CMSC 447

Software Requirements Specification (SRS)

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# Scope

## Identification

This project is to be a web application which when implemented will allow a user to input preferences into a questionnaire and top locations will then be outputted onto a map. When first accessing the webpage, the user will begin with the “login page.” From the login page, a user can access a “create an account page” or after authentication access their “homepage.” The homepage will allow the user to modify their account information from a “modify account page,” as well as allow the user to see the “map” and access the “questionnaire,” which are defined below.

The “questionnaire” refers to the portion of the project where the user inputs these preferences. This will be accessed from the homepage into a “questionnaire page.” The “ratings” will refer to the numerical input from a user in which they determine which statistics have a higher preference. The “statistics” refer to the set of data that our project will be accessing. The “map” refers to the portion of the project which is the visualization of data. The map is initially displayed from the homepage, but will initially be empty, and be modified as the user takes the questionnaire. After the user completes the questionnaire the map is referenced to be an “updated map” with the continuing definitions being components of the map. The map may also have markers which will be referred to as “pins.” The pins will allow the user to see an image of the location referred to as the “pin image.” In some cases where an image is not available, or if there is additional implementation, a pin may allow the user to see descriptive information on the location which will be referred to as the “pin information.”

The system should allow users to complete a survey which results in them having a list of preferred county locations. This should present a map to the user with marks for the user’s locations. Additionally, the system should maintain a login server for the different user accounts. This should additionally allow the user to maintain a user avatar and an about me text field. The avatar and text should be presented to the user from the homepage.

## System overview

The goal of this project is to create a web application which will allow a user to create an account, and from such account be able to evaluate different statistical values such that a list of locations within the United States will be outputted to the user which correlate to the user input. With the list, a map should be presented with pins that correlate to the location and can then be further expanded to output a location image or description.

A SQL database will be used for maintaining the user accounts. Along with this we expect to be using third party software for our output. This would include the use of GoogleMaps for our map output, and GooglePlaces for our image outputs, and GooglePlace for a description output. Further third-party software will be expanded in this section as seems fit throughout the project. All project development will be done through GitHub and then developer preference for development environments, debuggers, ect. The web portion of the application will be run using an Angular Framework on a localhost.

From the initial meeting with the client, there are no explicit requirements outside of those described within the document. The requirements within this document were created by the development team due to the lack of these above explicit requirements. The development team has been granted much freedom in terms of the development environment and software development procedures. As a result, much of the requirements described within this document have been left with a notice stating there were not corresponding requirements given. This was done such that there would be no disagreements between the development group and the client in terms of outside requirements. If additional requirements are added this document will be modified. Upon review and signature, the requirements are to be viewed as an agreement of the system to be developed between the development team and the client.

## Document overview

This document serves to be a list of agreements between the software developer and John Winder, the project client. This document will be a measure of success as well as accountability for both above parties. A successful project would be one that meets the below requirements. This further implies the system still has progress to be made when the requirements listed are not yet completed.

With the goal of accountability in mind, it will be proposed that any modification to this document, as well as any supplemental documents, specifically after approval from the client has been given, will receive additional approval signature. Furthermore, after client approval, the modifications to the documents will be presented in an accessible manner such that the changes can be referred to, as well as referenced, in a numbering scheme. Because of the nature of this project being within an academic course, we will allow for temporary signature in the form of emails. This should follow a format of “I approve of (document X).” or “I approve of (modification number).” Similarly, disagreements upon documentation should take the above form, so that the portion of the document that requires documentation is explicitly mentioned. In the case of disapproval, we, the developers, would desire that a brief explanation be given for the modification that is desired.

**1.3.1 Version Modification**

Version 1.0: Original Document

This will serve as a prototype for the document. At this point the document will include the title heading and descriptions given from the template SRS document. These headings are expected to be removed by the time of a final signature but are included for functionality within the software development group environment, as well as serve to demonstrate to the client the expectations the document is to serve. Since this is the original prototype document, the modifications include any sections that contains more than one paragraph, where the original paragraph serves as the template paragraph description, and the following paragraphs are the primary response.

