Initial Design Document

for

Recipe Database Integration Into Google Search Engine (RDIIGSE)

Version 1.1

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I. Revision History

Although the main author(s) are indicated for each section, all team members have revised and edited the entire document. Please reference Section 4, Inspection Report, for details.

Name	Date	Reason For Changes	Version
Sean Sukys	10/8/2012	Document Outline	1.0
Kevin Brayer, John Clark, Andrew Hale, Sean Sukys, Chris Wentz	10/10/12	Content added and updated	1.1

II. Table of Contents

I. Revision History

1. Overview

1.1 References - Sean and John

The following documents were consulted to determine the format of this document:

Document Title	Version	Type
Legal Data Markup Software Software Design Document	1.1	Software Design Document
SOFTWARE DESIGN DOCUMENT (SDD), Delta3D - After Action Review (AAR)	1.4	Software Design Document
NWRWAVES (NOAA Weather Radio With All-hazards VTEC Enhanced Software) Software Design Document OB7.2	2.62	Software Design Document
Google Source Code	N/A	Reference Code for integration

1.2 Definitions, Abbreviations, and Acronyms - Sean

PHP	PHP: Hypertext Preprocessor
SQL	Structure Query Language
WAN	Wireless Area Network
LAN	Local area Network

2. Design Documentation

2.1 Software Design

2.1.1 Programming language - Sean and Kevin

This program will utilize the languages of PHP and SQL. These languages are used because of their familiarity to the developers and can be supplemented by ones that are more familiar to a new developer. They are also used as they are the best way to create a web interface and have it query a database as this program will be doing. The source code repository will be stored on GitHub, and will utilize the Git version control system until our application is ready to go live.

2.1.2 API's Required - Kevin

PHP 5.0 (or later)
MySQL 4.1.1 (or later)

2.1.3 WAN and LAN Usage - Sean

Since this program is entirely web based the only use of WAN and LAN will be to connect to the server from a clients computer.

2.2 Database Structure - Sean, John, Andrew, and Chris

2.2.1 Entity Relationship Diagram - Andrew and Chris

To aid in comprehension of the database structure and the relationships between the tables, an Entity-Relationship (ER) diagram was constructed. Each table in our database is represented as a rectangle with the name of the table inside the rectangle. Likewise, relationships are represented as diamonds and connect tables between each other, showing a visual representation of how tables relate to each other. We have also included 1-M, M-1, and M-N relationship indicators for each relationship. Attributes have been excluded from this diagram for simplicity purposes. If attributes were added to the diagram, they would surround each table as laid out in the ER design model detailed in the following sections.

