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703657 PS/2 Web Engineering Project Final Report

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I. Project Idea

Project Pitch

Define the idea of your project in one sentence

Facilitate the finding of new recipes, creation of shopping lists, favoriting of interesting recipes for later use and creation of own recipes in order to make the whole process of cooking easier.

Project Detailed Description

List and describe in detail your project idea, settings and technical and usage restrictions, limitations (provide sufficient details).

To describe our project in detail, we use the structure of requirements because they represent the user view. The non-functional requirements are partly mentioned in the list of functional requirements but are listed at the end as well.

1. Access control - create an account

A guest of the website is able to create a new account and can access more functionality as logged-in user (see figure 1).

The user data include the email address which is the unique identifier of the user. A display name which is used in the main navigation. Further the phone number and a password are required. After successful creating a new account a user will be redirected to “Latest Recipes”. Further details to navigation and several checks can be found in section “User Interfaces”.

Create an account

Email	<input type="text" value="anna.huber@student.uibk.a"/>
Display Name	<input type="text" value="Anna"/>
Phone Number	<input type="text" value="00436601234567"/>
Password	<input type="password" value="....."/>
Re-Password	<input type="password" value="....."/>
<input type="button" value="Submit"/>	

Figure 1: Create new account

2. Login / Logout

A user can log in with an email address and the password (see figure 2). Once a user is logged-in the display name of the user is shown on top of each webpage (see figure 3).

Login

Email	<input type="text" value="anna.huber@student.uibk.a"/>
Password	<input type="password" value="....."/>
<input type="button" value="Login"/>	

or [Create an account](#).

Figure 2: Login

If a user is logged-in the navigation is different. A logged-in user has the ability to logout at any point on the website. Additionally a lot more features are available. This is marked in the features below with the addition that only logged-in user are able to use it.



Figure 3: Main navigation bar for logged-in user

3. Display list of recipes / latest recipes

Every visitor of the website get the easy to access list of recent recipes. It is the main page and lists recipes. Next to each recipe is a link “view” which allowed to get all the details of the recipe (see figure 4). This webpage can be easily accessed at any time by using the main navigation “Recipe” (see figure 3 and 4).

Latest recipes

[Search for recipes](#)

Recipe Name	Duration	Difficulty	
Tomato salad	10 minutes	simple	View
Sauce Bolognese	60 minutes	challenging	View
Asparagus soup	45 minutes	medium	View
Caprese	10 minutes	simple	View

Figure 4: Latest recipes (guest)

Latest recipes

[Search for recipes](#) [Add new recipe](#) [Create a new ingredient](#) [View favorite recipes](#) [Show my own recipes](#)

Recipe Name	Duration	Difficulty	
Tomatoes and Mozzarella	5 minutes	simple	View Favorite this recipe Edit Delete
Egg salad	3 minutes	challenging	View Favorite this recipe Edit Delete
Tomato salad	10 minutes	simple	View Favorite this recipe
Sauce Bolognese	60 minutes	challenging	View Favorite this recipe
Asparagus soup	45 minutes	medium	View Favorite this recipe
Caprese	10 minutes	simple	View Favorite this recipe

Figure 5: Latest recipes (logged-in user)

4. View recipe detail

From every provided list like the “Latest recipes” or the later explained “favorite list” or search result, the details of a recipe can be accessed. The recipe informations recipe name, a short description, the list of necessary ingredients, the instructions, the information how difficult and how long the preparation of the recipe takes are shown (see figure 6). All informations of each recipe is filled except from description. If the short description is empty, then this part is not shown. Furthermore each recipe has at least 1 ingredient with all informations like the chosen ingredient, the necessary amount and the weight unit. Further information to these checks as well as validation of the input or predefined values can be found in section “User Interface”.

MYLE

HomeRecipeSearchFavorites List

Hi AnnaLogout

Sauce Bolognese

Short Description:

The original italian spaghetti sauce.

