StudyLock

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Sean Bostic — 4/18/2016
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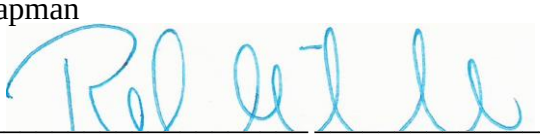

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Abstract

Students are often distracted by their mobile phones when they should be studying. It seems like the mobile phone which is a great piece of technology has somehow morphed into the biggest distraction from anything that requires focus. Texting or social media on a mobile phone requires active engagement and has strong potential for interfering with studying[1]. Using a custom lock screen that forces students to answer study guide questions, Sean Bostic and Jacob Chapman have aimed to manipulate the distraction of a mobile phone into a student's number one study aid called StudyLock. Students will no longer waste their study time because they were on the phone. Instead, that distraction is defused by StudyLock, which allows the users to make attempting study guide related questions as the only way to unlock their mobile phone. StudyLock aims to improve study time and keep students on track.

Problem Need

A college student is often required to know enough about certain subject matter to be able to pass an exam. Nursing students in particular are tasked with passing very large exams that cover a wide range of information. Therefore, a student's study time is crucial to their success. However, studying is often interrupted by small distractions, in particular the mobile phone. The mobile phone is a very useful device but can be the biggest distraction to a student when they need to focus. A simple text or tweet notification can sidetrack a student from the material they need to learn or review. StudyLock aims to protect the student's study time by manipulating the distraction of the phone into a study aid.

Proposed Solution

This project has created a mobile application on both Android and iOS devices which launches a custom lock screen on a mobile phone when it is unlocked. The lock screen is composed of relevant study questions that the user will have to attempt in order to unlock their mobile phone. The user has a number of options which include setting the number of questions that need to be attempted all the way to what time of day they want the lock screen to be enabled. The content that makes up the questions can be manually entered by the user, imported and parsed, or page scraped off the Internet. The lock screen's ultimate goal is to turn the distraction of a user's phone into an important study aid that will help the user remained focused. This goal has been reached by forcing users to attempt questions about relevant study material when they are about to be distracted by their phone. By enabling StudyLock, the user is forced to stay focused instead of giving into the distraction of a simple text, tweet, or email.

User Profile

The users for this project are primarily nursing students because they seem to have the most frequent exams with the largest amount of information. However, even though this is designed for nursing students, it will also be probable for the everyday student to use.