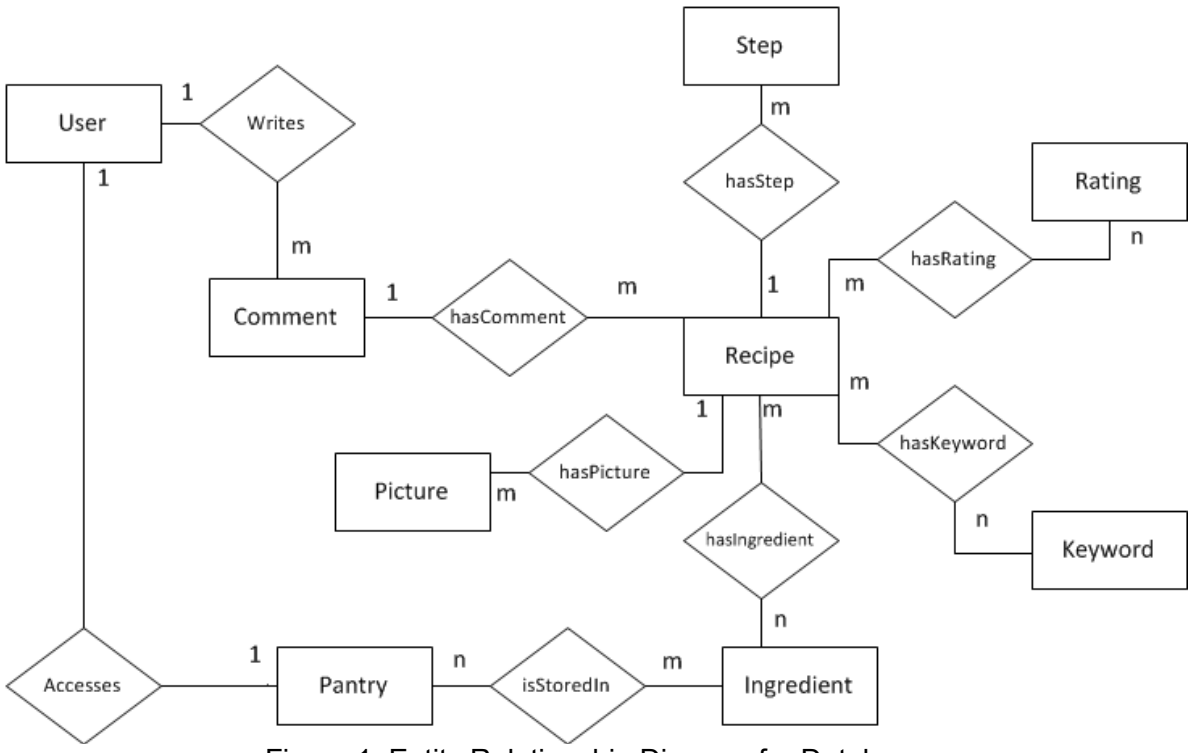

Figure 1: Entity Relationship Diagram for Database

2.2.2 Database Tables

To adequately store the large quantity of data necessary to operate this search engine, several interrelated tables had to be created in accordance with the ER diagram from the previous section.

2.2.2.1 Recipe Table

The recipe table will identify unique recipes by a Recipe ID (RID) number that will be automatically incremented upon table insertion. This RID value will be the primary key for table. Additional fields will include the name of the recipe, a description of the product, the User ID (UID) of the individual who created/submitted the recipe, the date the recipe was submitted, and and a status variable called Display which will indicate if the recipe should be included in search results.

Recipe					
<u>RID</u>	Name	Description	UID	Date_Submitted	Display

2.2.2.2 Steps Table

The steps table will identify unique steps by a Step ID (SID) number that will be automatically incremented upon table insertion. This SID value will be the primary key for the table. Each step

will be associated with a particular recipe referenced by the Recipe ID (RID) key. The actual step description will be stored in the column labeled description. To determine the order in which the steps must be executed, an order_num column was added.

Steps			
SID	RID	Description	Order_Num

2.2.2.3 Ingredients Table

The ingredients table will identify unique ingredients by an Ingredient ID (IID) number that will be automatically incremented upon table insertion. This IID value will be the primary key for the table. Each ingredient will have a name associated with it. A status variable called Display will be used to indicate whether or not to include the ingredient in the search results.

Ingredients		
IID	Name	Display

2.2.2.4 Keywords Table

The keywords table associates unique words, ideally without spaces, with recipes to allow additional search suggestions in the user interface. The key values for the table consist of both the Keywords value and the Recipe ID (RID) value. Keywords associated with a particular recipe can be identified by searching with the RID value. Similarly, recipes sharing a common keyword can be found by searching with the keyword.

Keywords	
Keywords	RID

2.2.2.5 Ratings Table

The ratings table will identify unique ratings by a Rating ID (RatID) number that will be automatically incremented upon table insertion. This RID value, the primary key for the table, will associate a recipe, identified by a Recipe ID (RID) value, with the user providing the rating, identified by a User ID (UID) value.

Ratings		
RatID	RID	UID

2.2.2.6 Users Table

The user table will identify unique users by a User ID (UID) number that will be automatically incremented upon table insertion. This UID value will serve as the primary key for the table. Each user have a username and password for login uses. The type of account associated with the user, such as moderator, administrator, or member, will be stored in the Acnt_Type

column. The date when the table entry was created, and thus the date when the user joined the database, will be recorded in the Join_date column.