Ingredients:

Ingredient	Amount	Weight Unit
Tomato	1	kilogram
Vegetable broth	100	milliliter
Onion (white)	1	piece
Minced meat	300	gram

Instructions:

Cut the tomatoes and the onion into little pieces. First fry the onion and the meat, then add the vegetable broth and cook for 15 minutes. Then add the tomatoes and cook for another 45 minutes. Season with some herb salt and pepper.

Difficulty:

challenging

Duration:

60 minutes

Download Shopping listDownload Recipe

Figure 6: View Recipe

5. Create recipe

A logged-in user is able to add a new recipe. The user which created the recipe is the owner of it. All of the informations for a recipe mentioned in “View recipe detail” above has to be filled (see figure 7). The only exception is the short description. The user benefit from predefined values for difficulties, weight unit and the ingredients which are provided as combo-boxes. This also makes it easier to read other recipes since it removes ambiguity of weight units, difficulties and ingredients. (see section “User Interface”)

The number of added ingredients depend solely on the user. Additional ingredients can be added during filling the recipe data. In each ingredient for a recipe all information needs to be given. A limitation of Zend 2 is that added ingredients are not deletable.

MYLE

HomeRecipeSearchFavorites List

Hi AnnaLogout

Create new recipe

Recipe Name

Short description

Please choose ingredients for this recipe

Ingredient:

Amount:

Weight Unit:

Ingredient:

Amount:

Weight Unit:

Instructions

Duration

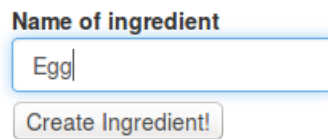
Difficulty

Figure 7: Add new recipe

6. Create new ingredient

If the predefined ingredients are not sufficient, a logged-in user is able to add new ingredients in the “Latest Recipes” view (see figure 5). Afterwards the user can use it in the recipe as well as any other logged-in user who creates a recipe. Therefore all user can profit from each other. A new defined ingredient only needs a name (see figure 8). A check verifies the ingredient name and makes sure that ingredients are unique (see section “User Interface”).

Create new ingredient



Name of ingredient

Egg

Create Ingredient!

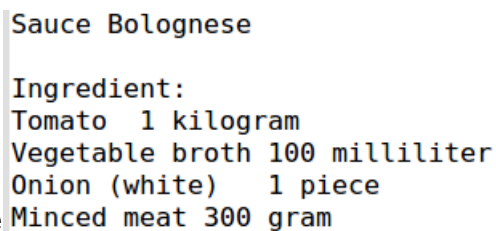
Figure 8: create new ingredient

7. Download recipe

When viewing the recipe's detail a logged-in user is able to download all informations of the recipe including the ingredients with their amounts to a text file. The user can change the suggested file name and store it on the local disk.

8. Download shopping list

When viewing the recipe's detail a logged-in user is able to download the information for a shopping. When a shopping list is downloaded only the ingredients with their amounts are stored to a text file (see figure 9). The user can change the suggested file name and store it on the local disk.



Sauce Bolognese

Ingredient:

Tomato 1 kilogram

Vegetable broth 100 milliliter

Onion (white) 1 piece

Minced meat 300 gram

Figure 9: Shopping list

9. Favorite a recipe

In order to remember recipes for the future a logged-in user can add chosen recipes to their own favorite list. This function is available from all lists like "Latest recipes" (see figure 5) or search results (see figure 12) just by using the link "Favorite this recipe" next to the recipe. If the user add a recipe more than once the user is simply navigated to the list of favorite recipes instead of displaying an error message in order to improve the usability.

10. View favorite recipe list

A logged-in user can view their favorite list by using for instance the main navigation "Favorite List". The previous added recipes are listed (see figure 10).

Favorite Recipes

Recipe Name	Duration	Difficulty	
Sauce Bolognese	60 minutes	challenging	Remove from list
Egg salad	3 minutes	challenging	Remove from list
Tomatoes and Mozarella	5 minutes	simple	Remove from list

Figure 10: Favorite list

11. Search for recipe

Recipes can be found by the recipe name (see figure 11). All recipes are listed where the given search term is a substring of the recipe name (see figure 12). The search is not case sensitive and can be accessed over the main navigation bar.

