

Group 29 (AKT)

Requirements Specification

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Revision History

Version	Date	Comments
1.0	04/10/17	Created document
1.1	05/10/17	Updated document
1.2	06/10/17	Finalized document Rev. 0

1 Project Drivers

1.1 Purpose of the Project

The purpose of the project is to create a community based social news aggregator and message board. Users are able to rate posts based on their interest. Posts are then sorted from highest to lowest rated, essentially allowing for more interesting topics to be shown to a greater audience. In addition to viewing posts, users will be able to comment and discuss within each post. This will facilitate the creation of and discussion within online communities.

1.2 Stakeholders

There are multiple stakeholders for this application as listed below.

The Customer/End Users

- **Application Registered Users:** The primary customers of this project are the application registered users. These are members of the general public who have an authenticated profile within the application and post and update shared content.
- **General Public:** The secondary customers of this project are the general public users who browse the content without contributing and curating content.

The Principals and Partners

- **AKT Team:** The AKT Team are the developers of this project. The team is involved in the creation and maintenance of the project. In this case, the developers are the principal stakeholders as well as the producers.
- **Google Firebase:** Other producer stakeholders including Google Firebase as they are hosting the application and providing user authentication and database services.

2 Project Constraints

2.1 Mandated Constraints

2.1.1 Solution Constraints

Description: The application shall operate on devices modern web browsers.

Rationale: The users include anyone with a device that can operate a web browser.

Fit Criterion: The application shall be tested to be functional on web browsers across several devices.

Description: The application shall operate only when the device is connected to the internet.

Rationale: In order to submit content or participate in discussions, users require an internet connection.

Fit Criterion: The application shall not load content without an internet connection.

2.1.2 Implementation Environment of the Current System

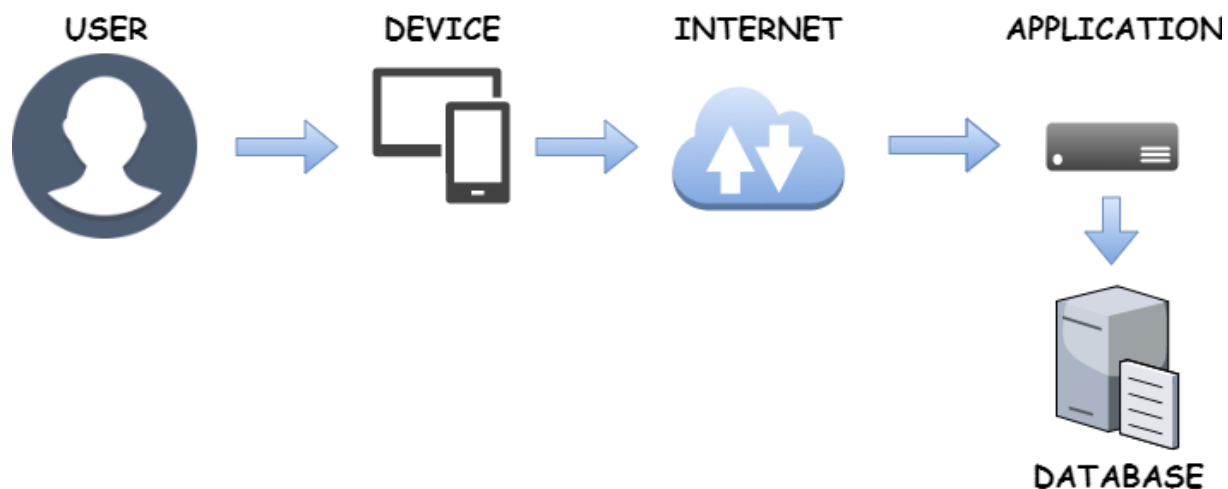


Figure 1: Implementation Environment Diagram

2.1.3 Partner or Collaborative Applications

The application will leverage Google Firebase's services in order to handle user authentication, database communication and web server hosting.

2.1.4 Off-the-Shelf Software

The application requires that the user have a device that is able to connect to the internet and operate a web browser(Chrome, Firefox, Safari, Edge, Opera, etc).

2.1.5 Schedule Constraints

The proof of concept demonstration application must be completed by October 16, 2017. The application must be completed by December 6, 2017. The development team can choose to maintain and update the project at their convenience after this date.

