

Detailed Design Document

Team SQ03

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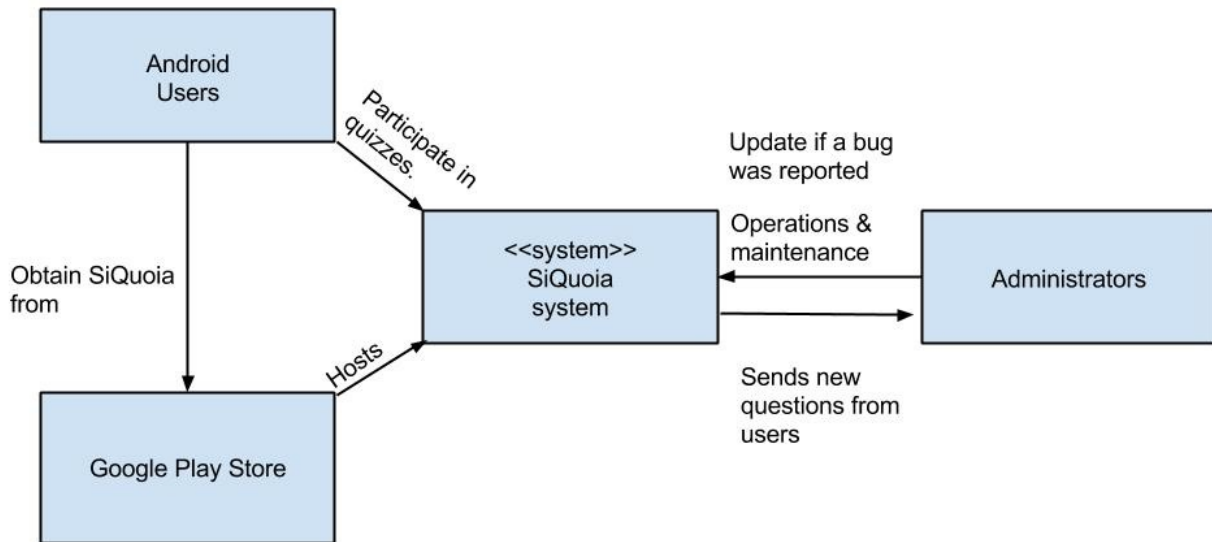
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