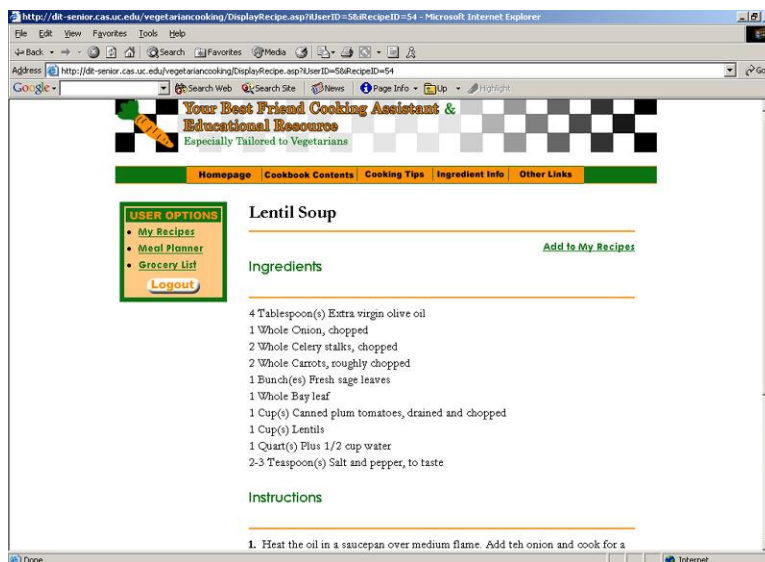


Figure 18. Add to My Recipes

5.2.3 Weekly Meal Planner

Once registered users have saved several recipes as their favorites, they are ready to begin creating meal plans. One does so by clicking the Meal Planner link in the User Options box along the left of the page. The main page displays links to the meal plans that the user has already created (See Figure 19). If none have been added, the page simply provides instructions on how to proceed. The box titled New Meal Plan appearing along the left beneath the User Options allows the user to create new meal plans. The instructions suggest naming meal plans by the beginning and ending dates of the week, beginning with Monday's date and ending with Sunday's date, as each meal plan runs Monday through Sunday regardless of the titled entered.

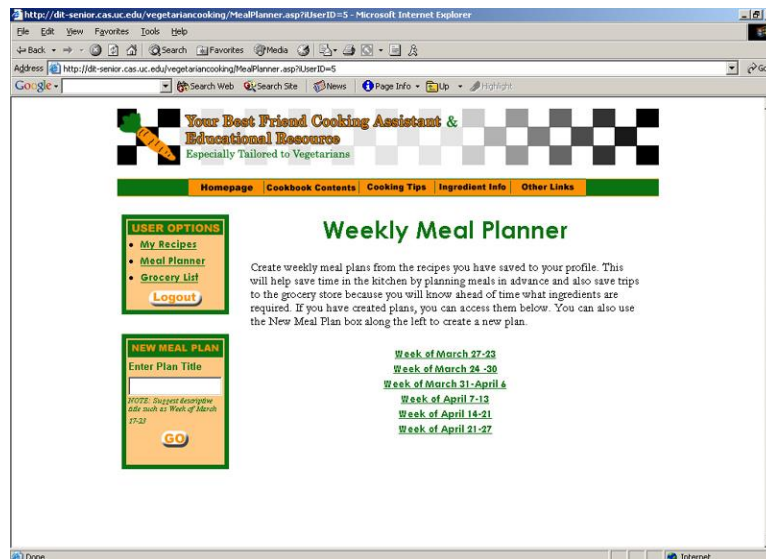


Figure 19. Main Meal Planner Page

When the user enters an existing meal plan by clicking one of the links on the main meal planner page, if present, he or she is directed to a page where the entire week is displayed, with a colored box for each day to which recipes were added (See Figure

20). The user has the options to delete recipes from specific days, delete an entire day, or generate a grocery list for an individual day or the entire week.

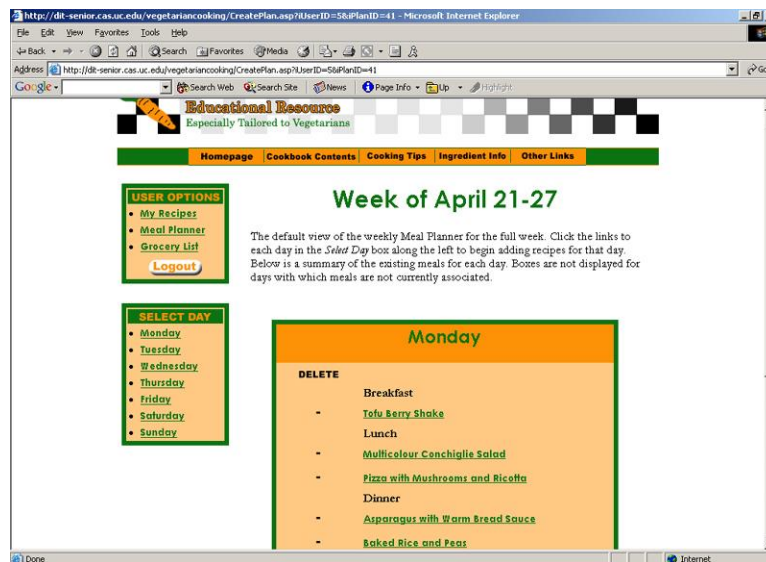


Figure 20. Meal Planner by Week

Finally, the user is able to view and alter any day within the meal plan by clicking a link to one of the days found in the box appearing in the left-hand column and titled Select Day. This displays meals created for that particular day (See Figure 21). If meals for that day already exist, each appears in a separate colored box on the page. Also on the page, near the top, is a box titled Create/Edit Meal. This allows users to create or modify any meal by adding recipes from their favorites to it. They simply need to designate the meal, course, and the desired recipe, each of which is selected from a pre-populated drop-down box. Individuals must submit something for all three categories, or else they will receive an error message stating that all necessary parameters were not provided. Users are also able to delete individual recipes from meals by clicking the minus symbol next to the recipe or may also delete an entire meal by clicking Clear All.

Finally, in this view, as in the previous one, the user can generate a grocery shopping list. This can be done for either individual meals or for all meals for an entire day.

