

Database Management Project

BeFit Project

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Database Management Project: BeFit Project

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Chapter 1. Introduction

Project Definition

BeFit project is an ITU Database Management Systems course project based on a web application which offers it users the opportunity to track the calorie they consume and burn within a day, and observe the weekly progress of calorie intake thus helping them to achieve the goal weight of which they determine when signing up for the website. One can simply browse various food according to food categories from the database and see the calorie values of them. Although, when signed up, a more sophisticated yet easy to use interface is introduced to the members. A member can create a diary and track the calorie intake on a weekly basis by adding food, exercises and meals to the diary from the “My Calendar” page. Besides those, the BeFit project also offers its users a social environment where signed up members can add others as friends, send messages to them and communicate with nutrition experts. This project is inspired by traditional diet programmes and today's famous social networks such as Facebook and Twitter.

Development and Running Environment

The project was developed using MySQL database server running version 5.5.28-29.1 and Java programming language. In the preparation stage, Apache Tomcat 7.0.27.0 server is used and all tests are done with this server. To connect java and html parts, Wicket 1.6.0 and MySQL JDBC driver are used. BeFit is independent from the operating system and it is implemented with Netbeans 7.2 IDE.

The project can be run on any up-to-date browser and on any operating system.

Workload

The workload of the project is as follows: Each member is responsible of the given tables, objects and elements.

- Volkan Ilbeyli
 - Food
 - Food Category
 - Meal
 - Ingredient
 - BMI Calculator
- Gökhan Çoban
 - User
 - Role
 - AuthAction
 - Role_AuthAction
 - My Calendar
- Burcu Güler
 - Exercise

- DiaryExercise
- DiaryFood
- Fatih Sezgin
 - Profile Page
 - Friends
 - Messages
- Hasan Akgün
 - Diary
 - DiaryTime
 - DiaryMeal

Chapter 2. Installation

Since the project is about a web page application using a database, a web browser will be sufficient to run the project. Since create - delete - edit options can be done through the website, no other software is needed to run the project other than an up-to-date browser.

Figure 2.1. Google Chrome / Windows 7

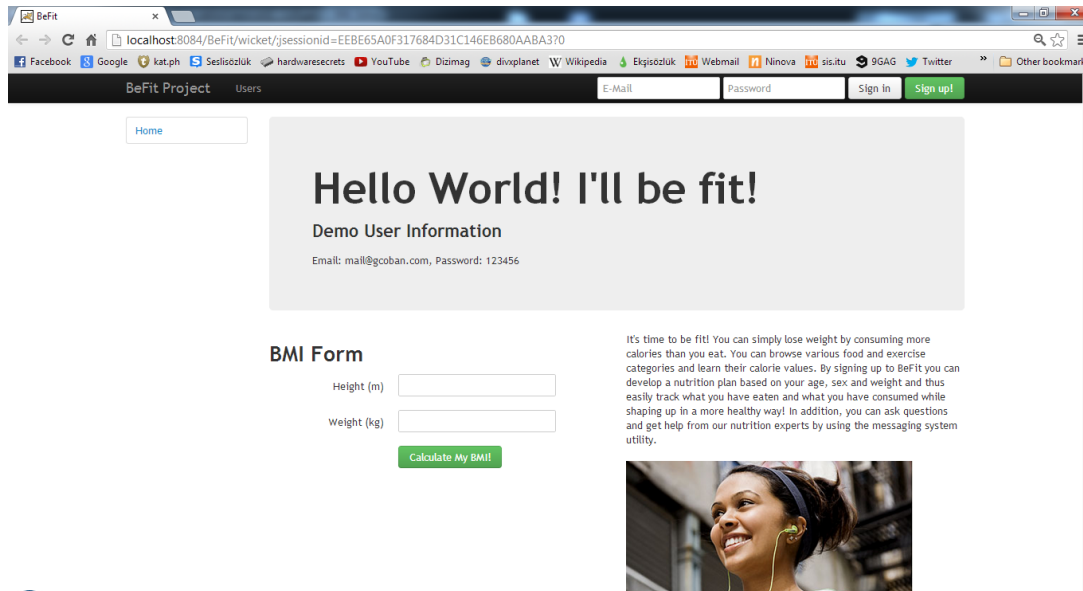
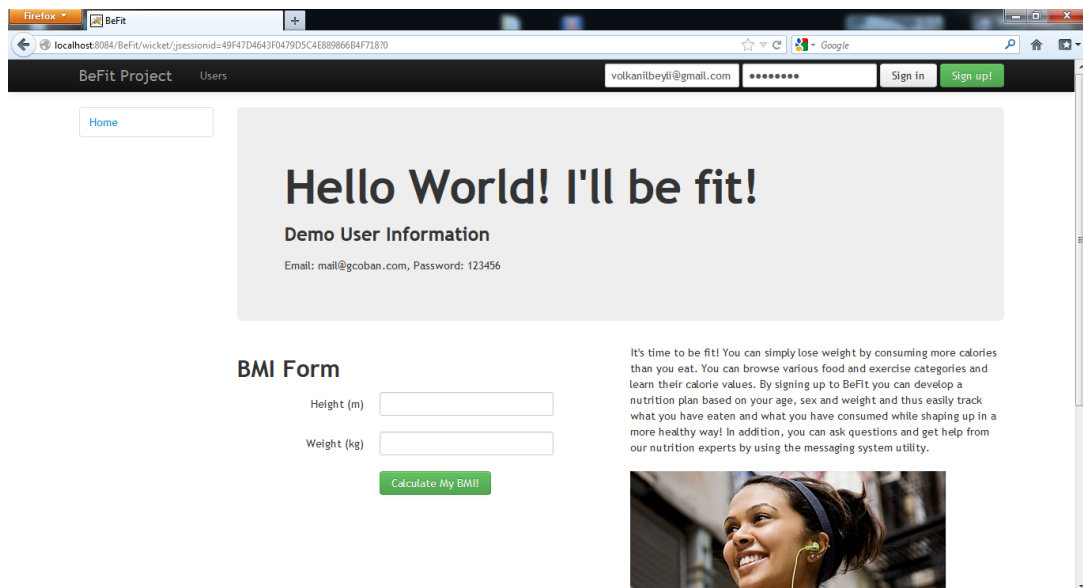


Figure 2.2. Mozilla Firefox / Windows 7



Chapter 3. User Manual

Home Page & Menus

Once the website is visited, a homepage which contains a login panel, a navigation panel and a BMI form as well as a welcome message and a homepage image as seen in the figure below.

Figure 3.1. Home Page

BeFit Project Users

volkanlibeyli@gmail.com ***** Sign In Sign up!

Home

Hello World! I'll be fit!

Demo User Information
Email: mail@goban.com, Password: 123456

BMI Form

Height (m)

Weight (kg)

Calculate My BMI!