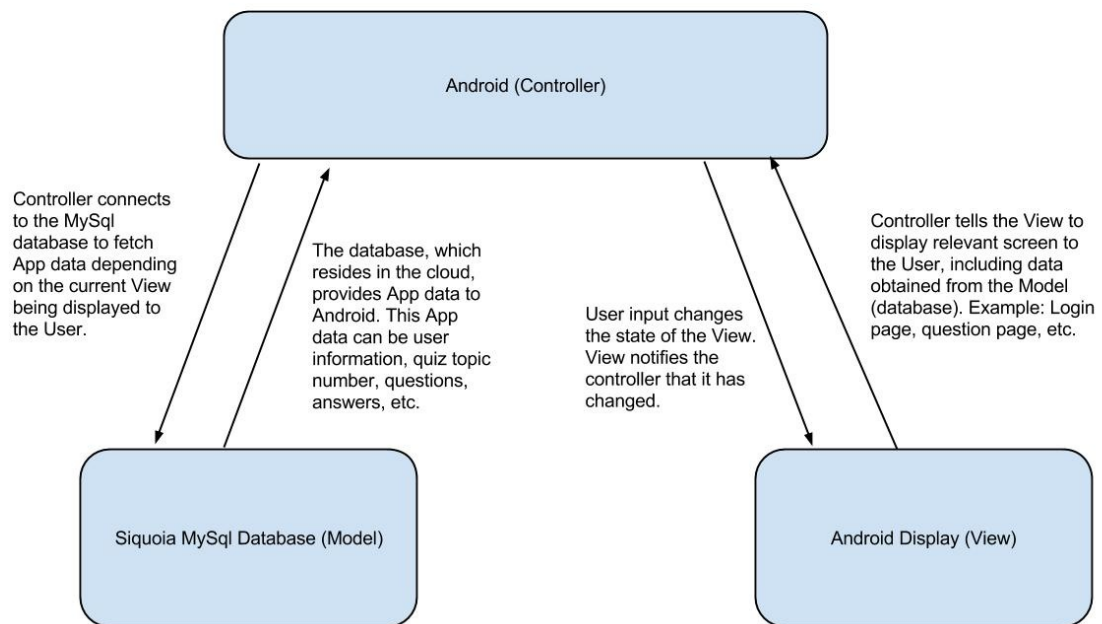
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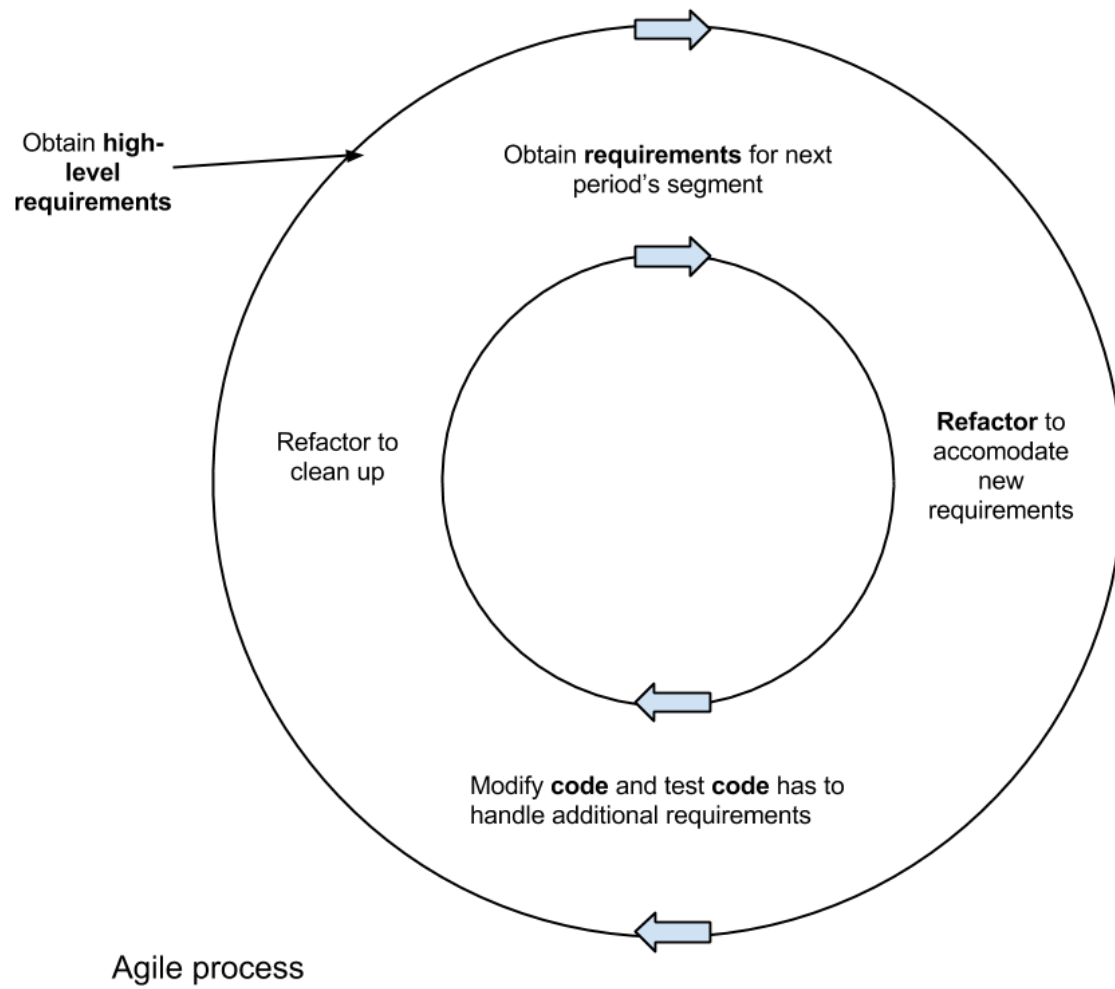
Context Model