Version 1.1: Updated System Overview, Minor Spelling

Modified the system overview to correspond with the other documentation to reflect the use of Angular framework and running the application on a local host. There were also typos in spelling within the requirements traceability table.

Version 2.0: Updated System Identification & Overview. Updated Requirements as of Meeting on 4/23. Requirements traceability completed.

The system identification and overview were updated to match the rest of the documentation. Similarly, new requirements were added as of the meeting on 4/23, so there have been additions for those topics. The requirements traceability was copied over from the STD.

Version 2.1: Minor grammar changes. Updated requirements table, and requirements traceability table to be more visually appealing and readable.

Version 2.2: Removed Skeletal Template and updated Table of Contents

Version 2.3: Edited section 1.1 and 1.2

# Referenced documents

This section will be filled as there are modifications to this document and will state such modifications as well as a draft number. This will serve as the primary location for all parties to references changes from the original documentation. Mostly referenced will be future documents dealing with the design of the system.

SDP: Software Design Plan

SDD: Software Design Description

# Requirements

## Required states and modes

The different states for this project will refer to the different pages for the web application. The pages will then have subsection which will describe what must be contained in such pages. The following are required pages for the web application:

1. The application shall contain a login page.
2. The login page shall allow a user to access the create account page.
3. The login page shall allow the user to input a username.
4. The login page shall allow the user to input a password.
5. The login page shall authenticate the username and password pair.
6. The system may have a admin login account.
7. The application shall contain a create account page.
8. The create account page shall allow the user to create a username.
9. The create account page shall check that the username is unique.
10. The create account page shall allow the user to create an account password.
11. The create account page shall allow the user to complete an “about me” text field.
12. The user shall be able to choose an avatar image.
13. The application shall contain a homepage.
14. The homepage shall contain a map of possible location outputs.
15. The homepage shall allow the user to access the modify user account page.
16. The homepage shall allow the user to access the questionnaire page.
17. If the homepage has an updated map the user shall be able to access the questionnaire page.
18. The homepage shall display the user’s avatar.
19. The application shall contain a modify user account page.
20. The modify user account page shall allow the user to change their username.
21. The modify user account page shall allow the user to change their account password.
22. The modify user account page shall allow the user to change their “about me” text field.
23. The modify user account page shall allow the user to change their avatar.
24. The application must contain a questionnaire page.
25. The questionnaire page shall display the different statistics which will determine output locations.
26. The questionnaire page shall allow the user to give a rating to statistics representing their priority.
27. Completion of the questionnaire shall allow the user to move to a homepage with an updated map.
    1. The updated map shall have pin locations of the top 10 locations.
    2. The updated map pins shall allow the user to see a pin image or pin description.
    3. If the user has already taken the questionnaire and is taking the questionnaire for an additional time, the updated map will display the new pin locations.

## CSCI capability requirements

The following will be requirements associated with the functionality of the application. This intends to demonstrate what the portions of the application serve, and thus will be referencing the pages initially defined in section 3.1.