It's time to be fit! You can simply lose weight by consuming more calories than you eat. You can browse various food and exercise categories and learn their calorie values. By signing up to BeFit you can develop a nutrition plan based on your age, sex and weight and thus easily track what you have eaten and what you have consumed while shaping up in a more healthy way! In addition, you can ask questions and get help from our nutrition experts by using the messaging system utility.

Without logging in, a visitor may calculate his/her BMI or view the user list using the navigation panel as seen below.

Figure 3.2. BMI Calculator

BMI Form

Height (m)

Weight (kg)

Calculate My BMI!

Calculated BMI: 18,6
Normal Weight

BMI < 18.5 = Underweight
18.5 <= BMI <= 24.9 = Normal Weight
25 < BMI <= 29.9 = Overweight
30 < BMI = Obesity

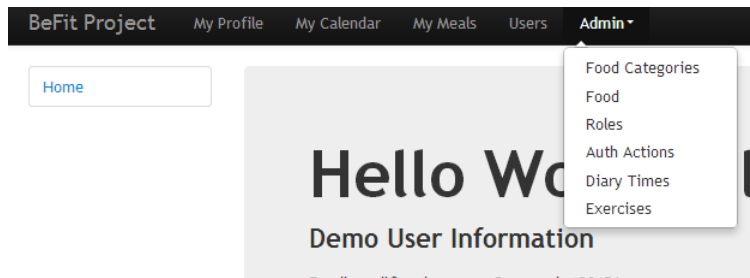
It's time to be fit! You can simply lose weight by consuming more calories than you eat. You can browse various food and exercise categories and learn their calorie values. By signing up to BeFit you can develop a nutrition plan based on your age, sex and weight and thus easily track what you have eaten and what you have consumed while shaping up in a more healthy way! In addition, you can ask questions and get help from our nutrition experts by using the messaging system utility.

Figure 3.3. User List

BeFit Project		Users	E-Mail	Password	Sign in	Sign up!
Home		Users				
Id	Name	Email	Role			
1	Gökhan Çoban	mail@gcoban.com	Admin			
2	Hasan Akgün	hasanag@bjk.gen.tr	Admin			
3	Volkan Ilbeyti	volkanilbeyti@gmail.com	Admin			
4	Fatih Sezgin	sezginfa@itu.edu.tr	Admin			
7	Burcu Güler	gulerbu@itu.edu.tr	Nutrition Expert			

BeFit is a Java based student project which is included in Database Management Systems lecture, ITU.

Once logged in, from the new menus that appear in the navigation bar, a nutrition expert and an admin can create, edit, delete and list food, food categories and meals. Ingredients can be edited, added, deleted and updated from “Meals” page. Below are some screenshots of these menus.

Figure 3.4. Navigation menu

Food, Food Categories, Meals & Ingredients

Creating, Editing, Deleting & Listing Food Categories

Figure 3.5. Listing Food Categories

BeFit Project		My Profile	My Calendar	My Meals	Users	Admin	Weld
Home		Food Categories					
Create Food Category		Edit/Delete	Id	Name	Super Category		
			25	Bread & Bakery			
			26	White	Bread & Bakery		
			27	Dark	Bread & Bakery		
			28	Baguettes & Bagels	Bread & Bakery		
			29	Diary & Eggs			
			30	Eggs	Diary & Eggs		
			31	Milk	Diary & Eggs		
			32	Butter & Fats	Diary & Eggs		

Figure 3.6. Editing a Food Category
Figure 3.7. Creating a new Food Category

Creating, Deleting, Editing & Listing Food, Meal and Ingredients

Since the same procedures are followed during development of the project for procedural completeness through the whole project, other create - list - edit - delete operations are done nearly the same way. Below are the screenshots of other objects which show the differences of the operations mentioned above.

Figure 3.8. Creating Food

Figure 3.9. Listing Meals

BeFit Project My Profile My Calendar My Meals Users Admin* Welcome Volkan Ilbeyli, Logout

Home Create Meal

List Meal Page

Edit/Delete	Id	Name	Calorie Value	Ingredients
	7	snack	15.0	
	8	New Meal	300.0	

* Calorie values of meals will be updated as new ingredients are added to the meal.

Figure 3.10. Listing Ingredients

BeFit Project My Profile My Calendar My Meals Users Admin* Welcome Volkan Ilbeyli, Logout

Home

List Ingredients Page

Ingredients of "snack"

Edit/Delete	Id	Food	Gram	Calories
	6	Wheat Bread	5.0	15.0
	8	Tapped Water	500.0	300.0

Add Ingredient!

Figure 3.11. Adding a New Ingredient

BeFit Project My Profile My Calendar My Meals Users Admin*

Home

Add Ingredient

to "snack"

Category

Food

Gram

Add Ingredient!

Exercises, Diary Exercises & Diary Food

Exercise and Its Operations

Some of the privileges of Admins are that add,delete,update and list exercises.

Adding Exercises

Figure 3.12. Adding an Exercise

BeFit Project
My Profile
My Calendar
My Meals
Users
Admin ▾

Home

Create Exercise

Name

Burned Calory per Minute

Create

By filling the name and burned calorie per minute blanks, admins can add exercises into the database.

Figure 3.13. Error Handling on Exercise Adding

Create Exercise

Error!
Burned Calorie/Minute value must be a positive integer or floating point number!

Name

Burned Calory per Minute

Create

If negative a number or string is tried to be inserted for calorie value the admin gets an error message.

Listing and Deleting Exercises









Admin can list all of the exercises in the database. Also with this page Admin can edit and delete exercise with which he/she chooses.

Figure 3.14. Listing Exercises

Home

Create Exercise

Exercise List

	Id	Name	Burned Calory per Minute
 	7	Swimming	9.0
 	8	Running	7.0
 	9	Plates	4.0
 	10	Handball	15.0







By pressing the ✕ button user can delete an exercise easily.

Figure 3.15. List After Deleted "Swimming Exercise"

Home

Create Exercise

Exercise List

	Id	Name	Burned Calory per Minute
 	8	Running	7.0
 	9	Plates	4.0
 	10	Handball	15.0

Editing Exercise


Admin can edit exercises by pressing the  button without loosing current values. And after name and calorie values are filled, admin can save the changes.

Figure 3.16. Editing an Exercise

Home

Edit Exercises

NameSwimming

Burned Calory per Minute9

Save

Diary Exercise and Its Operations

Diary exercises are the exercises which are in the certain days in users' programmes. Users and also admins can edit, delete, list exercises in programmes or add an exercise into the programme.

Adding Diary Exercise

Admins and users can add an exercise into diaries.

