

Software Test Report
Harkify Application
Version 1.0.0
Team Bravo
SWEN 670

Revision History

Author	Date	Reason For Changes	Version
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1 Introduction

1.1 Purpose

The purpose of this document is to present the testing completed on Harkify, to improve code quality and code coverage. To be able to implement a system of quality control, a series of automated, regression and user testing has been applied to Harkify. This document will present the final findings of those tests to see if Harkify achieves to meet its requirements and completes its use cases.

The document will first provide an overview of the application, followed by the testing strategy that was taken and provide information on the testing processes. Finally, the testing suites will provide the procedures that were taken, the goals of each test, and the outcomes of those tests.

1.2 Application Overview

The memory support application project was created by Dr. Mir Mohammed Assadullah and presented to his class as a capstone project. The application is intended to be a memory support of conversations that a person may have throughout the day. It will record and save notes on the conversation based on trigger words said by the user so that the user can return to the notes when wanting to recall information from conversations. Team Bravo developed their solution of the application called Harkify. Other aspects that the application must achieve is to record only the user that set up the application, provide as much customization as possible; for example, wake words, trigger words, amount of time a note is saved, and time the application should record. Finally, each note should be recorded, saved, and editable. The application was required to be developed using flutter and dart languages and deployable on both android and IOS.

1.3 Testing Strategy

In an effort to be able to test all parts of the application, the testing strategy will cover three types of testing: Unit/Widget, User Acceptance and Regression testing. These tests will allow us to test multiple aspects of the application including features that may not be able to only be done through automated testing.

1.3.1 Unit and Widget

The flutter framework provides a solution to be able to unit test the code as well as test the UI capabilities through widget testing. It allows testing of the widgets in the testing environment in a controlled scenario. Both of these testing systems encapsulate the entirety of the automated testing.

1.3.2 User Acceptance

While the code coverage can be improved through the automated testing, the integration of each of the audio inputs and outputs as well as the completion of use cases, needs to be tested through user acceptance testing. The testers and users will make sure that the application fulfills the everyday use cases.

1.3.3 Regression

After defects have been identified, they will be reported to the development team to be corrected. When the defects are fixed, the tester will go back and re-assess the fix and the functionalities, and features surrounding the fix to prove that other features were not affected. These defects and fixes are also reported.

2 Metrics and Testing

2.1 Flutter Automated Test Suites

Test Type	Pass	Fail
Unit Tests	13	0
Widget Tests	6	0
End to End Integration Test	1	0

2.2 User Acceptance Test Suite

2.2.1 Test Case 1: Start Application

No Test - Not Implemented

2.2.2 Test Case 2: Train Voice Recognition

No Test - Not Implemented

2.2.3 Test Case 3: Record Save Trigger

No Test - Not Implemented

2.2.4 Test Case 4: Record End Trigger

No Test - Not Implemented

2.2.5 Test Case 5: Record Search Trigger

No Test - Not Implemented

2.2.6 Test Case 6: Save Note

Test Case ID	TC-6 Save Note	Test Name	Successfully Saving a Note	
Tester Witness	Tyler P. None (Teams interfered with microphone during formal testing, tests were executed offline.)	Test Date	04 Aug 2021	
Pre-Condition(s)	<ul style="list-style-type: none">Application is open, tester’s voice has been trained, a Save trigger has been recorded, and an End trigger has been recorded.			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester speaks the Save trigger (“Ok so, I’d like to remember…”) followed by the sentence, “The quick brown fox jumps over the lazy dog 1 2 3 4 5 6 7 8 9 0”		System begins recording a note and displaying it as text.	<ul style="list-style-type: none">PassPass w/ exceptionsFail	
Tester speaks the End trigger (“is that right”).		System shows a confirmation that the note has been saved, and a sentence containing “The quick brown fox jumps over the lazy dog 1 2 3 4 5 6 7 8 9 0”	<ul style="list-style-type: none">PassPass w/ exceptionsFail	Deviation: Button press was used to end recording.
Test Case ID	TC-6 Save Note	Test Name	Saving a Note Without an End Trigger	