### (CSCI capability)

* 1. The login page shall be functional as defined below:
     + 1. The login page shall allow user a user to move to the homepage if the inputted username and password correspond to a created account username and password.
       2. If a username and password do not correspond to a created account, the user shall be prompted to attempt login again.
  2. The create account shall be functional as defined below:
     + 1. A username shall be unique to previously created accounts.
       2. If an inputted username is not unique, the user shall be prompted to input a new username.
       3. The username shall not be empty.
       4. The user password shall not be empty.
       5. The user shall choose a profile avatar.
  3. The homepage shall be functional as defined below:
     + 1. The initial homepage shall have an empty map.
       2. After completion of the questionnaire the map shall contain the top 10 pin locations.
       3. The pins on the map shall display the pin image or pin description.
       4. The homepage shall display the user’s avatar image.
  4. The modify user account page shall be functional as defined below:
     + 1. The modify user account page shall not modify the username to be empty.
       2. The modify user account page shall not modify the username to be the same as a created account username.
       3. The modify user account page shall not modify the password to be empty.
       4. The modify user account page shall allow the user to choose a new avatar.
  5. The questionnaire page shall be functional as defined below:
     + 1. The questionnaire page shall display all possible statistical categories.
       2. The questionnaire page shall include at least 3 empirical statistics.
       3. The questionnaire page shall allow a user to prioritize statistics.
       4. The questionnaire page shall yield different outputs for different user inputs.
       5. Completions of the questionnaire page shall display the corresponding updated map.

## CSCI external interface requirements

There are no requirements associated with the interface.

## CSCI internal interface requirements

There are no requirements associated with the internal interfaces.

## CSCI internal data requirements

The only internal data would be that corresponding to the username and passwords kept in a database. This section will be extended or updated to include how the usernames and passwords are being kept in the database. This section will be extended if a whitelist or blacklist are used.

* 1. The application shall store usernames in a database.
  2. The application shall store passwords in a database.
  3. The application shall store the user’s avatar in a database.

## Adaptation requirements

There are no additional requirements associated with adaptation.

## Safety requirements

There are no additional requirements associated with safety.

## Security and privacy requirements

There are currently no security and privacy requirements. As stated on the meeting on 3/8/18, the security of the application is not a primary concern and shall be handled by frameworks if applicable. This section may be updated/extended dependent on the framework.

## CSCI environment requirements

There are no additional requirements associated with the CSCI environment.

## Computer resource requirements

### Computer hardware requirements

There are no additional requirements associated with computer hardware.

### Computer hardware resource utilization requirements

There are no additional requirements associated with this computer hardware resource utilization.

### Computer software requirements

There are no additional requirements associated with computer software.

### Computer communications requirements

There are no additional requirements associated with the computer communication.

## Software quality factors

There are no additional requirements associated with the software quality.

## Design and implementation constraints

There are no additional requirements associated with the design and implementation.

## Personnel-related requirements

There are no additional requirements which are personnel related.

## Training-related requirements

There are no additional requirements associated with training.

## Logistics-related requirements

There are no additional requirements associated which are logistic related.

## Other requirements

There are no additional “other” requirements.

## Packaging requirements

There are no additional requirements associated with the packaging.

## Precedence and criticality of requirements

The following are the priority level of requirements based on the meeting minutes on 3/8/18. The primary requirements are those associated with the user accounts. This would include the pages for login and account creation. Also, under the primary requirements would be those associated with the visual representation of the data. This would include those requirements relating to the map, updated map, and pins. The secondary requirements would be those relating to the questionnaire, and output of user locations.

# Qualification provisions

The following table describes the relationship between requirements. This is shown within ‘Test’ column. Additionally, any optional requirements are denoted with a \* in the ‘Pass/Fail’ column.

