Group 29 (AKT)
Test Plan

Alex Trudeau
400030148

Kathryn Kodama
400013582

Tommy Tran
001150067

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Contents

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Table 1: **Revision History**

Version	**Date**	**Notes**
1.0	18/10/17	Created Document
1.1	24/10/17	Updated content and formatting
1.2	26/10/17	Updated content
1.3	27/10/17	Finalized content for Rev.0
2.0	20/11/17	Started Rev.1
2.1	03/12/17	Updated content

***list of figures is not applicable to this document as of version 1.3**

1 General Information

1.1 Purpose

The purpose of this test plan is to verify that the program works as intended and was implemented correctly with the utmost confidence.

1.2 Scope

This test plan provides the basis for testing the Reddit-Clone program's functionality and that it properly mimics the functionality of the original open source project Reddit. The program allows for users to post, discuss, and curate user created content.

The testing of Reddit-Clone means to cover the entirety of the project through black box, white box, manual, and automated tests. This document is an outline of the testing methods including the testing tools to be utilized.

1.3 Acronyms, Abbreviations, and Symbols

Table 2: **Table of Abbreviations**

Abbreviation	**Definition**
AKT	Alex, Kathryn, Tommy; also the team name (see Definitions table)
PoC	Proof of concept, project as of October 16, 2017
DevPlan	Development Plan document
UI	User Interaction

Table 3: **Table of Definitions**

Term	**Definition**
AKT	The developer team for Reddit-Clone
Black Box Testing	A testing method where the code is tested without knowledge of the internal structure
Comment	An authenticated user's text response to another user's post or comment
Down-dote	A term for ”disliking” a post/comment on Reddit-Clone.
Dynamic Testing	A type of testing where the software is tested based on specific input values to see if it matches the expected output values
GUI	Graphic User Interface
Manual Testing	A type of testing where the tester plays the role of the end user and uses most of the application's features to ensure correct behaviour
Post	A submission by an authenticated user that contains text and/or media attachments
Reddit	The original Reddit open source projected to be recreated (http://www.reddit.com)
Reddit-Clone	The project being created.
Subreddit	A page containing the posts of a certain topic
System Testing	A type of testing where the entire software and integration is tested. System testing is a subset of black box testing.
Up-vote	A term for ”liking” a post/comment on Reddit-Clone.
White Box Testing	A type of testing where the software is tested with knowledge of the inner workings of the code

2 Plan

This section provides information on the Reddit-Clone project and the software testing plan. This plan is based off of the main functionality that exists as of the PoC as well as any additional functions outlined in the DevPlan.

2.1 Software Description

Reddit-Clone will allow authenticated users create posts, subreddits and comments as well as curate others' content through up-votes and down-votes. The program is implemented in JavaScript with Angular 4 and Ionic 2 framework.

2.2 Test Team

The testing team for Reddit-Clone are all members of the AKT Development team: Alex Trudeau, Kathryn Kodama, Tommy Tran. The lead tester will be Tommy Tran.

2.3 Tools Used for Testing

The dynamic testing will utilize the following tools. Jasmine with Karma framework and Angular 4 testing packages will be used to dynamically test the JavaScript functionality of this project. Through the use of Jasmine the testing team will carry out unit tests and end to end testing.

The HTML/CSS testing will be tested through static testing and observation on Unix, Windows, iOS, and Android environments.

2.4 Testing Schedule

Refer to the Gantt Chart located in the project GitLab for the testing schema. Testing is divided into the following categories within the Gantt chart: Account Management, Content Management, Navigation Methods. Each testing category is assigned to a different member of the AKT development team and associated with a start date and end date.

Table 4: **Testing Schedule (as outlined in the Gantt Chart)**

Category	**Group Member**	**Completion Date**
Set up testing framework	Kathryn Kodama; Tommy Tran	5/11/2017
Manual Testing: Authentication Methods	Alex Trudeau	08/11/2017
Manual Testing: Content Creation	Tommy Tran	09/11/2017
Manual Testing: Navigation Methods	Kathryn Kodama	15/11/2017
Manual Testing: Database Management	Tommy Tran	13/11/2017
Automatic Testing: Database Services	Alex Trudeau	17/11/2017
Manual Testing: Overall site with any additional features	All members of AKT team	04/12/2017

3 Traceability Matrix

Please view the requirements specification document to view the functional and non-functional requirements located in the traceability matrix below. The tests detailed our outlined in the sections below.

matrix.png

4 System Testing

4.1 Tests for Functional Requirements

4.1.1 Account Management

User account creation (valid inputs)

Test ID: FRT1-1
Type: Functional, Dynamic, Manual
Initial State: Not authenticated, on home page
Input: Enter valid username, email and password
Output: Email sent to inputted email(user cannot log in yet).
How the test will be performed: Tester will sign up and after successful sign up, check that an email was received. Database will also be verified for successful user creation.

User account creation (invalid inputs)

Test ID: FRT1-2
Type: Functional, Dynamic, Manual
Initial State: Not authenticated, on home page
Input: Enter invalid or already registered username/email
Output: Error message shown to user. This test generates an exception.
How the test will be performed: Tester will attempt sign up with an invalid or already used username or email.

