INDIANA CAMPUS COMPACT

SCHOLARSHIP OF ENGAGEMENT GRANT PROGRAM FINAL REPORT

**Reducing Adult Obesity through a Dynamic Web System: A Northwest Indiana
Food Bank Service-Learning Project**

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A.   Impact

   1. Key Activities and Important Milestones

This project seeks to further develop and refine the service learning project in the CIS 42600: Applied Software Development Project. The inclusive classroom of which is course in the B.S. of Computer Information Systems (CIS) at Purdue University Calumet (PUC.) This is a capstone senior course that will be available to CIS majors in the College of Business. The objective of this project will be to build an interactive dynamic system that is available on the web through the Food Bank of Northwest Indiana's website that will allow users to select the food items that they have received at the Food Bank and the system will generate recipe options that are based on the combination of foods that the user has selected. Specifically, this project is to build a dynamic system to include the database full of ingredients and recipes as well as the webpage that features the system. The final product will have greater than 100 ingredient options with multiple recipe ideas generated for each ingredient choice. The system will display the recipes in a format that will be a separate, more easily printed pop-up page. This interactive web-based recipe generator fits right in line with the other projects the Food Bank of Northwest Indiana supports with the ultimate goal of ridding the area of poverty and hungry citizens.

Students spent the first few weeks of the project conducting research on different coding languages in order to appropriately weigh their options for how to best reach the project's stated goals. Initially students started the project using VB.net with an SQL Server 2008 database. Also during this phase of the project the structure of the database itself needed to be designed. It quickly became clear that the some of the difficulties students were having with the interaction of the database could be alleviated by switching to a Microsoft Access platform.

Even under this new platform students had issues with connectivity between the web tool and the database. After multiple failed attempts and facing an ever closer deadline, they were forced to adjust the project scope so that they could finish a working prototype before the deadline. Students did successfully

create a single ingredient recipe generator that matches the ingredient selected with a recipe that has the selected ingredient within it from the database.

2. Primary Challenges

The primary challenge was that students had during this entire project was getting the food ingredient list, which was originally a checkbox list, to function with the database in order to populate the recipe cards in the manner our original scope statement called for. They addressed this challenge by attempting numerous different coding practices and switching the type of database. All of these attempts proved futile. Another challenge of the project was that students showed insensitivity from their contact with the community sponsor, or demonstrated that a stereotype has actually been reinforced. Although we had an orientation meeting before the project commencement, students still hesitated to inquire the problems during the processes. These issues have been addressed in some fashion. Students were guided to look beyond and beneath the obvious to get at the root causes of social problems. They were taught to gather more data and look at issues from many perspectives rather than generalizing from one or two encounters.

The lesson learned were extremely valuable in this project. Students learned that when the possibility of being forced to alter the scope of a project arises, it is better to face that issue head on rather than try and finish something that isn't working because then you find yourself faced with a new issue—no time to complete the project with the new scope. Students also learned how to more effectively manage a difficult, multi-tiered project.

3. A Great Success Story

When it became clear that their initial plan of creating a completely dynamic web tool was just not going to be successful in the amount of time they had remaining before the due date they had to scramble to come up with a salvageable result for this project. They worked on a link based system and presented it to the sponsor and received a positive; however lukewarm response. Immediately after that presentation they conducted an impromptu brainstorming session that resulted in some additions and changes to the

functionality and appearance of the altered solution. These alterations became the final product and they are overall pleased with what they have created.

4. Impact on College Student Learning and Development

This project benefits the CIS student in two main areas. First, the students are able to learn and witness the true complexity of business scenarios for project management. . They have worked on many other projects before this one but they have never been forced to face so many challenges that proved insurmountable. All of the adjustments they had to make to the scope of the project on the fly required quick and decisive action under an increasingly short time window. Their development as a project manager was greatly influenced by the experiences they had on this project. Second, students experience the issues far more personally when they are intimately involved in collecting and analyzing data for a case. In particular, the information collecting process, the engagement with a community partner and the diagnosis of real world projects make the learning experiential and service-oriented. Such learning experiences have a far more beneficial effect than rote learning based assessment items or situations where students do not actively engage with the material. The benefit of the dynamic web site design project to the community partner will assist them to diagnose their on-going project, scenario analysis, and engagement with perspective students.

5. Impact on Departmental and Institutional Goals

Academically, this service learning project allows CIS senior students to expand their knowledge and skills in software development that will grow their foundation in business information systems implications and increase their confidence in future career opportunities. Professionally, this service learning project provides CIS senior students with valuable real world experience to realize what a software development and project management job may require at the workplace. The students' understanding of the career that they are pursuing increased, the students' work ethic through the service learning project improved, and the students' satisfaction in college learning at PUC by providing a service to a community increased. This funded service learning project created the successful case in the Department of Information Systems, Finance, and Business Analytics and College of Business. In addition, CIS senior applied software development capstone project

with service learning enhances the classroom experience with cutting edge research, business and technology initiatives. Faculty has the opportunity to be part of a showcase experiential learning program, as the Purdue University Calumet is on the leading edge of this important area of development for the future of education.