|  |  |  |  |
| --- | --- | --- | --- |
| Number | Requirement Summary | Test | Pass/Fail  Optional \*  Denoted with a Check or X |
| 3.1 | State Requirements | Meets 3.1.a-e |  |
| 3.1.a | Login page | Meets 3.1.a.1-4 |  |
| 3.1.a.1 | Access account creation |  |  |
| 3.1.a.2 | Username input |  |  |
| 3.1.a.3 | Password input |  |  |
| 3.1.a.4 | Authentication |  |  |
| 3.1.a.5 | Admin Account |  | \* |
| 3.1.b | CAP | Meets 3.1.b.1-5 |  |
| 3.1.b.1 | Create username |  |  |
| 3.1.b.2 | Unique username |  |  |
| 3.1.b.3 | Create Password |  |  |
| 3.1.b.4 | About me |  |  |
| 3.1.b.5 | Avatar |  |  |
| 3.1.c | Homepage | Meets 3.1.c.1-5 |  |
| 3.1.c.1 | Original Map |  |  |
| 3.1.c.2 | Access modify account page |  |  |
| 3.1.c.3 | Access questionnaire |  |  |
| 3.1.c.4 | Updated Map |  |  |
| 3.1.c.5 | Avatar Display |  |  |
| 3.1.d | Modify Account Page | Meets 3.1.d.1-4 |  |
| 3.1.d.1 | Change username |  |  |
| 3.1.d.2 | Change password |  |  |
| 3.1.d.3 | Change about me |  |  |
| 3.1.d.4 | Change Avatar |  |  |
| 3.1.e | Questionnaire | Meets 3.1.e.1-3 |  |
| 3.1.e.1 | Display Statistics |  |  |
| 3.1.e.2 | Rate statistics |  |  |
| 3.1.e.3 | Updated Map Algorithm | Meets 3.1.e.3.a-c |  |
| 3.1.e.3.a | List top 10 |  |  |
| 3.1.e.3.b | Pin Information |  |  |
| 3.1.e.3.c | Multiple Questionnaires |  |  |
| 3.2 | Capability Requirements | Meets 3.2.a-e |  |
| 3.2.a | Login Page | Meets 3.2.a.1-2 |  |
| 3.2.a.1 | Successful login |  |  |
| 3.2.a.2 | Unsuccessful login |  |  |
| 3.2.b | Create Account | Meets 3.2.b.1-5 |  |
| 3.2.b.1 | Unique username |  |  |
| 3.2.b.2 | Non-unique username |  |  |
| 3.2.b.3 | Empty Username |  |  |
| 3.2.b.4 | Empty Password |  |  |
| 3.2.b.5 | Choose Avatar |  |  |
| 3.2.c | Homepage | Meets 3.2.c.1-4 |  |
| 3.2.c.1 | Empty Map |  |  |
| 3.2.c.2 | Top 10 |  |  |
| 3.2.c.3 | Pin Info |  |  |
| 3.2.c.4 | Display Avatar |  |  |
| 3.2.d | Modify Account | Meets 3.2.d.1-3 |  |
| 3.2.d.1 | Empty Username |  |  |
| 3.2.d.2 | Unique Username |  |  |
| 3.2.d.3 | Empty Password |  |  |
| 3.2.e | Questionnaire | Meets 3.2.e.1-5 |  |
| 3.2.e.1 | Display Statistics |  |  |
| 3.2.e.2 | Empirical Statistics |  |  |
| 3.2.e.3 | Statistical Priority |  |  |
| 3.2.e.4 | Varied Output |  |  |
| 3.2.e.5 | Updated Map |  |  |
| 3.5 | Data Requirements | Meets 3.5.a-c |  |
| 3.5.a | Database usernames |  |  |
| 3.5.b | Database passwords |  |  |
| 3.5.c | Database avatar |  |  |

# Requirements traceability

The following table describes how each CSCI component will meet the requirements. The CSCI component numbers are described within the SDD which are summarized as follows. CSCI component 1, denoted as Comp1, is the login portion of the system. CSCI component 2, denoted as Comp2, is the modify account portion of the system. CSCI component 3, denoted as Comp3, is the questionnaire portion of the system. CSCI component 4, denoted as Comp4, is the homepage portion of the system.