Figure 3.17. Adding Exercise into Diary

The screenshot shows a web application interface for a diary. A modal dialog titled "Add Exercise" is centered on the screen. The dialog contains three input fields: "Exercises" with a dropdown menu showing "Choose One", "Time Length" with a text input field, and "Date" with a text input field showing the format "dd/mm/yyyy". Below these fields is a green button labeled "Add Exercise to Diary!". The background is a grid representing a diary. The columns are labeled with dates and times: "00:39:40 EET 2012". The rows are labeled "Morning", "Afternoon", and "Evening". Each cell in the grid contains a list of actions: "Add Food", "Add Meal", and "Add Exercise".

To add exercises into a diary, users must choose exercise from dropdown choices, specify time length and date. After that by pressing Add Exercises to Diary! button, exercise can be added.

Listing and Deleting Diary Exercises

Methods and pages of this part are implemented properly, but some problems have been occurred during merging these functions for calendar which is part of another group member. Basically in this part both users and admins can list the exercises in days. Additionally, with buttons they can delete and edit exercises in programme.

Same as the exercises part, by pressing the ✕ button user can delete an exercise easily.

Editing Diary Exercises

Methods and pages of this part are implemented properly, but some problems have been occurred during merging these functions for calendar which is part of another group member. In this part, by pressing the ✎ button, diary exercises can be edited without losing current values. And after name and calorie values are filled, changes can be saved.

Diary Food and Its Operations

Admins and users can also add food into the programmes and, edit, delete and list the foods in programmes which they are allowed to access.

Adding Diary Food

Foods can be added to the programmes by choosing their categories and specifying calorie per gram.

Figure 3.18. Adding Food into Diary

The screenshot shows a web application titled "My Calendar". In the background, there is a calendar grid with dates from Monday, December 24 to Saturday, December 28. On the left side, there are three time slots: "Morning", "Afternoon", and "Evening". A modal form is open in the center, titled "Adding Food to Diary". The form contains the following fields:

- Category:** A dropdown menu with "Drinks" selected.
- Sub-category:** A dropdown menu with "Coffee & Tea" selected.
- Food:** A dropdown menu with "Cappucino" selected.
- Gram:** A text input field containing the value "15".
- Button:** A green button labeled "Add Food to Diary!".


On the right side of the calendar, there are links for "Food", "Meal", and "Exercise" with "Add" buttons next to them.

Users can add food their calendar. First, they choose the category and sub categories of the food from dropdown choice. Then, they also choose the food or drink from the dropdown choice. Finally they specify the gram value and add it into the their programmes.

Listing and Deleting Diary Food

Methods and pages of this part are implemented properly, but some problems has been occurred during merging these functions for calendar which is part of another group member. Admins and users can list the food in the programmes. Additionally, from this page with delete and edit buttons they can edit and delete food in users' calendar.

Editing Diary Food

Methods and pages of this part are implemented properly, but some problems has been occurred during merging these functions for calendar which is part of another group member. Basically in this part, users can edit food in their diaries by pressing the  button.

Diary, Diary Time & Diary Meals

Diary and Its Operations

Diary is a bit different concept if it is compared to others. It is a mostly background process. When a user add a meal, food or exercise to a date a diary is automatically created and keeps information about that object's owner, date and diary time. So there is no directly front-end pages to add, create, update and delete diaries.

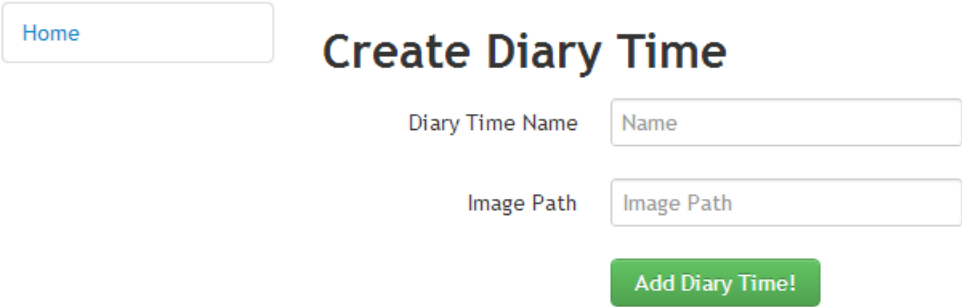
Diary Time and Its Operations

Diary Time is the time of a meal, food or exercise. Only admin can add/delete/update diary times and any user can get diary times.

Adding Diary Time

Admins can add a diary time.

Figure 3.19. Adding Diary Time



Home

Create Diary Time

Diary Time Name

Image Path

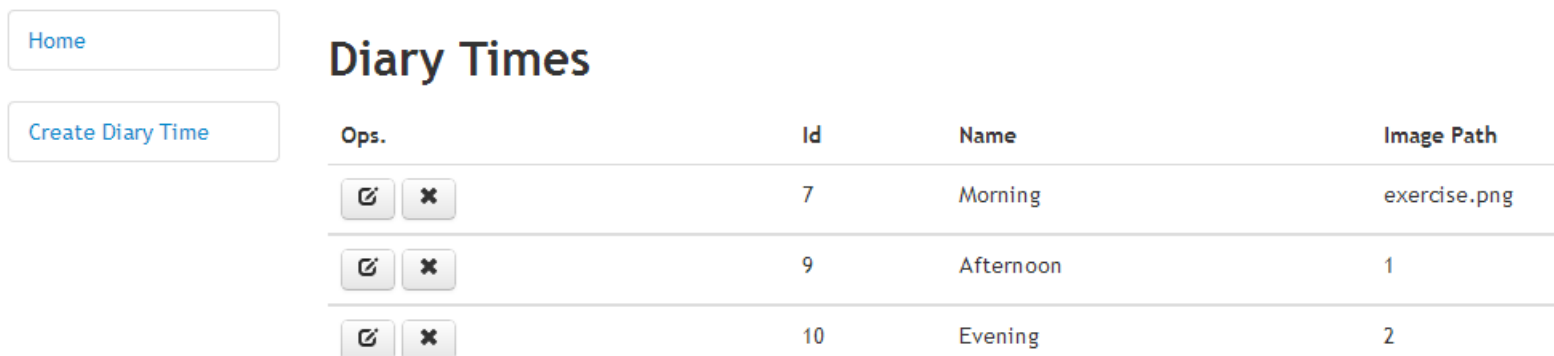
Add Diary Time!







Admin can add diary times with any name he/she wants and image path for diary time small picture.


Listing and Deleting Diary Times

In here again just admin can list and delete diary times.

