SiQuoia

(Simple Intelligence Quotient Increasing Application)

Software Requirements Specifications

Version 2

29 September 2013

Team SQ03

CMPE 131-03/CS 160-02
Computer Engineering/Computer Science
Software Engineering
San Jose State University

Revision History

Date	Description	Author	Comment
9/11/13	Version 1	SQ03	High Level SRS
9/29/13	Version 2	SQ03	Detailed SRS

Document Approval

Signature	Printed Name	Title	Date

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1. Introduction

1.1 Purpose

In response to the Request For Proposal (RFP) put forth by SiQuoia, Inc., SQ03 is proposing to deliver a solution which will meet all of SiQuoia, Inc.'s requirements, and will run on the Android 4.0+ platform of mobile devices. This SRS is written for the stakeholders of the SiQuoia project.

1.2 Scope

1.2.1 Software to be produced

SiQuoia, an application developed for the Android operating system for running and managing quizzes and will be delivered to SiQuoia Inc.

1.2.2 Software Characteristics

SiQuoia will provide end-users an interface to create their own personal user account, participate in quizzes, submit new questions for quizzes, and exchange a form of currency for quiz packets within the game.

1.2.3 Benefits

Developing SiQuoia on the Android platform will provide the benefits of the fast-growing market share of Android mobile devices.

1.3 References

IEEE Recommended Practice for Software Requirements Specifications
(IEEE Std 830-1998) 25 June, 1998

SiQuoia Inc. Request For Proposal, RFP No. 20130822

Android 4.0 Compatibility Definition, Revision 4
Last updated: April 21, 2013

1.4 Overview

The remainder of this document will provide an overall vision of SiQuoia by describing the various interfaces, characteristics, functions, and requirements.

2. Overall description

2.1 Product perspective

2.1.1 System interfaces

There are no special features needed in SiQuoia that are not intrinsic to the Android development platform.

2.1.2 User interfaces

The user will be shown initially a login screen where he must put in his credentials or create a new user account. After he logins he will be presented with a series of menus from which he can select topics and/or subtopics to start the quiz game. Mock-up images have been included in the appendices.

On startup, the user will be presented a login screen, where he can login with his credentials. After logging in the user will be presented a list of questions for his current quiz. After selecting a question, the user will be presented with the question text and four possible answers. Questions answered correctly will be in green while incorrect answered questions will be shown in red. Unanswered questions will be colored white and the user will be able to select the next unanswered question to continue his progress.

2.1.3 Hardware interfaces

SiQuoia will not support any device.

2.1.4 Software interfaces

The system requires a database to store all of it's users information. The android application will use MySql query language to communicate with the Oracle database. The database will run on an Apache server that will be published so that users can store their information onto our database from various android devices.

Database Specifications

- Name - Oracle
- Mnemonic - MySql
- Specification Number - 12C

Server Specifications

- Server - Apache HTTP
- Server Software Version Number - 2.4
- Source - Oracle

2.1.5 Communications interfaces

SiQuoia will use the HTTP protocol and HTTP Request to communicate with the database/server to obtain or update user information. The host will have an IP address to enable communication between Android to the

Apache server hosting the database.

2.1.6 Memory constraints

The app shall not take up more memory than what is required, so as to allow Android devices with limited onboard memory to use SiQuoia normally. SiQuoia shall take no more than 60 MB of RAM memory on any Android device and shalll not use more than 30MB of a device's hard drive space for application data.

2.1.7 Operations

The user will initially log into the app with their credentials. To play a game the user will select a quiz and then proceed to answer questions. When the app is unattended, it will save the current position the user is at and pick up at that spot up when used again.

After each session, the app will update the database with user's current status.

2.2 Product functions

The SiQuoia project should provide the following functionality as a final product:

- Users will be presented with a list of questions showing the ones they have and have not answered
- Allow the users to take quizzes on topics of their choosing and automatically populates the quizzes
- Allows users to submit questions
- Will have a leaderboard to rank user's performance for quizzes
- Will allow users the ability to redeem unique codes for organization-specific quiz packets.

2.3 User characteristics

The target audience for SiQuoia is very broad as it includes anyone who owns an Android device running ICS or higher. SiQuoia is intended to cater to a wide variety of knowledge bases by continually expanding the quiz database by accepting various types of user-submitted questions. A typical user's level of education, area of expertise, and technical expertise may vary greatly.

2.4 Constraints

To keep the application up to date with the newest Android tools and features, the Android version is considered a constraint. We chose ICS (Android 4.0) as the minimum to take leverage of most of the newest features, at the cost of losing users running any Android version before ICS.