Users				
UID	Username	Password	Acnt_Type	Join_date

2.2.2.7 Comments Table

The comments table will identify unique comments by a Comment ID (CID) number that will be automatically incremented upon table insertion. This CID value will serve as the primary key for the table. Each comment will have an associated author, recipe, rating, and comment description. The author will be identified by the User ID (UID) value while the recipe will be identified by the Recipe ID (RID) value. The rating is optional as the commenter may not have submitted a rating. If a rating was submitted, then the rating will be referenced by the Rating ID (RatID) value.

Comments				
CID	UID	RID	RatID	Description

2.2.2.8 Is_Used_In Table

The Is_Used_In table associates recipes with ingredients. Each recipe in this table shall be associated with at least one ingredient, but no limit has been set on the number of unique ingredients that can be associated with a recipe. Similarly, each ingredient in the table must be associated with at least one recipe but may be associated with as many recipes as desired. The key value is the combination of the Recipe ID (RID) and Ingredient ID (IID) values. Recipes using a particular ingredient may be found by searching with a particular IID. Similarly recipe ingredients may be found by searching with a specific RID value.

Is_Used_In	
RID	IID

2.2.2.9 Pantry Table

The pantry table associates ingredients with a particular user. In theory these ingredients are readily available to the user and will be used most frequently in recipe searches. Each user will be identified by the user's unique User ID (UID) number while each ingredient will be referenced by the Ingredient ID (IID) value. Each user in this table must be associated with at least one ingredient, but the user may be associated with as many ingredients as desired. Not all users in the Users Table need to represented in this table. Only the ones with active pantries (where the number of ingredients associated with the user is greater than zero) should be stored. Pantry items may be retrieved via a search with the UID value. Although rarely used, searches for all users with a specific ingredient in the pantry may be found using the IID value. This would be useful for the removal of an ingredient from the database, and the subsequent notification of all relevant users about said deletion.

Pantry	
UID	IID

2.2.2.10 Pictures Table

The picture table will identify unique pictures by a Picture ID (PID) number that will be automatically incremented upon table insertion. This PID value will serve as the primary key for the table. Each picture will be associated with a unique recipe referenced by the Recipe ID (RID) value from the recipe table. A caption should be included with each picture and stored in the caption column. The file will be stored as a blob in the file column of the table.

Pictures			
PID	RID	Caption	File

2.2.2.11 Favorite_Recipes Table

The favorite recipes table associates a user with a set of recipes most enjoyed by the user. Each user shall be identified by the User ID (UID) value while each recipe will be identified by the Recipe ID (RID) value. Each user in this table must be associated with at least one recipe but may be linked to any number of recipes desired. Similarly, a recipe may be linked to any number of users.

Favorite_Recipes	
UID	RID

2.3 Users Accounts - Sean

There will be several different levels of users, each with unique levels of access to add and edit content. There levels and areas of control are defined below.

2.3.1 Administrators

The administrator will have extensive knowledge of the workings of the product and the underlying database. Such a user will be able to affect all other users as well as the structure of the software to improve efficiency, correct mistakes such as the accidental deletion of an ingredient or recipe, and alter account permissions.

2.3.2 Moderators

The moderator has some experience with the culinary arts and has a desire to keep the product from being misused. Such a user will likely be employed by the company to validate suspicious or potentially malicious or inappropriate content (flagged by users) and delete it if necessary. They will chosen from amongst the community.

2.3.3 Registered User

This level will be able to add and delete their own recipes as well as favorite. This level of access will be able to comment on a recipe. Finally, the registered User will also have the ability to be promoted the Moderators.

2.3.4 Guest

The guest account will be for anyone who has not registered. They will able to search and see websites but nothing else.

3. Coding Standards - Sean and Kevin

The development team will use the following coding standards for the design and implementation of the software:

- Functions shall not exceed 100 lines.
- Each function shall have a preceding comments section describing the function's precondition, postcondition, and purpose.
- Each variable shall have a comment describing the variable's purpose.
- Each loop shall have begin and end comments.
- A consistent indentation of 5 spaces shall be used for each block.
- All variables that are not in the interface specification shall be declared locally.
- Coding Style will adhere to the standards of the Allman Style.
- Changes committed to the repository will be tracked via Git, and each commit will have an accompanying description for each file changed.