6. Impact on Community Issues

The service learning component will be partner Food Bank of Northwest Indiana in Gary, a non-profit organization and member of FA network which not only provides food to charities foe people trying to make ends meet, but also food and supplies to those recovering from natural disaster. The Food Bank of Northwest Indiana provides food to less fortunate families in Lake and Porter County. Food Bank of Northwest Indiana does not administer any food to patrons themselves so it is difficult for them to educate their patrons universally. The Food Bank distributes all of its food items to food pantries that are spread out all over the covered areas in Northwest Indiana. Food Bank of Northwest Indiana would like to provide recipients a way to prepare the food they receive in a healthy manner and it needs a way to provide this service universally to all of its patrons at all of its pantries. The addition of an interactive recipe database to the Food Bank of Northwest Indiana's website will provide its patrons and others a list of healthy recipes. Users will be able to select ingredients they will use to prepare a meal, and a list of healthy recipes will populate for the user to choose.

Impact on Professional Development

Due to the funding support from the Indiana Campus Compact (ICC), Dr. Chen was able to successfully implement adding a service-learning component for a senior project course, CIS 42600. It is designed to facilitate hands-on student learning of both the technical and the interpersonal aspects of software development, and it involves student engagement with real customers and real stakeholders in the creation of real events with real outcomes.

As the course instructor, Dr. Chen dedicates the time and energy necessary for developing and merging the original software development contents with service learning into the course architecture. The course development processes enhance Dr. Chen's experience in developing a service learning course. Specifically, it is in two aspects. First, the course CIS 42600 is a capstone course that allows students to apply software

development skills learned in the curriculum in CIS. Second, the course consists of a student team developing a software project for a client in a real world setting. Thus, instructors need to closely monitor student performance. Students, particularly those who do not have experience working in a team-based, project-oriented setting, will struggle to break away from the traditional, lecture-based curriculum. They may need additional support to build the skills necessary for project-based experiential education. Set aside time for one-on-one meetings with these students – either in person or in a chat room – to provide a support structure until the student gains the confidence to move forward independently.

As the principle investigator of the grant, Dr. Chen learned how to estimate and manage the budget of a funded project.   The professional development experience benefit is infinite. The funding provided by ICC is essential for Dr. Chen to fulfill his commitment to offer a great opportunity to course development for real world experience to students.

7. Institution's Efforts

Purdue University Calumet is recognized as a national leader in the field of experiential education and is one of a select few institutions to adopt this approach as a graduation requirement that complies with standards established by the National Society of Experiential Education (NSEE). Experiential learning courses must meet a set of measurable guidelines to fulfill the graduation requirement. The University, the student and the community partner must collaborate to ensure success for all parties. By graduation, each student will have had more opportunities to apply what he or she has learned in a chosen project. That can lead to job opportunities, interview skills and solid life skills. Thus the strategic goal of experiential learning at PUC has inspired all faculty members to pursue any service-learning funded projects. My funding awarded service learning project for CIS capstone project course is a milestone for information systems students at Purdue University Calumet.

8. Publication

Dr. Chen means to disseminate his findings from implementing a learning service project into an advanced project management course for health care industry, including the summary of the course structure

and the collected assessment results from this course. The detail process to develop a service learning course will serve as a prototype model for future reference and will published in a journal publication.

B.   Community Partnership

Food Bank of Northwest Indiana in Gary served by a service-learning project benefit from direct assistance and personal empowerment that is generated through the involvement of students. The students become invested in their community as a result of the knowledge and experience they gained in their service projects. Food Bank of Northwest Indiana in Gary benefits through the enthusiasm and hard work of the participating students. Perhaps the most beneficial aspect of service-learning to the community is the change of impression that the students real world experience and capability. College of Business students are not thought of as learning by books but are thought of as the community's greatest resources as well as future workforces. Meanwhile, Dr. Chen's partnership with Food Bank of Northwest Indiana in Gary for service learning will brings sustainable opportunities and benefits to all stakeholders involved in the success of this effort: the University and its faculty and students, as well as our Community partners.

C.   Evaluation

Since we use the team-based service learning model in this semester-long project management course, our goal was to effectively and fairly evaluate the team as well as each individual student on the team. We took a two-step approach to finding an effective evaluation technique to apply to these semester-long projects.

1.   First evaluation attempt

In our first attempt at an effective evaluation process, we solicited input from students on the contribution of each member of the team. We had students complete an evaluation form (see Appendix D) for every other member team. The evaluation was done by each student at the end of the semester and handed in to the instructor. This evaluation technique was very ineffective. Students were unable to dispute the percentages that their teammates gave them. In some cases, groups of students graded one student poorly just based on their like/dislike of that student rather than on the areas of importance to the project. We had to discard this

evaluation process because it did not work. We then decided to include input from the individual students being evaluated and came up with our second evaluation process.

2. Second evaluation attempt

In addition to evaluating assurance of service learning, we also want to assess the success of the service-learning course itself, especially while the pedagogy is still new to you. Even when we become experienced with service-learning pedagogy, evaluation is the key to continuous improvement. Given that using service-learning can mean having more uncertainty and variation in student learning outcomes than in traditional courses, evaluation becomes an important tool for achieving desired effects. To this extent, we would like to survey the students about how the service-learning course impacted them; we administered the Service-Learning Student Survey at the end of the semester. Two Assessment instruments are listed in Appendix E.