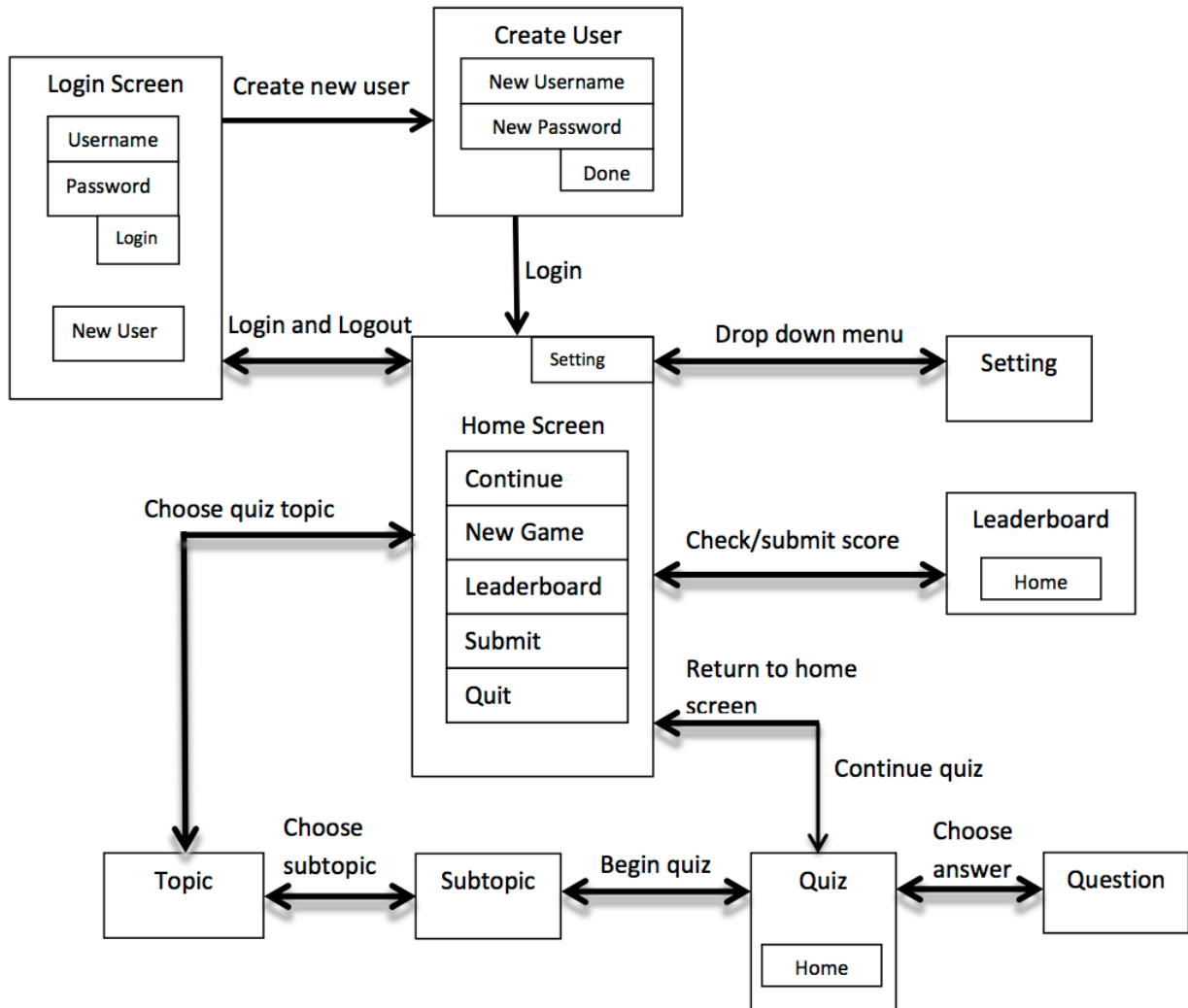
MVC Architecture



Process Model



State Diagram



Use Cases

| Register as a new user | |
|------------------------|---|
| Actors | User |
| Description | <p>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.</p> <p>Three text boxes shall appear prompting the user to: Choose a username, Choose a password, or Reenter the password.</p> |
| Data | User's chosen username and password |
| Stimulus | User selection of the "Register" button from the main menu |
| Response | 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. |
| Comments | None |

| User Login | |
|--------------------|--|
| Actors | User |
| Description | Two text boxes, "Username" and "Password", shall appear on the login page to allow the user to enter their username and password respectively. |
| Data | User's username and password |
| Stimulus | User enters their login credentials into the corresponding fields on the login page. |
| Response | If the login is successful, the user shall be authenticated and shall be shown the main menu. 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 reenter their username and password again. |
| Comments | A user account must have already been created in order to successfully login. |

| Start a new game | |
|--------------------|---|
| Actors | User |
| Description | <p>A selection of high-level subject shall be displayed for the user to select. After selecting a high-level subject, a series of sub-categories shall be displayed for the user to select.</p> <p>Once a subcategory 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.</p> |
| Data | None |
| Stimulus | After successfully logging in, the user shall be able to select “Start a new game” from the main menu. |
| Response | A new quiz will be presented to the user. |
| Comments | A user must already be successfully logged in to their account. |

| Participating in a quiz | |
|-------------------------|--|
| Actors | User |
| Description | <p>A question shall be displayed to the user and the progress of the session shall be saved via uploading to the SiQuoia server.</p> <p>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.</p> |
| Data | Selected answer |
| Stimulus | A user shall be able to select one of four choices to answer the corresponding question. The user then hits the “Submit answer” button. |
| Response | <p>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. More specifically, unanswered questions are colored white, correctly answered questions are green, and incorrectly answered questions are red.</p> <p>Once the last question of the packet has been answered, a summary shall be displayed presenting how many total questions answered correctly.</p> |
| Comments | A new quiz must be initialized, or a previous quiz is being continued |

| Continue from last save | |
|-------------------------|---|
| Actors | User |
| Description | The system shall allow a user to resume where the user left off. The system shall display the same question that the user was on during their previous session. |
| Data | User session |
| Stimulus | The user selects to continue rather than start a new quiz. |
| Response | The users previous session will be reinitialized. |
| Comments | A user must already be successfully logged in to their account, and a quiz must be initialized during a previous play. |

| Submit new question | |
|---------------------|--|
| Actors | User |
| Description | Allows a user to submit new questions to SiQuoia. Fields will be displayed to enter the question information in. The question shall be uploaded to SiQuoia administrators for review. |
| Data | Question topic, question title, the four choices text, and the correct answer. |
| Stimulus | The user will click on the menu button and select "Submit a question". |
| Response | A confirmation will be displayed upon success |
| Comments | A user must be logged in |

