11/13/2012

CS 361

Simplifying Nutritional Tracking with QR and Bar Codes

Customer: Kevin Stephenson | Group Members: Colin Bradford, Kyle Cesare, Emerson Hovekamp, Taya Juenemann, Tudor Marcu, Peter Rindal, Joshua Vilwock, and Nick Pepperling

User Stories

Describe your 10-20 user stories (approx 2 pages)

Scanning/Input:

1. Restaurant Go-er
    - Name(s): Peter Rindal

      Restaurants can place QR codes next to their food items on their menus. Their customers will see these QR codes and use their mobile device to scan it and then see nutritional facts, ingredients, and anything else the restaurant wants to share.

2. Meal at Home
    - Name(s): Colin Bradford

      Users input meals made at home. Users can search for an item and use that as an ingredient or create their own if they can't find the item they're searching for.

3. Food w/o Bar Code/Label
    - Name(s): Nick Pepperling and Tudor Marcu

4. Link a New Food to a QR Code
    - Name(s): Peter Rindal and Tudor Marcu

      Food providers will be able to go to a website where they can fill in nutritional information and an image. After entering the information they will be provided a QR code that they will be able to print onto their products.

Tracking:

5. User Wants Daily Info
    - Name(s): Emerson Hovekamp

      Users view a list of food items consumed on the current day, and a current daily total of major nutritional categories.

6. User Wants Weekly Info
    - Name(s): Kyle Cesare

      Users can view a weekly aggregation of their food intake. They will be presented with a graph of a number of nutritional statistics, with each day being a data point.

7. User Wants Monthly Information
    - Name(s): Kyle Cesare

See weekly info, but for a monthly timespan.

8. Individual Item/Meal
    - Name(s): Colin Bradford

    Users can track individual items or meals. User can view their use and consumption of an item or meal. When viewing an item or meal, the user should see a timeline of their consumption and they should be able to change the range of dates to view in the timeline.

9. Activities - Burning Calories
    - Name(s): NickPepperling

10. Compare Daily Levels w/ Goals and History
    - Name(s): Nick Pepperling

Individualization:

11. User Wants to Input Their Stats
    - Name(s): Emerson Hovekamp

    User enters weight, height, age, gender, and activity level, and then is presented with an individualized nutritional plan based off average nutritional requirements for the stats entered. This information should be stored so the user can look at it again without entering all their information a second time.

Tasks

For each user story, indicate when the story is due (if at all) and list the corresponding tasks. For each task, indicate if you think that it logically should be completed before or after another task. In addition, how long you think that it would take a pair of programmers, working together, to complete the task. (approx 2 pages)

User Stories (Organized by group member)

- Peter Rindal:

  (See Nick Pepperling: Analyze Intake Over Time)

- Nick Pepperling:

  Analyze Intake Over Time:

  The user can view various graphics such as line graphs, to display their dieting information. This can be analyzed across their daily intake, and suggested daily intake necessary for the user to meet their dietary goals.

  Necessary Tasks: 1-2 days completion time.
  - The system would need to utilize some external data structure to store the caloric intake over a time period.
  - An instance of this data structure would also be need to store the users dietary goals over time.
  - Upon request from the user the info will be retrieved from the data structure, and input into a plotting tool.
  - The user will be presented with a line graph displaying their base caloric intake (on the y axis) and time units (on x axis).
  - There would be a drop down menu for the user to select what time units to display. (i.e. hours if user selects daily, days if user selects weekly, etc...)

  Calorie Balance From Exercise:

  User can input exercise information each day. Each exercise selected is mapped to an approximate value of calories burned. The user can then view a two-way plot of calories consumed vs. calories burned.

  Necessary Tasks: 1-2 days completion time
  - The system would require a page the users could navigate to to input exercise information.
  - The input would be stored in an external data structure.
  - Upon user request the system would retrieve the current calories consumed, and calories burned.

- The input would be put in a plotting tool, and produce a two-way bar graph to show a comparison between the two.

❖ Emerson Hovekamp:

User Inputs Their Profile Information:

User enters weight, height, age, gender, and activity level, and then is presented with an individualized nutritional plan based off average nutritional requirements for the stats entered.

Necessary Tasks:

- Creation of a form into which the information is to be placed (2 hours)
- Creation of entity/table in database to store the information (1-2 hours)
- Implementation of reasonable/feasible/accurate algorithm to estimate nutritional needs from the information (1-2 hours)
- Display for viewing the personal stats and individualized nutrition plan (1-2 hours)

This user story will be implemented.