Verify user account

Test ID: FRT1-3
Type: Functional, Dynamic, Manual
Initial State: After successful user account creation
Input: Open verification link in email
Output: Success message (User can now log in)
How the test will be performed: Tester will check account email and open the verification link

Log in

Test ID: FRT1-4
Type: Functional, Dynamic, Manual
Initial State: Prompted to log in
Input: Enter user information from previously created account
Output: Successful or failed authentication
How the test will be performed: The user will log into the application with an email not associated with any account (authentication fails). Then the user will log in with a previously created user account (authentication succeeds).

Log in (unverified)

Test ID: FRT1-5
Type: Functional, Dynamic, Manual
Initial State: User prompted to log in
Input: The user will enter user information from previously created account.
Output: An error message should appear notifying the user to verify their account via their email.
How the test will be performed: The user will log in with a previously created user account. The authentication succeeds but will then prompt the user to check their email to verify their account.

Log out

Test ID: FRT1-6
Type: Functional, Dynamic, Manual
Initial State: Authenticated, viewing homepage
Input: Log out button selected
Output: Log in/Sign Up button shown on homepage
How the test will be performed: Log out and then confirm that authenticated user privileges were lost.

4.1.2 Content Management

Post creation

Test ID: FRT2-1
Type: Functional, Dynamic, Manual
Initial State: Authenticated, create post modal opened
Input: Test post parameters
Output: Check post shows in subreddit
How the test will be performed: Authenticated account will create a test post and verify that a post shows in the posted subreddit afterwards

Subreddit creation

Test ID: FRT11-1
Type: Functional, Dynamic, Manual
Initial State: Authenticated, create subreddit modal opened
Input: Test subreddit name and description
Output: Subreddit created
How the test will be performed: Authenticated account will create a test subreddit and verify that the subreddit exists and was added to the subreddit navigation list

Content browsing

Test ID: FRT3-1
Type: Functional, Dynamic, Manual
Initial State: Application active and at home page
Input: View homepage and then select a subreddit
Output: Show posts from a variety of subreddits on homepage, show posts from specific subreddit when selected
How the test will be performed: Tester will manually view and verify that posts from multiple subreddits show on the homepage and when a subreddit is selected, posts from only that specific subreddit is shown

Delete posts

Test ID: FRT4-1
Type: Structural, Dynamic, Manual
Initial State: Authenticated
Input: Send delete request for test post to database
Output: Test post deleted
How the test will be performed: Authenticated test account will send a request to delete a post and then verify that the post has been successfully deleted.

Delete comment

Test ID: FRT4-2
Type: Structural, Dynamic, Manual
Initial State: Authenticated
Input: Send delete request for test comment to database
Output: Test comment deleted
How the test will be performed: Authenticated test account will send a request to delete a comment and then verify that the comment has been successfully deleted.

Create comment

Test ID: FRT5-1
Type: Structural, Dynamic, Manual
Initial State: Authenticated
Input: Send a request to create a test comment to database
Output: Test comment created
How the test will be performed: Authenticated test account will send a request to create a comment and then verify that the comment has been successfully created.

Up-voting a post

Test ID: FRT6-1
Type: Structural, Dynamic, Manual
Initial State: Authenticated
Input: Send a request to upvote test post to database
Output: Test post points increased
How the test will be performed: Authenticated test account will send a request to upvote a post and then verify that the post points has been successfully incremented.

Down-voting a post

Test ID: FRT6-2
Type: Structural, Dynamic, Manual
Initial State: Authenticated
Input: Send a request to downvote a test post to database
Output: Test post points decreased
How the test will be performed: Authenticated test account will send a request to downvote a post and then verify that the post points has been successfully decremented.

Up-voting a comment

Test ID: FRT6-3
Type: Structural, Dynamic, Manual
Initial State: Authenticated
Input: Send a request to upvote test comment to database
Output: Test comment points increased
How the test will be performed: Authenticated test account will send a request to upvote a comment and then verify that the comment points has been successfully incremented.

Down-voting a comment

Test ID: FRT6-4
Type: Structural, Dynamic, Manual
Initial State: Authenticated
Input: Send a request to downvote a test comment to database
Output: Test comment points decreased
How the test will be performed: Authenticated test account will send a request to downvote a comment and then verify that the comment points has been successfully decremented.

User karma points

Test ID: FRT6-5
Type: Structural, Dynamic, Manual
Initial State: Authenticated
Input: Upvote/downvote a user's post/comment, select the user's name to open user profile
Output: User profile modal opened(karma points should have changed)
How the test will be performed: Tester will upvote or downvote a user's post or comment and then select the user to view their information. The karma points should then be verified to change according to the upvote or downvote.

Sorting posts (Home page)

Test ID: FRT7-1
Type: Functional, Dynamic, Manual
Initial State: Authenticated, on home page
Input: Select all three different sorting options: Hot, New and Top
Output: All posts sorted according to selection
How the test will be performed: Tester will select different sorting option and verify that sorting works. Hot shows more recently popular posts, New shows newest posts and Top shows posts with highest karma points.