Figure 3.20. Listing Diary Times

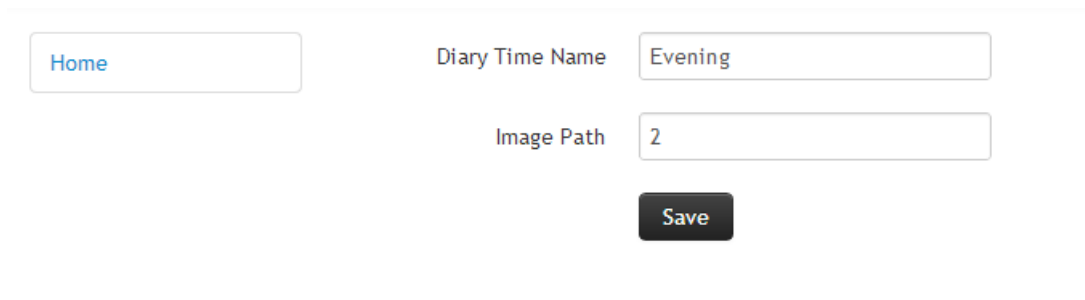



Home	Create Diary Time	Diary Times			
		Ops.	Id	Name	Image Path
		 	7	Morning	exercise.png
		 	9	Afternoon	1
		 	10	Evening	2

By pressing the  button admin can delete a diary time easily.

Editing Diary Times

Figure 3.21. Editing a Diary Time



In this part, by pressing the  button, diary times can be edited without losing current values. And after name and image path values are filled, changes can be saved.

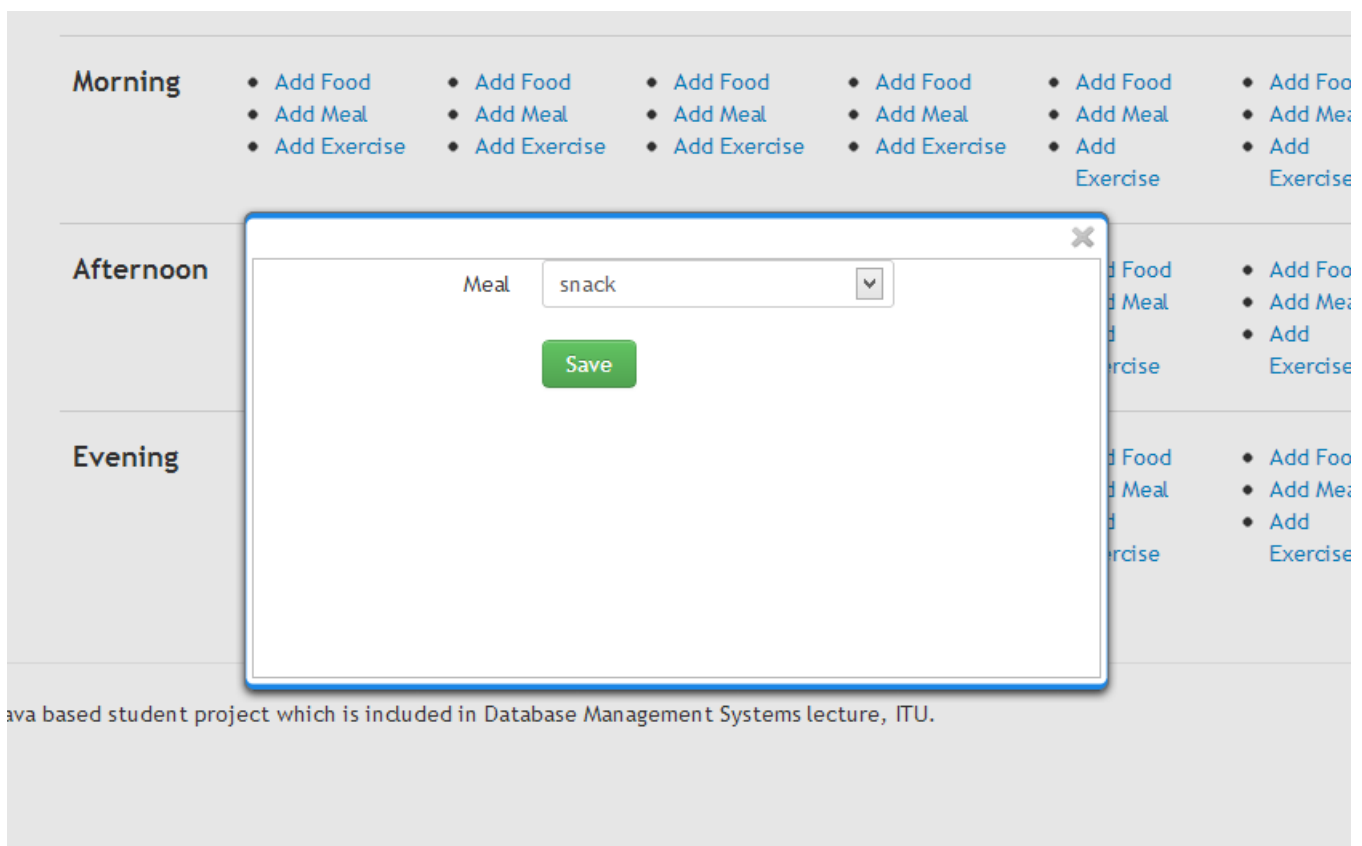
Diary Meal and Its Operations

Admins and users can also add meal into the programmes and, edit, delete and list the foods in programmes which they are allowed to access.

Adding Diary Meal

Foods can be added to the programmes by choosing their categories and specifying calorie per gram.

Figure 3.22. Adding Meal into Diary




java based student project which is included in Database Management Systems lecture, ITU.

Users can add meals their calendar. They can choose the meal from dropdown choice and save it easily.

Listing and Deleting Diary Meal

Methods and pages of this part are implemented properly, but some problems has been occurred during merging these function for calendar which is part of another group member. Admins and users can list the meal in the programmes. Additionally, from this page with delete and edit buttons they can edit and delete food in users' calendar.

Editing Diary Meal

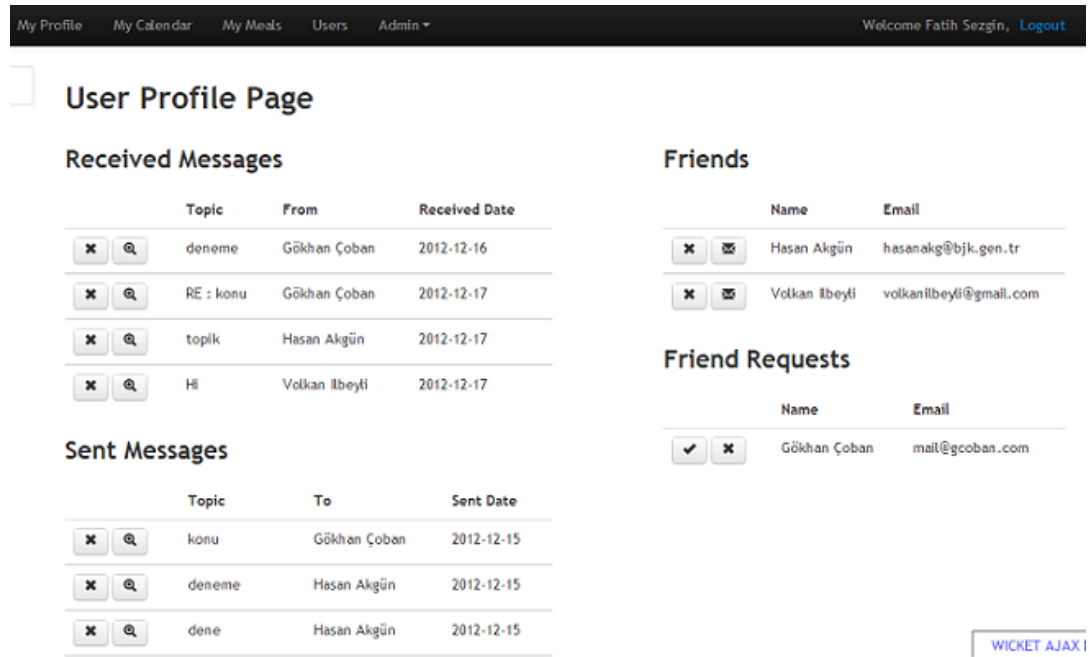
Methods and pages of this part are implemented properly, but some problems has been occurred during merging these function for calendar which is part of another group member. Basically in this part, users can edit meal in their diaries by pressing the  button.