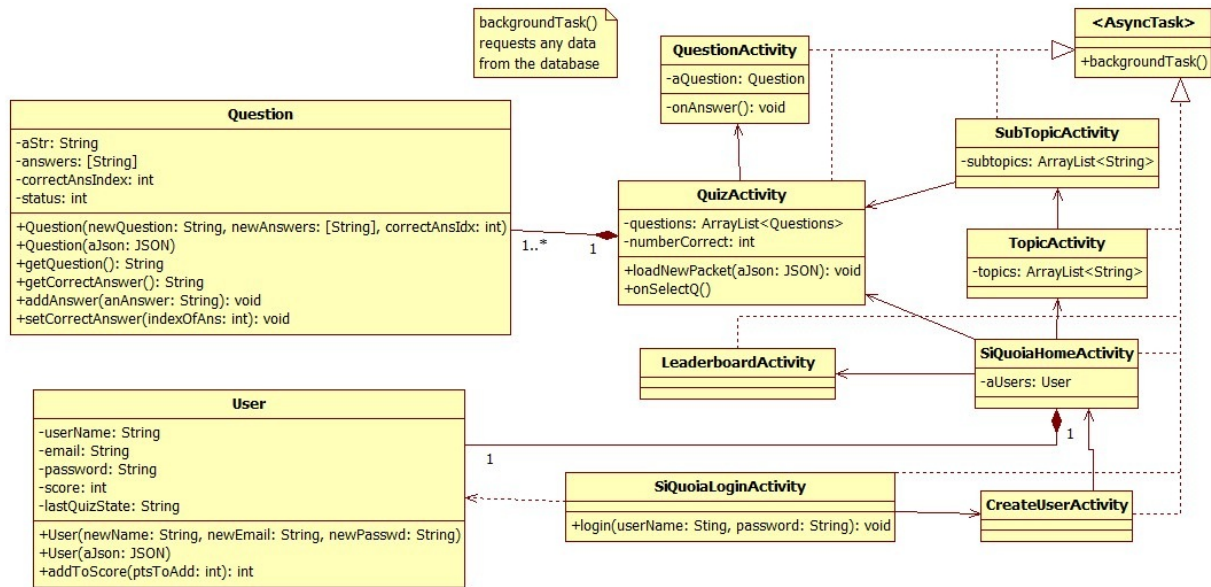
| Exit game | |
|--------------------|---|
| Actors | User |
| Description | The app shall allow the user to quit the game no matter where they currently are. |
| Data | User session will be saved |
| Stimulus | User selects exit |
| Response | Program will exit |
| Comments | None |

| Refer a friend | |
|--------------------|---|
| Actors | User |
| Description | <p>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.</p> <p>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.</p> |
| Data | Friend's email address |
| Stimulus | User selects "Refer a friend" from the setting. |
| Response | A confirmation will be displayed upon validation of email address |
| Comments | If the application is installed on the referee's device via that unique link, the referer will acquire credit towards in game rewards. |