Search for recipes

Recipe name contains

Duration smaller or equal than (in minutes)

Show

Without recipe name or duration all recipes will be shown.

Figure 11: Search for recipes by name

Search result for recipe name includes 'tomato'

New search for recipes

Recipe Name	Duration	Difficulty	
Tomato salat	10 minutes	simple	View Favorite recipe
Tomatoes and Mozarella	5 minutes	simple	View Favorite recipe Edit Delete

Figure 12: Search result for search by name

Further features like editing or deleting a recipe or removing from favorite list are mentioned in section “Project Adaptation”.

The following non-functional requirements are fulfilled:

- Guests are not allowed to use the functions edit / delete recipes, download shopping list, download recipe, favorite a recipe or show the favorite list.
- Logged-in user are only allowed to access their own favorite list.
- Logged-in user can only add recipes to or remove recipes from their own favorite list.
- Logged-in user can only use ingredients which are already in the database.

- Logged-in user can only edit and delete the recipes they created on their own.
- A recipe or a shopping list contain at least one ingredient.
- A user can only login with a formerly created account.
- Email addresses need to be unique.

II. Project Technical Solution

Web Technologies

Describe the technical solution of your project, particularly, depict an architecture, list and describe technical components and interactions among them, used frameworks, databases, servers, etc.

Our application is based on a client- / server-architecture.

We use a Apache webserver, a MySQL database and our language is PHP. We use the XAMPP open source cross-platform web server solution to install those software on our laptop. Normally a webserver would provide those software.

We use the Zend 2 framework as our MVC framework. It is an open source framework for developing web applications using PHP 5.3+. Zend 2 uses object-oriented PHP. It offers a comprehensive database abstraction as well as HTML5 compliant form elements. It supports our need for modular architecture and, as mentioned before, supports the Model-View-Controller pattern. We use composer as installer and dependency tracking mechanism.

The client uses a web browser. We focused our test efforts on Firefox and Chrome as browser. The client uses the web address <http://www.myle.com> to access the website. The requests of the client are sent to the web server where the responses are built by our application, using Zend 2 framework and the database.

The modules within the application are designed such that the responsibilities are clear and the coupling between modules is low. The core modules are Recipe, CreateAccount, Login and the Application. Within those modules, the software architecture pattern MVC is implemented by separation of view-, model- and controller logic which is brilliantly supported by Zend 2 framework.

We use PHPUnit to test the main functions of our application.

sources:

<https://www.apachefriends.org>

<http://framework.zend.com/>

III. Project Results

Project Requirements Fulfillment

Describe your final implementation status according to your requirements. Justify the unfulfilled requirements (if any).

All of the requirements as discussed previously in section “Project Detailed Description” are fulfilled and additional features are implemented. The additional features are mentioned in section “Project Adaption”.

User Interfaces

Describe the user interfaces (put screenshots if necessary).

Our intention was to provide a convenient user interface and at the same time the intended quality level should be met and security issues should be addressed. The main functions are described in section “Project Detailed Description”. In this section additional information is given for navigation, predefined values for the user and several validations of the input including the feedback for the user.

Main Navigation: The main navigation is the navigation bar at the top of the site which has the same logic on every page. It's items represent the main functionality of the application. It is dependent on whether the user is logged-in (see figure 14) or not (see figure 13). Additionally at the top of the page a login button is shown for guests and if the user has logged-in, a welcome message together with the display name and a logout button replaces the login button.



Figure 13: Main navigation bar for guests



Figure 13: Main navigation bar for logged-in user

Additional navigation: Additionally we provide access to features in form of hyperlinks at several pages depending on the content. For instance when the user has one of the list of recipes like a search result, the user can choose the recipe they want to edit/delete or favorite just by choosing the link next to the recipe (see figure 12).

