SiQuoia

(Simple Intelligence Quotient Increasing Application)

Software Requirements Specifications
Version 1
11 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

Document Approval

Signature	Printed Name	Title	Date

TABLE OF CONTENTS

1. Introduction

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 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 perks in-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 Glossary

A

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

H

HTTP: HyperText Transfer Protocol - HTTP defines how messages are formatted and transmitted, and what actions Web servers and browsers should take in response to various commands.

I

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

M

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

R

RFP: Request for Proposal

S

Salting: Random data that is used to hash passwords to prevent them from being cracked.

T

Tomcat: An open source web server.

1.4 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

1.5 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

2.1.2 User interfaces

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

The user will be required to interact and make gestures on a touch screen on a mobile device supporting an Android operating system. The gestures and interactions can include a swipe motion from any point on the screen to any other point on screen, tapping to select an option on a list, or other gestures used to navigate and manipulate menus on the Android operating systems.

2.1.3 Hardware interfaces

Devices to be supported by SiQuoia are Android devices running ICS or higher.

2.1.4 Software interfaces

The system requires a database to store all of it's users information. Our android application will use MySql query language to communicate with our Oracle database. Our database will run on Tomcat Server that will be published so that users from multiple platforms can store their information onto our database.

- Name - Oracle
- Mnemonic - MySql
- Specification Number - 12C
- Server - Apache HTTP
- 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 server and to the database.

2.1.6 Memory constraints

SiQuoia shall take no more than 60 MB of memory on any Android device. 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 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 user 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:

- Allow users to create and login to an account that tracks the history and scores of quizzes taken.
- Allow the users to take quizzes in topics of their choosing and/or randomly chosen topics.
- Allow users to download additional quizzes
- Allow the users to submit questions for points/credit
- Leaderboards are created and maintained by the server on user accounts progress and scores on quizzes.This should specify the normal and special operations required by the user such as
  a) The various modes of operations in the user organization (e.g., user-initiated operations);
  b) Periods of interactive operations and periods of unattended operations;
  c) Data processing support functions;
  d) Backup and recovery operations.

  NOTE - This is sometimes specified as part of the User Interfaces section.

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, one constraint is the Android version. We chose ICS (Android 4.0) as the minimum to take leverage of most of the newest features, but we lose 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 the central location for all user information as well as storing app data such as application data such as quiz questions.

During a quiz in progress, the user will only view one question at a time. Additionally, when an incorrect answer has been entered, the user will see immediate feedback in regards to that question.

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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

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 register themselves.
    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, and the password is consistent with the enforced password policy, a new user shall be created on the database on the SiQuoia server, and the user shall be prompted with a success message.
    4. If any of the conditions above fail, the user shall be prompted with an error stating:
        a. Username already taken, please choose another
        b. Password mismatch
        c. Password is too weak

        At which point the user shall be brought back to step 3.

User Login:

- Precondition: SiQuoia is installed on device and has been initialized, and a user account has already been created
- User input/ Path:
    1. After SiQuoia has been initialized, or after creating a new user account, the user can select “Login” from the initial menu.
    2. Two text boxes, “Username” and “Password”, shall appear on the login page to allow the user to enter their username and password respectively.
    3. If the login is successful, the user shall be authenticated and shall be shown the main menu.
    4. 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. At this point, 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 of this User input path.
    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 has completed a quiz packet.
- User input/ Path:
    1. After the user has completed a quiz packet, they shall be allowed to submit their own question, that is of the same high level topic as the quiz packet that they just completed.
    2. The question shall be uploaded to SiQuoia for review.

Exit game:

- Precondition: None
- User input/ pass:
    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 has successfully completed a quiz packet.
- User input/ pass:
    1. The app shall allow the user to refer SiQuoia to a friend via Email, SMS, Twitter or Facebook.

3.3 Performance requirements

Static Requirements

- Supports at least 100 users simultaneously
- Supports a database of at least 5 topics and 10 subtopics in each topic
- Device shall parse a 100 questions into a quiz 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 two main data entities and therefore, two logical databases.