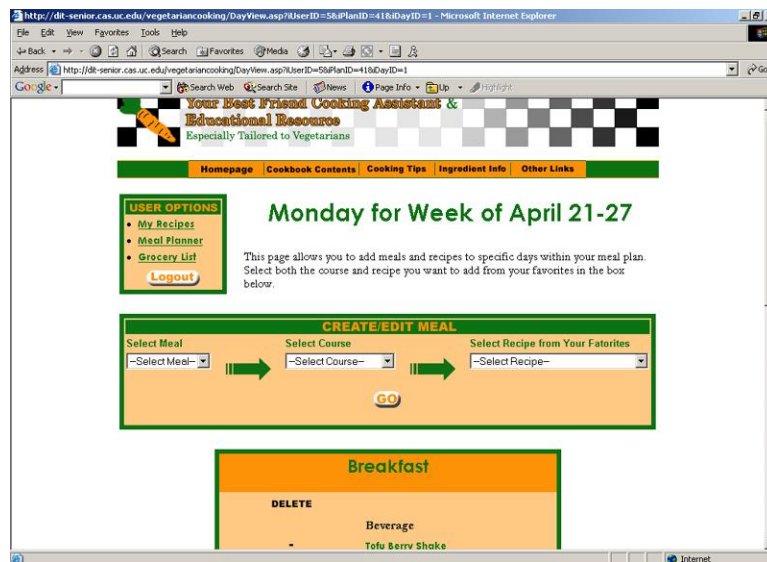


Figure 21. Meal Planner by Day

5.2.4 Grocery List Generator

The Grocery List Generator feature complements the meal planning tool allowing grocery lists to be created from the recipes contained within a particular plan. As mentioned in the previous section, the user has the option to generate lists by week, day, and meal, depending upon his or her needs. This proves to be useful since the other way to gather the ingredients for a meal is by viewing each recipe individually, which could prove to be tedious and cumbersome. The Grocery List Generator provides an effective, time-saving method of compiling all needed ingredients so they can be printed and taken to the store for reference while shopping. Grocery lists can be generated for specific meal plans, days, or meals within the meal planning section. The Grocery List section simply allows user to generate a grocery list for a specific meal plan (See Figure 22).

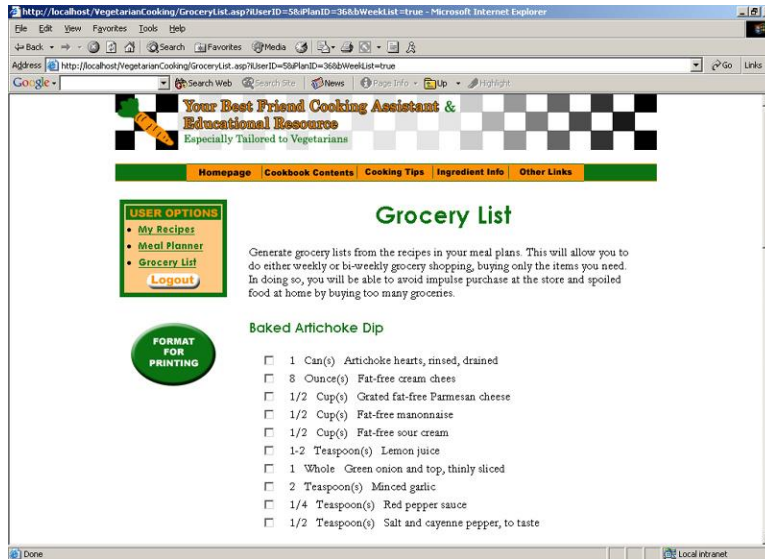


Figure 22. Grocery List Generator

5.3 Administrator Options

The administrator account (admin@vegcook.com, admin) provides the highest level of access, unlocking all features available on the site. When logging in as an administrator, you will notice that there are additional links available in the User Options box, Management and Add Recipe (See Figure 23). Additionally, the message that appears as the page title reads Welcome Administrator.

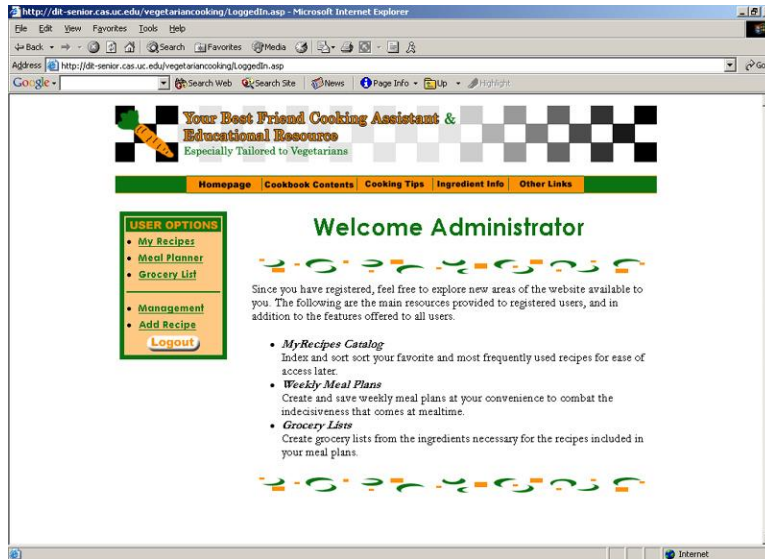


Figure 23. Administrator Login

5.3.1 Add Recipe

Administrators are the only user able to enter recipes. This was intentionally done for purposes of maintaining data integrity. In a real life scenario, users would be able to submit recipes to the administrator in a specified format and would be entered into the database and made available to the public, pending approval. Currently, the administrator must complete a three step process to enter recipes. After clicking the Add Recipe link, he or she is taken to the first step, appearing in an interface that has a very different design than the rest of the site. This was done for a purpose since, on these pages, the actions taken can affect the entire population using the site. Therefore, I created an interface that was different, but continues to use a similar color pattern, buttons that resemble those available on pages accessible to all users, and utilizes similar database interactivity but with some additional capabilities.

The first step in the process of adding a new recipe is to enter the general recipe information, such as title, main ingredient, course, nationality, source, and a description

(See Figure 24). The administrator has the ability to cancel out on this step. Once submitted, however, the recipe has been partially entered into the database.