Profile Page, Friend List & Messaging System

Profile Page

User profile is the page where every user can see their friend list and the messages they send and received. It can be accessed from top menu when a user is logged in.









Figure 3.23. MyProfile Page









The screenshot shows the 'My Profile' page with a navigation bar at the top containing 'My Profile', 'My Calendar', 'My Meals', 'Users', and 'Admin'. The user is logged in as 'Welcome Fatih Sezgin' with a 'Logout' link.

User Profile Page





Received Messages

	Topic	From	Received Date
 	deneme	Gökhan Çoban	2012-12-16
 	RE : konu	Gökhan Çoban	2012-12-17
 	topik	Hasan Akgün	2012-12-17
 	Hi	Volkan İlbeyli	2012-12-17



Sent Messages

	Topic	To	Sent Date
 	konu	Gökhan Çoban	2012-12-15
 	deneme	Hasan Akgün	2012-12-15
 	dene	Hasan Akgün	2012-12-15

Friends

	Name	Email
 	Hasan Akgün	hasanakg@bjk.gen.tr
 	Volkan İlbeyli	volkanilbeyli@gmail.com

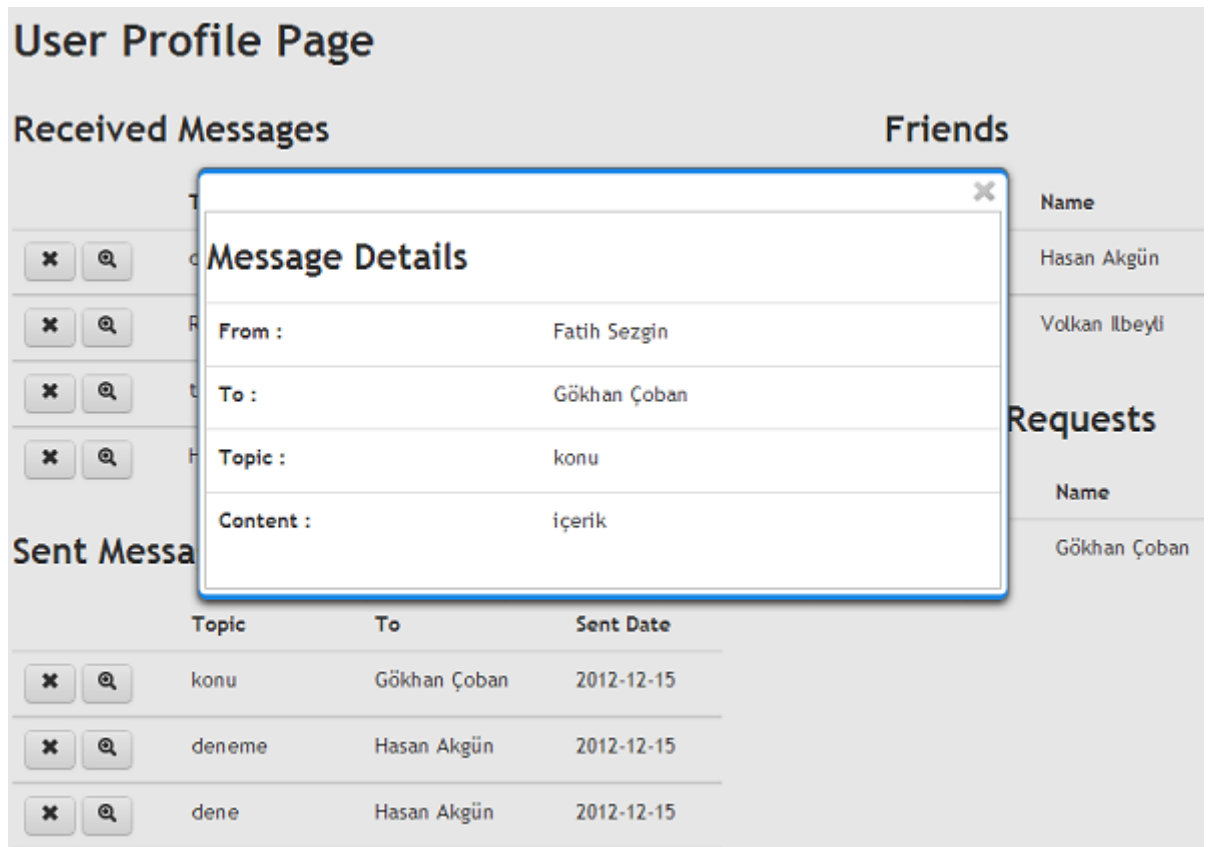
Friend Requests

	Name	Email
 	Gökhan Çoban	mail@gcoban.com

WICKET AJAX I

Messages

At the left part of the profile page, messages are listed in two groups as sent and received messages. Near every message there two buttons one for deleting message and one for seeing the content of message. When the second button clicked, content of the message is shown in modal window that pops up.

Figure 3.24. Message Detail Modal

If the message is one of the received ones, under the message there is a part to quickly reply this message.