User Daily Information:

(See Nick Pepperling: Analyze Intake Over Time)

❖ Tudor Marcu:

Link QR Code:

The user (restaurant) enters information about a given food, which is then stored in a database with other foods. A unique QR code (ID Code in mean time) is then generated that is used as an identifier/primary key in the database, thus every food item will be easily matched. (10 hours)

Necessary Tasks:

- The database design should be finished first, as it controls pretty much all the info. (5 hours)
- This user story doesn't need to necessarily be completed before ALL of the others, but it should definitely be one of the first. We want restaurants/companies to be able to add their food to the database for people to find.
- The database should only take a day to complete, and the form for submitting the information could easily be paired and completed with the database to make sure everything works as expected (5 hours).

This user story will be implemented.

Food without Code or Label:

Users can take a picture of the food and enter nutritional information manually, which is then stored in a separate (custom) database for the user, rather than the centralized QR coded database. Relations can then be made between the two - or more - tables if need be; perhaps there could be some data-mining type deal where relations can be made and have the food and most accurate nutritional information added to the real public database.

Necessary Tasks:

- A database again needs to be completed first, and thoughtful relations should be designed. This should be modular, so it may take a day just for the design alone.
- The implementation should be trivial if it is designed well, and the relations would
  also follow from it. Creating a solid and efficient algorithm to match common foods
  and sort the data would take more time though, and is not necessarily required.
- Total for this would be a couple of days without the data mining. Testing could take
  another day just to be sure the custom database works well and doesn't interfere.

User Wants Weekly Info:

- Database tables must be created to store user's past statistics (5 hours)
- User login/registration system must be implemented (10 hours)
- Graphical information display must be designed and implemented (10 hours)

User Wants Monthly Info:

- Database tables must be created to store user's past statistics (5 hours)
- User login/registration system must be implemented (10 hours)
- Graphical information display must be designed and implemented (10 hours)

❖ Colin Bradford:

Meal at Home:

Users input meals made at home. Users can search for an item and use that as an ingredient or create their own if they can't find the item they're searching for.

Priority: Medium - Medium-High, should be done but after the QR code input tasks.

Necessary Tasks: (~13 hours)

- Database tables must be created that can store meals and their ingredients. (3 hours)
- A search function that returns ingredients must be implemented. (5 hours)
- A form that creates a new meal must be implemented. (3 hours)
- A form that creates a new ingredient must be implemented. (2 hours)

Individual Item/Meal:

Users can track individual items or meals. User can view their use and consumption of an item or meal. When viewing an item or meal, the user should see a timeline of their consumption and they should be able to change the range of dates to view in the timeline.

Priority: Low, not a necessary function of the site.

Necessary Tasks: (~5 hours)

