Lab 2 – Prototype Product Specification

Team Gold

Kayla D. Fields

CS 411W

Mr. Thomas Kennedy

7 March, 2019

Version: 2
Table of Contents

1. Introduction .................................................................................................................. 3
   1.1 Purpose .................................................................................................................... 4
   1.2 Scope ....................................................................................................................... 5
   1.3 Definitions, Acronyms and Abbreviations .............................................................. 6
   1.4 References .............................................................................................................. 8
   1.5 Overview ............................................................................................................... Error! Bookmark not defined.

2. General Description .................................................................................................... Error! Bookmark not defined.
   2.1 Prototype Architecture Description ................................................................... Error! Bookmark not defined.
   2.2 Prototype Functional Description ....................................................................... Error! Bookmark not defined.

Table of Figures

Figure 1: Current Process Flow ......................................................................................... 4
Figure 2: Proposed Process Flow ..................................................................................... 5
Figure 3: Major Functional Components Diagram ......................................................... 10

List of Tables

Table 1: Prototype Features ............................................................................................. Error! Bookmark not defined.
1. **Introduction**

   Study Buddy will be a web application developed for students who wish to be matched with like-minded students for the purpose of forming study groups. Study Buddy will apply an Intelligent Buddy Matching algorithm, discussed in Section 2.1, used to match potential study buddies.

   A study group is a small group of students who meet with the goal of reviewing coursework and preparing for exams. According to the article Benefits of Joining a Study Group, many students, especially those in college resist joining study groups even though they have proven benefits, such as improved notes, building a support system, covering more material and making topics more interesting. Study Buddy is directed toward students who tend to be too shy to reach out to other students or who may feel alienated because they are enrolled in an online class.

   Figure 1 shows the limited options for students who wish to form a study group. If they are shy or an online learning student, there are no tools to help them find or form groups, if they are not shy or enrolled in online classes, their options are limited to asking classmates or posting on a discussion board. This can lead to several attempts as there will likely be some negative responses.

   With the current process flow, students who do make a connection to form a study group may join or form a group that is not conducive to their own study habits or their own learning style. Visual, auditory, kinesthetic and reading/writing are the four most common types of learners (Erickson, 2016). Joining those with similar learning styles can allow the group to make better use of time by having more strategic study sessions.
1.1 Purpose

The purpose of Study Buddy is to provide a way for students enrolled online, or those that are shy, to find partners or join study groups for the purpose of improving the learning experience.

The proposed process flow, shown in Figure 2, shows that with Study Buddy, any student can more easily find a study group. Students who want to form a study group will access the web application, if they are a new user, they will then create a profile, complete with learning preferences. Users will then select their topic of study and the application will match them to potential study partners or groups.

According to Southern Cross University, 23% more students passed courses by having a “study buddy support (SBS).” Study Buddy will be an effective and invaluable tool for students who want the benefits of study groups such as improved grades, increased motivation and focus, as well as a more comfortable setting to learn, as described but Southern Cross University.
1.2 Scope

Numerous external application programming interfaces will be used to allow for a central study application. Google Hangouts will permit users to meet online when in-person meetings are not feasible. Google Drive will allow for file sharing and joint project collaboration. Other applications that will assist in file and data sharing for various topics include: Codeshare for real-time programming and coding assignments and Jupyter Notebook for sharing mathematical equations and visual data. Slack, a real-time messaging application will be embedded to the web application to allow users to chat via web or smartphone and receive notifications and alerts for conversations, this permits users to ensure they do not miss opportunities to set up new meeting times and locations. Git is another feature, Study Buddy users will be able to create repositories using Project name, owner and members.
1.3 Definitions, Acronyms and Abbreviations

Auditory Learner - best comprehend information by listening to information rather than reading it or seeing it visually.

Business Logic - The programming that manages communication between an end user interface and a database.

CRUD - Stands for Create, Read, Update, and Delete. Basic database/application operations.

Entity Class - A simple Java Class with member variables and getter and setter methods defined.

JPA - Java Persistence Application Programming Interface is an API for handling all database operations such as storing or retrieve entities from the database.

JSF - Java server faces is a java framework that couples the view and servlet into one managed component.

Kinesthetic Learner - best comprehend information by participating in activities or solving problems in a hands-on manner.

ORM - Object-relational mapping. Technique for persisting objects into a database table. Tables are modeled after Entity classes.

Procrastination - delaying or postponing a task, which needs to be completed, often to the detriment of the procrastinator.

Prototype - the prototype of Study Buddy will be a reduced scale version of the final product, and will demonstrate the functionality of the completed product in a simulated environment.

Reading/Writing Learner - best comprehend information by reading texts to further absorb information by condensing and rephrasing it in traditional lecture and note-taking environments.

Study Group - a small group of students with similar goals who meet regularly to review course material and prepare for exams.
**Visual Learner** - best comprehend information by visualizing relationships and ideas through maps, charts, diagrams and even essays.

**Web Application** - an application that uses a website as the interface
1.4 References

Benefits of Joining Study Group, Retrieved October 1, 2018, from:
https://www.educationcorner.com/studying-groups.html

Codeshare information, Retrieved September 12, 2018, from: https://codeshare.io/


Fields, Kayla. “Lab 1 – Studdy Buddy Description.” Old Dominion University. 7 March 2019.