D.   Appendices

Appendix A: CIS 42600 Applied Software Development Project Syllabus and Course Schedule
Appendix B: Food Bank of Northwest Indiana, Gary Contact
Appendix C: Food Bank Project Demonstration
Appendix D: Student Peer Evaluation Form
Appendix E: Student Service Learning Assessment

Appendix A: CIS 42600 Applied Software Development Project Syllabus and Schedule

CIS 42600
Apply Software Development Project

Fall 2013

Course Instructors

Name Dr. Kuan Chen
Office   Anderson 360
Phone 989-2336
E-mail   kchen@purduecal.edu
Office Hours by appointment
Textbook: None

Course Description

Students will implement the design that was developed in the Systems Development class. A team-based approach will be used solving a "real world" business problem.

Business Applications Course Overview

Students will plan, design, implement, and document a Business System with a minimum of 6 programs (2 of which must be update/ file maintenance (add/change/delete) programs and one the menu development program).

The primary goal is to create a professionally developed business system that will enhance your value as an Information Systems/Programming professional.

We will meet as a class one session per week for presentation of general information and general questions and concerns. Most of your work will be in an "independent study" format in an attempt to simulate a work environment as much as possible.

Please note that we are not going to discuss any programming language in detail.

Course Objectives

The student will demonstrate the ability to produce:

System Design

1. A description of the business programming system. This should describe the business that would use your system and the business system itself. The description will include a description of each file you plan to use, and a written description of each program you are planning on developing for your business system.
2. An initial Gantt chart is to be submitted by the second week of class estimating your schedule for course completion by September 7, 2009.
3. Data Flow diagram/System Flowchart: Using any available software tool, develop your system design once your initial system description is approved.
4. Record layouts/descriptions for all files used:

5. Source document descriptions/layouts: Most systems begin with some type of source document, these documents must be submitted

System Development

1. Use one computer language to create the code for your business system: you may use Java, C++ or a database software as Excel, ACCESS, combined with Visual Basic.

2. Use any related computer manuals needed to complete the course. You are encourage, and expected, to use the many manuals and textbooks for the languages and the hardware available in the computer lab, college library, and your personal materials.

System Implementation

The student will demonstrate the ability to:

1. *Prepare documentation*:
*   Project management documentation
*   Program documentation
*   System Documentation
*   Operation documentation
*   User's Manual

Key: Create your documentation as you go. Use word-processing software

2. **Demonstrate** the system to the class: this involves a formal presentation that includes a description of the organization and the business application developed.

SUCCESS SYSTEM

In this course, students will have the opportunity to demonstrate achievement in the following Success System skills and abilities:

PROBLEM SOLVING

Demonstrated by: a) analyzing the problems presented in the assignments. B) Developing and implementing solutions to assignments.

SELF-INITIATIVE AND RELIABILITY

Demonstrated by: a) regular, punctual class attendance. b) taking responsibility for following through the process of completing assignments by deadlines.

WRITTEN COMMUNICATION

Demonstrated by: clearly expressing ideas in written documentation.

COMPUTER APPLICATION SKILLS

Demonstrated by: using appropriate hardware and software.

Course Format

Attendance:
Your presence is expected at all class meetings if we meet. If you are going to miss a class you need to inform me PRIOR to the class. I will deduct 5 points for each missing class.

Projects:
You are expected to complete the design and implementation phases for a business application system. Your performance will be measured based on completeness, timeline, and operability of the system.

Presentation
You will make one presentation in class: A demonstration of your business application. Further guidelines will be discussed in class.

Grading Criteria

Activity	Points	Due Day
Overall Strategy	10	9/4
Project Charter and Scope Statement	10	9/11
System description & objectives and Design Flowcharts	10	9/18
Data structure	45	9/25
Form, Table, Query, and Report	400	11/6
Test data	20	11/13
Documentation each	160	11/27
Final system Demonstration	100	12/4
Total	800	

Appendix B: Food Bank of Northwest Indiana Contact
Arleen Peterson
Executive Director
Email: apeterson@foodbanknwi.org
or apetersonfbnwi@yahoo.com

Food Bank of Northwest Indiana
2248 W. 35th Ave
Gary, IN 46408
C: 773.255.7219
P: 219-980-1777 Ext. 301
F: 219-980-1720

Appendix C: Food Bank Project Demonstration

Database Design:

The database design will consist of two tables; INGREDIENTS and RECIPES. The database is stored in a 2010

Microsoft Access database named FOODBANK.

The INGREDIENTS table is featured in Figure 1.1, consisting of two fields; ID and Ingredient_Name. The ID

field is an AutoNumber data type and serves as the primary key for this table. The second field is the

Ingredient_Name, a text data type.

Figure 1.1 INGREDIENTS Table

INGREDIENTS	
ID	Ingredient_Name
1	Almonds
2	Chicken
3	Celery
11	Garlic
12	Onion
13	Potatoes

The RECIPES Table is featured in Figure 1.2, which consists of 4 fields; ID,Recipe_Name, Ingredients, and

Instructions. The ID field is an AutoNumber data type and serves as the primary key for this table.

Recipe_Name, Ingredients, and Instructions are all text data types.