Figure 3.25. Reply Message Modal

The image shows a 'Reply Message Modal' window overlaid on a user profile page. The modal is titled 'Message Details' and contains the following information:

From :	Gökhan Çoban
To :	Fatih Sezgin
Topic :	deneme
Content :	deneme123

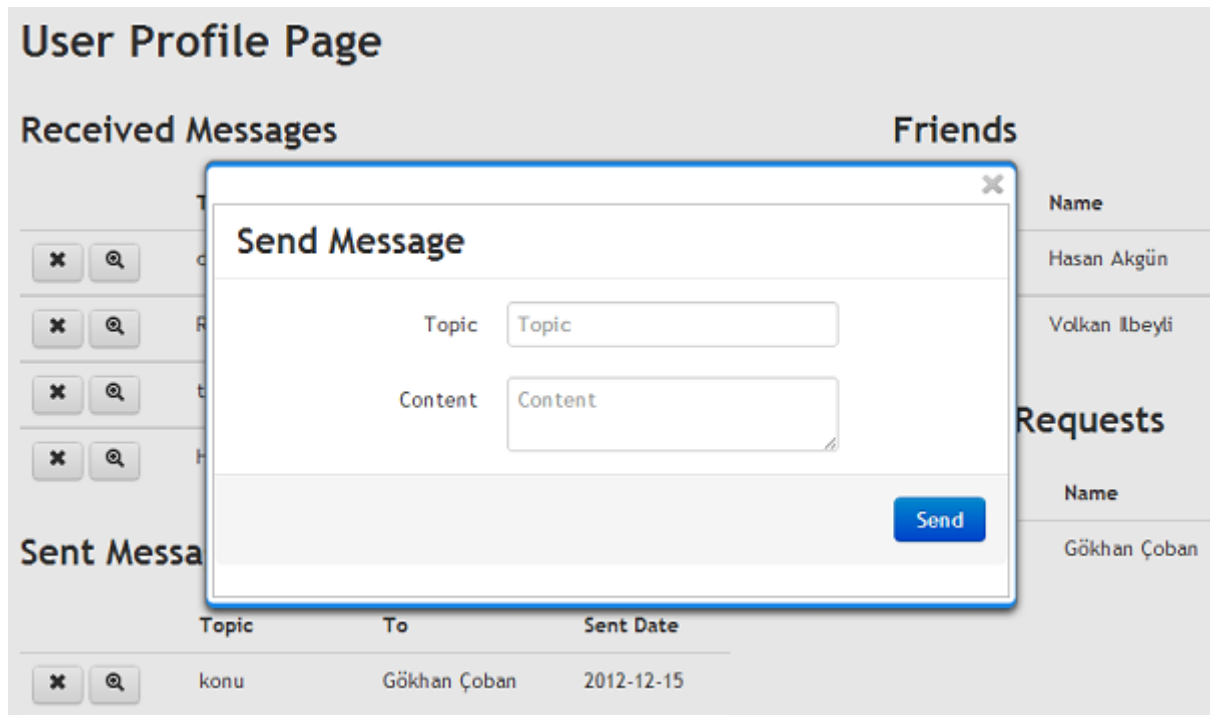
Below the details, there is a 'Send Reply' section with two input fields:

Topic	<input type="text" value="RE : deneme"/>
Content	<input type="text" value="Content"/>

A blue 'Send' button is located at the bottom right of the modal. The background shows parts of the user profile page, including sections for 'Received Messages', 'Sent Messages', and 'Requests'.

Friend List

At the right part of the profile page there is a friend list and under it friend request list. In the friend request list you can see the people who wants to be friends with you and accept or decline these requests. These requests can be send from user list page. In the friend list section there are two buttons for every friend one for removing a friend and other for sending them a message. When send message button clicked a model opens and ask for topic and content of the message.

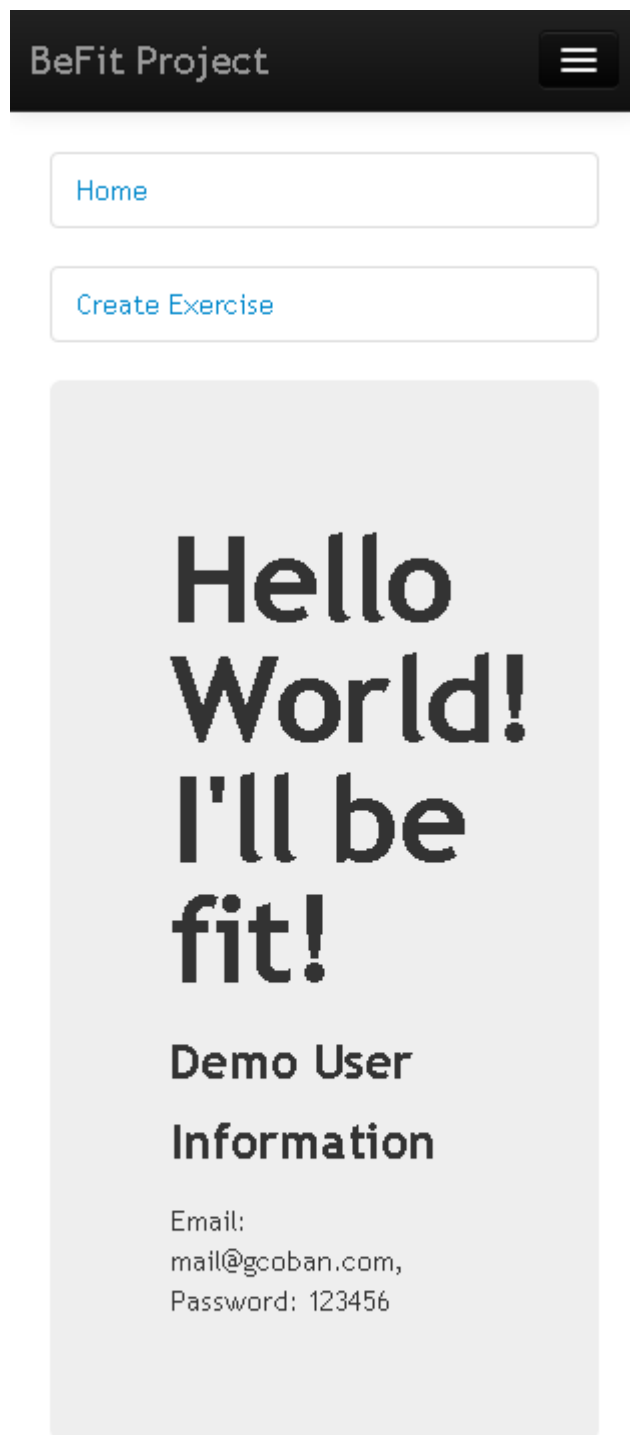
Figure 3.26. Send Message Modal

Users, Roles, AuthActions & Calendar

There are three types of registered users in the system: Admin, Nutrition Expert and User. Also there is visitors which means unregistered user. A user must register the system to take its advantages.

As the project being responsive, visitors will see a home page given below if they are using a mobile device. All pages are responsive in our project. The html codes is written by the help of Twitter Bootstrap documentation.

Figure 3.27. Home page with mobile devices.



BMI Form

Height (m)

Visitors can only see the HomePage and Users page. But in pages like Users all authenticated/unauthenticated users will have other actions. For example visitors neither can see the Edit Button of a User nor can access the Edit Page of a User but Admin either can see or can access. Users page

screenshots for visitors and Admins are given below. This is the list page of the user object. Deleting a user (only authorized users can take this action such as Admin) can be handled by clicking the X button.