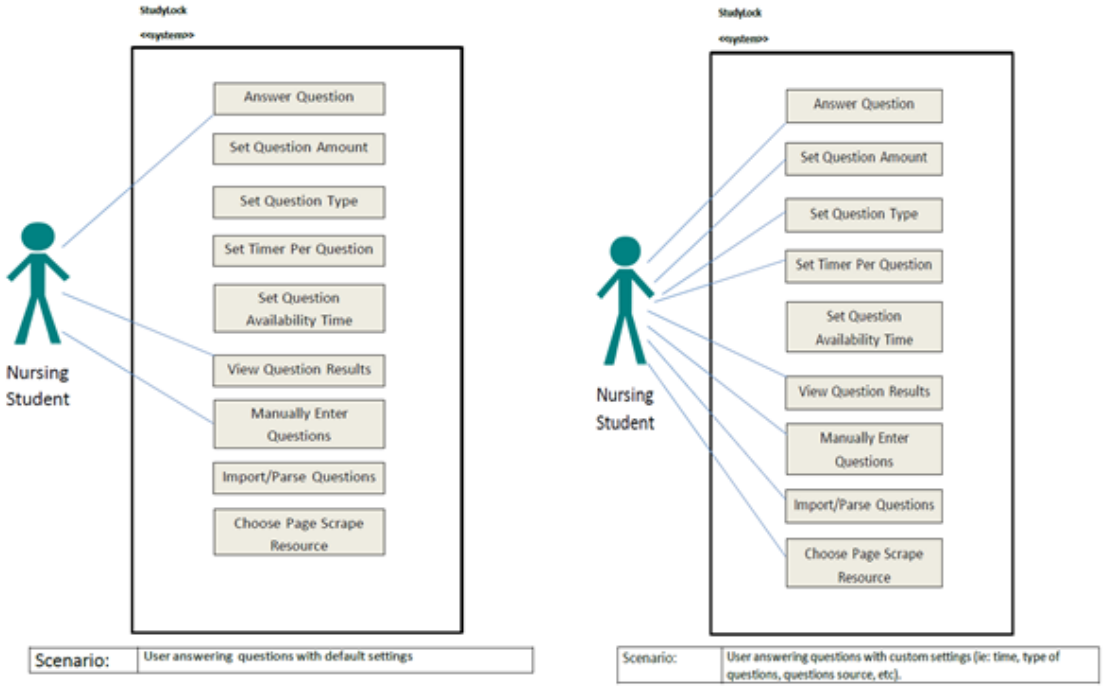

Figure 1: User Case Diagram

Technologies

The application is being built with the Meteor platform using pure JavaScript. This open-source framework allows for cross-platform code which has been ideal for this project (Android and iOS)[3]. The code is mostly being written using the open source text/source code editor called WebStorm and using physical Android and iOS devices as the test benches for the deployed code.

Potential Solution Restrictions

StudyLock still enables the basic functionality of a phone like other lock screens do such as making an emergency call or receiving a call. The project will not eliminate this basic functionality of the phone. Since this project has been meant for both Android and iOS devices, the development effort was focused on making two working versions for both types of devices. iOS development was much more difficult in dealing with custom lock screens and has slightly different functionality than the Android version.

Objectives/Deliverables

The first objective was to create the skeleton (visual, no functionality version) of the user interface which included the lock screen and the settings menu. The next objective was to build the functionality of the UI for the lock screen and some features of the settings menu (number of questions to be attempted and timer). These two objectives were aimed to be completed by the end of Fall semester. The next objective was to have the content of the questions to be imported and parsed rather than entered manually. The next objective was to have the rest of the settings menu completed (types of questions to be asked, saving results of answers, and randomizing questions). The last feature was to have the content for the questions to be page scraped off the Internet.

Proposed Budget

In order to release StudyLock to the Apple App Store a basic Apple Developer Program fee costing $100.00 was financed[2]. Additionally there was a subscription fee to our

backend database hosted by Compose.io. The cost of the Compose.io hosting came out to $18.00/month[4]. We intended on hosting for a year so the total cost of all purchased items came out to $316.00. Aside from the Apple Developer Program and Compose.io fees, the application was built using free programs such as WebStorm and free open source resources such as Meteor.js[3]. Below Figure 2 showcases our budget for this project. Figure 3 and Figure 4 define our scope and timeline with a project timeline and a Gantt chart.

Purchased Items		**Predicted Cost**	**Total Cost**
Apple Developer Program		$100.00	$100.00
Compose Subscription	$18.00/month	$216.00	
		$316.00	