Figure 1.2 RECIPES Table

RECIPES			
ID	Recipe_Name	Ingredients	Instructions
1	One	1/2 cup almonds, 2 cloves garlic, 5 potatoes	Cook for 15 mins
2	Two	3/4 cup onions, 2 stalks celery, 1 lb. chicken	Bake for 1 hour
3	Three	3 lbs. chicken, 5 cloves garlic	Poach for 10 mins
4	Four	1 lb. chicken, 3 potatoes, 1 onion, 2 stalks celery	Broil for 6 hours

Appendix II

Web Application Design:

The web application is named FoodBankProject and consists of 9 web pages. The home page provides the user with a detailed list of all ingredients listed in the database. In the project files, this page is named Default.aspx. Each ingredient name is a hyperlink, which will take the user to a list of recipes containing the selected ingredient. Additionally, each ingredient has a photo for easy identification.

Figure 2.1 Home Page (Default.aspx)

Based on our sample of 6 ingredients, there are 4 corresponding recipes associated with these ingredients. There are four recipe lists web pages and they are named MPr1r3r4.aspx, MPr1r4.aspx, MPr2r3r4.aspx, and MPr2r4. Also, the 'Home Button' in the Navigation bar will take the user back to the list of Ingredients, allowing them to choose another ingredient.

Figure 2.2 Recipes List Page MPr2r3r4.aspx.aspx
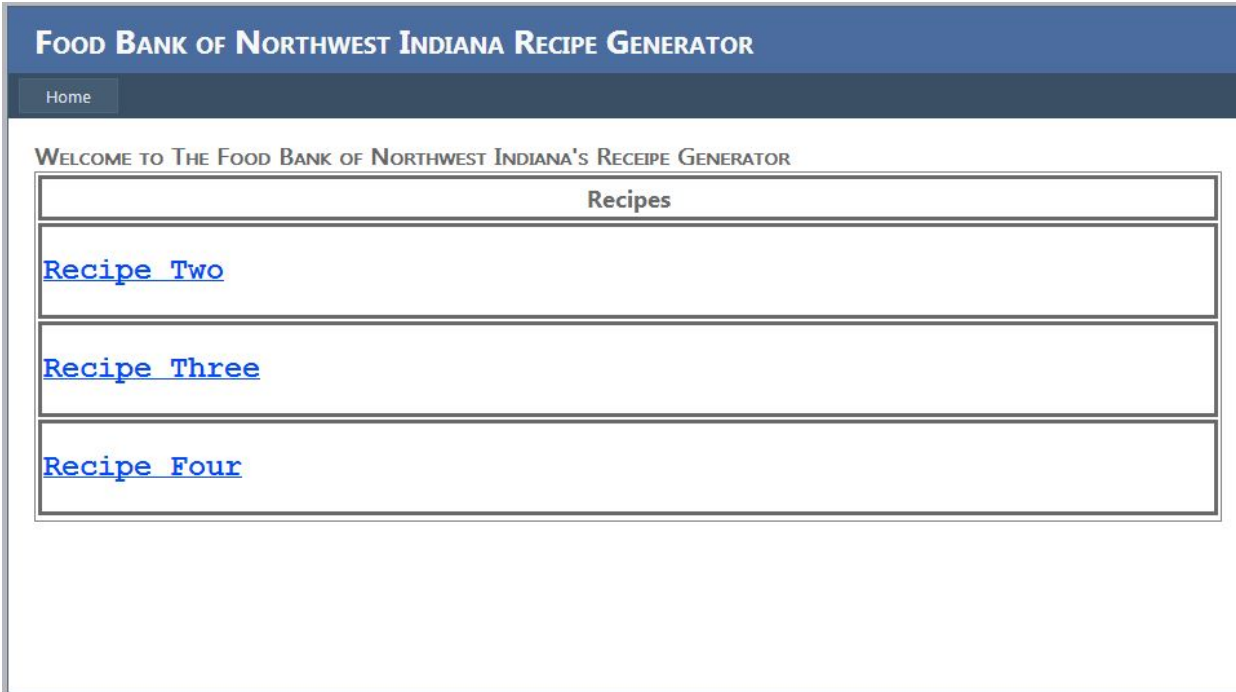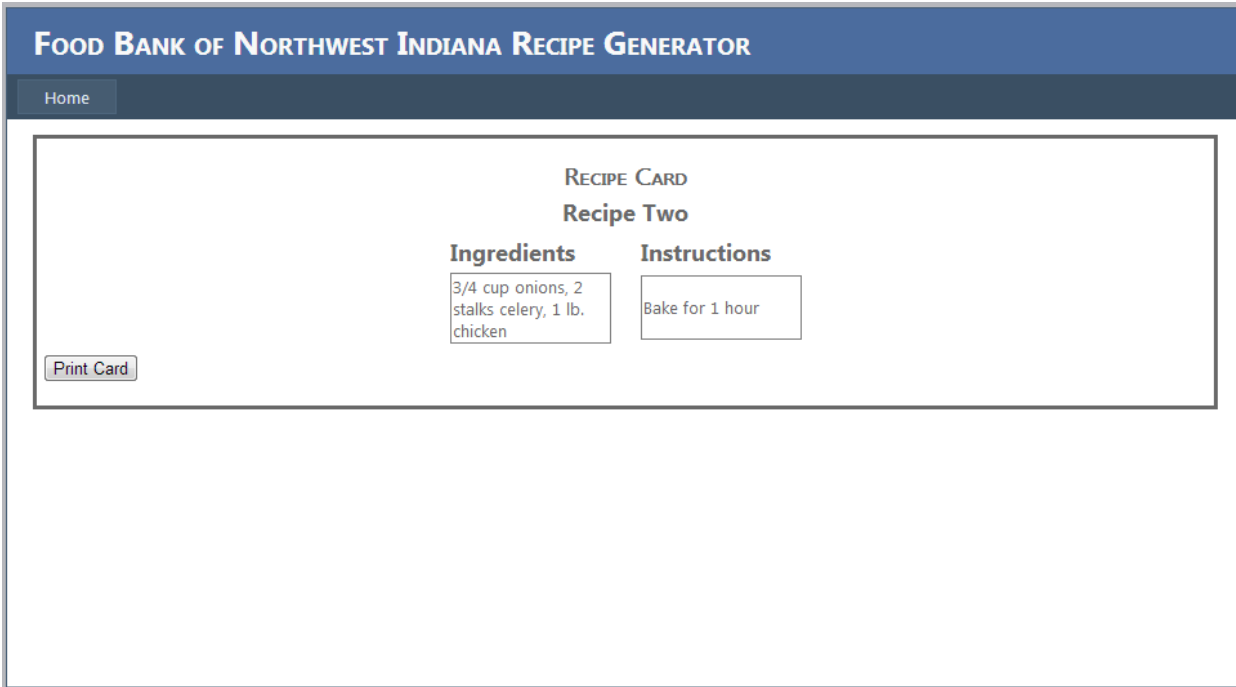