Figure 3.28. Users page for visitors.

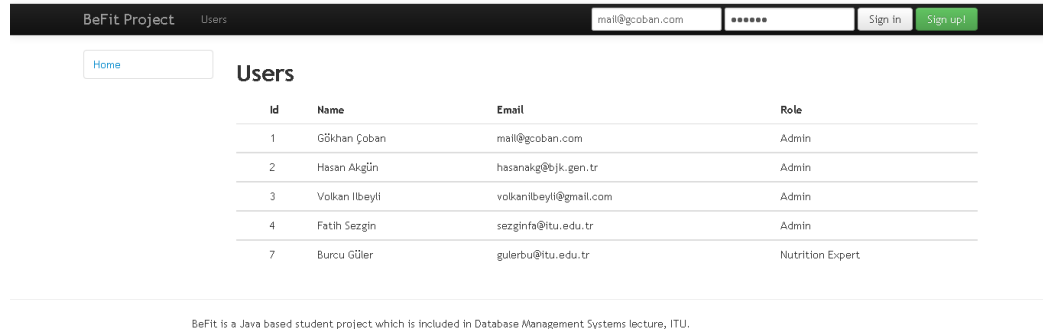
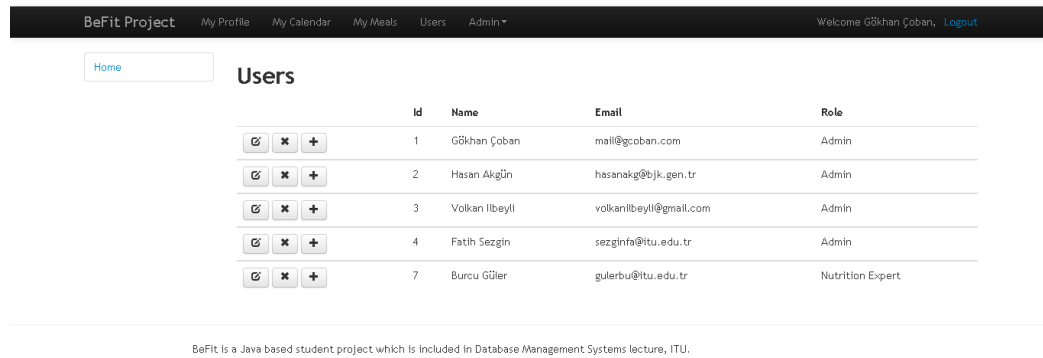
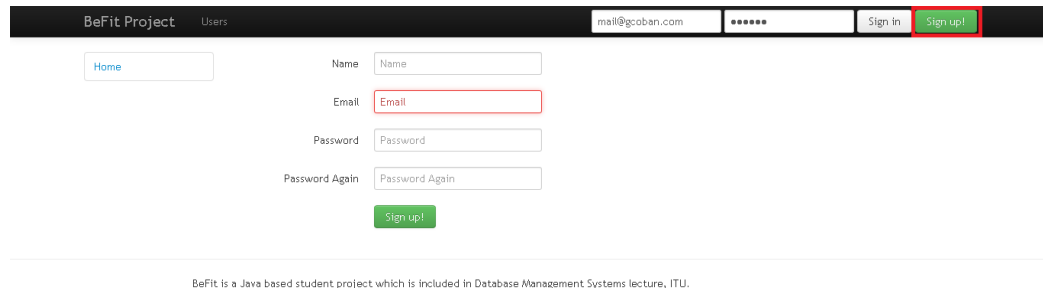


Figure 3.29. Users page for Admins.



Visitors can register the system by clicking the "Sign Up" link in the login panel at the right top corner of any page. This is the create page for user object. Validation is done by the help of HTML5 attributes like required=required etc. in all pages. For example Email text box is a required text box so it is covered by red border when clicked to write Email address.

Figure 3.30. Sign up page.



Admins can edit an User informations.

Figure 3.31. Edit user page(Only authorized users can access this page.)

BeFit Project My Profile My Calendar My Meals Users Admin>Welcome Gökhan Çoban, Logout

Home

Edit User

Name: Gökhan Çoban

Email: mail@gcoban.com

Password: *****

Password Again: Password Again

Role: Admin

Save

BeFit is a Java based student project which is included in Database Management Systems lecture, ITU.

The second object for authentication/authorization part of this project is Role. The first object was User. Only Admins(who has BeFit.Admin.Role action with his Role) can create a Role and can access the Role(List-Edit-Create-Delete) pages. Listing(Also delete action in it), editing, creating pages are given below.

Figure 3.32. Role list page.

BeFit Project My Profile My Calendar My Meals Users Admin>Welcome Gökhan Çoban, Logout

Home

Roles

Create Role

Food Categories
Food
Roles
Auth Actions
Diary Times
Exercises

ID	Name
3	Admin
5	User
6	Nutrition Expert
6	asdasdad

BeFit is a Java based student project which is included in Database Management Systems lecture, ITU.

Figure 3.33. Role create page.

BeFit Project My Profile My Calendar My Meals Users Admin>Welcome Gökhan Çoban, Logout

Home

Create Role

Name: Name

Auth Actions: BeFit, BeFit.Admin, BeFit.Admin.AuthAction, BeFit.Admin.DiaryTime, BeFit.Admin.Role, BeFit.Admin.User, BeFit.User

Create

BeFit is a Java based student project which is included in Database Management Systems lecture, ITU.

Figure 3.34. Role edit page.

BeFit Project My Profile My Calendar My Meals Users Admin Welcome Gökhan Çoban, Logout

Home Edit Role

Name Admin

Auth Actions

BeFit.Admin
BeFit.Admin.AuthAction
BeFit.Admin.DiaryTime
BeFit.Admin.Role
BeFit.Admin.User
BeFit.User

Save

BeFit is a Java based student project which is included in Database Management Systems lecture, ITU.

The third object for authentication/authorization part of this project is AuthAction. Only Admins(who has BeFit.Admin.AuthAction action with his Role) can create a AuthAction and can access the AuthAction(List-Edit-Create-Delete) pages. Listing(Also delete action in it), editing, creating pages are given below.

Figure 3.35. AuthAction list page.

BeFit Project My Profile My Calendar My Meals Users Admin Welcome Gökhan Çoban, Logout

Home AuthAction List

Create Auth Action

Food Categories
Food
Roles
Auth Actions
Diary Times
Exercises

ID	Name	Role
5	BeFit.Admin	
8	BeFit.Admin.AuthAction	
9	BeFit.Admin.DiaryTime	
7	BeFit.Admin.Role	
11	BeFit.Admin.User	
10	BeFit.User	

BeFit is a Java based student project which is included in Database Management Systems lecture, ITU.

Figure 3.36. AuthAction create page.