Both types of navigations comply with the non-functional requirements that a logged-in user has more features than a guest. The guest only gets to see the available features which are mentioned in “Project Detailed Description”. A logged-

in user has extended features like edit or delete the own recipes or to view the recipes of the favorite list.

Combo-boxes: The values for difficulties and weight units for recipes are predefined. There are 3 different types of difficulties. Each of the weight units have a short and long name like kg and kilogram. The user can access those values during creation or editing a recipe by combo-boxes. This brings uniformity to the data and improves the quality of data enormously.

Predefined ingredients: The ingredients which are used within the recipes have to be defined in order to use them. This is the basis for a sufficient data quality and lay the foundation for future extensions like search for recipes by ingredients.

Verify unique ingredient name: If the predefined ingredients are not sufficient they can be extended by a logged-in user (see “Project Detailed Description”). When a new ingredient is to be created, first the database is checked if one with the same name already exists. If yes, a pop-up with an error message is shown, if not the ingredient will be created.

Validation of input: We have several input validations in place. If a validation failed an error message is shown right under the corresponding field (see figure 15).

a) Text: Due to security reasons text is only interpreted as simple text. This is used for the user data like email address or phone number as well as for the recipe data like recipe name, description or instructions. Additionally the text has a maximal number of characters. These is different for each textfield and correspond with the length of the textfields in the database.

b) Numbers: The duration of a recipe makes only sense if it is a positive number higher than 0. This is checked as well.

c) Mandatory fields: All fields for recipe and user are defined as mandatory fields. The description of the recipe is the exception from that rule. This is checked when the data of a recipe or user are inserted during creation or in the case of recipe additionally when it is edited.

d) Mandatory ingredient: A recipe can have several ingredients but to save a recipe the check for at least 1 ingredient needs to be passed. Additionally all necessary fields like ingredient, amount and weight unit need to be filled.

Verify unique user identification: The email address of a user is used for identifying a user. Therefore it has to be unique. During the process of creating a user this check has to be passed and if not a message as pop up will be provided.

Verify password: The password for a new user account has to be inserted twice to prevent typos. These 2 versions have to be equal in order to pass the check otherwise a pop up inform the user.

Please choose ingredients for this recipe

Ingredient:

Amount:

- Please choose an amount > 0!

Weight Unit:

Ingredient:

- Please choose an ingredient!

Amount:

- Please choose an amount > 0!

Weight Unit:

Instructions

- Value is required and can't be empty

Duration

- Please choose a duration greater than 0!

Difficulty

Figure 15: Add new recipe - error messages

Project Adaptation

Describe any required adaptation during your project implementation. For example, additional features which are not included in the initial requirements.

During the design phase we set great value upon the project content that should be do-able in the given amount of time and we kept further ideas in mind and designed the application along those lines. Our goal was a simple design which is extensible and therefore flexible for further development. We were able to implement more features than we had planned without the need of changing the content model.

1. **Planned difference to content model:**

- a) As we had already mentioned in the mid term report the group and model were only in the content model due to restrictions of WebRatio.
- b) As we have mentioned in the mid term presentation another restriction in WebRatio was that the userID could only be of type integer. Due to the requirement that the email address should be the userID, our field in the database model is of type string.
- c) The many-to-many relation between lists and recipes in the content model needed to be transformed in order to realize it in a relational database. This ordinary step was done by adding the table listDetail.

2. **Changes in the navigation:** The search is included in the main navigation bar and get to an own search page instead of a search field in the top navigation bar. The search provides now more opportunities than planned and can be accessed by this solution very easily.

3. **General information for the project:** The general information of the web application and basic introduction of the navigation is presented on the start page www.myle.com.

4. **Extended search for duration of recipes:** The search was extended such that recipes can be found either by recipe name or by a maximal duration of the recipe (see figure 16 and 17). Both criteria can be combined.