The User database will store all user information including usernames, passwords and other user specific information that the user inputted when signing up as a new user.

Th Question database 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

A reliable connection to the internet is required to allow connection to the SiQuoia hosting server during login, submission of new questions, or downloading new sets of questions.

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 be at least 8 characters long and they must include a numeric or a special symbol character. 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.

3.7 Additional comments

SiQuoia can have restrictions between Users like Student and Instructor. Instructor can create the quiz and the student will have no access to edit the Quiz. This will be an additional feature to SiQuoia if time and labor allows.

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 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

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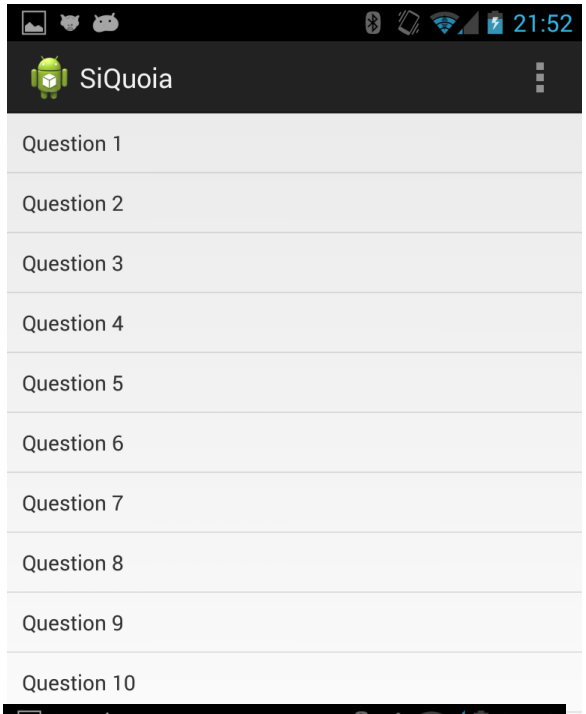
Index

