Proposed Architecture:

* All goals and philosophies well explained, and completely consistent with high priority NFR’s
* All critical architecturally significant requirements correctly identified and implications explained
* A comprehensive list of decisions and constraints identified. Decisions completely consistent with goals and philosophies, sensible, and well justified with reference to specific needs of project
* A comprehensive list of architectural mechanisms identified. Mechanisms related to architecturally significant requirements.
* Framework/architectural style sensible and completely appropriate to project. All NFR’s addressed.

**Purpose:**

**Architectural goals and philosophies (consistent with NFR’s):**

Overall goal is to create a server based, cross platform mobile application that will allow a multitude of users to be online simultaneously. An additional goal is to include a single player game that allows offline gameplay.

A smaller scope of this would be to see two players play online in a choice quiz game against each other. As well as having a global leaderboard and a multitude of available questions. The game will determine a winner and then update their individual and worldwide leader board. The game also allows players to be a part of multiple games simultaneously, allowing players to start new games or continue existing ones.

Based on the overall goals set out in the vision document the following are the high priority NFR’s. Usability, Reliability, Performance and Maintainability.

Usability is the most important NFR as without a usable system all other NFR’s can’t even be considered. The game is intended to be run on mobile devices and have a UI catered to those users. The game must be intuitive and self explanatory in all degrees of operation.

Reliability is important to be considered due to the game running off a server. The entire operation of the game requires a connection to the server to be reliable. Without a reliable connection, users will not be able to play any of the functionality of the application.

Performance is still important in regards to this being a mobile application. The app must be tailored to mobile use and be quick to respond to inputs from the user. It must also have quick response times from the server as delays longer than 1-2 seconds is enough for mobile users to stop using the application. Mobile users expect everything to happen instantly.

Maintainability is important as the game must be able to be continued to be upgraded and bugs fixed without hindering the overall functionality of the game. Without being maintainable users could experience large downtimes. By focusing on making the game maintainable the server can be kept up for as much time as possible.

Current Non Functional Requirements:

* Usability
* Reliability
  + Availability
  + Accessibility
  + Stability
* Performance
  + Response Time
  + Throughput
* Maintainability
  + Scalability
* Compatibility
* Persistence/ Data Integrity
* Efficiency

Current Functional Requirements:

1. The game must be implemented with C# script.

2. The game must be developed in Unity3d.

3. Game must be playable on different operating systems.

4. The game should allow 2/multiple players.

5. The game must display a login scene to the user.

6. Login screen must allow users to play as a guest.

7. Login screen must allow users to register to play

8. Login screen must allow users to login via Facebook.

9. Login screen must allow users to login in with google play services.

10. Once the user has logged in, the main menu screen will be presented.

11. Menu screen must allow player to start a game.

12. Menu screen should allow players to invite, share and like on Facebook.

13. Menu screen must allow player to enter settings menu.

14. Menu screen must allow player to access high scores.

15. The player should be able to start a new game at any time.

16. Questions must be presented to the player.

17. User must be able to choose an answer.

18. The application must be able to determine if the player has selected the correct answer.

19. Points are added for correct answers and deducted for incorrect answers

20. The score of each player must be recorded.

21. The application must have the ability to determine the winner.

22. A congratulatory message should be displayed to the winning player.

23. A list of correct answers will be displayed to the user when the game is over.

24. When the game ends the program should ask the player if a new game should be started.

25. A timer should limit the amount of time of each round.

26. Users can add people to a friends list (either by searching for their username or by adding them at the end of a round)

27. Players will have the ability to challenge people on their friends list

**Assumptions and Dependencies:**

Assumptions:

* Application is exclusively being built for the iOS and Android platform
* Game is currently being built using Unity and language of C#
* A PHP server will be used to implement online interactivity.

Dependencies:

* Server is a crucial part of the game; online activity cannot run without it.
* Availability of the team. We are limited to the time allowances of all team members as stated in the team charter.
* The skill of the team. Each team member has varying skills so many dependencies are in place for key parts of the project.

**Architecturally significant requirements:**

Based upon the above dependencies:

* Project created in unity and built upon the C# language.
* Development for both Android and iOS mobile devices.
* Use of a PHP server for multiplayer capabilities.

**Decisions, constraints & justifications:**

We have chosen Unity as our builder since it uses a language that all of the team are confident with, allows us to create cross platform applications easily and is purpose built for designing the type of application we wish to create.

The decision of creating a cross platform application was done early on, this will open up our game to a much wider audience. This decision then leads to the need of using the PHP server that will talk to each device as well as using Unity which allows us to create one application that runs on both devices. This will save time which is going to be a key resource throughout the development phase.

**Architectural Mechanisms:**

Common solutions to common problems. How the PHP server will be implemented? How we will develop inside of Unity? etc

**Key abstractions:**

* Quiz Up (think that was the name)
* ‘mobile friendly’, quick, low CPU use, pleasing, entertaining
* (what else?)

**Layers or Architectural framework:**

**Architectural Views:**

* Use cases will be provided to describe the main functions of the system. Containing all architecturally significant properties.
* Maybe an overall class diagram?
* Logical view