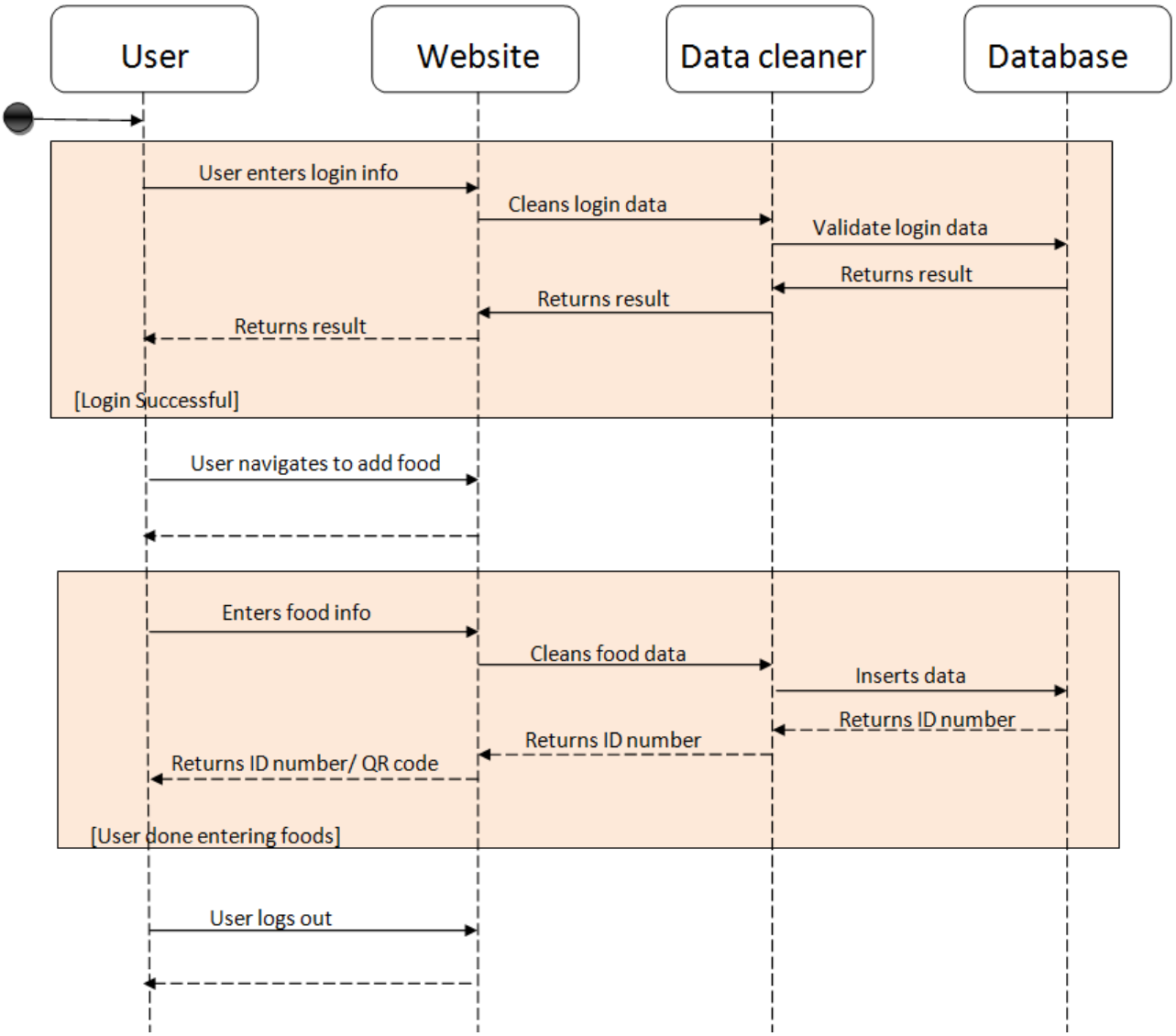
- Database tables must be created that track when a user ate a meal or ingredient. (2 hours)
- A time-line must be rendered for a given meal/item. (1 hour)
- A webpage to display the information. (2 hours)

This user story will be implemented.