Find-A-Friend, Retrieved September 16, 2018, from:
https://www.blackboard.odu.edu/webapps/discussionboard/do/message?action=list_messages&course_id=_323209_1&nav=discussion_board_entry&conf_id=_351171_1&forum_id=_309142_1&message_id=_7355155_1

Forgetting All Your Coursework, Retrieved September 16, 2018, from:
https://www.blackboard.odu.edu/webapps/discussionboard/do/message?action=list_messages&course_id=_323209_1&nav=discussion_board_entry&conf_id=_351171_1&forum_id=_309142_1&message_id=_7348213_1

ODU Find a study group, Retrieved January 29, 2019, from:
https://padlet.com/sscinstruction/odufindastudygroup

Schoenherr, N. (2016, January 13). Discovering why study groups are more effective | The Source | Washington University in St. Louis. Retrieved October 2, 2018, from
https://source.wustl.edu/2006/07/discovering-why-study-groups-are-more-effective/
Slack Information, Retrieved September 12, 2018, from: https://slack.com/

Google Meet information, Retrieved September 12, 2018, from:
https://support.google.com/a/answer/7303775?hl=en


1.5 Overview

The Study Buddy prototype will consist of three major elements: the web application, which is the user interface, accessible by any internet capable device; the server infrastructure, which will collect and process data; and a database of user accounts which will be comprised of the user’s personal information, availability, study preferences and blocked list. The exchanges are shown in Figure 4.

2. General Description

The Study Buddy prototype will perform the algorithms required to match users with other buddies. The prototype will be limited to a web application, with only a select few accessing it for testing purposes. The prototype will permit identification of design and implementation weaknesses as well as verify algorithms.

2.1 Prototype Architecture Description

The prototype architecture will include a virtual server, a database and a set of internet accessible devices, shown in Figure 4. The configuration of the database will be that of the final product and shall include tuples of simulated user data.

Figure 4: Major Functional Components Diagram
Functional components will be identical to those of the final product. Only a small sampling of devices will be used for the prototype development.

A virtual machine will be utilized for the prototype server infrastructure. The database, web server and the server software will be run from the virtual server. For testing purposes all application features will be implemented and the virtual server will allow any performance tests to take place.

2.2 Prototype Functional Description

Features of the prototype will be more limited than those of the finished product due to the limited development time and need to acquire necessary permission or registrations. Other features will be unavailable due to the small scope of the prototype. A full list of available features for both the prototype and the final product can be found in Table 1.
<table>
<thead>
<tr>
<th>Features</th>
<th>Study Buddy Final Product</th>
<th>Study Buddy Prototype</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GUI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Login</td>
<td>Allows user entry of authentication credentials</td>
<td>Will be implemented</td>
</tr>
<tr>
<td>New User</td>
<td>Allows a user to create an account</td>
<td>Will be implemented</td>
</tr>
<tr>
<td>Study Preference Setting</td>
<td>Allows users to set study preferences for intelligent buddy matching algorithm</td>
<td>Will be implemented with limited study preference fields</td>
</tr>
<tr>
<td>Search for buddies</td>
<td>Allows user to search for study buddies</td>
<td>Will be implemented</td>
</tr>
<tr>
<td>Create a study group</td>
<td>Allows user to create a study group</td>
<td>Will be implemented</td>
</tr>
<tr>
<td>Set wait time</td>
<td>Allows user to set wait time in case of no matched buddies found</td>
<td>Will not be implemented</td>
</tr>
<tr>
<td><strong>Features</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web Application</td>
<td>The way in which the user will interact with the Study Buddy application using a web browser</td>
<td>Will be implemented</td>
</tr>
<tr>
<td>Mobile Application</td>
<td>The way in which the user will interact with the Study Buddy application using their smartphone device</td>
<td>Will not be implemented</td>
</tr>
<tr>
<td>Private Message</td>
<td>Allows users to send and receive private messages within the Study Buddy App</td>
<td>Will not be implemented</td>
</tr>
<tr>
<td>Block buddies</td>
<td>Allows users to block buddies with different goals</td>
<td>Will not be implemented</td>
</tr>
<tr>
<td>Partner match by subject of interest</td>
<td>Matching Study Buddies by their own subject interest</td>
<td>Will be implemented</td>
</tr>
<tr>
<td>Intelligent Buddy Matching</td>
<td>Matching Study Buddies with the proprietary algorithm</td>
<td>Will be implemented</td>
</tr>
<tr>
<td>Google Hangout Integration</td>
<td>Allows users to integrate their Google Hangouts accounts for setting meeting times and web conferencing</td>
<td>Will be implemented</td>
</tr>
<tr>
<td>Slack Integration</td>
<td>Allows users to integrate their Slack accounts, allowing channels to be made to aid in communication between Study Buddies</td>
<td>Will not be implemented</td>
</tr>
<tr>
<td>Codeshare integration</td>
<td>Allows users to share their code real time with their Study Buddies</td>
<td>Will not be implemented</td>
</tr>
<tr>
<td>Schedule syncing with “Buddy”</td>
<td>Allows users to make matches with Study Buddies based on the availability they input</td>
<td>Will not be implemented</td>
</tr>
<tr>
<td>Rate your buddy</td>
<td>Allows users to provide feedback on their Study Buddies</td>
<td>Will not be implemented</td>
</tr>
</tbody>
</table>

Table 1: Prototype Features