Figure 2: Budget Analysis

Timeline

Task Name	Start Date	End Date	Duration (days)
Sprint 1	10/16/15	10/30/15	14
Determine features to accomplish with first sprint	10/16/15	10/20/15	4
Create home, quiz, notes, and settings pages	10/21/15	10/27/15	6
Apply styling to home and notes page	10/27/15	10/30/15	3
Fill pages with fake data	10/30/15	10/31/15	1
Sprint 2	10/30/15	11/6/15	7
Fix styling issues	10/31/15	11/6/15	6
Establish remote data source	11/1/15	11/3/15	2
Populate quiz page with data source	11/3/15	11/5/15	2
Settings Page UI	10/30/15	11/6/15	7
Quiz Page UI	10/30/15	11/6/15	7
Functionality of Quiz Page	11/5/15	11/6/15	1
Upload file to Notes Page	11/4/15	11/6/15	2
Sprint 3	11/6/15	11/15/15	9
Quiz lock screen page	11/6/15	11/8/15	2
Choosing number of questions feature	11/6/15	11/8/15	2
Choosing type of question feature	11/8/15	11/13/15	5
Clean up any issues that prevent MVP	11/10/15	11/15/15	5
Create manual entry questions page	11/10/15	11/15/15	5
Sprint 4	1/15/16	1/31/16	16
Create question timer feature	1/15/16	1/20/16	5
Create import/parser feature	1/15/16	1/31/16	16
Release to testing group	1/30/16	1/31/16	1
Sprint 5	2/1/16	2/15/16	14
Create page scraping resource feature	2/1/16	2/15/16	14
Record user's results to questions	2/8/16	2/15/16	7
Testing Report	2/8/16	2/15/16	7
Sprint 6	2/15/16	2/29/16	14
Get feedback from testing group	2/15/16	2/29/16	14
Fix bugs found and concerns with testing	2/15/16	2/29/16	14
Revised Abstract	2/15/16	2/16/16	1
Sprint 7	3/1/16	3/14/16	13
Release for user testing	3/1/16	3/8/16	7
Tech Expo Poster	3/1/16	3/7/16	6
Final Report	3/1/16	3/7/16	6
Fix bugs found	3/8/16	3/14/16	6
Sprint 8	3/14/16	3/31/16	17
Final Bug Fixes	3/14/16	3/31/16	17
Prepare for presentations	3/21/16	3/31/16	10
Submit Final Report	3/14/16	3/31/16	17
Present at IT Expo	4/11/16	4/12/16	1

