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MEALS2SHARE Neighborhood Home Cooked Food Sharing Web Application

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MEALS2SHARE

Neighborhood Home Cooked Food Sharing Web Application

By

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A Project submitted in partial fulfillment of the requirements for the degree of

Masters of Science in

Computer Information Systems

Dr. Yonglei Tao

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# Table of Contents

Abstract ......................................................................................................................................................... 3  
I. Introduction ............................................................................................................................................. 4  
II. The Project Concept ............................................................................................................................... 4  
III. Project Requirements ............................................................................................................................ 5  
IV. Implementation ..................................................................................................................................... 6  
V. User Task Process Flow ......................................................................................................................... 11  
VI. Usability Evaluation .............................................................................................................................. 12  
VII. Future Work and Conclusion ............................................................................................................... 13  
Screenshots ................................................................................................................................................ 14  
Reference .................................................................................................................................................. 19
Abstract

The goal of this project is to develop a web application which will provide users a platform to share home cooked food. Today in fast pace busy life, it is nearly impossible to get started in meal preparation after returning home from work. Many a times we are away from our homes travelling or staying away for different reasons. Having food that is inferior to home food and compromising on fast food or restaurant food have resulted in diseases that were rare few decades back. Increasing obesity, diabetes or other metabolic diseases could be significantly controlled with good and healthy food habits. Therefore, to provide quality and healthy food as if it was from one’s own kitchen, this web application provides an easy solution where the healthy home food seeker “foodie” could interact with home food provider “cook”. This application is built in ASP.NET framework using MVC (Model View Controller) development model and requires SQL Server. This application brings an easy to use interface so that the provider user could share the food they have prepared in their kitchen with the price they want to sell it and the service receiver user could search the food they would like to eat and locate the cook in geographical proximity. Both users - cook and foodie have their dedicated user accounts to keep track of their food listings, order history and transactions. This web application brings its own advantage to both users- foodie and cook and thus will provides immense business opportunity to the service provider launching this ecommerce web application.
I. Introduction

In last two decades internet have revolutionized the world connecting the world as never before. This have opened opportunities in many ways including revenue generation through ecommerce. Business that were marginalized due to geographical limitations took advantage and rode on internet to expand their business as far as internet could reach. Today all business regardless of their size or type are benefitting to grow their business using internet. Not to mention, existence of some business depends solely on internet; many business and services such as Facebook, Twitter and Amazon would have never existed without internet. Web applications power these online business through web browsers allowing capturing, processing and storing data for immediate and recurrent use. Web applications use combination of server side script which deals with storage and retrieval of information and client side scripts which deals with the presentation of information. Integrating right features to a web application are critical to the need of service provider and to provide excellent experience to the customer.

Today in fast pace busy life, it is nearly impossible to get started in meal preparation after returning home from work. Many a times we are away from our homes travelling or staying away for different reasons. Having food that is inferior to home food and compromising on fast food or restaurant food have resulted in diseases that were rare few decades back. Increasing obesity, diabetes or other metabolic diseases could be significantly controlled with good and healthy food habits. Therefore, to provide quality and healthy food as if it was from one’s own kitchen, this application provides an easy solution where the healthy home food seeker “foodie” could interact with home food provider “cook”. This application brings an easy to use interface so that the provider could share the food they have prepared in their kitchen with the price they want to sell it and the user could search the food they would like to eat and locate the cook in geographical proximity. The cook and foodie have their dedicated login accounts to keep track of their food listings and orders. This web application brings its own advantage to both users- foodie and cook and thus will provides immense business opportunity to the service provider launching this ecommerce platform.

II. The Project Concept

The idea of this project is based on the hybrid ecommerce – sharing economy model. This kind of business model is called Network Orchestrators. In this model a network of peers is created where people can connect with each other and create value. They either sell products or services or share knowledge etc. In the peer to peer
economy model one set of user becomes the service provide and the other set of user becomes the service receiver. Therefore, in my web application my two primary users are “COOK” and “FOODIE”. The cook are the service provide or food seller and foodie are the service receiver or customers or food buyers. My application will serve as a platform where these two category of peer users can connect with each other and server each other’s need.