2.2 Naming Conventions and Terminology

Term	Description
ACT Team	The development team
Comment	A user's response to a post or another user
Downvote	A way for a user to 'vote-down' a comment, post or subreddit GUI
Graphic User Interface	
Post	A submission by a User that contains text or a link
Reddit-Clone	The current project being designed
Subreddit	Page holding the posts of a certain topic
Upvote	A way for a user to 'vote-up' a comment, post or subreddit
User	A person using the application

Table 1: Reddit-Clone Naming Conventions

2.3 Relevant Facts and Assumptions

The original application is written in Python, an object oriented class-based programming language. Since the AKT team is developing this project using JavaScript (still an object oriented language but not class-based) there is an assumption that all basic functionality can still be mimicked without relying on the same class-based system.

This application is intended for use by the general public. It is assumed that users will not require more than very basic knowledge of their device and web browser in order to access the application. It is assumed that users of this application will have internet connectivity in order to access the application.

If a user deletes their profile, the content they shared and contributed under that profile will remain on the application.

3 Functional Requirements

3.1 The Scope of the Work

3.1.1 The Current Situation

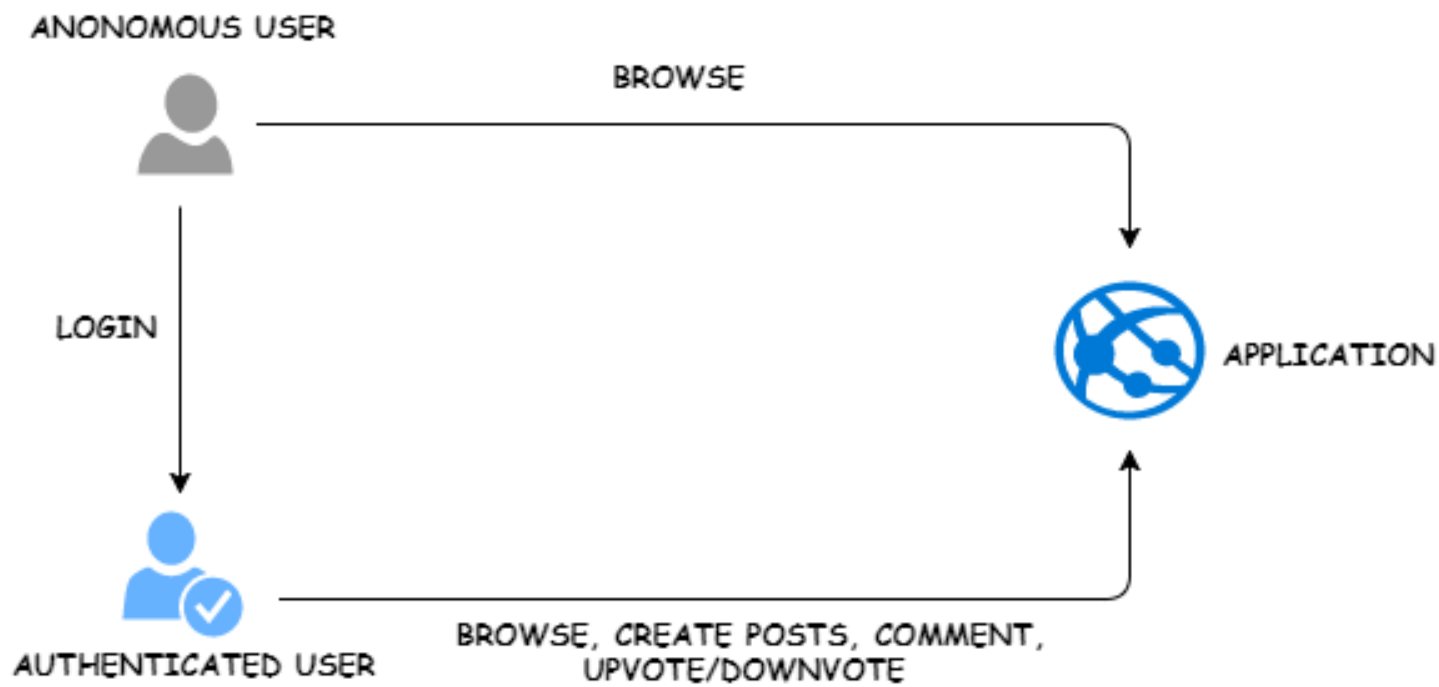