The screenshot shows a web browser window with the title "http://localhost/VegetarianCooking/RecipeWizard.aspx?UserID=6 - Microsoft Internet Explorer". The address bar shows "http://localhost/VegetarianCooking/RecipeWizard.aspx?UserID=6". The page content is titled "Add Recipe Step 1 - General Recipe Information". Below the title, there is a section labeled "INSTRUCTIONS:" with the text "Enter general information about the recipe you wish to add. These attributes will allow users to easily search on all recipes in the cookbook database." Below the instructions, there is a text input field labeled "Recipe Title". Below the text input, there are three dropdown menus: "Main Ingredient Category" with options: Onions and Leeks, Shoots and Stems, Roots, Greens, Beans, Peas, and Seeds, Squashes, Fruit, Salad Vegetables, Mushrooms; "Intended Course for Recipe" with options: Appetizer, Soup, Salad, Sandwich, Main Course, Side Dish, Bread, Sauce or Condiment, Dessert; and "Nationality" with options: American, Italian, Mexican, German, Thai, Middle East, Chinese, Japanese, Indian. Below these dropdowns, there is a dropdown menu labeled "Recipe Source" with options: "The One-Dish Vegetarian: 100 Recipes for Quick and Easy Vegetarian Meals" and "Vegetarian and Vegetable Cooking: The Definitive Encyclopedia of Healthy Vegetarian Food". The browser window shows the status bar at the bottom with "Done" and "Local intranet".

Figure 24. Add Recipe Step 1

The two proceeding steps allow the administrator to loop through and provide as many ingredients and instructions as necessary. These pages present an interface identical to that of Step 1 to maintain consistency in layout and navigation. For each form, similar error-checking procedures are executed using JavaScript. In any case where sufficient parameters are not supplied, the administrator receives an error message and the submittal is cancelled.

5.3.2 Database Management

The administrator is presented with several database management options, all accessible from a single page, when clicking the Management link under User Options. The page accessed from this link provides several colored boxes, similar to those in the Meal Planner section, enabling modification of various tables in the database (See Figure 25). Each provides links to three database modification actions for a specific table: add,

edit, and delete. Currently, the tables that can be altered are ingredients, courses, units, and sources. Additionally, bookmarked links are provided to each colored box in the left column. These are presented in a box titled Management Options.

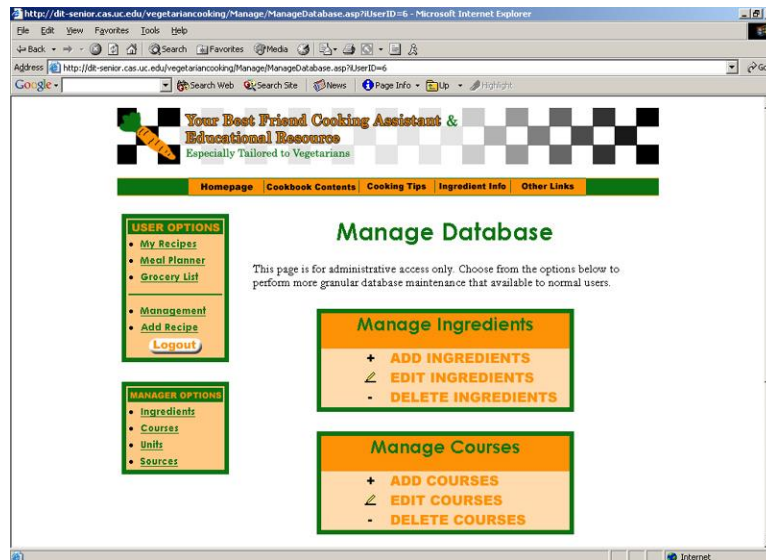


Figure 25. Database Management

The interface for database modification is consistent with that for adding recipes. It consists of a light-orange background, black instruction text, and orange headings. The buttons on the page are white, beveled, and contoured, with orange text (See Figure 26). The display for each of the three functions available when altering a table are relatively similar. Whether the interface is blank or pre-populated depends upon the action chosen which, in turn, executes the appropriate stored procedure.

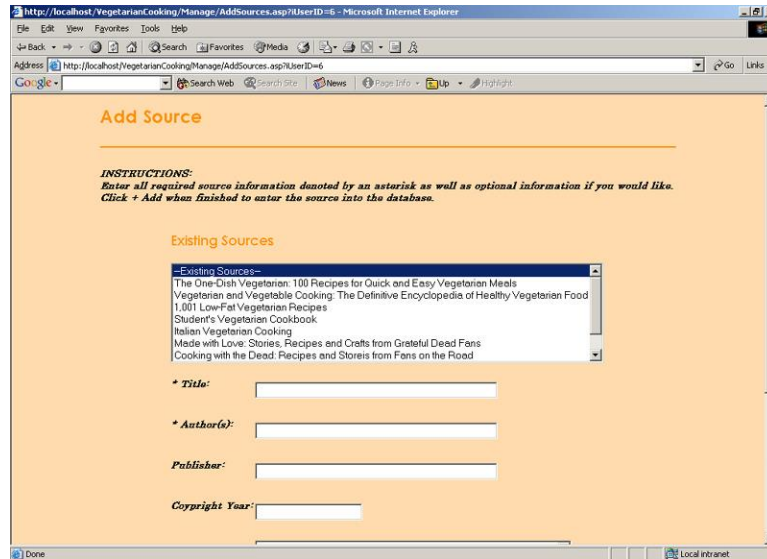


Figure 26. Management Interface

Editing database tables is a two step process, where the administrator first chooses an entry to edit from a scrolling list. After doing so, he or she is directed to a second page that is identical to the page for adding to, or appending, the database. However, the text and combo box fields are pre-populated with the data currently associated with the designated entry. The administrator has the option to edit these fields and resubmit them, which updates the appropriate record in the database.

Deletion of records from the database is a more guarded process. In the case of a submitted deletion, one or more stored procedures are first run to ensure that there are no existing associations with the record that will corrupt the data. In cases where other data exists that is contingent upon the designated record, an error message displays for the administrator, stating that the record cannot be deleted at this time (See Figure 27).