III. Project Requirements

Business Requirements

1. Ecommerce web application to buy and sell home cooked food.
2. User accounts for all users –
   a. Seller account/Cook Account – Responsible for selling home cooked food
   b. Buyer account/Foodie Account – Responsible for buying home cooked food
3. Food items/product listings with image, price and seller name.
4. Item details displayed separately with Order Now option.
5. Google map location pointer.
6. Location based search for food item
7. Search filter depending on Cuisines type, Food type and

Functional Requirements

1. Seller Master – Cook’s profile information from name, phone number, address, about me to image to personalize sellers account.
i. **Food Master** – Cook can create food items for listing by providing information such as Category, Food Name, Food Type, Price etc.

ii. **Food List** – The list of all the food items posted by a seller or cook user are available. User can edit the listing and upload images.

iii. **Order List** – Contains order information such as order number, ordered by, delivery address if applicable, date and time of order and order status. Order status can be updated by clicking on Order number. This basically tracks order placement information for the seller.

2. **Buyer Master** – Foodie can create profile by providing information such as name, phone number, address etc. personalize sellers account. A foodie and order food from the listings by selecting order now button

   1. **Order history** – The order placed by foodie are tracked in order history which also display order status and seller name along with date and time.

3. **Food Listing** – This will display all the food items available for purchase. This basically has filter search which a user can use to narrow down their search result.

4. **Order Now** – This page will describe each individual food item in detail along with pointing the location of the place where the item is available.

5. **Order Placement** – This page will have information such as delivery address and delivery mode, user will use this to process the payment and finally placing the order.

### IV. Implementation

The application is developed using .NET Framework 4.5 ASP.NET MVC 4. SQL Server 2012 is used as backend and Bootstrap for mobile responsiveness. Microsoft Visual Studio 2013 IDE and web server IIS 8 are the development environment.

1) **.NET Framework**

   .Net Framework is used for the development of web based or windows based application within the Microsoft Environment. It consist of a large Framework Class Library (FCL) and the programs in .NET
frame work execute in software environment called as CLR (Common Language Runtime). CLR work like a virtual machine in executing dot net languages such as C#, C++, VB etc. These dot net languages are compiled into Intermediate Language (IL) instead of compiling into machine code. The IL code is compiled into machine code once accepted by the CLR. This recompilation is Just-In-Time (JIT) that is done as soon as the function is called. The dot net languages are used by ASP.NET to generate HTML pages. The programs are 1st compiled into .NET class and then cached the first time they are called and the subsequent calls uses the cached version. In .NET windows form are used to write rich clients for desktop applications and ADO.NET is used to access and modify the data stored in the relational database systems. Code verification, Garbage collection and code security are supported by CLR though supported on windows platform only. Other platforms are supported if they have their own JIT compiler.

![NET Architecture Diagram]

**Figure 2: .NET Architecture**

2) **ASP.NET**

In ASP.NET the virtual directory and its subdirectory consist of all files structurally. The ASPX file is the source file and web forms are contained in the files with .aspx extension. The files with extension ASCX are the files with web user control. The web.config files contains configuration settings and are the only file in specific web application. The Global.ASAX file defines global variables and is only one per application. The Dynamic-Link Library (DLL) contains the custom controls for ASP.NET applications and can be used across multiple projects.
3) ASP.NET MVC

A. MVC Design

The Model in MVC design pattern represents the application core and ranges from simple static class that return data set to complex multi assembly business logic layer. The View is for displaying the data. This is the User Interface layer for the application and it contains the data representation that have been retrieved by the model. Presentation of data is the only logic present in the View. The Controller is where the data input takes place. It stands between Model and View. It handles the request reads from the values and passes them to the model, it then decides which view to render and finally sends the data to be rendered to the view.