2.5 Assumptions and dependencies

The multi-user saved data feature of SiQuoia is dependent on the creation of a database system to store all users information. The database will be running 90% of time for users to access their account and quiz information and progress.

3. Specific requirements

3.1 External interfaces

All user input to SiQuoia is done through the touchscreen interface on the Android device itself.

The information that will be sent to the main SiQuoia server during normal functions will consist of:

- Username / Session ID
- Password
- Current state information regarding quizzes in progress for that particular user

3.2 Functions

Standard Mode:

Register as a new user:

- Precondition: SiQuoia is installed on device and has been initialized
- User input/ Path:
    1. After SiQuoia has been initialized, it shall allow a user to register themselves as a new user. This initial menu will have the button “Register” for users to self-register
    2. Three text boxes shall appear prompting the user to:
        a. Choose a username
        b. Choose a password
        c. Re-enter the password
    3. If the username has not already been claimed, and the passwords match, a new user shall be created on the database on the SiQuoia server, and the user shall be prompted with a success message

User Login:

- Precondition: SiQuoia is installed on device and has been initialized, and a user account has already been created.
- User input/ Path:
    1. Two text boxes, “Username” and “Password”, shall appear on the login page to allow the user to enter their username and password respectively
    2. If the login is successful, the user shall be authenticated and shall be shown the main menu
    3. If the login is unsuccessful, a prompt shall inform the user that either their username or password has been entered incorrectly and the system shall allow the user to re-enter their username and password again

Start a new game:

- Precondition: A user has already successfully logged in to their account.
- User input/ Path:
    1. After successfully logging in, the user shall be able to select “Start a new game”

from the main menu
2. A selection of high-level subject shall be displayed for the user to select
3. After selecting a high-level subject, a series of sub categories shall be displayed for the user to select
4. Once a sub-category has been selected, a list of specific quiz “packets” shall be displayed. The specific quiz “packet” shall be the final selection made by the user before the quiz begins

Participating in a quiz:

- Precondition: A new quiz has been initialized, or a previous quiz is being continued
- User input/ Path:
    1. A question shall be displayed to the user and the progress of the session shall be saved via uploading to the SiQuoia server
    2. A user shall be able to select one of four choices to answer the corresponding question
    3. The user hits the “Submit answer” button
    4. A message indicating either a correct, or incorrect answer shall be displayed to the user, in addition to prompting the user to tap to continue
    5. On the next user input, the next question shall be displayed and then repeat the procedure from Step 1
    6. Once the last question of the packet has been answered, a summary shall be displayed presenting how many total questions answered correctly

Continue from last save:

- Precondition: A user has already successfully logged in to their account, and a quiz has been initialized during a previous play.
- User input/ Path:
    1. The system shall allow a user to resume where the user left off
    2. The system shall display the same question that the user was on during their previous session

Submit new question:

- Precondition: A user is logged in.
- User input/ Path:
    1. The user will click on the menu button and select “Submit a question”.
    2. Field to enter to topic, the question title, the four choices text and correct answer.
    3. The question shall be uploaded to SiQuoia for review.

Exit game:

- Precondition: None
- User input/ path:
    1. The app shall allow the user to quit the game no matter where they currently are.
    2. The app shall not crash when the user quits the game.
    3. The app will periodically save the state so that the user can resume where they left off from.

Refer a friend:

- Precondition: A user is logged in.
- User input/ path:
    1. The app shall allow the user to refer SiQuoia to a friend via Email, SMS, Twitter or Facebook via the “refer a friend” button from the main menu.
    2. The user enters a valid email address into the corresponding field and submits.
    3. An email is sent to the email address entered by the user that contains a unique link that contains a reference number to the referring friend.
    4. If the application is installed on the referee's device via that unique link, the referer will acquire credit towards in game rewards.

Redeeming quiz-code:

- Precondition: A user is logged in.
- User input/ path:
    1. The user selects “Redeem Code” from the main menu.
    2. The user enters the code they received in the corresponding text field and hits “Submit”
    3. The quiz packet is added to the users available list of quiz packets.

Learning Mode:

- When users login to SiQuoia, they will be given an option to select “Learning mode” or “Standard Mode.” When users are in “Learning Mode” they will be able to answers questions, but will not have their scores affected.