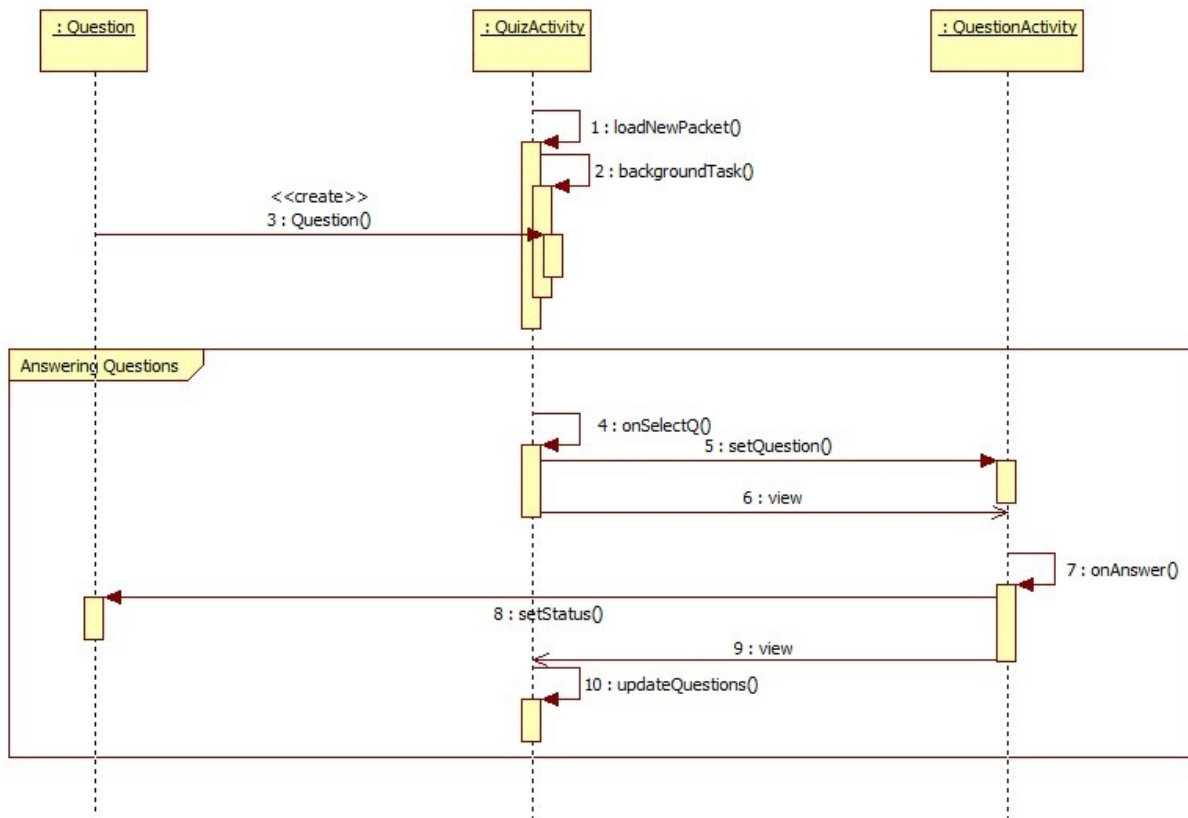
| Redeeming quiz-code | |
|---------------------|--|
| Actors | User |
| Description | A user is able to redeem a quiz-code in order to access organization-specific quiz packets |
| Data | Redeem Code and corresponding quiz packet. |
| Stimulus | The user selects “Redeem Code” from the main menu. |
| Response | The quiz packet is added to the users available list of quiz packets. |
| Comments | None |

| Logging out | |
|--------------------|--|
| Actors | User |
| Description | A user is able to log out of the application |
| Data | User session |
| Stimulus | The user selects "Logout" from the settings menu |
| Response | User will be presented with a login screen and user information will be wiped. |
| Comments | The user's session will automatically be saved once they select "logout" |