Search for recipes

Recipe name contains

Duration smaller or equal than (in minutes)

Show

Without recipe name or duration all recipes will be shown.

Figure 16: Search recipes by duration

Search result for duration smaller than 10 minutes

[New search for recipes](#)

Recipe Name	Duration	Difficulty	
Caprese	10 minutes	simple	View Favorite recipe
Tomato salat	10 minutes	simple	View Favorite recipe
Egg salad	3 minutes	challenging	View Favorite recipe Edit Delete
Tomatoes and Mozarella	5 minutes	simple	View Favorite recipe Edit Delete

Figure 17: Search result for search by duration

5. **Show your own recipes:** A logged-in user who has already created recipes has an additional feature to show only his or her created recipes. This gives the user an excellent overview.
6. **Edit own recipes:** The logged-in user can edit all data of the recipes which they created. The function edit is only provided where the user is the owner (see figure 17). A limitation is that the number of ingredients of the recipe are unchangeable due to Zend 2.
7. **Delete own recipes:** The logged-in user can delete their own recipes. The function delete is only provided where the user is the owner (see figure 17). If the recipe is deleted the connection to the ingredients are removed as well. If the recipe was in anyone's favorite list, it is removed from those lists.
8. **Remove recipe from favorite list:** A logged-in user who used to favorite recipes, has the opportunity to remove those recipes from their favorite list by using the link next to the recipe (see figure 10).
9. **Mandatory fields:** Check for mandatory fields are implemented – see

section “User Interfaces”

10. **Validation of input:** Checks on input of user are implemented – see section “User Interfaces”

11. **Predefined values:** Predefined values are implemented– see section “User Interfaces”

Project Showcase

Put public URL of your project. If installed locally, make an appointment with the tutor to demonstrate your project.

We will arrange an appointment.

IV. Project Future Potential

Potential Future Work

Describe how you would progress with and/or improve your project, if you are to continue working on it.

We have chosen this project because we could realize a reasonable application with a good set of features and we had lots of ideas to extend the application with further interesting features. The application can be developed for instance with these features:

1. **Meal-plan:** Use recipes to create a plan for a limited period of time and let other user participate on those meal-plans which were published by the owner
2. **Extend search:** Extend the search by a feature to search for recipes with special ingredients or special needs like allergens or improve the search by anticipation of typos or synonyms
3. **Picture / Video:** Extend recipe by adding a picture or a video of making the recipe
4. **Extend shopping list:** Create shopping list for several recipes or customize the shopping list to get only those ingredients which are necessary to buy
5. **Several lists:** A user can create more lists and give them individual names and can be published
6. **Rating of recipes:** User can rate recipes and can use that as search property
7. **Tags:** User can classify recipes with tags like Italian - or vegetarian food and can use them as search property

8. **Reviews on recipes:** User can give information to their own experience for a recipe
9. **App:** Provide an app for mobile devices in order to access especially recipes and the shopping list when people are mobile
10. **Chat:** User can chat with each other
11. **Ask experts:** User can ask nutrition experts or trainers
12. **Quality approval:** Experts approve recipes for instance for contained allergens and add information

Wouldn't such an application be awesome. 😊

Potential Future Societal and Economic Impacts

Describe your opinions on the added values of your project from the societal and economic standpoints. For example, how the project can help to create a new business (for instance startup or a new product in an established company) and what would be necessary for it.

In order to build a business unique characteristics are essential to be distinctive to competitors. There are several website which offer a lot of ideas but as far as our research has shown many of them are quite specialized. In our opinion our website should combine several features in one solution. These topics could be offering meal plans, access the application by mobile devices or the offer to ask nutrition experts or trainers directly. In order to raise the quality and have another competitive advantage experts can approve recipes by awarding a special sign to make sure that special needs like allergen are fulfilled. The income could not only be based on advertisement but on paying for further consultations of nutrition experts or trainers. But beforehand there has to be a thorough research of the market, figure out the unique characteristics and make a business plan to find out what is due-able and realistic.