3.3 Performance requirements

Static Requirements

- Supports a wide variety of topics each containing subtopics
- Device shall parse 100 questions quiz packets in under 3 seconds

Dynamic requirements

- 90% of requests for downloading quizzes shall take no more than 4 minutes under a heavy load
- 95% of requests for downloading quizzes shall take no more than 2 minutes under a light load
- Submitting a quiz question shall take less than 30 seconds under a light load
- Shall take less than 30 seconds to authenticate a user.

3.4 Logical database requirements

SiQuoia shall contain a single database with multiple tables with user and question information.

The “User” table will store all user information including usernames, passwords and other user specific information such as the question that they are currently on and other information that the user inputted when signing up as a new user.

The “Question” table will store all the data that SiQuoia will use for the quiz game, such as all the data for both questions and answers in the different quiz packets of the game. This includes user submitted questions.

3.5 Design constraints

The graphical user interface shall be limited to the screen size of the Android device that SiQuoia is running on. Design may need to be optimized for various android sizes. Also, GUI design is limited up to Android Version ICS (4.0).

3.5.1 Standards compliance

There are no standards or regulations that need to be specified for SiQuoia at this time.

3.6 Software system attributes

3.6.1 Reliability

The application will not crash 95% of the time it is running.

3.6.2 Availability

User progress shall be saved periodically to enable users to resume their progress. SiQuoia's server shall be operational 95% of the time during Fall 2013 semester, with periodic downtimes for upgrades and maintenance, to allow users to log in, save progress, submit new questions and download new ones.

3.6.3 Security

The SiQuoia Android app will allow user logins to prevent unauthorized access, protect users' privacy and maintain security.

Passwords will also be salted to prevent malicious attempts to extract passwords from the database.

3.6.4 Maintainability

Since Android is an evolving and progressive operating system, there is small maintenance needed for forward compatibility. In addition, the server shall contain a host that expands with the user base and as such the host can migrate to a more powerful server should the need arise.

3.6.5 Portability

SiQuoia will be developed with compatibility of all Android 4.0+ mobile devices in mind. This will allow almost any Android device of the current and future generations to use SiQuoia. This will be the limit of portability for SiQuoia.

3.7 Branding

SiQuoia will support branded packets with the sponsor's logos that can be downloadable by typing in a

special code.

3.8 Additional comments

SiQuoia can have restrictions between users like student and instructor. The Instructor can create the quiz and the student will have no access to edit the Quiz.

In addition, SiQuoia will have a “Learning” mode where the user will be able to answer questions, but not have their scored affected when in this mode. Users will have the opportunity to take a practice quiz to allow them to prepare for the real quiz.

Appendix

Project Plan

- Week 1 Tools Presentation
- Week 2 Requirements submission
- Week 3 Analysis and Design submission
- Week 4-12 Review
- Week 13 Final Deliverable
- Week 14 Project Presentations

Team Staffing

- **Business Manager**: Andrew Jones
- **Project Manager**: Dat Nguyen
- **Risk Manager**: Horace Cheng
- **Development Managers**: Parnit Sainion, Mark Odell
- **Testing Manager**: Akshay Hegde

Notebook Log

- **Meeting Minutes 9/6/13**
    - Team member rolls established
    - Tools:
        - **Platform**: Android 4.0 OS (IceCream Sandwich)
        - **IDE**: Eclipse
        - **Testing**: Android Devices
        - **Version Control**: Git
        - **Bug Tracking**: GitHub
        - **Project management**: Google Hangout, Google Docs, Microsoft Office Suite
        - **Database/Server**: Oracle/Tomcat
    - Immediate Tasks:
        1. Setup GitHub
        2. Email professor with presentation info
        3. Create powerpoint presentation
        4. Setup google hangout

- **SRS Requirements Meeting**
  Date - 9/23/13
  Location - Online via Google Hangout
  Duration - 1 hour

  Purpose of meeting:
    - Review version 1 of RFP and make changes based on comments left by Ishie.
    - Apply the new changes to RFP version 2.

- Discuss progress of project and plan for upcoming due dates.

Questions Raised During Meeting For Ishie:

- Would you want us to refer a friend, leader boards, Optional feature)?
- Reduced Packet size to 25 questions per packet?
- Reduced Topic numbers to 3 with 2 subtopics each?
- Question structure (refer to question 3)?
- Branding Information.

Conclusion - RFP version 2 is in progress and will be updated once more after the next meeting with Ishie.