Topic **Page Number**

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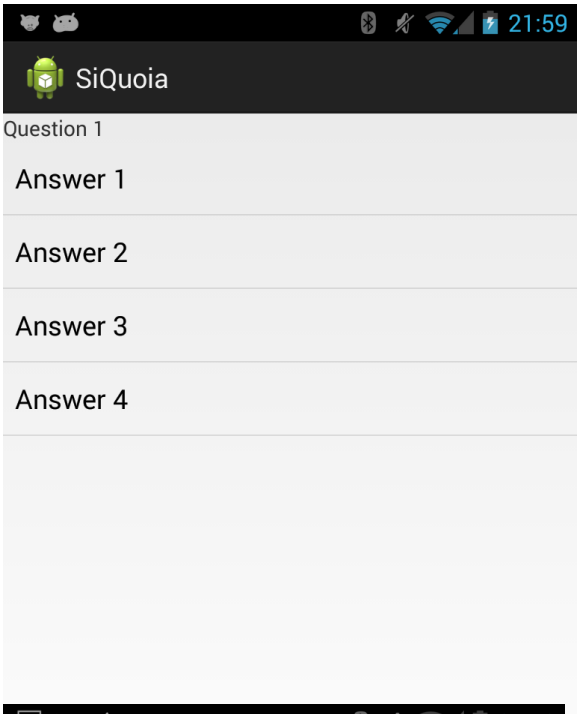
Question 2
Question 3
Question 4
Question 5
Question 6
Question 7
Question 8
Question 9
Question 10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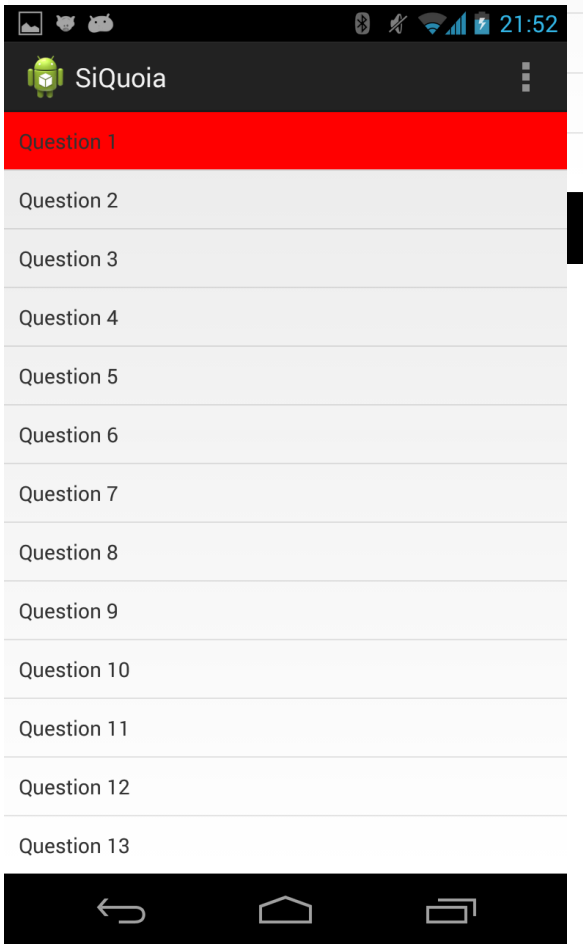
Answer 1
Answer 2
Answer 3
Answer 4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SiQuoia
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Question 7
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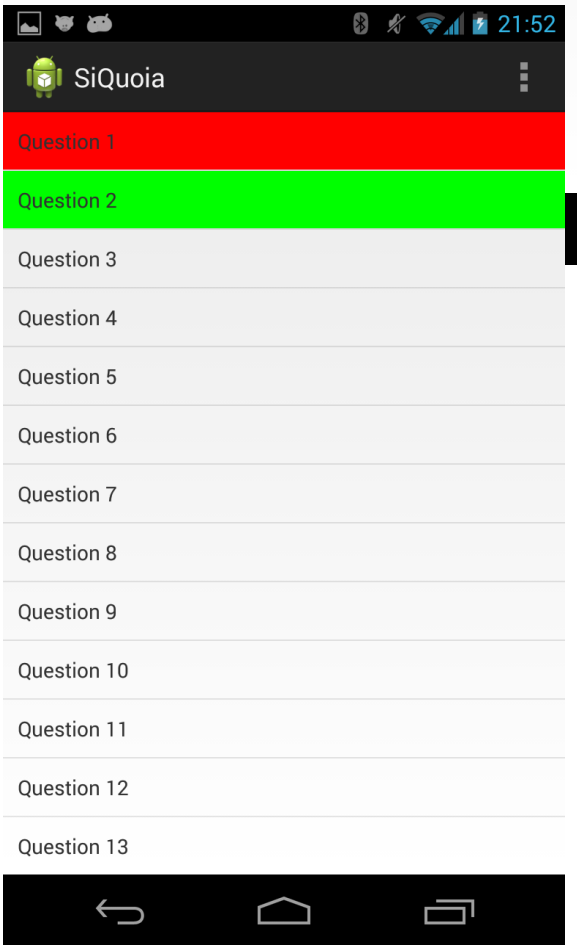
Question 9
Question 10
Question 11
Question 12
Question 13


21:52
SiQuoia
Question 1
Question 2
Question 3
Question 4
Question 5
Question 6
Question 7
Question 8
Question 9
Question 10
Question 11
Question 12
Question 13

ESWAR:

Please pay attention to Grammar.
Please avoid long, confusing sentences.
Document lack consistency. On question/multiple questions?
Missing information on “Branding” that RFP spoke about.
Point: 16/20

Here is what the RFP said about “Branding”:
Special game sets can be branded with corporate logos and be made available with codes. For example a DMV branded game that helps train for a driver’s written test.