4. Web Interface

4.1 Search Results - Chris, John, and Sean

When a user searches Google for ingredients, our smart search engine will identify it as a recipe search and will display the search results in recipe search result page. This page is composed of four distinct sections: the header, main result page, basic functions bar, and advanced functions bar. Additional buttons and tabs will increase the functionality of the results page. A help tab will appear in the bottom left corner of the page to make sure our users understand how to properly use our search engine. There will be The button in the upper left hand of the web page will allow the user to log in so they can save their favorite recipes and even add recipes to the database. A mockup of the search results page can be seen below.

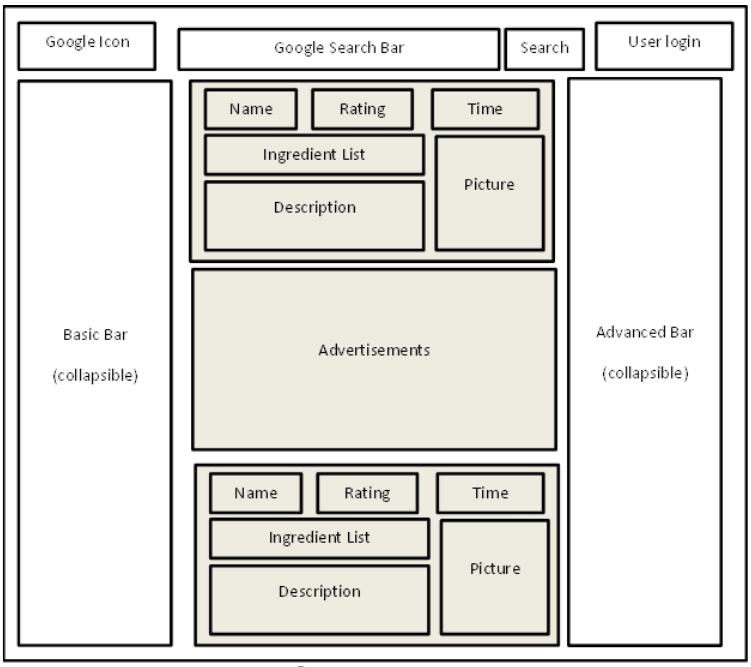

Figure 2: Search Result Layout

4.1.1 Title Bar

The title bar contains the Google logo in the upper left corner, Google's signature search bar, and a user login button.

4.1.2 Main Result Page

On the main search result page, the recipes will be displayed in a single list with relevant information including the name of the food, its ingredients and a brief description. A picture of the dish will appear to the right of each result for a visual representation of the recipe. There will also be a time component so the user knows how long they will be committing to this recipe.

4.1.3 Basic Functions Bar

The user interface will also contain features for both novice and advanced users. The basic features will be located in the basic bar on the left side of the search results screen. Included in this bar will be the ability to alter the search parameters for the recipes. In particular, the user will be able to include only one of a set of ingredients, all ingredients in the set, or exclude certain ingredients entirely. A mockup of this search tool is depicted below.

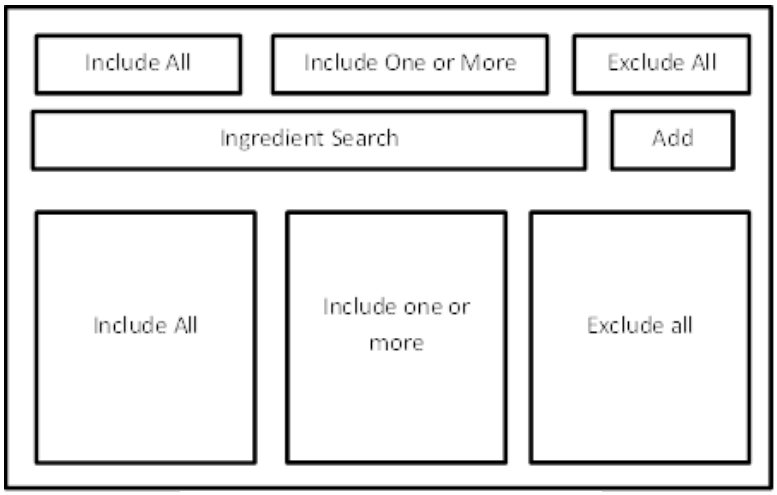

Figure 3: Search Filter Layout

Beneath the filter function specified above in the basic bar will be a diagram showing the overlap of the sets. The search parameters can be changed dynamically without altering the list of ingredients in each set by clicking on the desired region of intersection. A mockup of the interface is included below.