Sorting posts (Subreddit)

Test ID: FRT7-2
Type: Functional, Dynamic, Manual
Initial State: Authenticated, on test subreddit
Input: Select all three different sorting options: Hot, New and Top
Output: All posts sorted according to selection
How the test will be performed: Tester will select different sorting option on the test subreddit and verify that sorting works. Hot shows more recently popular posts, New shows newest posts and Top shows posts with highest karma points.

4.1.3 Navigation Methods

View user profile

Test ID: FRT8-1
Type: Functional, Dynamic, Manual
Initial State: Application active
Input: Select user to open user profile
Output: User profile modal opened
How the test will be performed: Tester will select a user to view their information and verify that all of the information is correct with the database.

Edit user profile picture

Test ID: FRT8-2
Type: Functional, Dynamic, Manual
Initial State: Application active
Input: Select update photo and add link url, click ”Submit”
Output: User profile picture changed
How the test will be performed: Tester will select a user to view their information and change the profile photo. The user will log in and out to ensure the new profile picture has been saved to their account.

View subreddit

Test ID: FRT9-1
Type: Functional, Dynamic, Manual
Initial State: Application active
Input: Select a test subreddit or use subreddit navigation
Output: Test subreddit displayed
How the test will be performed: Tester will have the application opened and select a subreddit. The subreddit should then be displayed

Search for existing subreddit

Test ID: FRT10-1
Type: Functional, Dynamic, Manual
Initial State: Application active
Input: Input a subreddit name
Output: Show subreddit (if it exists)
How the test will be performed: Tester will have the application opened and search for a subreddit. Since the subreddit exists, the tester can then verify that the search successfully moves user to specified subreddit.

Search for non-existing subreddit

Test ID: FRT10-2
Type: Functional, Dynamic, Manual
Initial State: Application active
Input: Input a subreddit name
Output: No subreddit shown
How the test will be performed: Tester will have the application opened and search for a subreddit that does not exist.

4.2 Tests for Nonfunctional Requirements

4.2.1 Portability

Open app on multiple operating systems and platforms

Test ID: NFRT1-1
Type: Non-Functional, Dynamic, Manual
Initial State: Application closed, not running
Input: Navigate to website
Output: Page will load, posts will load if connected to internet
How the test will be performed: Tester will navigate to the application from an internet browser. The home page of the application should load with popular posts.

4.2.2 Performance

Retrieving data within a 5 second response time

Test ID: NFRT2-1
Type: Functional, Dynamic, Manual
Initial State: Application active
Input: Select any button on the application or refreshing the page
Output: Page requested loads within 5 seconds.
How the test will be performed: Navigation through various pages of the apps and creating posts, logging in, up voting/down voting comments

Reliability/Availability: Accessing the application with internet accesss

Test ID: NFRT2-2
Type: Functional, Dynamic, Manual
Initial State: In a location with wifi access or data accesss
Input: Visit the correct URL of the project hosted
Output: Application loads on device
How the test will be performed: Tester will be in a location with internet access and try to navigate to the project URL.

4.2.3 Security

Moderator control

Test ID: NFRT3-1
Type: Non-Functional, Dynamic, Manual
Initial State: Logged on to Firebase on AKT development team account
Input: Navigate to authentication database/posts database
Output: Specified user accounts/comments/posts deleted
How the test will be performed: A member of the AKT development team will access the Firebase databases and remove users or posts/comments/subreddits that contain online harassment or inappropriate content.

User attempts to access another user's account

Test ID: NFRT3-2
Type: Non-Functional, Dynamic, Manual
Initial State: On website, not logged in as user
Input: Enter another user's email and some password
Output: Application should present error in credentials message
How the test will be performed: A member of the AKT development team will attempt enter a user's email into the login component and a random password, then attempt to log in.

5 Tests for Proof of Concept

Proof of concept testing will be focused on manual testing of the core functionalities of the project. Proof of concept testing will focus on setting the stage for how the project will be tested going forward. In terms of testing for the proof of concept, two major functionalities will be tested: account creation and management and creating content (posts, subreddits, comments).

5.1 Account Creation and Management

5.2 Creating Content

6 Comparison to Existing Implementation

In order to ensure that the project has at least the core functions of Reddit, all functional types tests that we use can also be applied to the original Reddit application.

7 Unit Testing Plan

7.1 Unit testing of internal functions

The Jasmine test framework will be leveraged in order to unit test the functionality of the components and services. The core functions that will be tested are within the database service (database.service.ts) which handles almost all of the data transfer between the application and Firebase. These tests will mainly consist of structural tests to verify that the application receives proper information from the database. There will be no use of stubs or drivers in unit testing.

7.2 Coverage Metrics

One coverage metric used for testing is testing against lines of code. The metric is as follows:
(A) = total lines of code being tested
(B) = total lines of testing code executed
(B) / (A) x 100= test coverage percentage

Other coverage metrics include the number of requirements compared to the number of test cases that cover that specific requirement. The traceability matrix mentioned above is well suited to analyze this metric.

Additionally, the number of test cases passed and failed will be a good metric to view the coverage of the test plan.