BeFit Project My Profile My Calendar My Meals Users Admin Welcome Gökhan Çoban, Logout

Home Create AuthAction

Key Key

Create

BeFit is a Java based student project which is included in Database Management Systems lecture, ITU.

Figure 3.37. AuthAction edit page.

BeFit Project My Profile My Calendar My Meals Users Admin Welcome Gökhan Çoban, Logout

Home Edit AuthAction

Key BeFit.Admin

Save

BeFit is a Java based student project which is included in Database Management Systems lecture, ITU.

There is a My Calendar page where users can see their weekly diaries(Meals, Food, Exercises) with the calorie values that they will take in that week. There is a screenshot given from My Calendar page below.

Figure 3.38. My Calendar page.

BeFit Project

My Profile

My Calendar

My Meals

Users

Admin

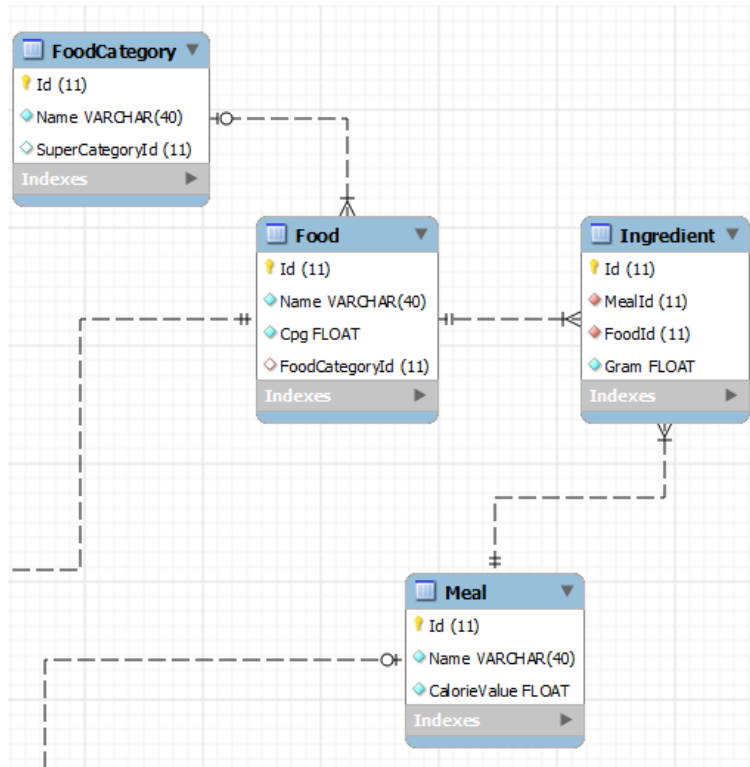
Welcome Gökhan Çoban, [Logout](#)

[Home](#)

Chapter 4. Technical Manual

Database Design

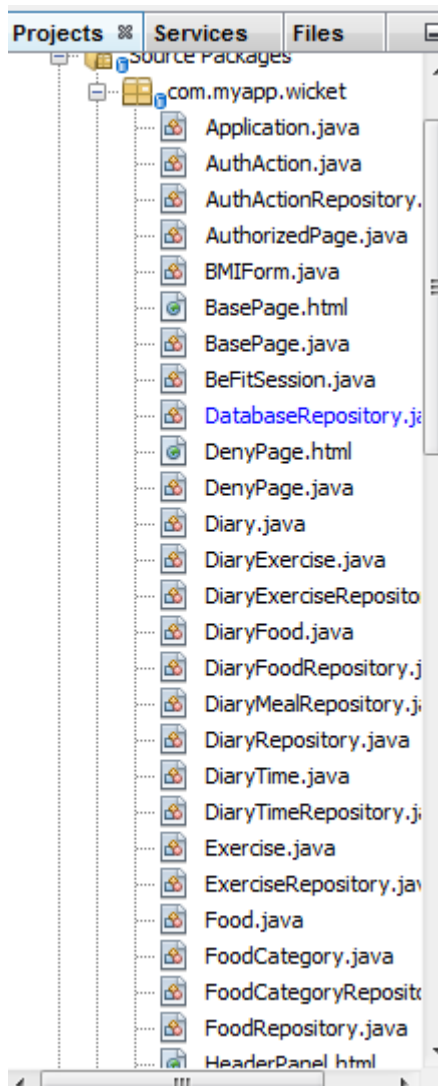
Figure 4.1. E/R Diagram



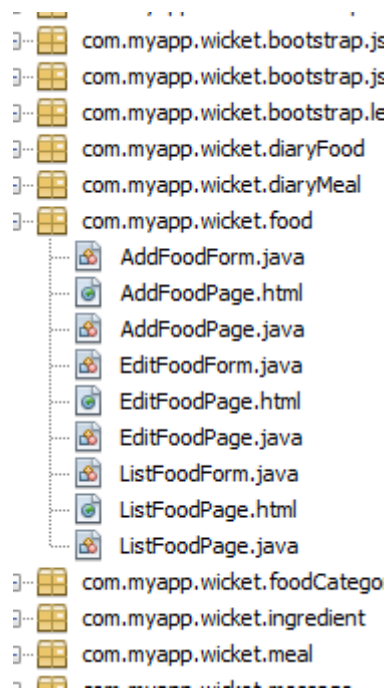
As it can be seen from the E/R Diagram, FoodCategory:Food has 1:n, Food:Ingredient has 1:n, Ingredient:Meal has n:1 relationship. In plain English, a food category may contain many food in it. A meal may contain ingredients while an ingredient may contain only one food since the database is designed in such a way that the tables correspond to the 1st normal form.

Software Design

In the project, the home page components (BMI Form), some error handling pages, objects and their repositories, database connection files are kept in the main package of the wicket file directory.

Figure 4.2. File Hierarchy

On the other hand, the object interfaces, i. e. operation pages (create - edit - list) pages are kept in their own packages as shown below.

Figure 4.3. Pages in their own packages

My section of the objects are listed below.

- Food.java & FoodRepository.java
- FoodCategory.java & FoodCategoryRepository.java
- Meal.java & MealRepository.java
- Ingredient.java & IngredientRepository.java
- Interface pages (list, create, edit) of the objects given above.
- BMI.java

Besides traditional Wicket components, some AJAX components are used in the project as well. Below are the list of Wicket and AJAX components used in the project.

- Wicket components
 - Link
 - Form
 - Label
 - Button
 - WebMarkupContainer
 - DropDownChoice
 - TextField
- AJAX components
 - AjaxFormComponentUpdatingBehavior

- AjaxRequestTarget
- AjaxFallbackLink

Twitter Bootstrap is used for css. You can find link at the references section.

Known Issues

There are some known bugs in the project. Below is a list.

- The default choices may get bugged while editing an object.

Bibliography

Twitter Bootstrap (Web Page [<http://twitter.github.com/bootstrap/>]).