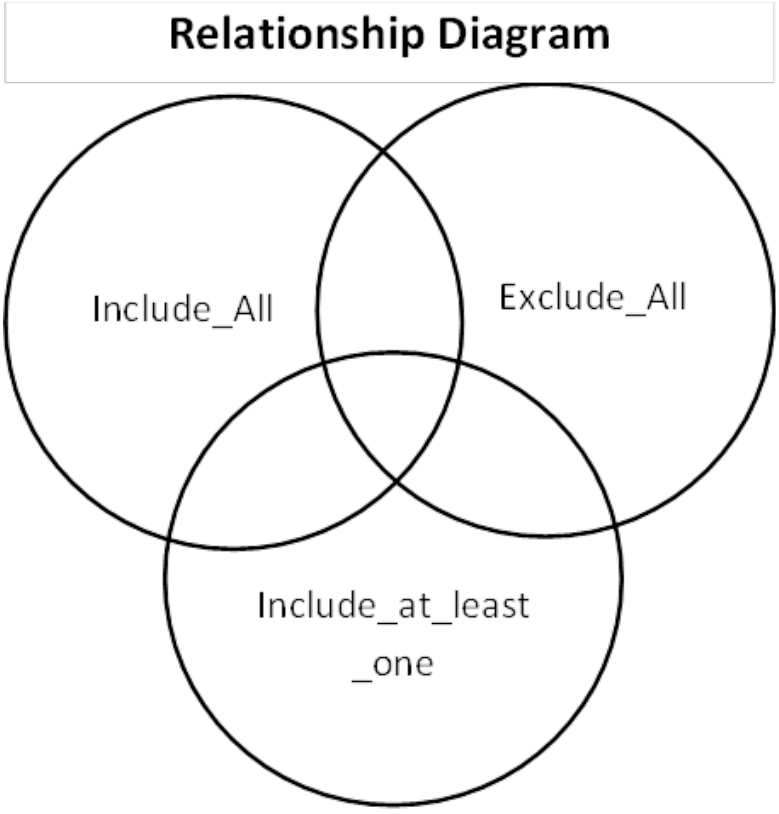

Figure 4: Dynamic Set Selection Layout

4.1.4 Advanced Functions Bar - Sean and John

The user will have an advanced bar on the right hand of the page as well. This bar will be a collapsible feature rich tool. It will contain different modules based on the level of access of the User, i.e. Moderator, Admin etc. If the User is of the class Registered User it will contain the ability to quickly upload recipes and ingredient from the side bar. This will also feature the ability to rate comment and also access the User's pantry right from the bar. The next level of Moderator will have a different side bar containing the ability to access flagged recipes, edit them and delete them, as well as contact the recipe owner. This will give the moderator the power they need to keep the website up to date and free from inappropriate content. The Admin will have the ability to access a list of Registered Users, Moderators, and the ability to recover changes made by a moderator from their sidebar. All users will have a limited ability to recover changes from this point as well.

4.2 Recipe Page - Sean and Chris

When a user selects a recipe they would like to view from the database it will do several things. It will query the table to discover the image file as well as the text to display including a list of steps and ingredients. On a recipe page, users are given the option to comment on the recipe and rate the recipe. A small star link is clickable to favorite the recipe or un-favorite it.