![MVC Design Diagram]

- Model logic – The business layer
- View logic – The display layer
- Controller logic – The input control

**Figure 3: MVC Design**

MVC is a software design pattern used for development of web applications and it is one of the three ASP.NET programming model other two being web forms and web pages. There are many advantages of MVC design pattern one of them is that MVC separation helps in managing complex application and allows to focus on one aspect at a time. Other advantages of using ASP.NET MVC are it is light weight and highly testable framework. Allows parallel development and provides full control over HTML, CSS and JavaScript.
B. ASP.NET MVC – Pipeline

When an ASP.NET MVC gets an incoming request from a user the request first pass through the ASP.NET stack and is handed over to the routing engine. Depending on the route configuration the routing engine looks for the appropriate controller and if the controller is found it is invoked else the controller not found is returned by the routing engine. The controller and the model interacts and if the incoming data is found model binding is done by the ASP.NET MVC to make the incoming data strong. If the model is invoked it retrieves and save appropriate data and returns to the controller. Finally, controller request for the view from the model and then hands over the request to the View Engine which in turn returns the result to the controller. Lastly but not the least the controller sends the result back as a part of HTTP response.

![Diagram of ASP.NET MVC Pipeline](image)

**Figure 4: ASP.NET MVC - Pipeline**
4) Database Diagram

Below is the entity relation diagram for meals2share web application. It indicates the entity relationships, unique keys and foreign keys. There are total 11 tables in the meals2share database. The database was designed using the SQL Server Management Studio.

Figure 5: Database Diagram
V. User Task Process Flows

1. **Cook/ Seller User Task Process flow** – When a cook user visits the homepage of the meals2share web application he/she is expected to follow the following process flow for their tasks.

![Cook/Seller User Task Process flow Diagram](image)

**Figure 6: Cook/Seller User Task Process flow**
2. **Foodie/ Buyer User Task Process flow** – When a foodie user visits the homepage of the meals2share web application he/she is expected to follow the following process flow for their tasks.

![Foodie/Buyer User Task Process Flow Diagram](image)

**Figure 7: Foodie/Buyer User Task Process flow**

VI. **Usability Evaluation**

The following feedback was obtained by performing user testing on the application –

1. The search box should be visible at the top of the welcome screen i.e. close to the sign in tab.
2. The user wants to see How It Works button in the center of the welcome screen rather than on the bottom of the page.
3. When the users logs into their accounts the name of the respective user logged in should be displayed on the top right corner next to the settings tab.

4. In the seller/cook account user wants to have a delete button so that they can have more control over the food listings.

5. The user found searching the food listing easy to use.

The following scored was given to the application on a scale of 100% for usability testing –

<table>
<thead>
<tr>
<th>Usability</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy to learn</td>
<td>90%</td>
</tr>
<tr>
<td>Efficiency of Use</td>
<td>85%</td>
</tr>
<tr>
<td>Memorability</td>
<td>95%</td>
</tr>
<tr>
<td>Error frequency and severity</td>
<td>40%</td>
</tr>
<tr>
<td>Subjective Satisfaction</td>
<td>60%</td>
</tr>
</tbody>
</table>

VII. Future Work and Conclusion –

The User Interface of the application will be enhanced to more user acceptance. Such as, more filter options will be provided to the user. The search option will be placed at the top of the application so that it is visible to user as soon as the user visit the homepage. Moreover, a landing page will be created where the user can find details about how it works and that landing page will also have a search bar. The search will be more enhanced to level of global text search so that users can search through food names or cooks name or more. The users will be provided with more admin rights so that they can make desired changes to their user accounts. The UI of the user accounts will be made more advanced making available options such as saving favorite searches and orders. The most desired functionality which will be worked on will be email and chat integration in the application so that users can connect more easily to each other using inbuilt chat and email. An option for live feed about the user postings will also be integrated to the application in near future. Implantation of payment gateway using SSL is a required feature for an ecommerce based application and will be worked on. Moreover, application needs to be worked from security and user authentication point of view too. The application is ever extending and the feature and functionality list can never subside. The main motive remains to make the application as user friendly as possible.
Screenshots – Main Functionality Screens

1. Homepage

2. Homepage for user if user is signed in
3. Homepage continue...

4. Food listing Page
5. Food Item details and Order now page

6. Order Placement page
7. Sign Up page

8. Login or Sign In page
9. Cook/Seller User Account Page

10. Foodie/Buyer User Account Page

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