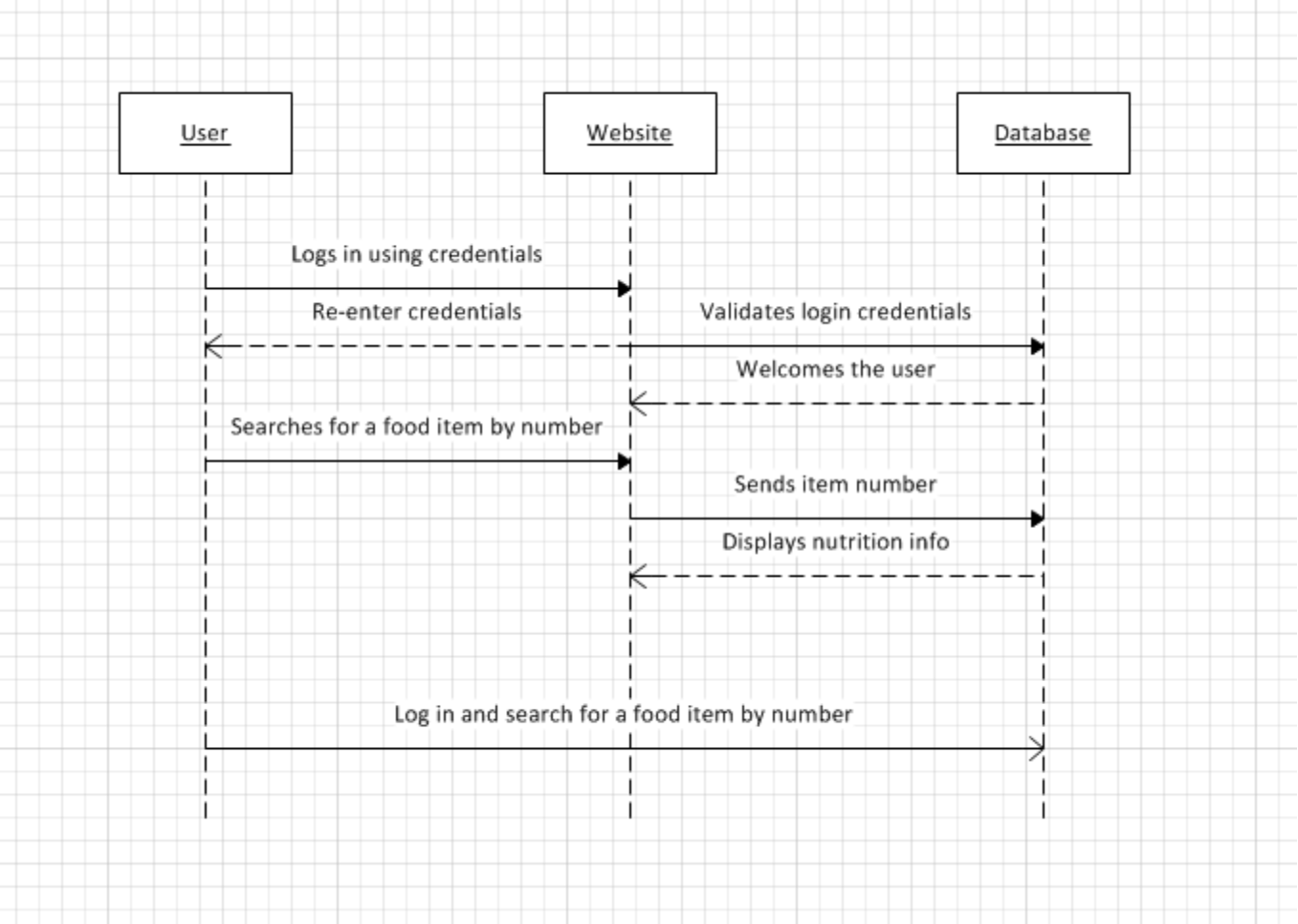
UML Sequence Diagrams

For each user story due next week, either give a UML sequence diagram showing what your implementation will look like, or describe a spike that you did in order to learn about how to implement the user story (approx 3 pages)