Figure 3: Timeline Review

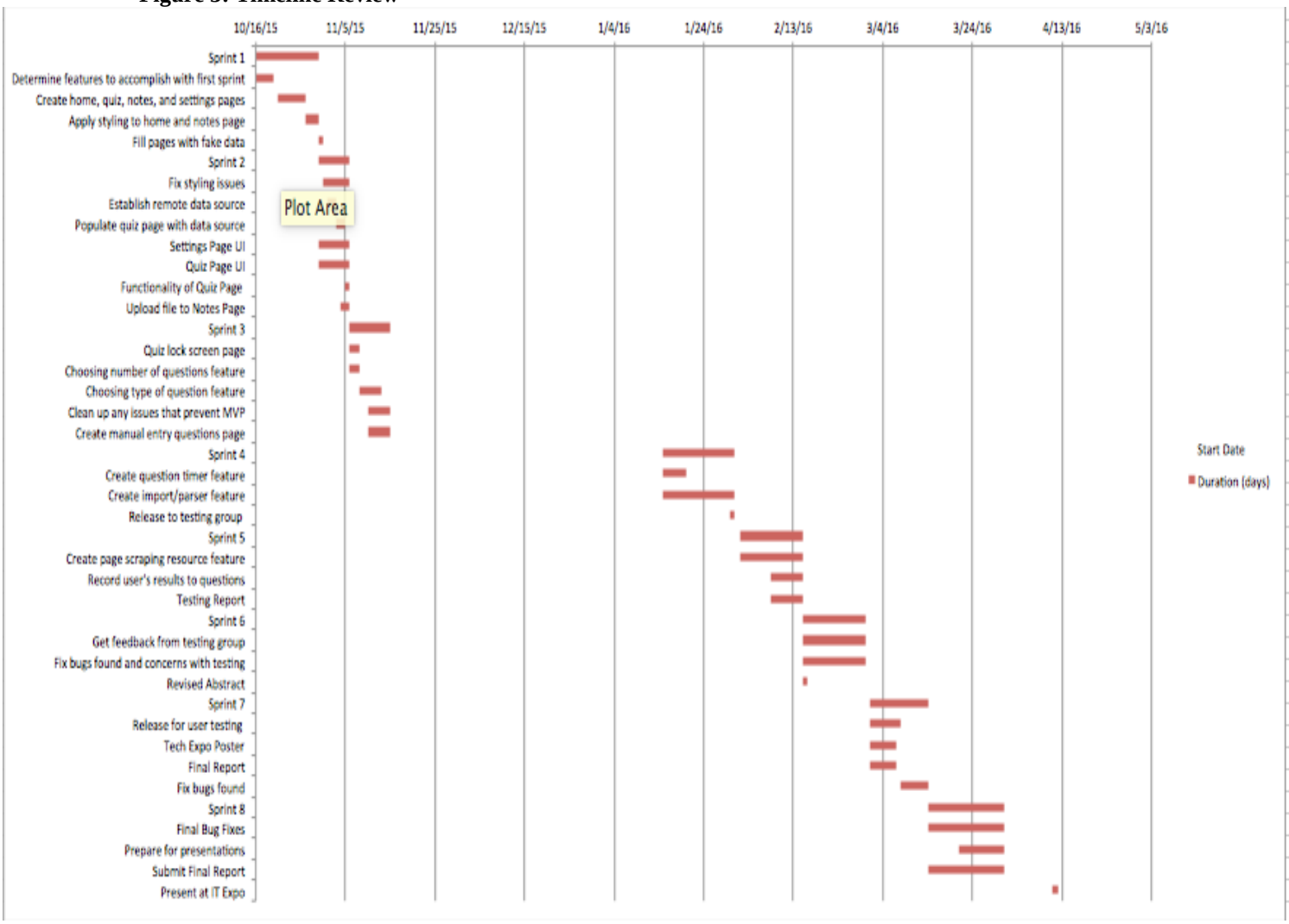

Figure 4: Gantt Chart

Project Testing

Testing Scope

The testing scope of the application StudyLock was on multiple platforms that included Android devices, iOS devices, and a web application.

Objective

The overall objective of testing StudyLock was to ensure that it was functioning properly. Furthermore, the testing aspect of this project revealed efficiency issues, edge cases, and defects with the code base. Both the development team and a small user group of nursing students who used StudyLock to improve their study habits did testing. Testing improved the experience of StudyLock and played a crucial role in its overall success.

Reporting

Any feedback from the user group of nursing students or developers was recorded and logged into a bug-tracking tool on Asana.com. Those bugs were triaged and assigned a severity level that determined how quickly that bug was fixed.

Testing Procedures

For developer and QA testing the following were performed to test StudyLock:

- Critical features list that defines the most basic functionality
- Test case creation to cover the functionality defined from the critical features list
- Documentation of step-by-step usage to test each test case
- Reporting of bugs to Asana with reproduction steps

The user testing group of nursing students followed the below steps:

- Manual documentation of the problem(s) that was encountered
- Reproduction steps of problem(s) encountered

- Weekly meeting with development team to discuss past week of testing
- Training on new functionality and how to use it when it is available

Testing Schedule

Phase	Start Date	End Date
UI basic appearance testing	11/1/2015	11/16/2015
Quality Assurance Check	11/1/2015	11/16/2015
User Testing Phase 1	1/11/2015	1/30/2015
User Testing Feedback 1	1/30/2016	2/1/2016
User Testing Phase 2	2/1/2016	2/28/2016
User Testing Feedback 2	2/28/2016	3/1/2016
User Testing Phase 3	3/1/2016	3/20/2016
User Testing Feedback 3	3/20/2016	3/21/2016

Figure 5: User Testing Schedule

Testing Meetings

The development team met in person with the user testing group to record results from testing phases, showcase new functionality, and to discuss StudyLock further. These meetings occurred one time a week and were audio recorded for quicker feedback exchange.

Testing Variables

The following events altered the testing cycle:

- Delays in bug fixes
- Hardware failure
- Broken deployment builds

Project Scope Change

Based on our user testing and the feedback provided by the nursing students a change was made to our scope. The custom lock screen turned into a locked quiz screen that would be enabled by push notifications during a set schedule. Ultimately this was what the nursing students felt like they valued the most and were able to still utilize manipulation of the distraction of their phone; which was the cornerstone of this project.