|  |  |  |  |
| --- | --- | --- | --- |
| Number | Requirement Summary | Test | CSCI component # |
| 3.1 | State Requirements | Meets 3.1.a-e | System |
| 3.1.a | Login page | Meets 3.1.a.1-4 | Comp1 |
| 3.1.a.1 | Access account creation |  | Comp1 |
| 3.1.a.2 | Username input |  | Comp1 |
| 3.1.a.3 | Password input |  | Comp1 |
| 3.1.a.4 | Authentication |  | Comp1 |
| 3.1.a.5 | Admin\*optional |  | Comp1 |
| 3.1.b | CAP | Meets 3.1.b.1-5 | Comp2 |
| 3.1.b.1 | Create username |  | Comp1 |
| 3.1.b.2 | Unique username |  | Comp1 |
| 3.1.b.3 | Create Password |  | Comp1 |
| 3.1.b.4 | About me |  | Comp2 |
| 3.1.b.5 | Avatar |  | Comp1 |
| 3.1.c | Homepage | Meets 3.1.c.1-4 | Comps 1,4 |
| 3.1.c.1 | Original Map |  | Comp1 |
| 3.1.c.2 | Access modify account page |  | Comp1 |
| 3.1.c.3 | Access questionnaire |  | Comp1 |
| 3.1.c.4 | Updated Map |  | Comp4 |
| 3.1.c.5 | Avatar Display |  | Comp2 |
| 3.1.d | Modify Account Page | Meets 3.1.d.1-4 | Comp2 |
| 3.1.d.1 | Change username |  | Comp2 |
| 3.1.d.2 | Change password |  | Comp2 |
| 3.1.d.3 | Change ‘About Me’ |  | Comp2 |
| 3.1.d.4 | Change Avatar |  | Comp2 |
| 3.1.e | Questionnaire | Meets 3.1.e.1-3 | Comp3 |
| 3.1.e.1 | Display Statistics |  | Comp3 |
| 3.1.e.2 | Rate statistics |  | Comp3 |
| 3.1.e.3 | Updated Map Algorithm | Meets 3.1.e.3.a-c | Comp3 |
| 3.1.e.3.a | List top 10 |  | Comp4 |
| 3.1.e.3.b | Pin Information |  | Comp4 |
| 3.1.e.3.c | Multiple Questionnaires |  | Comp4 |
| 3.2 | Capability Requirements | Meets 3.2.a-e | Comp1 |
| 3.2.a | Login Page | Meets 3.2.a.1-2 | Comp1 |
| 3.2.a.1 | Successful login |  | Comp1 |
| 3.2.a.2 | Unsuccessful login |  | Comp1 |
| 3.2.b | Create Account | Meets 3.2.b.1-4 | Comp1 |
| 3.2.b.1 | Unique username |  | Comp1 |
| 3.2.b.2 | Non-unique username |  | Comp1 |
| 3.2.b.3 | Empty Username |  | Comp1 |
| 3.2.b.4 | Empty Password |  | Comp1 |
| 3.2.b.5 | Choose Avatar |  | Comp1 |
| 3.2.c | Homepage | Meets 3.2.c.1-3 | Comp4 |
| 3.2.c.1 | Empty Map |  | Comp4 |
| 3.2.c.2 | Top 10 |  | Comp4 |
| 3.2.c.3 | Pin Info |  | Comp4 |
| 3.2.d | Modify Account | Meets 3.2.d.1-3 | Comp2 |
| 3.2.d.1 | Empty Username |  | Comp2 |
| 3.2.d.2 | Unique Username |  | Comp2 |
| 3.2.d.3 | Empty Password |  | Comp2 |
| 3.2.e | Questionnaire | Meets 3.2.e.1-5 | Comp3,4 |
| 3.2.e.1 | Display Statistics |  | Comp4 |
| 3.2.e.2 | Empirical Statistics |  | Comp3 |
| 3.2.e.3 | Statistical Priority |  | Comp3 |
| 3.2.e.4 | Varied Output |  | Comp3 |
| 3.2.e.5 | Updated Map |  | Comp4 |
| 3.5 | Data Requirements | Meets 3.5.a-c | Comp1,2 |
| 3.5.a | Database usernames |  | Comp1,2 |
| 3.5.b | Database passwords |  | Comp1,2 |
| 3.5.c | Database Avatar |  | Comp1,2 |