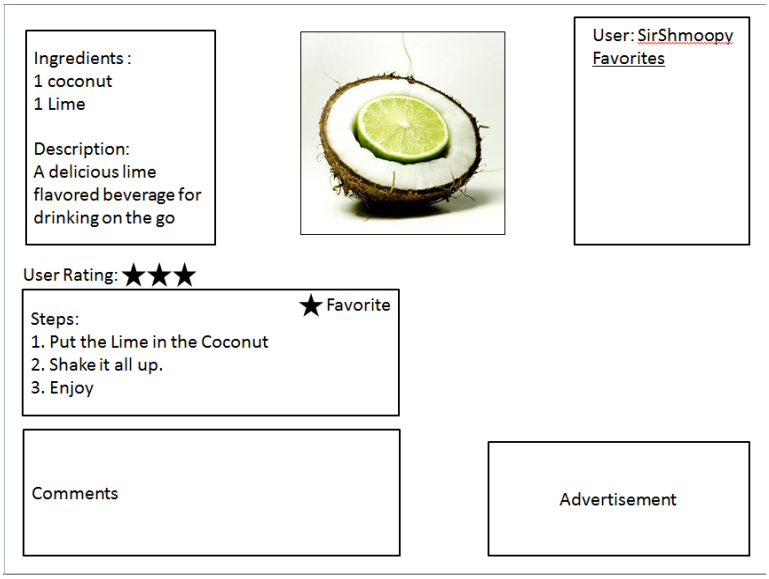

Figure 5: Recipe Description Page

4.3 Account Registration / Login - Chris and Sean

A user that wants to rate recipes, keep a personal pantry, favorite recipes, etc, will be required to register an account with Google (or in this case, our own database). Our account registration page will look identical to Google's account registration page, but will interface with our own database so as to allow us to keep each user's account preferences, pantry, etc. Likewise, our user login page will look similar to Google's, but will query our own database for account validation.