SRS v1

- Andrew Jones
  - Setup and start layout/template of document
  - Contributed to sections: 1.1 - 1.5, 2.2, 2.3, 2.5, 3.1, 3.2, 3.6, Index, Appendix
- Mark Odell
  - Contributed to sections: 3.3, 3.6.1, 3.6.4, Appendix, Index
- Akshay Hegde
  - Contributed to sections: 2.1.6, 3.2, 3.5, 3,5.1, 3.6.2, 3.6.3, Index
- Parnit Sainion
  - Contributed to sections: 1.3, 2.1.3, 2.1.3, 2.3, 3.3, 3.5, Appendix
- Horace Cheng
- Dat Nguyen
  - Contributed to sections: 2.1.4,2.1.5, 2.1.7, 3.5, 3.7, Appendix

Glossary

A

Android: an operating system that is designed for mobile devices (smart-phones, tablet PCs, etc.)
Apache: An HTTP web server.

H

Hypertext Transfer Protocol (HTTP): HTTP is a communication protocol which is used primarily to send and receive web pages or data on the Internet.

I

Ice Cream Sandwich (ICS): is the Android version 4.0 to 4.0.4. This is SiQuoia's target version of Android.

M

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mySQL: A widely used open-source relational database management system that provides multiple users

access to databases

Q

Query: System instructions between android and database
Question: A question has a question string, 4 possible answer choices, but only one correct

R

RFP: Request for Proposal

S

Salting: Random data that is used to hash passwords to prevent them from being cracked.
SQ03: The name of the team responsible for creating this version of SiQuioa.

T

Tomcat: An open source web server.
Table: A section of the database that contains either user or question information.