Figure 2: Current Situation Diagram

3.2 Business Data Model & Data Dictionary

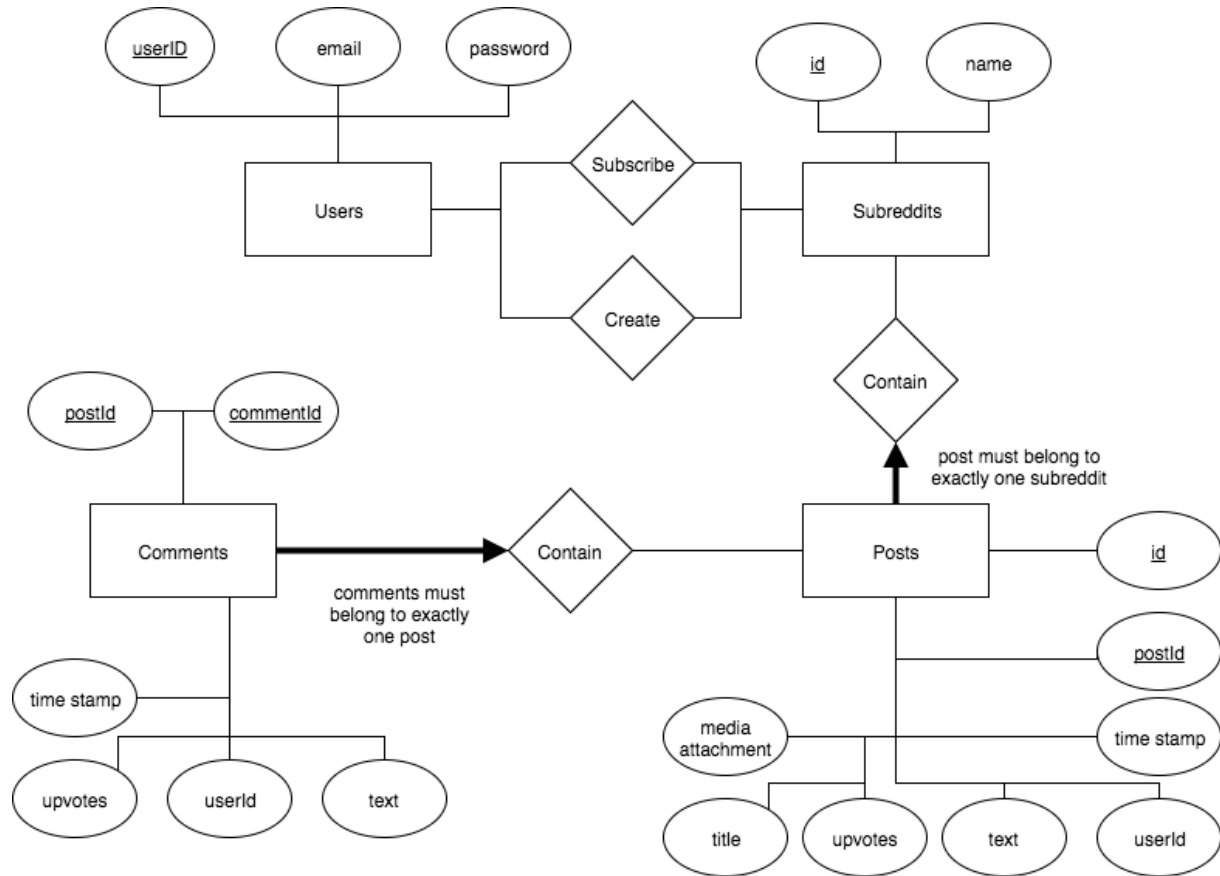


Figure 3: ER Diagram

Users

userId	String	Firestore assigned user id.
Email	String	User's specified email address
Password	String	User's specified user password. Password combined with email address allows users to access their account.

Table 2: Users Schema

Subreddits

id	String	Unique identifier of subreddit.
Name	String	Name of the subreddit.

Table 3: Subreddits Schema

Posts

postId	String	unique identifier auto-assigned to post.
id	String	id referenced from Subreddit table that ties a post to a subreddit.
userId	String	userId referenced from Users table that ties a user to a post.
Media Attach- ment	String	URL or binary data (uploaded from device)
Title	String	User specified title of the post
Message	String	text that belongs in the content of a post.
Upvotes	Integer	Number modified as user's 'up-vote' a post or 'down-vote' a post.
Time Stamp	Number	UNIX timestamp of the date at time of creation.

Table 4: Posts Schema

Comments

commentId	String	unique identifier auto-assigned to comment.
postId	String	postId referenced from Posts table that ties a comment to a post.
userId	String	userId referenced from Users table that ties a user to a comment.
Upvotes	Integer	Number modified as user's 'up-vote' a post or 'down-vote' a comment.
Message	String	Content of the comment.
Time Stamp	Number	UNIX timestamp of the date at time of creation.