1. Generate Sequence of Numbers (Barcode)



2. Search by Number

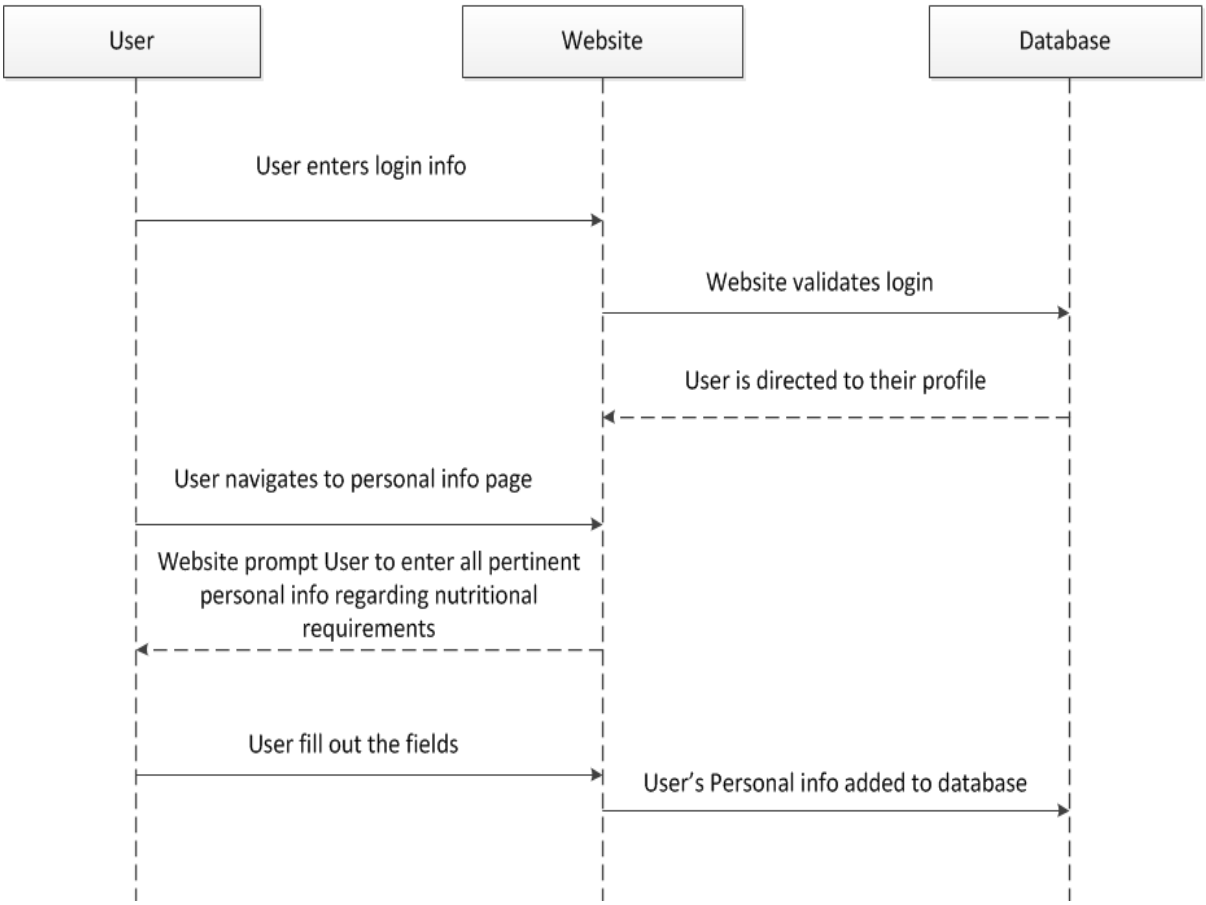


Explanation for "Search by Number" Sequence Diagram:

When we say "Search by Number", we mean that the user can search for a food item by number, and that each food item is assigned a specific number. In this sequence diagram, the user will be able to go to the website and login. The user enters their account credentials, and then the website validates the credentials and allows them access to their account (or, in the event that their username or password was incorrect, returns a "Please re-enter your credentials" message to the user). Then, the user has access to their account and the full website. They can then search for a food item by typing in a number in the search box according to the food item they are looking to find nutritional information about. The website then sends this query to the database, and the database then hands back the corresponding information. Then the website displays the page with this nutritional information about the food that the user had searched for.

3. Enter Personal Information

User Wants to Input Personal Information About Nutritional Requirements



Plan for Implementing

Outline your plan for implementing the stories due next week -- who is doing what, when? (approx 1 page)

1. Colin Bradford: Will work with Kyle to create the user profile page functionality. The user will be able to input their information and it be saved to the database (see sequence diagram #3) so that they don't have to re-enter it every time.

2. Kyle Cesare: Will be working with Colin to create the user's personal information profile functionality. Will also work with Peter and Nick on the database.

3. Emerson Hovekamp: Will be working on the Link QR Codes. Generate Sequence of Numbers (Barcode) – See sequence diagram #1

4. Taya Juenemann: I will help design and create the website, including the main page, the login/logout functionality. I can assist with implementing the user's personal account pages, as well as the food nutritional value and information pages. I will complete this whenever needed to allow enough time for subsequent tasks to be completed.

5. Tudor Marcu: I will help with designing/creating the website and interaction with the databases, as well as any other areas that need extra work.

6. Peter Rindal: In addition to designing the database with Nick I will help implement the Web interface that the user will see when logging in and submitting food/personal information. This will be done using php and another group member will be working with me on this.

7. Joshua Vilwock: Will be working on implementing the search functionality (see sequence diagram #2)

8. Nick Pepperling: I will work with Peter to set up the tables in the database(s) in order to record user's personal information and add the nutritional information of food items. If there are other tasks that spawn during the process of this task we will tackle them as they appear. If assistance is needed among the other group members to help make the website, etc... I will be available for that as well.

Final Notes

In one sentence, briefly summarize whether your customer was willing and able to meet with you twice on Tuesday, Wednesday or Thursday. Also, indicate if you think that the customer was reasonable about what will be due on Tuesday. If your customer cannot meet with you on those days, then assign one of your teammates to play the role of the customer.

Our customer, Kevin Stephenson, was willing to meet with us. We think that the customer was reasonable about his expectations for what will be due on Tuesday.

Briefly summarize the contribution of each of your team members.

- Colin Bradford – User Stories and Task sections (as labeled by name).
- Kyle Cesare – User Stories and Task sections (as labeled by name).
- Emerson Hovekamp – User Stories and Task sections (as labeled by name).
- Taya Juenemann – Completed Sequence Diagram #2, title page, most of the "Plan for Implementation" page, and compiled/formatted the final document and submitted it for the group.
- Tudor Marcu – User Stories and Task sections (as labeled by name).
- Peter Rindal – User Stories and Task sections (as labeled by name).
- Joshua Vilwock – Unknown (He was not included in group mailing list by accident, however, we never heard from him until today.)
- Nick Pepperling - User Stories and Task sections (as labeled by name).