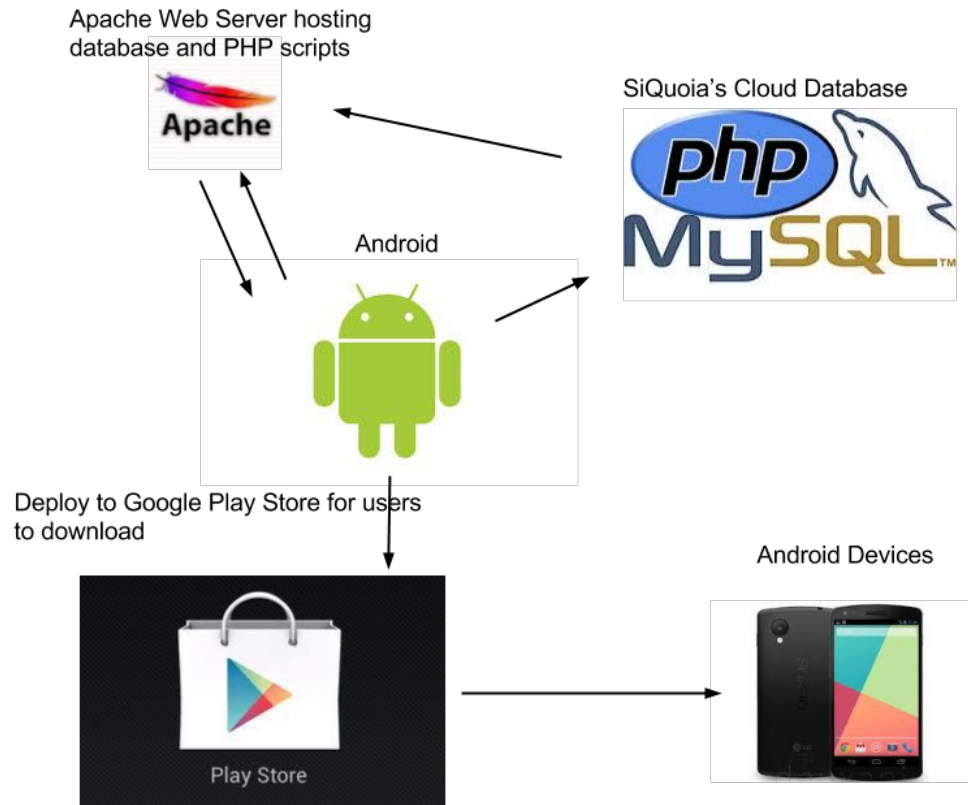
Class Diagram



Sequence Diagram

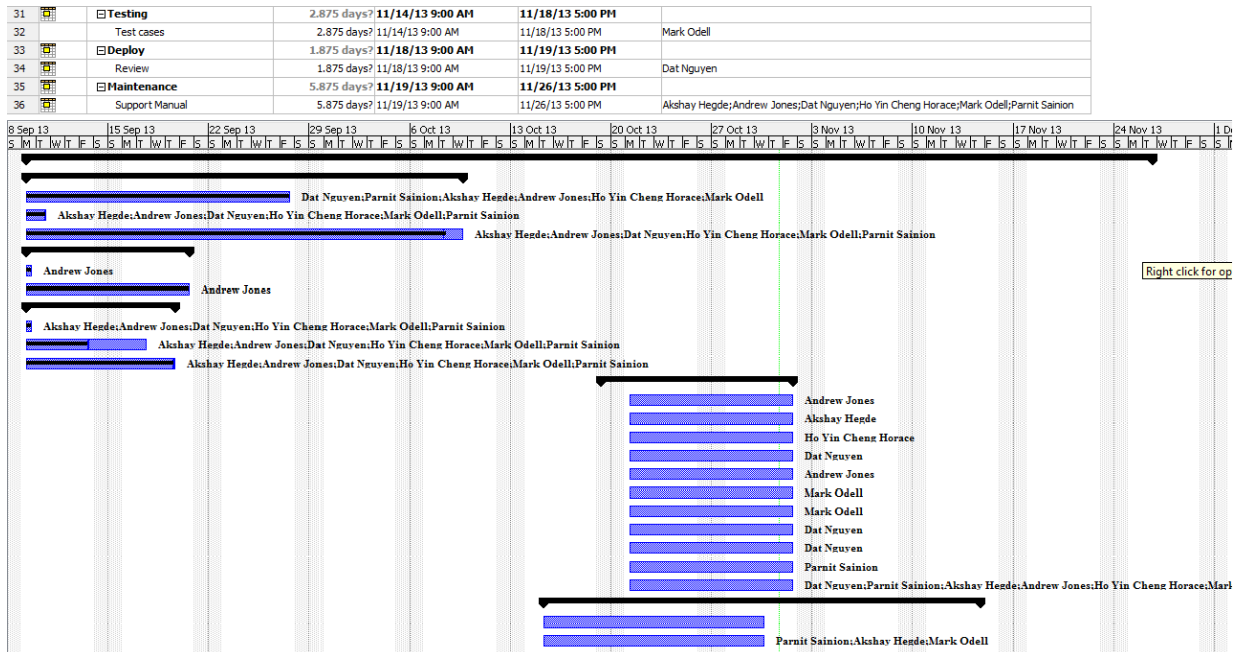


Architectural View of Deployment

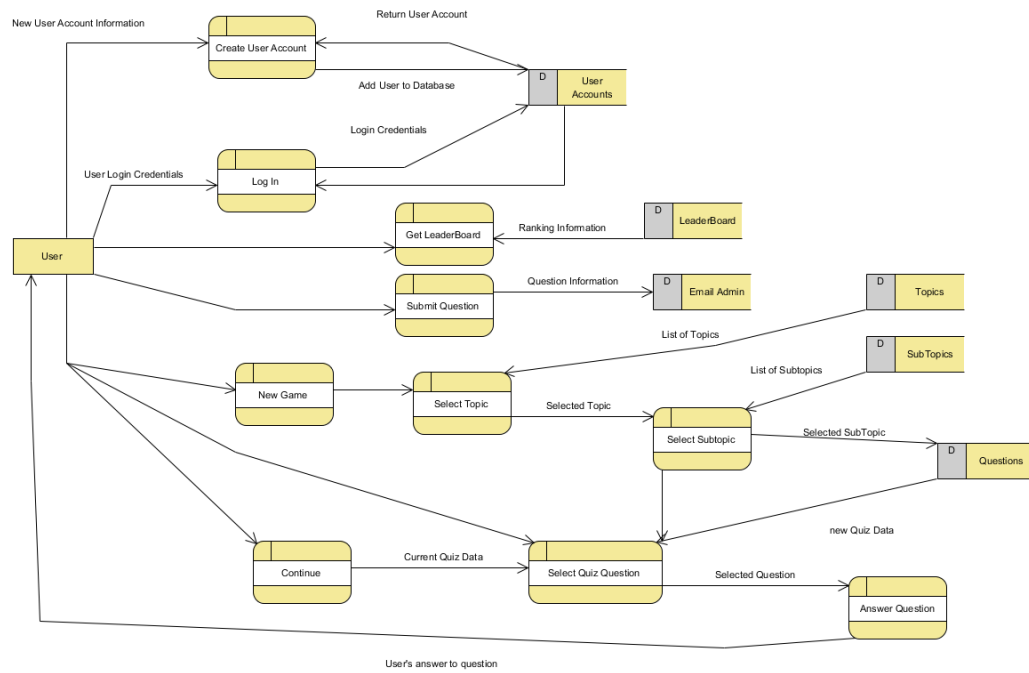


Gantt Chart

| | | Name | Duration | Start | Finish | Resource Names |
|----|---|----------------------------------|-------------|------------------|------------------|--|
| 1 | | Outline Goals | 57 days? | 9/9/13 8:00 AM | 11/26/13 5:00 PM | |
| 2 | | RFP | 23 days? | 9/9/13 8:00 AM | 10/9/13 5:00 PM | |
| 3 | ✓ | First Draft | 15 days? | 9/9/13 8:00 AM | 9/27/13 5:00 PM | Dat Nguyen;Parnit Sainion;Akshay Hegde;Andrew Jones;Ho Yin Cheng Horace;Mark Odell |
| 4 | | Review | 2 days? | 9/9/13 8:00 AM | 9/10/13 5:00 PM | Akshay Hegde;Andrew Jones;Dat Nguyen;Ho Yin Cheng Horace;Mark Odell;Parnit Sainion |
| 5 | | Final Draft | 23 days? | 9/9/13 8:00 AM | 10/9/13 5:00 PM | Akshay Hegde;Andrew Jones;Dat Nguyen;Ho Yin Cheng Horace;Mark Odell;Parnit Sainion |
| 6 | ✓ | Requirement Gathering | 10 days? | 9/9/13 8:00 AM | 9/20/13 5:00 PM | |
| 7 | ✓ | Meeting With Client | 1 day? | 9/9/13 8:00 AM | 9/9/13 5:00 PM | Andrew Jones |
| 8 | ✓ | Follow Up | 10 days? | 9/9/13 8:00 AM | 9/20/13 5:00 PM | Andrew Jones |
| 9 | | Requirement Analysis | 9 days? | 9/9/13 8:00 AM | 9/19/13 5:00 PM | |
| 10 | ✓ | Set Task | 1 day? | 9/9/13 8:00 AM | 9/9/13 5:00 PM | Akshay Hegde;Andrew Jones;Dat Nguyen;Ho Yin Cheng Horace;Mark Odell;Parnit Sainion |
| 11 | | Review | 7 days? | 9/9/13 8:00 AM | 9/17/13 5:00 PM | Akshay Hegde;Andrew Jones;Dat Nguyen;Ho Yin Cheng Horace;Mark Odell;Parnit Sainion |
| 12 | | Cost Estimation | 9 days? | 9/9/13 8:00 AM | 9/19/13 5:00 PM | Akshay Hegde;Andrew Jones;Dat Nguyen;Ho Yin Cheng Horace;Mark Odell;Parnit Sainion |