Table 5: Comments Schema

3.3 The Scope of the Product

Below is the Use-Case Diagram for the User Interaction System.

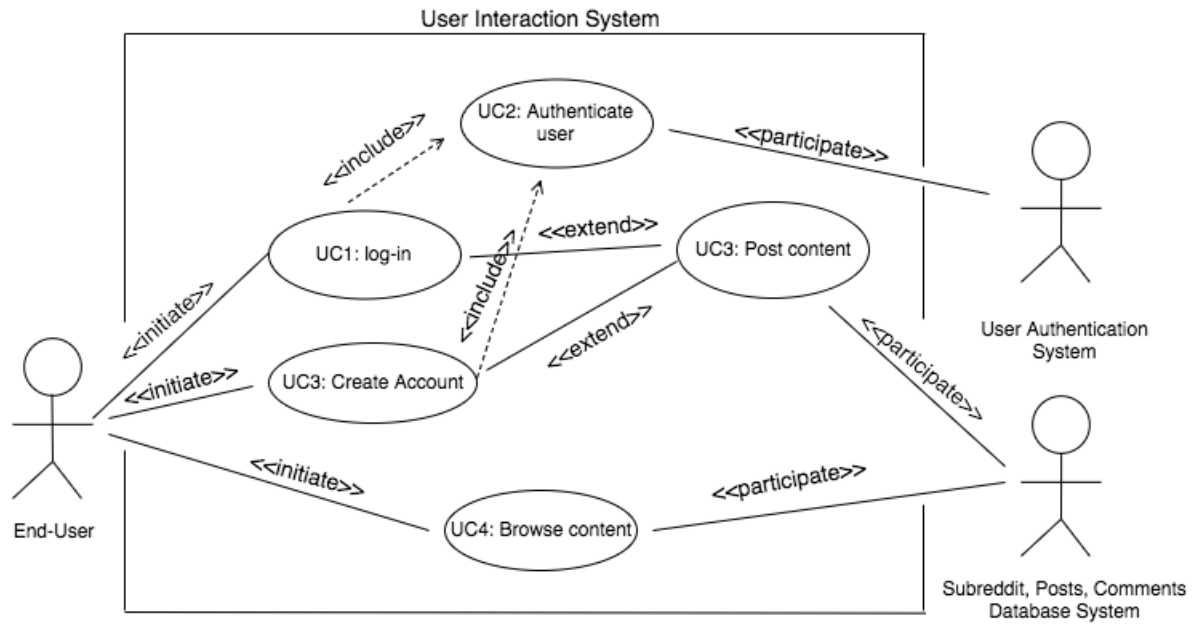


Figure 4: Use Case Diagram for the User Interaction System

3.4 Functional Requirements

Requirement Number: FR1

Description: A user should be able to create a profile, log-in, log-out, and delete their profile.

Rationale: If the user cannot create a profile, they cannot create posts or contribute content. Similarly, a user should have the right to permanently remove themselves from the application through deletion of their profile.

Fit Criterion: Able to create a user profile, verify through an email address, reset one's password, and delete application.

Requirement Number: FR2

Description: A user who is logged in should be able to create a post within a subreddit.

Rationale: Any authenticated user should be able to post content.

Fit Criterion: Posts shall be created on multiple accounts.

Requirement Number: FR3

Description: Any user should be able to browse content (not required to log-in).

Rationale: Users should not need to be authenticated when just browsing the application.

Fit Criterion: Both authenticated and anonymous users shall be able to browse through posts and comments in any subreddit.

Requirement Number: FR4

Description: Users should be able to edit or delete their posts and comments when logged on.

Rationale: Users should have control over the content and replies they submit.

Fit Criterion: Authenticated users shall have the ability to edit and delete their posts.

Requirement Number: FR5

Description: A user should be able to create a comment in response to a post when logged on.

Rationale: Users should be able to discuss content posted.

Fit Criterion: Authenticated users shall be able to comment on posts.

Requirement Number: FR6

Description: A user should be able to 'up-vote' or 'down-vote' posts and comments when logged on.

Rationale: Users should be able to have input on what they deem is interesting and be able to agree or disagree with other user's comments. This will ensure the content on the application is user-curated.

Fit Criterion: Authenticated users shall be able to 'up-vote' and 'down-vote' posts or comments once.

Requirement Number: FR7

Description: Posts can be sorted based on date posted and popularity.

Rationale: More popular or interesting posts(deemed by the community) should be shown to users with priority.

Fit Criterion: Posts with higher ratings shall be shown before lower rated posts.