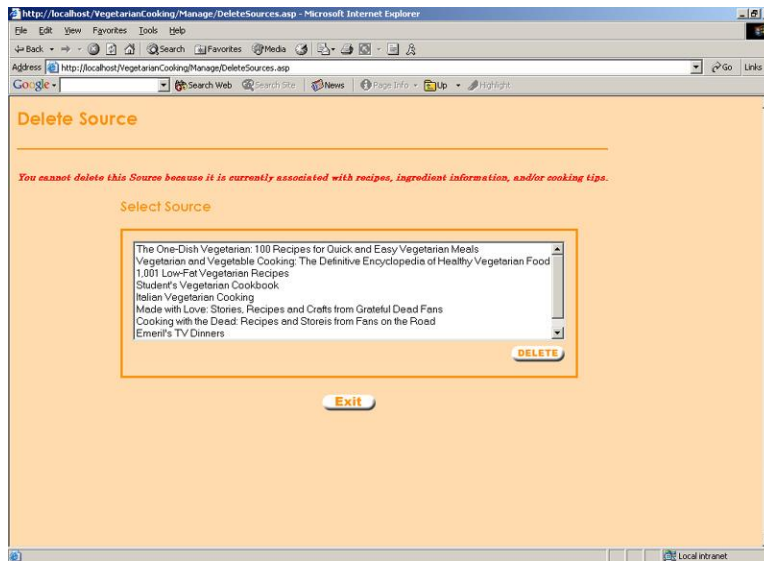


Figure 27. Error in Management Interface

6. Conclusions and Recommendations

While the conclusion of Senior Design III comes as a relief in terms of stress and amount of time it demanded, it also involves a hint of sadness. Were more time available, further improvements could still be made. And, of course, I always had the goal of achieving the most complete and useful product possible. For this reason, I plan to continue work on the project to achieve my final vision. Additionally, I aim to make use of the tool to prove that it can serve the functions it was intended to.

6.1 Recommendations for Practices that Proved Successful

Although I am aware of changes that would make my Web application better, I am satisfied with the functionality I achieved considering the skill set with which I began and the time constraints for both learning and development. I feel that I have laid a solid groundwork for a project that could be further developed and become even more useful.

6.1.1 SQL Server 2000 Stored Procedures and Active Server Pages

I could not be more satisfied with the performance and ease of use of SQL Server 2000. The most beneficial aspect of this Relational Database Management Software (RDBMS) was the capability to create and execute stored procedures from Active Server Pages. It was relatively easy to create stored procedures with a very basic knowledge of the query language used. Furthermore, the code for the procedures can be generated using a graphical interface in the Query Analyzer. I strongly recommend the use of SQL Server and its stored procedures to create a Web application with a database backend. There is only one thing that I would do slightly differently regarding the use of stored procedures. My project ended with a very high number of stored procedures and I am not certain that this was necessary. I believe I could have decreased the number by only making the stored procedures slightly more complex. However, it was easy to simply create a new stored procedure for each task that arose. I recommend researching the capabilities and coding of stored procedures before using them because this will allow for their use to be as efficient as possible.

6.2 Conclusions Concerning What Should Be Done Differently

6.2.1 Usability

Three specific aspects of usability of my Web application that I would improve upon if I had more development time are improved compatibility, increased user control, and improved searches.

Ideally, a user should be able to use nearly any Web browser they may have to access and use the tools on my site. However, this is not the case due to lack of experience and time constraints. At minimum, I would have the site work in the

browsers of all major vendors, such as Microsoft Internet Explorer, Netscape Navigator, America Online, Opera, and Mozilla.

With more development time, I would also be able to provide more user capabilities. For instance, a user should be able to delete Meal plans. Currently, they cannot do so, which is bad since the user would want to maintain a groomed account if they used the Web application over an extended period of time. I would also provide the ability for such functions as submitting a recipe via e-mail to be approved by the administrator and entered into the database. Users would also be able to e-mail recipes to share with others and should be provided with a more developed set of organizational tools for their favorite recipes, as well as all recipes in the database.

Finally, searches should be improved upon. While the recipe and ingredient searches do currently function, they do not function 100% as expected. For searches, I included wild cards on each side of the search term in the stored procedure. So, logically, a user should be able to enter an 's' and any records being searched that contain that letter should be returned. However, this is not the case. Currently, the search term must be entered fully as the data appears in its field. I tried multiple methods to resolve this and none worked, so I have yet to find a solution.

6.2.2 Recipe Management

In the early stages of deployment, the administrator's main function is to populate the cookbook database with a large variety of recipes that offer users diverse and practical choices. For the initial display of the final product, an ample amount of recipes are available for demonstration purposes. However, for use on a day-to-day basis, users would require a much larger recipe store. A greater amount could not be entered, simply

due to time constraints. Professor Tom Wulf suggested locating a recipe vendor that provides structured recipes in bulk that could be downloaded for free or a nominal price. The goal would then be to create a script that transfers the recipes to the database, tagging them with XML in the process, such that each one does not need to be manually entered. This is a wonderful suggestion and one that I was able to only briefly research, also due to time restrictions. While I have located some such vendors that may provide recipe structures that could be ported to my format, I have not yet been able to find one that has available solely vegetarian recipes. Therefore, this possibility would need to be researched further and visited in a subsequent site update.

Additionally, I have discovered disadvantages to the manner in which I store my recipes in the database. Other than the process of adding a recipe being somewhat cumbersome, there are a couple main drawbacks to the way the recipes are entered and stored. First, the same ingredient could, logically, be entered multiple times for different recipes. This is not apparent to the normal user, but it has two problems. First, this is an unnecessary use of space in the database. Second, when the administrator is looking for an ingredient to edit or delete, a specific ingredient can be hard to find. This is actually one of the reasons that ingredients are stored the way they are. It was not feasible to populate a drop-down box with all ingredients from which the administrator could select during the process of adding recipes. There would come to be too many.

Another recommendation, in hindsight, is that quantities should be stored in numeric, as opposed to string format. This would allow calculations to be performed on recipe ingredient quantities. For instance, a user could have the option of doubling or

tripling a recipe when cooking for a crowd and would be able to view the adjusted quantities and units for each ingredient.

Finally, the administrator should be able to delete and edit recipes. I was unable to get far enough in the development process to enable he or she to do so. The administrator would currently need to edit the recipes from within SQL Server. The preferred method would be available in a Web interface.