Conclusion

This project delivered a mobile application to both Android and iOS that enforces a person to stay focused when trying to study. The application created a custom quiz screen that appears on the clicking of a scheduled persistent push notification system which projects questions that need to be attempted in order to use the phone. The current user group is nursing students because of their wide range of exams and content but the application can be useful for any students wanting to eliminate the distraction of their phone during their crucial “study time”.

References

1 David, P. (2015-11-01). Mobile phone distraction while studying. *New media & society*, 17(10), 1661-1679.doi:10.1177/1461444814531692

2 "From Code to Customer." *Apple Developer Program*. N.p., n.d. Web. 04 Dec. 2015. <https://developer.apple.com/programs/>.

3 "Meteor." *Meteor Blog RSS*. N.p., n.d. Web. 04 Dec. 2015. <https://www.meteor.com/>.

4 "Hello World!" *About Us*. N.p., n.d. Web. 04 Dec. 2015. <https://compose.io/about-us/>.

Appendix

Expert Name	Profession	Contact Information
Michael Richardson	Full Stack Developer	probackpacker@gmail.com 513-608-4600
Michael Riley	Senior Quality Analyst	Mic.Riley@caresource.com 937-305-0421

Figure 6: Project Expert Resources

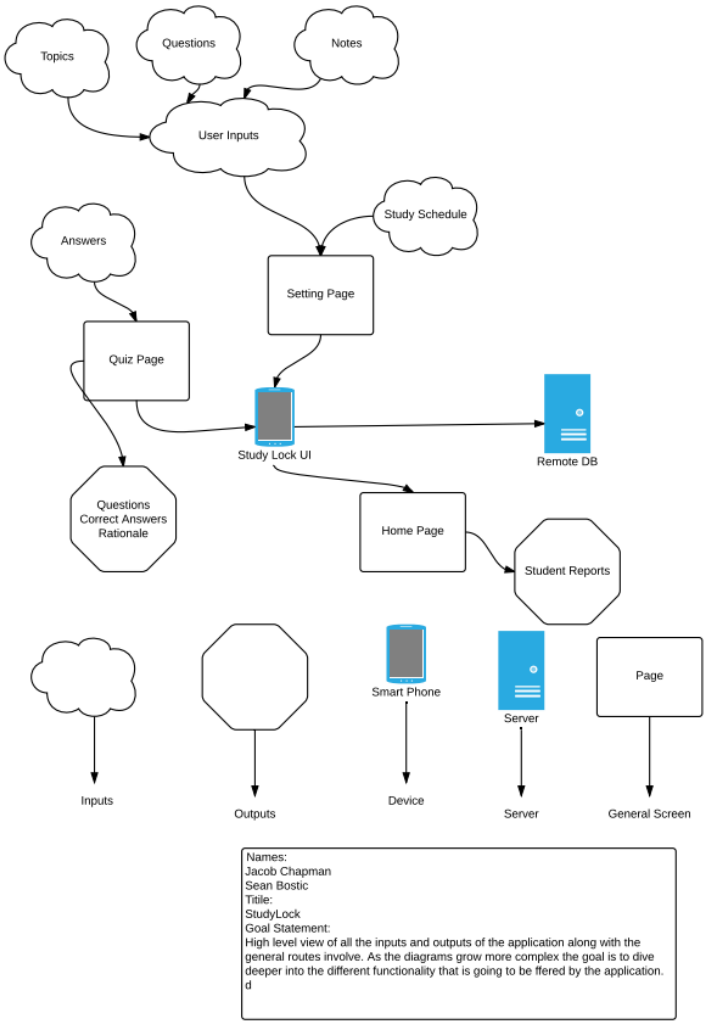

Figure 7: Technical Diagram