Requirement Number: FR8

Description: User profiles show karma points(accumulated from their posts or comments)

Rationale: Users submitting quality content or have comments which the community values should be awarded.

Fit Criterion: User profiles shall show their accumulated karma points from all of their posts and comments.

4 Non-functional Requirements

4.1 Look and Feel Requirements

Requirement Number: NF1

Description: The GUI will be how the user interacts with the application. The GUI should include a log-in/sign-up screen, content posted on the application and click-able buttons. The buttons will allow the user to navigate the application as well as 'up-vote' and 'down-vote' content. Content should be sorted based on popularity.

4.2 Usability and Humanity Requirements

Requirement Number: NF2

Description: The application will be able to be used by anyone that can use a keyboard and mouse, or a mobile device's keyboard and UI.

4.3 Performance Requirements

4.3.1 Speed and Latency Requirements

Requirement Number: NF3

Description: The application shall respond to user input to make subreddits, posts, and comments. The application data shall update with new subreddits, posts, comments as soon as the user opens the application, or manually refreshing the page.

4.3.2 Reliability and Availability Requirements

Requirement Number: NF4

Description: The application shall be available wherever there exists an internet connection and as long as the Firebase realtime database is under maximum load.

4.3.3 Longevity Requirements

Requirement Number: NF5

Description: The application will be relevant for the life of Angular 4 and Ionic 2/3, as well as Javascript functional browsers.

4.4 Operational and Environmental Requirements

Requirement Number: NF6

Description: The product is to be used anywhere where there exists an internet connection, and there exists a device that has access to an internet browser.

4.5 Maintainability and Support Requirements

4.5.1 Maintenance Requirements

Requirement Number: NF7

Description: The application will have minimal maintenance requirements. The domain name will have to be renewed yearly. Changes to visual styling may be made without affecting the functionality of the application itself.

4.6 Security Requirements

Requirement Number: NF8

Description: Each user profile is password protected. This protects others from logging into another user profile and posting/updated/deleting content that is not theirs. There is an option for user's to reset their password as well via a "Forgot your password?" button.

4.7 Legal Requirements

Requirement Number: NF9

Description: The application should adhere to all laws

5 Project Issues

5.1 Open Issues

Back end database management

Authentication through Firebase has been completed but how the application manages data storing and data flow is still an issue.

5.2 Off-the-Shelf Solutions

5.2.1 Ready-Made Products

Since the application requires unique data management, it is not possible to purchase a solution.

5.2.2 Products that can be copied

The application is based off of the original reddit so it is possible to observe the source code and try to mimic their solution.

5.3 New Problems

5.3.1 Limitations in the Anticipated Implementation Environment That May Inhibit the New Product

Since the application is leveraging Firebase's free plan, if there are over 100 simultaneous connections or data transferred is over the allowed limit the application may not function correctly.

5.3.2 Follow-Up Problems

The application requires Firebase in order to function properly. If Firebase is shut down or offline there is nothing our developers can do about it.

5.4 Tasks

5.4.1 Project Planning

Task	Projected finish date
Subreddit, Post and Comment functionality	October 16, 2017
User profiles, Thread sorting	November 13, 2017
Extra features	November 27, 2017

Table 6: Project Planning Table

5.5 Risks

As with any online open forum or discussion board, a health and safety risk associated with this project is cyber-bullying or online harassment. There is also the case of copyright infringement or inappropriate content being posted. This will be up to the developers to prevent and curate while this application is in use. The developers email will also be available for users to report specific cases of harassment or inappropriate use of the application.

5.6 Costs

There will be no external costs involved in the implementation of the project because of the free hosting service provided by Google Firebase. However, if there are too many users or posts a premium Firebase plan may need to be purchased.

5.7 User Documentation and Training

The project will include a "Help" page which will instruct users upon creation of a log-in on how to create subreddits, posts, and upvote content.

The GUI will be easy enough to navigate that documentation will not be needed for users in order to browse content.

5.8 Waiting Room

The following requirements are not to be included in the initial product release.

- Curating and moderating content including but not limited to appointing moderators. This would require additional developers.

- Additional functionality including new sorting methods for content.
- Restriction of inappropriate content including an option for users to report other users, comments, posts, and subreddits.
- A messaging systems for users to have one-on-one conversations.

5.9 Ideas for Solutions

Further insight on Firebase User authentication and security. Proper hierarchy, teamwork, and documentation fo code with help to solve issues as they occur.

6 Appendix

6.1 List of Figures

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Table 8: List of Tables