U

User: A User is a person playing SiQuoia on an Android device

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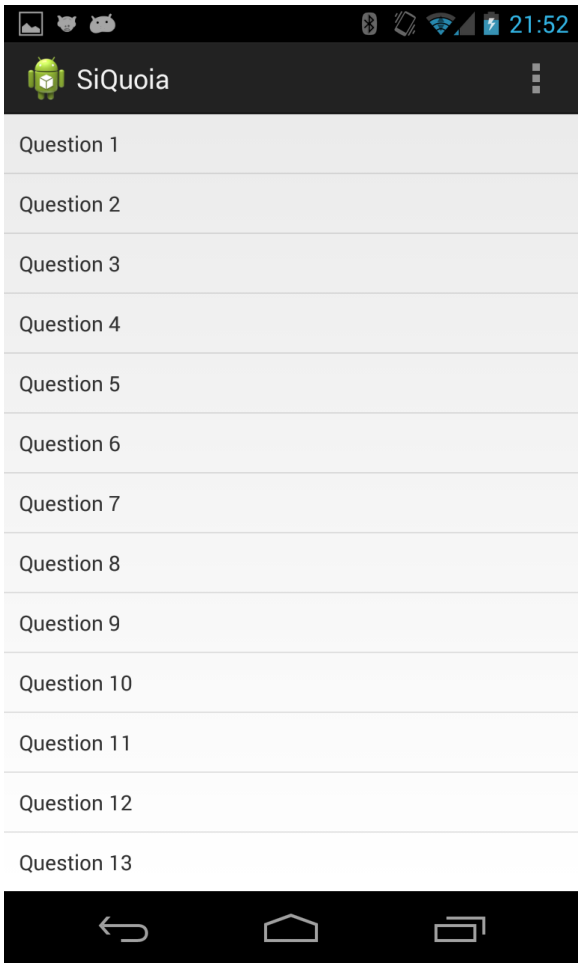
Images: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SiQuoia
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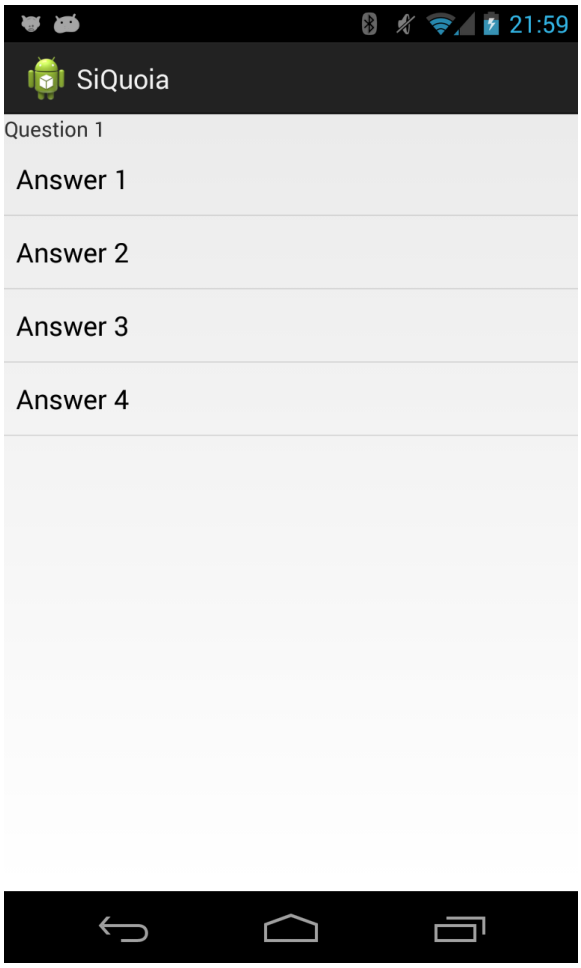
Question 2
Question 3
Question 4
Question 5
Question 6
Question 7
Question 8
Question 9
Question 10
Question 11
Question 12
Question 13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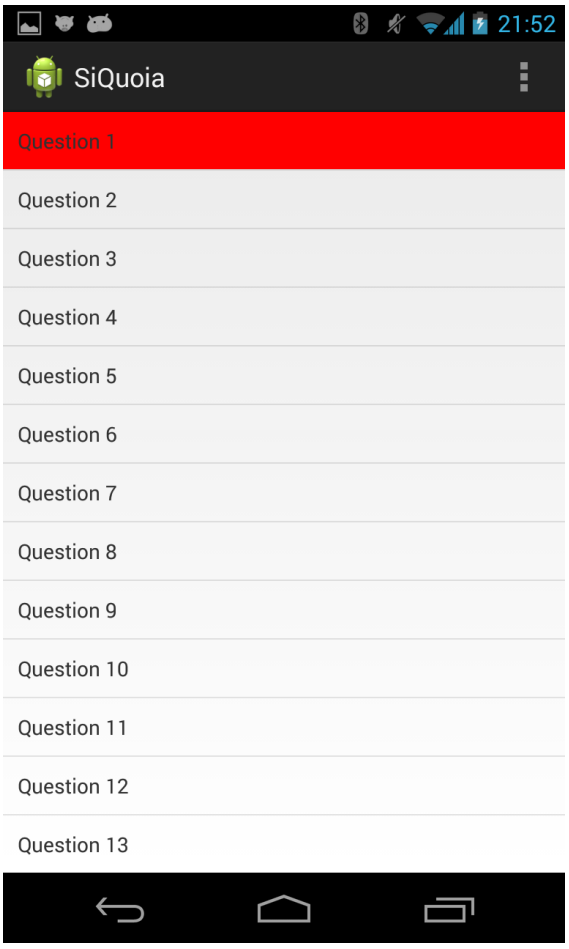
SiQuoia
Question 1
Answer 1
Answer 2
Answer 3
Answer 4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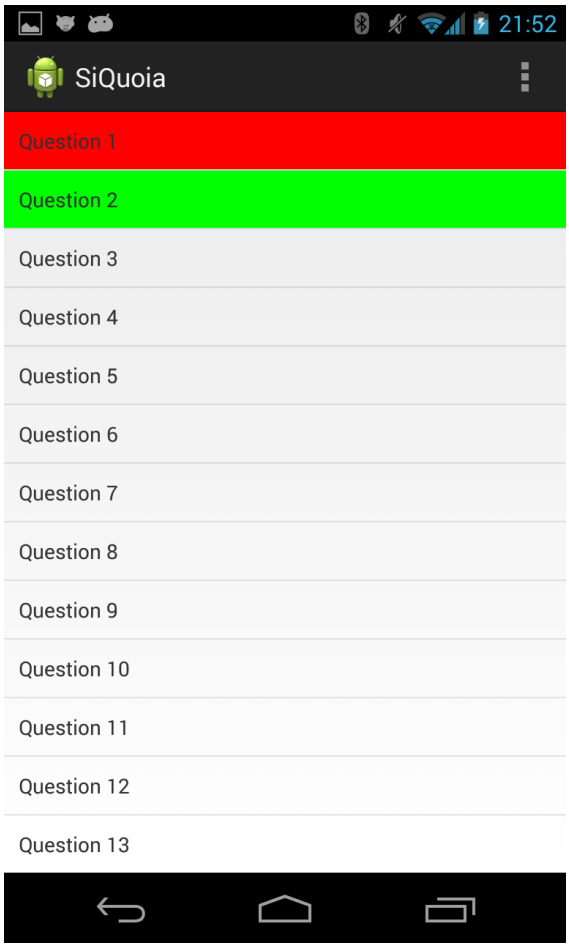
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