6.2.3 Coding Practices

Another aspect of my development I would change in retrospect is to ensure that the most efficient code is always used. In certain instances, I am fairly certain that, although my code works, there would be a better way to achieve the task that would be both simpler and more maintainable. At times, I simply pushed forward with coding, as opposed to doing more research on the best practice, because I was worried about meeting deadlines. I recommend against following this practice. Often, the research time put in could greatly decrease future development time, so it is ultimately a wise practice, as opposed to a faulty one. Specifically, in regard to my work, I would attempt to use more functions to execute code that is recycled and redundant throughout a page.

Appendix A.

HTML, VBScript, and JavaScript Code Samples

A 1. HTML Code Samples

The following is the line of HTML used to throughout each page to instantiate the necessary database connection. This line was added to the header of each page that requires a database connection. The contents of the includes file appears in section A 2. since it is VBScript. Includes files were used extensively throughout the site to reuse components that were repeated multiple pages as well, such as the navigation bar and the login box.

```
<!-- #include file=includes/incConnVeggie.asp -->
```

The following is typical HTML coding used to call style sheets throughout the site. Two style sheets were used to maintain consistent appearance among the normal user interface and the administrator interfaces. This line calls the main style sheet used to maintain cohesion throughout the normal user interface.

```
<link href="Stylesheets/Main.css" rel="stylesheet">
```

For the following buttons, I used HTML code to generate changes in appearance for the mouseover event: Register New Account, Generate Weekly Grocery List, and Format for Printing. Below is sample code that creates this behavior.

```
<a href="Register.asp" onmouseout = "document.NewUser.src =  
'images/btnNewUser.gif';" onmouseover = "document.NewUser.src =  
'images/btnNewUserFocus.gif';">  

```

Forms were used to pass data from one page to another, or possibly to itself. The post method was used to do so. Below is an example of the code employed.

```
<!--this form submits to LoggedIn.asp where the user login information provided
is validated after initial form validation is performed via JavaScript-->
<form name="frmSubmitLogin" id="frmSubmitLogin" action="LoggedIn.asp"
method="post">
    <input type="hidden" name="hdnPassword" id="hdnPassword">
    <input type="hidden" name="hdnLogin" id="hdnLogin">
    <input type="hidden" name="hdnSubmit" id="hdnSubmit" value="YES">
</form>
```

A 2. VBScript Code Samples

Below is the content of the includes file that instantiates a database connection. Since this connection is required throughout a large majority of the pages, the code for it was placed in an includes file and simply called in the page header where required.

```
<%
Dim ConnString ConnString = "Driver={SQL Server}; Server = dit-
senior.cas.uc.edu; Database = VegCooker; UID = VegUser;PWD = veggie"
%>
```

One of the most important functions of VBScript was to instantiate and execute the many SQL Server stored procedures used throughout the pages. When run, this code creates an instance of a record set, associates it with a stored procedure, and then passes variables to the procedure and executes. Below is an example of what this code looks like.

```
'SP to check if the e-mail login provided for a new user account has already been
used.
set cmExistingUser = Server.CreateObject("ADODB.Command")
cmExistingUser.ActiveConnection = ConnString cmExistingUser.CommandText
= "dbo.ExistingUser" cmExistingUser.CommandType = 4
cmExistingUser.CommandTimeout = 0 cmExistingUser.Prepared = true
cmExistingUser.Parameters.Append
cmExistingUser.CreateParameter("@EmailLogin", 129, 1,25,strEmailLogin) set
rsExistingUser = cmExistingUser.Execute
```

VBScript also came in very useful for executing code or displaying certain content based upon conditions. The main conditional loops used were *do while* and *if* statements. For example, the following code displays the login box if the user has not yet logged in. Otherwise, it displays the User Options box. You will notice that both of these pieces are contained in includes files.

```
<%  
'if the user is logged in, display additional options  
'otherwise, display the login box  
if not iUserID="" then  
%>  
  
    <!-- #include file=includes/UserOptions.asp -->  
  
    <%  
    else  
    %>  
  
    <!-- #include file=includes/LoginBox.asp -->  
  
    <%  
    end if  
    %>
```

The following is code used to loop through a record set. Within the loop, certain code would execute a number of times until the end of the record set is reached. An example would be when populating a list box. I did not include the code within the loop due to space constraints.

```
<%  
do while not rsMealList.eof  
%>  
  
    <!-- code reiterates until the end of the record set is reached -->  
  
    <%  
        rsMealList.movenext  
    loop%>
```

A 3. JavaScript Code Sample

The following is the combination of HTML tags and JavaScript code that is typical throughout my site and performs field validation. Essentially, where a form submittal is necessary, the page contains two forms for the submittal. The first form sends the parameters to the JavaScript function for validation. If the validation is successful, the second form is submitted behind the scenes, being fired with JavaScript and sent to another, or the same, page using ASP post methods. Below is the JavaScript function for validating the user login form.

```
<script language="javascript1.1">
function login()
{
    if ((document.frmLogin.txtEmailLogin.value != "") &&
        (document.frmLogin.txtUserPassword.value != ""))
    {
        document.frmSubmitLogin.hdnLogin.value =
            document.frmLogin.txtEmailLogin.value;

        document.frmSubmitLogin.hdnPassword.value =
            document.frmLogin.txtUserPassword.value;

        document.frmSubmitLogin.submit();
    }

    else
    {
        if (document.frmLogin.txtEmailLogin.value != "")
        {
        }

        else
        {
            alert('Username cannot be blank.');
```

```
        if (document.frmLogin.txtUserPassword.value != "")
        {
            //
        }

        else
        {
            alert('Password cannot be blank.');
```

```
    }
</script>
```


Appendix B.

Stored Procedure Code Samples

This appendix provides examples of code for SQL Server stored procedures used in this project. Stored procedures were used extensively to add, edit, update, and validate information in the database. Since many functions were simple, but performed transactions with different tables, the logic of the stored procedures could be recycled in certain cases. Below are examples of the types of stored procedures used and the logic within them. See the documentation contained on the accompanying CD for a full list of the stored procedures, with their code and descriptions of their functions.