| 13 | | Detail Design Document | 10 days? | 10/19/13 8:00 AM | 11/1/13 5:00 PM | |
| 14 | | Context Model | 10 days? | 10/19/13 8:00 AM | 11/1/13 5:00 PM | Andrew Jones |
| 15 | | MCV architecture for the project | 10 days? | 10/19/13 4:00 PM | 11/1/13 5:00 PM | Akshay Hegde |
| 16 | | Process model | 10 days? | 10/19/13 4:00 PM | 11/1/13 5:00 PM | Ho Yin Cheng Horace |
| 17 | | State Transition Diagram | 10 days? | 10/19/13 4:00 PM | 11/1/13 5:00 PM | Dat Nguyen |
| 18 | | Use Cases | 10 days? | 10/19/13 4:00 PM | 11/1/13 5:00 PM | Andrew Jones |
| 19 | | Class Diagram | 10 days? | 10/19/13 4:00 PM | 11/1/13 5:00 PM | Mark Odell |
| 20 | | Sequence Diagram | 10 days? | 10/19/13 4:00 PM | 11/1/13 5:00 PM | Mark Odell |
| 21 | | Architectural View of Deployment | 10 days? | 10/19/13 4:00 PM | 11/1/13 5:00 PM | Dat Nguyen |
| 22 | | Gantt Chart | 10 days? | 10/19/13 4:00 PM | 11/1/13 5:00 PM | Dat Nguyen |
| 23 | | Data Flow | 10 days? | 10/19/13 8:00 AM | 11/1/13 5:00 PM | Parnit Sainion |
| 24 | | Traceability Matrix | 10 days? | 10/19/13 8:00 AM | 11/1/13 5:00 PM | Dat Nguyen;Parnit Sainion;Akshay Hegde;Andrew Jones;Ho Yin Cheng Horace;Mark Odell |
| 25 | | Coding | 23 days? | 10/15/13 8:00 AM | 11/14/13 5:00 PM | |
| 26 | | Prototype | 12 days? | 10/15/13 8:00 AM | 10/30/13 5:00 PM | |
| 27 | | Design | 12 days? | 10/15/13 8:00 AM | 10/30/13 5:00 PM | Parnit Sainion;Akshay Hegde;Mark Odell |
| 28 | | Interface | 6 days? | 10/31/13 8:00 AM | 11/7/13 5:00 PM | Akshay Hegde;Mark Odell;Parnit Sainion |
| 29 | | GUI | 4.875 days? | 11/7/13 9:00 AM | 11/13/13 5:00 PM | Akshay Hegde;Mark Odell;Parnit Sainion |
| 30 | | Implementation | 23 days? | 10/15/13 8:00 AM | 11/14/13 5:00 PM | Akshay Hegde;Mark Odell;Parnit Sainion |