Figure 2.3 Recipes List Page MPr1r3r4.aspx
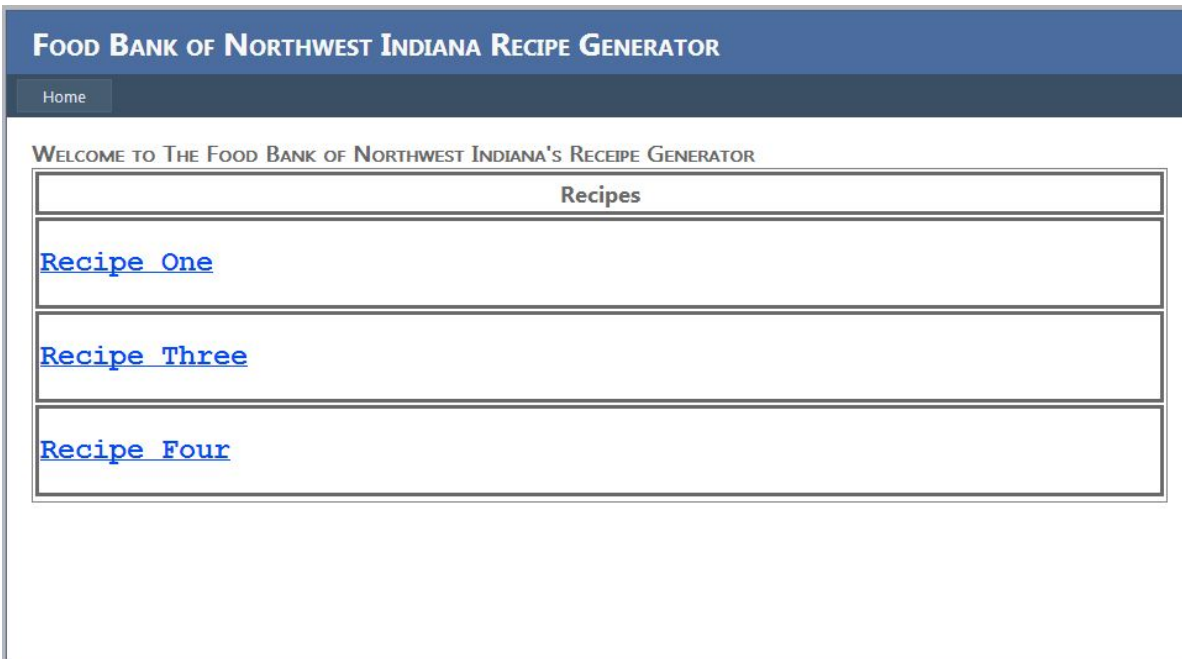
Figure 2.3 Recipes List Page MPr1r4.aspx
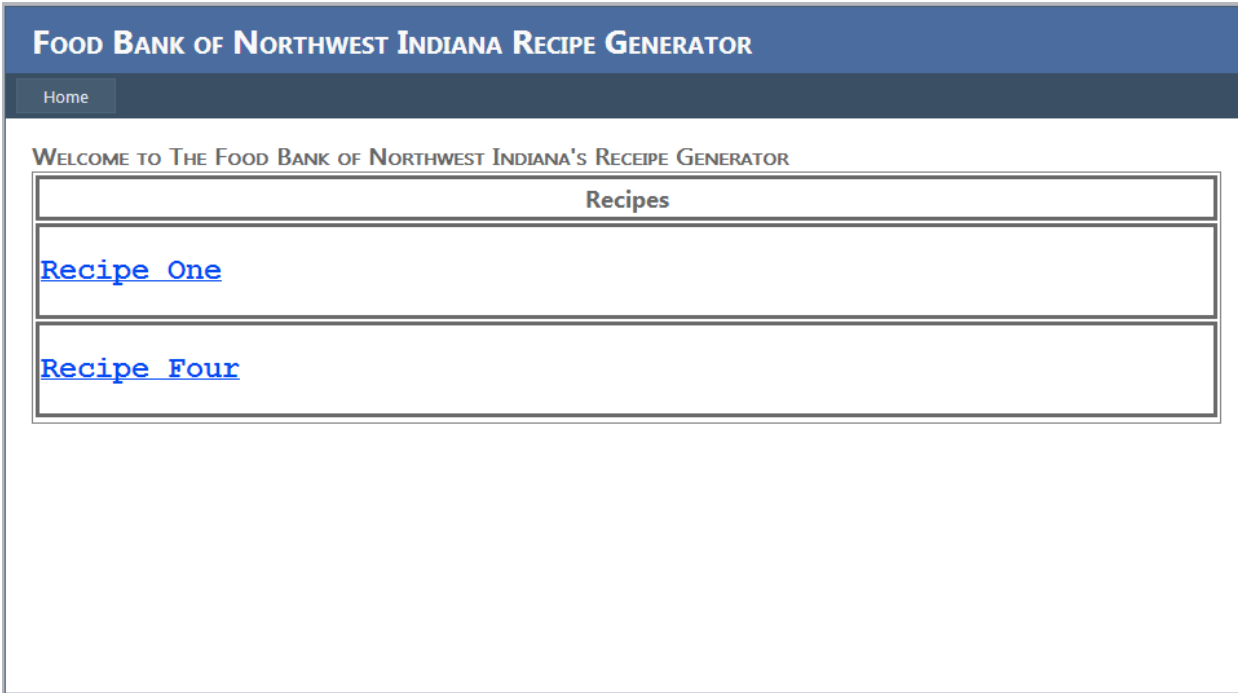
Figure 2.4 Recipes List Page MPr2r4.aspx
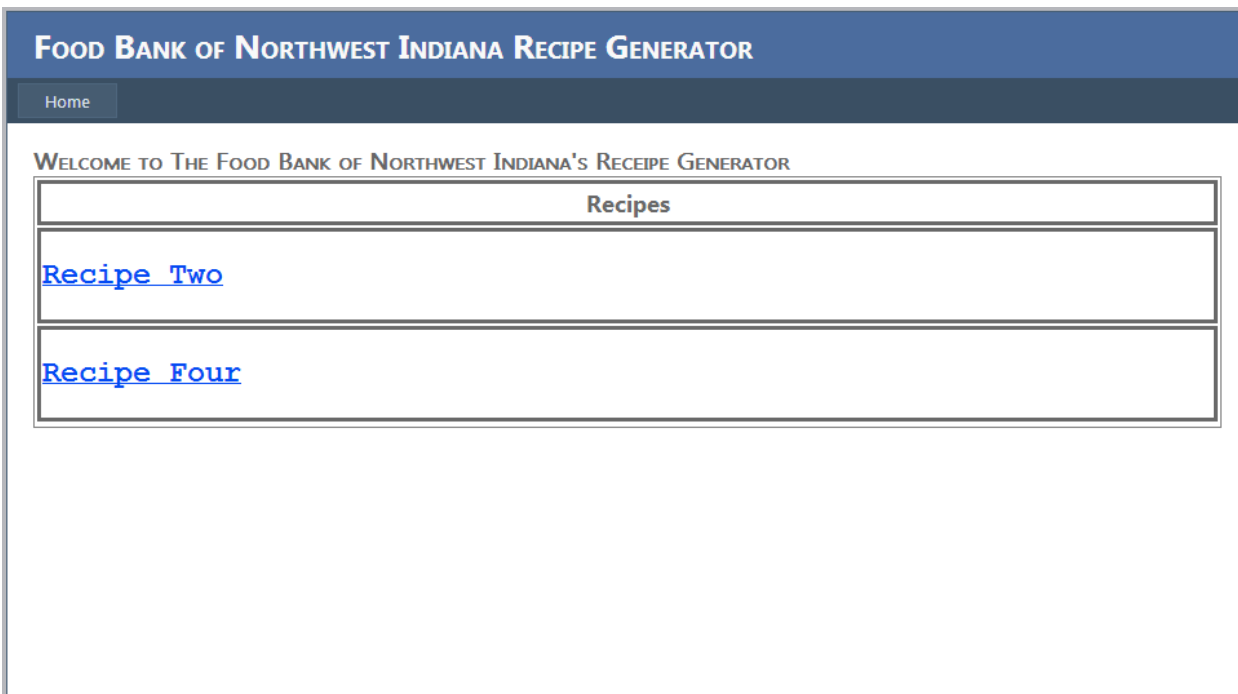
The recipes listed are hyperlinks and will take the user to the specified recipe card. The recipe card page will include the recipe title, ingredients, and preparation instructions. The ingredient and instructions information is populated through a dynamic connection to the Access database. Based on the recipe selected, the correct information will populate in these two 'Details View Panels'. There use will also be able to print the recipe information by clicking the 'Print Card' button. Also, the 'Home Button' in the Navigation bar will take the user back to the list of Ingredients, allowing them to choose another ingredient.