AddCourses

This is a simple, but typical, stored procedure used for appending data to a table. This particular stored procedure can only be executed by the administrator. It is run on *AddCourses.asp* when the administrator enters a new course and course description.

```
CREATE PROCEDURE AddCourses
@Course char(25),
@CourseDescription char(100)
AS
Insert Into tblCourses Values(@Course, @CourseDescription)
GO
```

CheckCourseRecipeAssociations

Stored procedures were used to ensure data integrity as well. This stored procedure is executed for the administrator prior to running the *DeleteCouse* stored procedure on *DeleteCourses.asp* to ensure that there are no existing course associations to any existing recipes that have been entered by the administrator. If any associations exist, the deletion does not occur.

```

CREATE PROCEDURE CheckCourseRecipeAssociations
@CourseID bigint
AS
SELECT      *
FROM        tblCourses INNER JOIN
            tblRecipes ON tblCourses.CourseID = tblRecipes.CourseID
WHERE       (tblRecipes.CourseID = @CourseID)
GO

```

CheckUser

This is a very important stored procedure. It is executed on nearly every page. It determines whether a user that has logged in is the administrator or a normal user. The number of added options, appearing in the User Options box in the left column, depends upon the user status.

```

CREATE PROCEDURE CheckUser
@iUserID bigint
AS
SELECT EmailLogin
FROM tblUsers
WHERE UserID=@iUserID AND (EmailLogin like 'admin@vegcook.com')
GO

```

CountIngredientInfo

On certain pages, it was necessary determine the amount of records contained in the record because the result affects layout of the display. This stored procedure executes on *IngredientInfo.asp*. The purpose it serves is to determine whether the search results contain a single, or multiple, ingredients. If there are multiple ingredients, bookmarks are generated to jump to their location on the page. Otherwise, the bookmarks are not necessary and, therefore, are not generated.

```

CREATE PROCEDURE CountIngredientInfo
@Ingredient char(100)
AS
SELECT      COUNT(*) AS IngredientCount

```

```
FROM      tblIngredients
WHERE Ingredient LIKE '%'+@Ingredient+'%'
GO
```

DeleteCourse

This is a simple stored procedure that deletes a record from the database. However, it works in conjunction with other stored procedures. This specific stored procedure can only be executed by the administrator. Additionally, it will only run if no existing associations are found for the course chosen for deletion. The stored procedure executes on *DeleteCourses.asp* if the administrator submits a deletion and this condition is met.

```
CREATE PROCEDURE DeleteCourse
@CourseID bigint
AS
DELETE FROM tblCourses
WHERE CourseID = @CourseID
GO
```

DeleteDaysMeals

This is a less consequential stored procedure that performs a deletion and, so, can be run by normal registered users. The code below can be executed by a user who has logged in and begun the process of creating a meal plan. It runs if they click the Clear All button within the box for a day on *CreatePlan.asp*. While it does not delete any recipes from the database, it does delete their association with the particular day and meal plan.

```
CREATE PROCEDURE DeleteDaysMeals
@PlanID bigint,
@DayID bigint
AS
DELETE FROM tbljnMealPlans
```

```
WHERE (PlanID = @PlanID) AND (DayID = @DayID)
GO
```

EditSource

This administrator is able to modify specific existing data within the database tables through the management pages. This stored procedure executes for the administrator on *EditSources.asp* after they have selected a source, modified the information associated with the source and submitted the modifications. This stored procedure commits the modifications to the database.

```
CREATE PROCEDURE EditSource
@Title char(250),
@Author char(100),
@Publisher char(50),
@CopyRightYr char(25),
@Description char(1000),
@Review char(1000),
@SourceID bigint
AS
UPDATE tblSources
SET Title=@Title, Author=@Author, Publisher=@Publisher,
    CopyRightYr=@CopyRightYr, Description=@Description,
    Review=@Review
WHERE SourceID=@SourceID
GO
```

GenerateWeekList

Registered users have the opportunity to generate grocery lists from the meal plans they have created. This stored procedure executes on *GroceryList.asp* if the user has clicked the Create Weekly Grocery List button on *CreatePlan.asp*. It retrieves all ingredients for the recipes chosen for the designated meal plan.

```
CREATE PROCEDURE GenerateWeekList
@PlanID bigint
```

```

AS
SELECT  tblRecipes.Title, tblIngredients.Ingredient
FROM    tbljnMealPlans INNER JOIN
        tblRecipes ON tbljnMealPlans.RecipeID = tblRecipes.RecipeID
INNER JOIN
        tbljnRecipeIngredients ON tblRecipes.RecipeID =
        tbljnRecipeIngredients.RecipeID INNER JOIN
        tblIngredients ON tbljnRecipeIngredients.IngredientID =
        tblIngredients.IngredientID INNER JOIN
        tblMealPlans ON tbljnMealPlans.PlanID = tblMealPlans.PlanID
WHERE   (tbljnMealPlans.PlanID = @PlanID)
GO

```

GetCourses

In many instances, there is a need to return all records from a specific table to display for the user and from which he or she can choose. These record sets typically populate drop-down combo boxes or generate links the user can click to gather further information. This stored procedure is used on multiple pages. It is run whenever the full list of courses needs to be displayed.

```

CREATE PROCEDURE GetCourses
AS
SELECT *
FROM tblCourses
GO

```

GetIngredientInfo

In a few scenarios, the database needs to be searched for a query submitted by the user. This stored procedure is executed on *IngredientInfo.asp* when he or she enters in a search term and submits it. The database is searched for the entered search term. If found, the information associated with the ingredient is retrieved and displayed.

```

CREATE PROCEDURE GetIngredientInfo
@Ingredient char(100)

```

```

AS
SELECT *
FROM      tblIngredients INNER JOIN
           tblSources ON tblIngredients.SourceID = tblSources.SourceID
WHERE     (Ingredient LIKE '%'+@Ingredient+'%')
GO

```

GetUser

This is a very important stored procedure. It is executed during the login process to authenticate the user. If corresponding login information is found, the user ID and name are retrieved from the database. After a user has logged in, their identification number is passed from one page to the next, with each page checking whether or not the user is logged in.

```

CREATE PROCEDURE GetUser
@Login char(25),
@PWD char(25)
AS
SELECT  *
FROM      tblUsers
WHERE     (EmailLogin LIKE @Login) AND (Password LIKE @PWD)
GO

```

RecipeSubmit1

When a new record is appended to a database table, many times the new ID generated needs to be passed back to be used in the subsequent code. This stored is executed during the process of an administrator adding a new recipe to the database. It submits the data for the first step, which provides general recipe information such as the title, source, and attributes upon which users will be able to browse and perform searches. This stored procedure also returns the new recipe ID that will be used for entry throughout the recipe creation process.

```
CREATE PROCEDURE RecipeSubmit1
@Title char(50),
@MainCategoryID bigint,
@CourseID bigint,
@NationalityID bigint,
@SourceID bigint,
@Description char(500)
AS
INSERT INTO tblRecipes
VALUES(@Title,@MainCategoryID,@CourseID,@NationalityID,@SourceID,
@Description)
SELECT @@IDENTITY AS 'RecipeID'
GO
```

Appendix C.

