3. Specific Requirements

This portion describes the specific requirements for the prototype version of Study Buddy which will be deployed as a web application. Each requirement is followed by a line in parenthesis that indicates who originally wrote the requirement and who edited the requirement. The format resembles the following:

(O: Last Name, M1: Last Name, M2: Last Name, … , MN: Last Name)

The O indicates the author who originally drafted the requirement and Mi indicates the ith author who modified the requirement.

3.1 Functional Requirements

3.1.1 Account Creation

3.1.1.1 The application shall allow users to create an account from the user interface.

(O: Carlson, M1: Best)

3.1.1.2 Once the application creates an account, the corresponding user shall receive an email confirmation.

(O: Carlson, M1: Myers)

3.1.1.3 The application shall notify users with an error message when invalid user credentials are submitted.

(O: Best)

3.1.1.4 The application shall allow two-factor authentication.

(O: Williams, M1: Hylton)

3.1.1.5 The application shall ask the user to complete a survey to determine their study preferences.

(O: Barsell)

3.1.1.6 The application shall allow the user to choose to not complete the study preferences survey at account creation, but at a separate time as well.

(O: Barsell)

3.1.1.7 The application shall allow the existing user to login from the login page and home page.

(O: Carlson, M1: Sharkey, M2: Barsell)

3.1.2 Account Management

3.1.2.1 The application shall allow logged in users to edit account information.

(O: Carlson)
3.1.2.2 The application shall allow logged in users to change their username.
(O: Best)

3.1.2.3 The application shall allow logged in users to change their email address.
(O: Best)

3.1.2.4 The application shall allow users to request a reset for their forgotten passwords.
(O, M1: Best)

3.1.2.5 When a password reset is requested, the user shall receive an email with instructions on
how to securely reset their password.
(O: Best)

3.1.2.6 The application shall allow users to be automatically logged in for up to 2 weeks before
requiring manual login.
(O: Williams, M1: Best, M2: Barsell, M3: Crotzer)

3.1.2.7 The application shall allow users to add buddies to the blocked buddies list.
(O: Fields, M1: Sharkey, M2: Fields)

3.1.2.8 The application shall allow users to remove buddies from the blocked buddies list.
(O: Fields)

3.1.2.9 The application shall allow users to edit their profile study preferences after completing
the initial study preferences survey.

A sample list of study preferences shall include:

- Learning Styles:
  - Auditory - preferring to hear concepts to grasp information
  - Visual - preferring to see images, read text books to grasp information.
  - Kinesthetic - preferring to learn by doing to grasp information.

- Communication Styles:
  - Passive: don't often express opinions and communicate indifferently.
  - Aggressive: expresses opinions in a demanding manner, without regard for the other person.
  - Passive-Aggressive: passive externally with aggressive internal feelings during communication.
  - Assertive: communicates with purpose but without the demanding and overbearing attitude present in Aggressive communicators.

- Study Styles:
  - Social (interpersonal) - preferring to study/learn in groups or with another person.
- Solitary (intrapersonal) - preferring to work alone or using self study.

Motivation Styles
- Intrinsic: includes things like: interest in the subject, curiosity, wanting to master the subject, self-motivation, enjoying learning.
- Extrinsic: includes things like: fear of punishment, monetary rewards, fear of failure, competition from others.

(O: Hylton, M1: Best, M2: Barsell)

3.1.2.10 The application shall provide users with the option to display or hide their personal information:

- Real name
- Profile picture
- Phone number
- Email address

(O: Sharkey, M1: Best, M2: Barsell)

3.1.3 Searching for buddies

3.1.3.1 The application shall allow a user searching for a buddy to choose a class/subject/topic at the time the search process is initialized.
(O: Barsell, M1: Best)

3.1.3.2 The application shall create an initial list of buddies who search for the same class/subject/topic.
(O: Sharkey)

3.1.3.3 The application shall remove buddies with different availability from the potential matched list.
(O: Sharkey)

3.1.3.4 The application shall remark blocked buddies whose names appear on the potential matched list.
(O: Sharkey)

3.1.3.5 The application shall calculate the similarity score between the searcher and a buddy using a cosine of an angle between 2 vectors where the vectors contain the users’ study preferences.
(O: Sharkey, M1: Myers, M2: Sharkey)
3.1.3.6 The application shall sort the list of potential matched buddies in descending order based on the similarity scores between the searcher and each buddy on the list.
(O: Sharkey, M1: Myers)

3.1.3.7 The application shall allow users to set a wait time limit for their desired end date of the search if:
   - No matches are found
   - The searcher does not decide to join existing groups
   - The searcher only matches with buddies on the blocked list
(O: Sharkey, M1: Best, M2: Sharkey)

3.1.3.8 The application shall allow users to cancel the search if:
   - No matches are found
   - The searcher does not decide to join existing groups
   - The searcher only matches with buddies on the blocked list
(O: Sharkey)

3.1.4 Forming study groups

3.1.4.1 The application shall allow the users to create a new study group by sending invitations to buddies on the matched list.
(O: Sharkey)

3.1.4.2 The application shall allow users to view contact information for matched buddies.
(O: Williams, M1: Sharkey, M2: Myers)

3.1.4.3 The application shall allow users to rate their previous study groups on a scale of 1-5.
(O: Fields, M1: Best, M2: Fields)

3.1.4.4 The application shall allow users to join existing study groups.
(O: Sharkey)

3.1.5 External APIs integration

3.1.5.1 The application shall utilize the third party API, namely Google Hangouts, for communication between users.
(O: Crotzer)
3.1.5.2 The application shall utilize the third party API, namely Slack, for communication between users.
(O: Sharkey)

3.1.5.3 The application shall integrate with Codeshare for real-time code collaboration between users.
(O: Fields, M1: Myers)

3.1.5.4 The application shall utilize third party API Google Drive for document sharing between users.
(O: Fields)

3.1.5.5 The application shall integrate with Git to share repositories between users.
(O: Fields)

3.2 Performance Requirements

3.2.1 The application shall retrieve entity objects first from entity Manager L2 cache.
(O: Crotzer)

3.2.2 The application shall be compatible with these versions of web browsers:
   ● Google Chrome Version: 72
   ● Safari Version: 12
   ● Microsoft Edge Version: 17
(O: Sharkey)

3.3 Assumptions and Constraints

N/A

3.4 Non-Functional Requirements

3.4.1 The application shall be written in Java.
(O: Sharkey)

3.4.2 The application shall utilize Java Server Faces and Primefaces for web application development.
(O: Sharkey)

3.4.3 The application shall utilize the Model–View–Controller design pattern and the facade design pattern.
(O: Sharkey)

3.4.4 The application shall employ entity classes for storing objects in the database.
3.4.5 The application shall store users’ study preferences information in vectors.  
(O: Sharkey)

3.4.6 The application shall store users’ personal information.  
(O: Williams)

3.4.7 The application shall utilize Microsoft SQL Server Management Studio as the database management system.  
(O: Sharkey)

3.4.8 The application shall only display a buddy’s username by default, rather than their real name.  
(O: Sharkey, M1: Barsell)