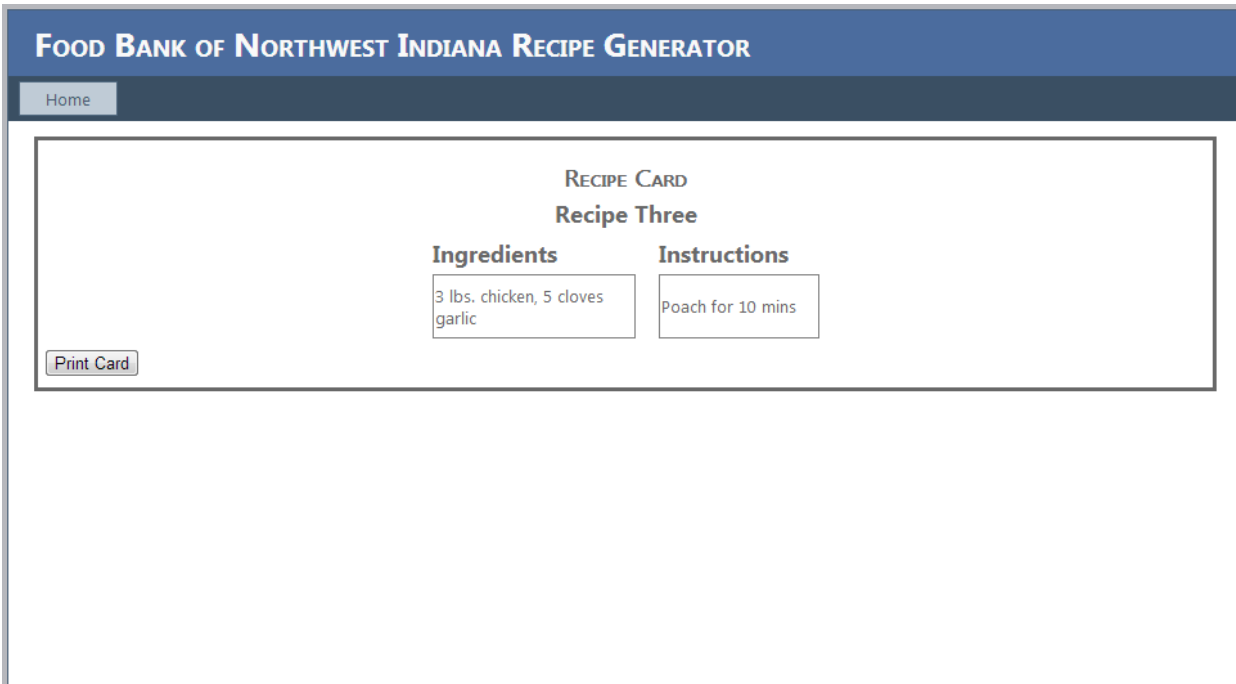**Figure 3.1 Recipe Card Recipe1.aspx**
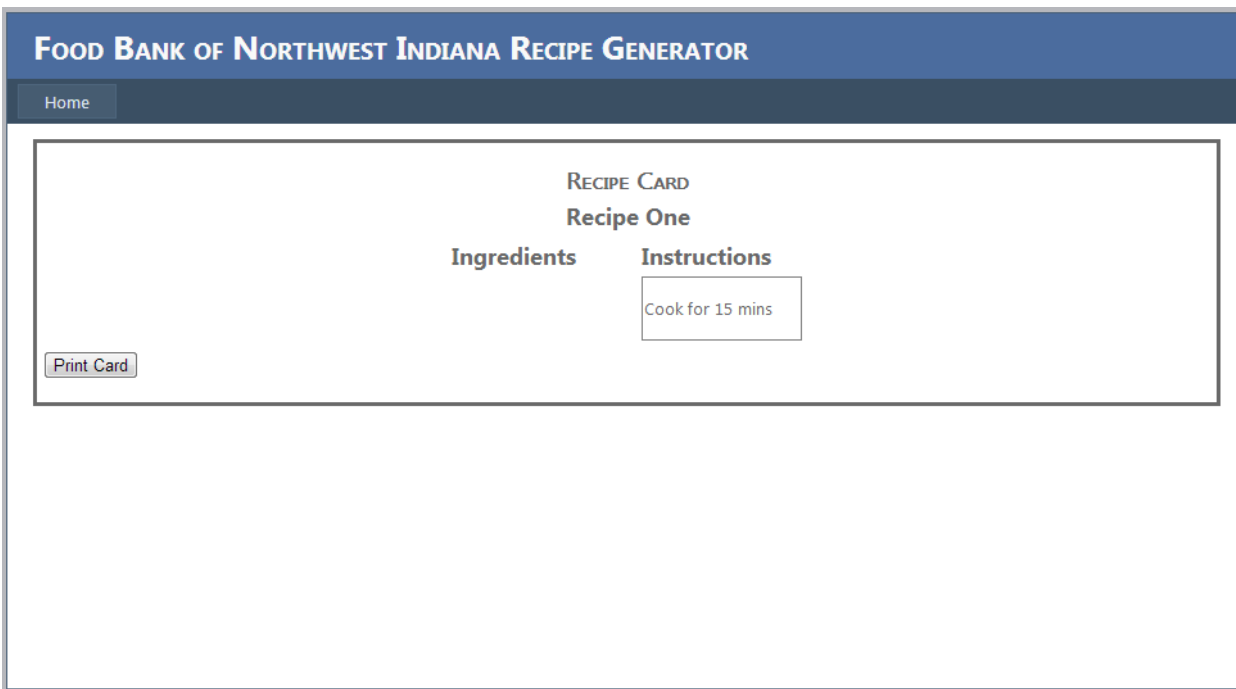
Figure 3.2 Recipe Card Recipe2.aspx