Database Table Definitions

C 1. User Information Tables

These tables store user account and contact information. An entry is made when a new user creates an account from the registration page. Entries are checked against this table when a user attempts to login from any page. Also, when users are logged in, their credentials are checked against the table to determine whether or not they are the administrator. If so, they are provided with the necessary management options. Otherwise, they receive the typical user options. These tables also contain saved user information such as favorite recipes and meal plans.

<i>tblUsers</i>		
Column	Data type	Size
UserID (Primary Key)	bigint	8
EmailLogin	char	25
FName	char	25
LName	char	25
Password	char	25
ExperienceID (Foreign Key)	bigint	8
NOTE: Administrator login is admin@vegcook.com , admin		

<i>tblUserContactInfo</i>		
Column	Data Type	Size
UserID (Foreign Key)	bigint	8
Address1	char	50
Address2	char	50
City	char	25
State	char	25
Zip	char	25
Phone	char	25

<i>tblExperience</i>		
Column	Data Type	Size
ExperienceID (Primary Key)	bigint	8
ExperienceLevel	char	25

<i>tblInMyRecipes</i>		
Column	Data Type	Size
MyRecipeID (Primary Key)	bigint	8
UserID (Foreign Key)	bigint	8
RecipeID (Foreign Key)	bigint	8

<i>tblMealPlans</i>		
Column	Data Type	Size
PlanID (Primary Key)	bigint	8
UserID (Foreign Key)	bigint	8
PlanTitle	char	50

<i>tblMeals</i>		
Column	Data Type	Size
MealID (Primary Key)	bigint	8
MealName	char	50

<i>tblDays</i>		
Column	Data Type	Size
DayID (Primary Key)	bigint	8
DayName (Foreign Key)	char	15

<i>tbljnMealPlans</i>		
Column	Data Type	Size
MyMealID (Primary Key)	bigint	8
UserID (Foreign Key)	bigint	8
PlanID (Foreign Key)	bigint	8
DayID (Foreign Key)	bigint	8
MealID (Foreign Key)	bigint	8
CourseID (Foreign Key)	bigint	8
RecipeID (Foreign Key)	bigint	8

C 2. Recipe information tables

These tables store all information about recipes, including ingredients, measurements, instructions, and the source cookbooks from which the recipes were taken.

<i>tblRecipes</i>		
Column	Data Type	Size
RecipeID (Primary Key)	bigint	8
Title	char	50
MainIngredientID (Foreign Key)	bigint	8
CourseID (Foreign Key)	bigint	8
NationalityID (Foreign Key)	bigint	8
SourceID (Foreign Key)	bigint	8
Description	char	500

<i>tbljnRecipeIngredients</i>		
Column	Data Type	Size
RecipeDetails (Primary Key)	bigint	8
RecipeID (Foreign Key)	bigint	8
IngredientID (Foreign Key)	bigint	8
QuantitlyID (Foreign Key)	bigint	8
UnitID (Foreign Key)	bigint	8

<i>tblQuantity</i>		
Column	Data Type	Size
QuantityID (Primary Key)	bigint	8
Quantity	char	25

<i>tblUnits</i>		
Column	Data Type	Size
UnitID (Primary Key)	bigint	8
Unit	char	25

<i>tblIngredients</i>		
Column	Data Type	Size
IngredientID (Primary Key)	bigint	8
Ingredient	char	100
GeneralInfo	char	1500
Nutrition	char	1500
BuyAndStore	char	1500
Preparation	char	1500
Cooking	char	1500
SourceID (Foreign Key)	bigint	8
CategoryID (Foreign Key)	bigint	8

<i>tblIngredientCategories</i>		
Column	Data Type	Size
CategoryID (Primary Key)	bigint	8
Category	char	25

<i>tblInstructions</i>		
Column	Data Type	Size
InstructionID (Primary Key)	bigint	8
RecipeID (Foreign Key)	bigint	8
Instruction	char	1000

<i>tblCourses</i>		
Column	Data Type	Size
CourseID (Primary Key)	bigint	8
CourseName	char	25
CourseDescription	char	250