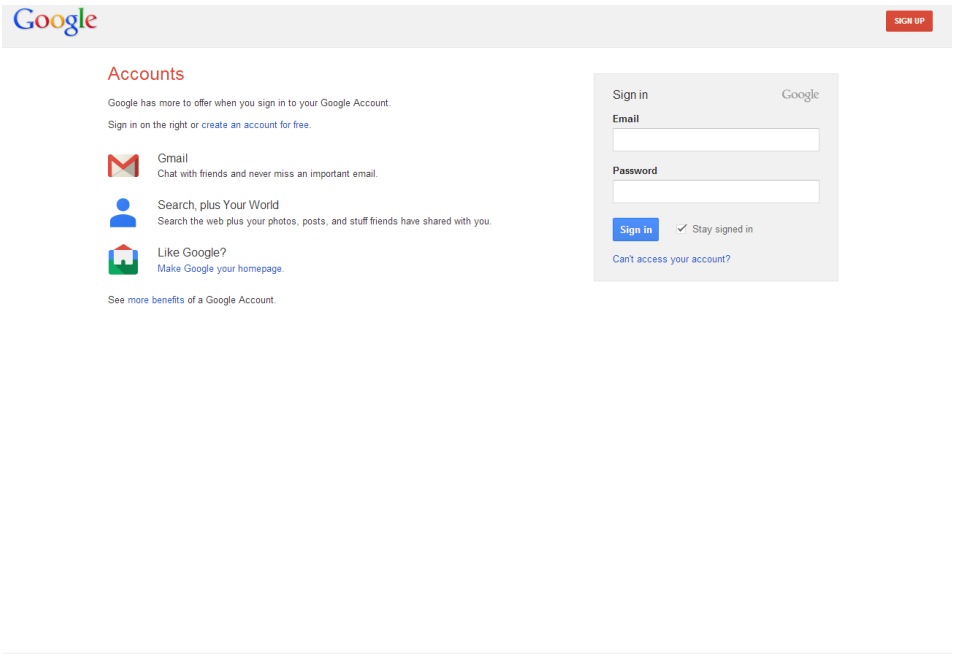

Figure 6: Account Login Screen

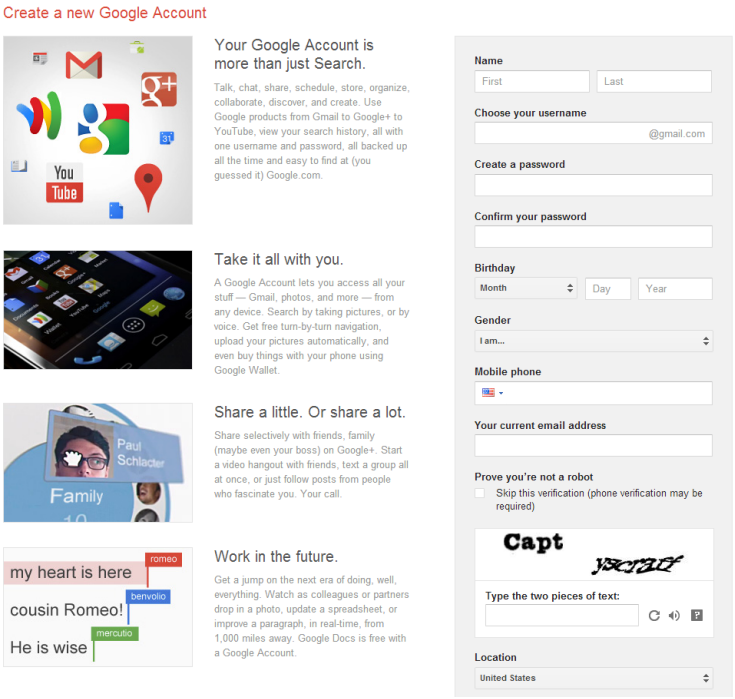

Figure 7: Account Registration Screen

4.4 Create Recipe Page - Chris and Sean

One feature of our database system allows users to create and manage their own recipes. When a user creates a recipe for the database, the user is asked for all of the attributes of their recipe. In order to upload a picture, the user is prompted to browse their computer for an image file that best represents that recipe. The user is initially

given 5 small text fields to enter each step of the recipe. If the user requires more steps, they can click the “Add Steps” button. At this point, the form data is passed to the same page with an additional step. Once the user is done filling out all of the fields, they will submit the recipe and it will create an entry in the database, and begin displaying in search results. If a user does not fill out the required fields, they will be prompted to fix any errors. There will also be a small field to include a description of the recipe to provide clarification to the recipe.

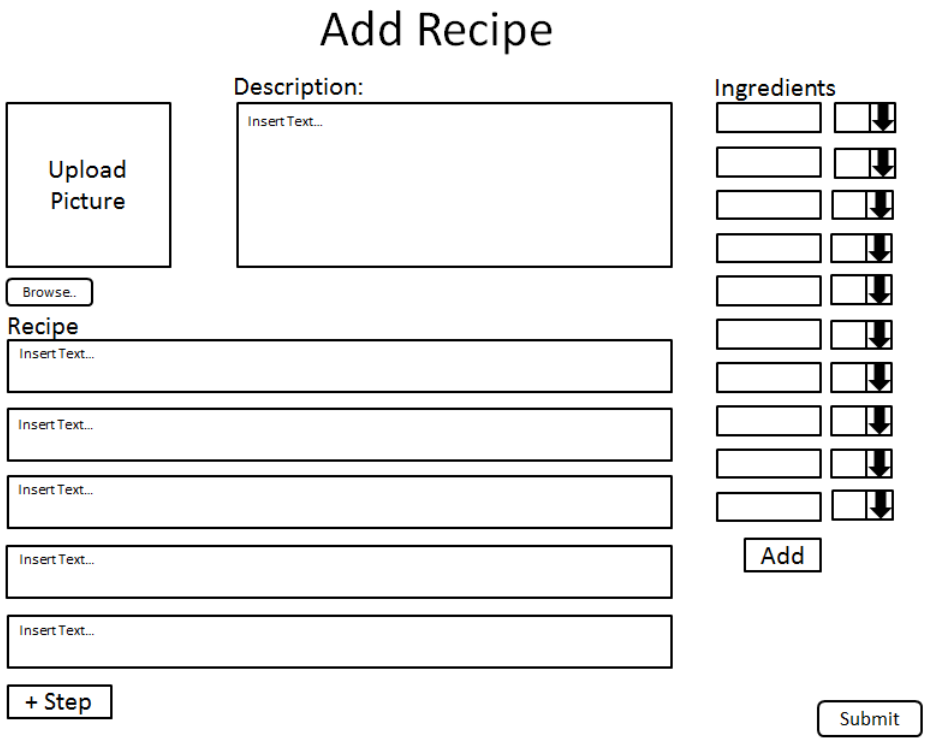

Figure 8: Add Recipe Page