Food Bank of Northwest Indiana Recipe Generator

Home

RECIPE CARD
Recipe Two

Ingredients   **Instructions**

3/4 cup onions, 2
stalks celery, 1 lb.   Bake for 1 hour
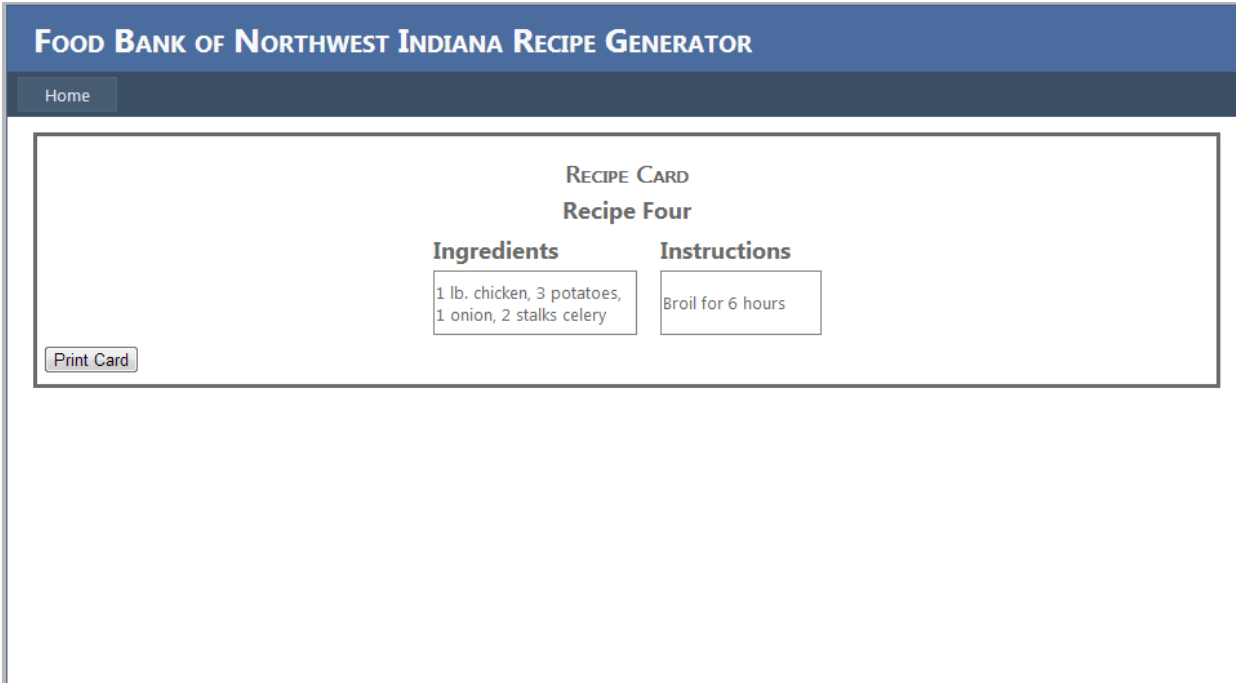chicken

Print Card

Figure 3.3 Recipe Card Recipe3.aspx

Food Bank of Northwest Indiana Recipe Generator

Home

RECIPE CARD
Recipe Three

Ingredients   **Instructions**

3 lbs. chicken, 5 cloves
garlic   Poach for 10 mins

Print Card

Figure 3.4 Recipe Card Recipe4.aspx

Appendix D: Student Peer Evaluation Form

CIS 42600 Final Project Evaluation

Team name: _____

Print your name: _____

Please print the name of each team member and complete the following table for each.

Out of 100% in this project, what percentage did Team Member 1 _____ contribute:

Team meeting 20%	Communication 20%	Complete Task on time 20%	Collecting Data 20%	Writing 20%

Out of 100% in this project, what percentage did Team Member 2 _____ contribute:

Team meeting 20%	Communication 20%	Complete Task on time 20%	Collecting Data 20%	Writing 20%

Out of 100% in this project, what percentage did Team Member 3 _____ contribute:

Team meeting 20%	Communication 20%	Complete Task on time 20%	Collecting Data 20%	Writing 20%

Appendix E: Student Service Learning Assessment

1. A Shorter Survey Instrument

 The following four statements are used to survey statements for service-learning course evaluation. Use them as they are or modify them as you deem appropriate.

 Students: Using a Likert scale (in which 1=strongly agree, 2=agree, 3=neutral, 4=disagree, and 5=strongly disagree), indicate your level of agreement with each of the following statements:

- The community work I did through this course helped me to better understand the lectures and readings in this course.

- The community work I did in this course helped to better understand key course concepts.

- The lectures, readings, and assignments in this course helped me to provide more effective service in the community.

- The idea of combining community work with coursework should be practiced in more classes at PUC.

2. Open-Ended Questions

 We also developed a brief set of questions and ask students to respond in writing.

- To what extent did the experience meet your expectations?

- What might have helped link your service experience and the course content better?

- What community needs did your service fulfill?

- What community needs were not addressed?

- How did the service experience illuminate or challenge theories you've learned in the classroom?

- How did the course content enable you to provide more effective service?