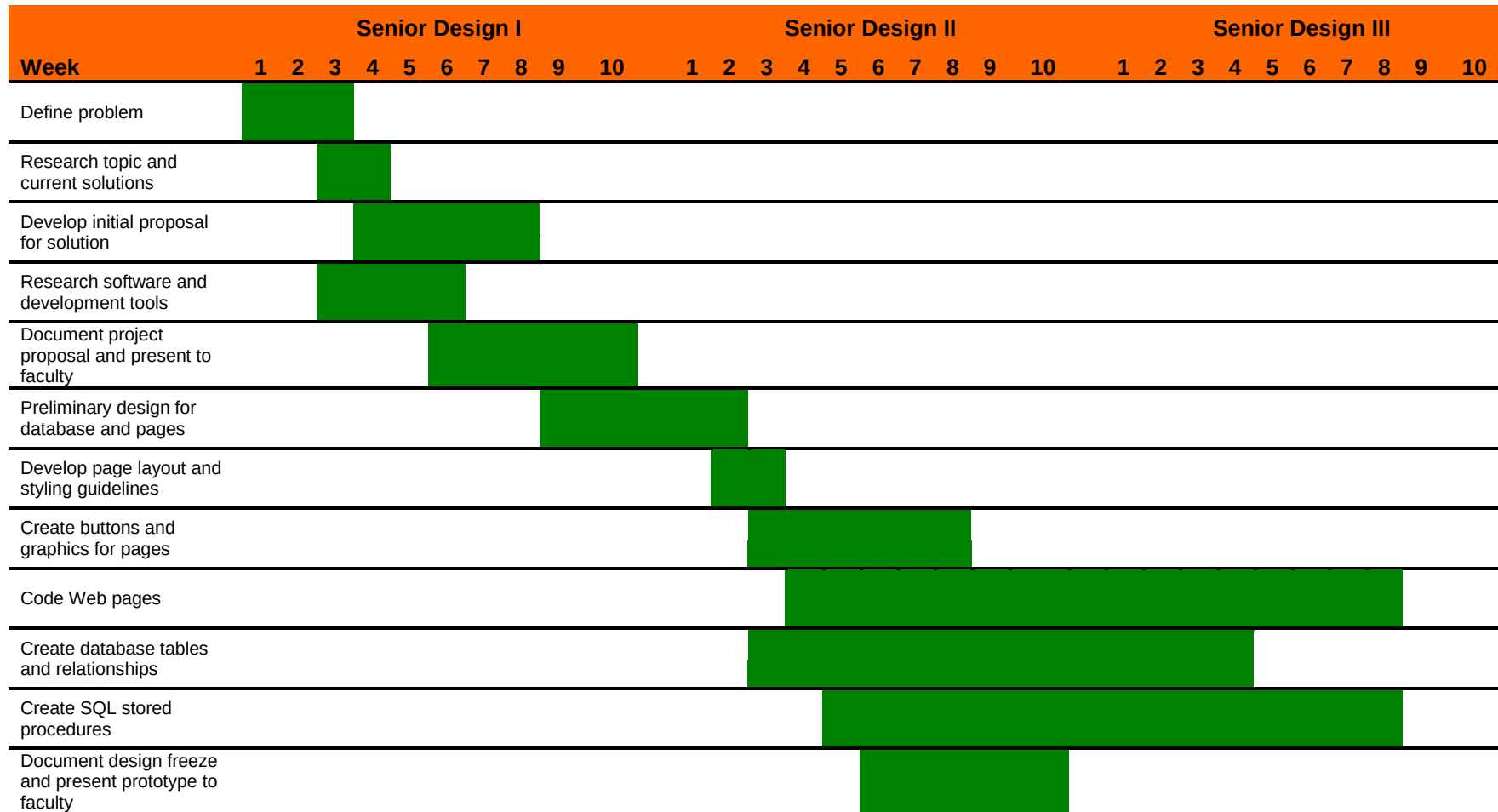
<i>tblNationalities</i>		
Column	Data Type	Size
NationalityID (Primary Key)	bigint	8
Nationality	char	25
Description	char	100

<i>tblSources</i>		
Column	Data Type	Size
SourceID (Primary Key)	bigint	8
Title	char	250
Author	char	100
Publisher	char	50
CopyrightYr	char	25
Description	char	100
Review	char	100

<i>tblCookingTips</i>		
Column	Data Type	Size
TipID (Primary Key)	bigint	8
Topic	char	50
WebPage	char	50
SourceID (Foreign Key)	bigint	8

Appendix D.

Project Timeline



	Senior Design I										Senior Design II										Senior Design III									
Week	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Test and fix bugs in functionality																														
Disperse and review usability surveys upon their return																														
Complete project documentation and present to project to faculty																														

Appendix E.

Recipe and Informational Resources

E 1. Programming Resources

1. Amundsen, Michael. *Practical Visual InterDev™ 6*. Indianapolis: Que Corporation, 1999.
2. Burns, Joe. *HTML Goodies*. Indianapolis: Que Corporation, 1999.
3. Homer, Alex, et al. *Active Server Pages 3.0*. Birmingham: Wrox Press Ltd., 1999.
4. Ladd, Eric, et al. *Platinum Edition Using HTML 4, XML and Java™ 1.2*. Indianapolis: Que Corporation, 1999.
5. Waymire, Richard and Rick Sawtell. *SAMS Teach Yourself Microsoft® SQL Server™ in 21 Days*. Indianapolis: Sams Publishing, 2001.

E 2. Recipe Resources

1. Ewald, Ellen Buchman. *Recipes for a Small Planet: The Art and Science of High Protein Vegetarian Cookery*. New York: Ballantine Books, 1973.
2. Ingram, Christine, et al. *Vegetarian and Vegetable Cooking: The Essential Encyclopedia of Healthy Eating*. New York: Hermes House, 2002.
3. Lappé, Frances Moore. *Diet for a Small Planet 20th Anniversary Edition*. New York: Ballantine Books, 1991.
4. Raymond, Carole. *Student's Vegetarian Cookbook: Quick, Easy, and Tasty Vegetarian Recipes*. Rocklin, CA: Prima Publishing, 1997.
5. Robbins, Maria. *The One-Dish Vegetarian: 1000 Recipes for Quick and Easy Vegetarian Meals*. New York: St. Martin's Press, 1998.
6. Spitler, Sue and Linda R. Yoakam, R.D., M.S. *1,001 Low-Fat Vegetarian Recipes*. Chicago: Surrey Books, 1997.
7. Stucchi, Emanuela. *Italian Vegetarian Cooking*. London: Pavilion Books Limited, 1996.
8. Zipern, Elizabeth Peace. *Cooking with the Dead. Recipes and Stories from Fans on the Road*. New York: St. Martin's Press, 1995.

9. Zipern, Elizabeth Peace. *Made with Love: Stories, Recipes and Crafts from Grateful Dead Fans*. New York: St. Martin's Press, 1996.

E 3. Informational Resources

1. Hunter, Beatrice Trum. *Poor and Getting Poorer: America's Eating Habits*. Consumers' Research. Feb. 2000. pp. 10-15.
2. Ingram, Christine, et al. *Vegetarian and Vegetable Cooking: The Essential Encyclopedia of Healthy Eating*. New York: Hermes House, 2002.
3. Lappé, Frances Moore. *Diet for a Small Planet 20th Anniversary Edition*. New York: Ballantine Books, 1991.

References

1. Amazon.com. <http://www.amazon.com>. 2003.
2. Hunter, Beatrice Trum. *Poor and Getting Poorer: America's Eating Habits*. Consumers' Research. Feb. 2000. pp. 10-15.
3. Microsoft.com. <http://www.microsoft.com>. 2003.