Data Flow



Design Patterns

1. Abstract Factory

We are not implementing an Abstract Factory design.

2. Builder

We are not implementing a Builder.

3. Factory Method

We are not implementing a Factory Method.

4. Object Pool

We are not using the Object Pool pattern.

5. Prototype

We are not using the prototype design pattern.

6. Singleton

We are using the singleton design pattern. We can only have one instance of an activity at a time

7. Adapter

We are using the adapter pattern. The adapter takes our list of topics, subtopics, and questions and adds them to the ListView so we can display the information we want.

8. Bridge

We are not implementing the Bridge Pattern on our design.

9. Composite

We are no implementing the Composite Pattern in our design.

10. Decorator

We are dynamically displaying if questions are incorrect or correct and updating the color of the question associated.

11. Facade

We are not implementing the Facade Pattern for Siquoia.

12. Flyweight

We are not implementing the Flyweight design pattern for Siquoia.

13. Private Class Data

We have private data and objects in our classes.

14. Proxy
We are using the Proxy design pattern by having PHP be the communicator between Android and the data base
15. Chain of Responsibility
We are not using Chain of Responsibility because we are not linking and receiving any objects.
16. Command
We are not using command.
17. Interpreter
We are not implementing an Interpreter design.
18. Iterator
We are using the iterator design pattern to display and go through our questions in the quiz. The iterator design will allow us to make sure the correct questions are being displayed when the user is scrolling through the quiz.
19. Mediator
We are not using the Mediator design pattern.
20. Memento
We are not using the Memento pattern.
21. Null Object
We are not implementing the Null Object pattern.
22. Observer
The Quiz and Home activity classes will be displaying information updated from the User and Question classes.
23. State
Every action applied by users will take SiQuoia through different states from creating and submitting of quizzes.
24. Strategy
Activity classes use a background method to execute common background functions including requesting information from the database.
25. Template Method
We do not use the template method.
26. Visitor
We are not using the Visitor design pattern.

Traceability Matrix

| Functional Requirements | Functional Design | Internal Design | Code | Tests |
|---|----------------------|---|----------------------|-------|
| FR 01 User Login | Login Screen | SRS 2.1.2 Use Case: User Login Class Diagram State Diagram | LoginActivity | N/A |
| FR 02 Register User | User Creation screen | SRS 3.2 Use Case: Register as a new user State Diagram | UserCreationActivity | |
| FR 03 Choice of list of questions | Quiz Screen | SRS 3.2 Use Case: Participating in a Quiz State Diagram | QuizActivity | N/A |
| FR 04 Unanswered Question turns White | Quiz Screen | Use Case: Participating in a Quiz | QuizActivity | N/A |
| FR 05 Wrong/Right Questions Red/ Green | Quiz Screen | Use Case: Participating in a Quiz | QuizActivity | N/A |
| FR 06 Answering a question | Question Screen | SRS 3.2 Use Case: Participating in a Quiz Class Diagram Sequence Diagram | QuestionActivity | N/A |

| | | | | |
|---|---------------------------------------|--|-------------------------|-----|
| FR 07 Interface to mySQL through Apache server | PHP and Android background scripts | SRS 2.1.4 Use Case: Getting data from the database Deployment Architecture | PHP scripts | N/A |
| FR 08 Update User Information | | SRS 2.1.7 Use Case: Exit Game Use Case: Logging out | QuizActivity | N/A |
| FR 09 Leaderboard | | SRS 2.2 Class Diagram State Diagram | LeaderBoardActiv ity | N/A |
| FR 10 Redeemable Codes | Redeem Code Screen | SRS 2.2 Use Case: Redeeming quiz-code | HomeActivity | N/A |

| # | Non-Functional Requirements | Description | SRS sec. |
|-------|----------------------------------|------------------------------------|-------------|
| NF 01 | Shall not more than 60MB RAM | Self explanatory | 2.1.6 |
| NF 02 | Shall not use > 30MB of HD space | Yes | 2.1.6 |
| NF 03 | Database up 90% of Time | Database is accessible 90% of time | 2.5 |