Tester Witness	Tyler P. None (Teams interfered with microphone during formal testing, tests were executed offline.)	Test Date	15 Jul 2021
Pre-Condition(s)	<ul style="list-style-type: none"> Application is open, tester's voice has been trained, and a Save trigger has been recorded. 		
Action	Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester speaks the Save trigger ("Ok so, I'd like to remember...") followed by the sentence, "This text note is for testing purposes only"	System begins recording a note and displaying it as text.	<ul style="list-style-type: none"> Pass Pass w/ exceptions Fail 	
Tester is quiet for the number of seconds specified in the application settings to trigger the end of note saving.	System shows a confirmation that the note has been saved, and a sentence containing "This text note is for testing purposes only"	<ul style="list-style-type: none"> Pass Pass w/ exceptions Fail 	Recording did not automatically save without user input.
Test Case ID	TC-6 Save Note	Test Name	No Note to Save
Tester Witness	Tyler P. None (Teams interfered with microphone during formal testing, tests were executed offline.)	Test Date	04 Aug 2021
Pre-Condition(s)	<ul style="list-style-type: none"> Application is open, tester's voice has been trained, a Save trigger has been recorded, and an End trigger has been recorded. 		
Action	Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues

Tester speaks the Save trigger (“Ok so, I'd like to remember...”), then immediately speaks the End trigger (“is that right”).		The application does not save any note.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	Recording captured the End Trigger as the note.
Test Case ID	TC-6 Save Note	Test Name	Successfully Saving a Long Note	
Tester	Tyler P.	Test Date	04 Aug 2021	
Witness	None (Teams interfered with microphone during formal testing, tests were executed offline.)			
Pre-Condition(s)	<ul style="list-style-type: none">• Application is open, tester’s voice has been trained, a Save trigger has been recorded, and an End trigger has been recorded.			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester speaks the Save trigger (“Ok so, I'd like to remember...”) followed by this text: “Mr. Dursley was the director of a firm called Grunnings, which made drills. He was a big, beefy man with hardly any neck, although he did have a very large moustache. Mrs. Dursley was thin and blonde and had nearly twice the usual amount of neck, which came in very useful as she spent so much of her time craning over garden fences, spying on the neighbors. The Dursleys had a small son called Dudley and in their opinion there was no finer boy anywhere.”		System begins recording a note and displaying it as text.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	
Tester speaks the End trigger (“is that right”).		System shows a confirmation that the note has been saved, and the correct content for the saved note.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	Deviation: Button press was used to end recording.

2.2.7 Test Case 7: View Note

Test Case ID	TC-7 View Note	Test Name	Successfully Viewing a Note	
Tester	Tyler P.	Test Date	04 Aug 2021	
Witness	Damion S.			
Pre-Condition(s)	<ul style="list-style-type: none">Application is open, and a text note was previously saved			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester selects the “View Notes” option from the menu.		System displays the view notes screen.	<ul style="list-style-type: none">PassPass w/ exceptionsFail	
Tester selects a text note from the View Notes list.		System shows the full content of the selected note on the screen. Selected note includes Edit and Delete options.	<ul style="list-style-type: none">PassPass w/ exceptionsFail	
Test Case ID	TC-7 View Note	Test Name	Editing a Note	
Tester	Tyler P.	Test Date	04 Aug 2021	
Witness	Damion S.			
Pre-Condition(s)	<ul style="list-style-type: none">Application is open, a text note was previously savedThe tester is on the “View Notes” screen.			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues

Tester selects a note to Edit.		System shows the full content of the selected note in an editable format. System shows Save and Cancel options.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	<ul style="list-style-type: none">•
Tester adds the word “TEST” at the beginning of the text note and again at the end of the text note.			N/A	
Tester selects the Save option.		System shows the View Note screen again with “TEST” at the beginning of the text note and again at the end of the text note.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	<ul style="list-style-type: none">•
Test Case ID	TC-7 View Note	Test Name	Deleting a Note	
Tester Witness	Tyler P. Damion S.	Test Date	04 Aug 2021	
Pre-Condition(s)	<ul style="list-style-type: none">• Application is open, a text note was previously saved, and the tester is viewing a text note.			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester selects the Delete option.		System asks for a confirmation that the note should be deleted.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	<ul style="list-style-type: none">•
Tester selects Yes.		System shows a confirmation that the note has been deleted.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	System does not show a confirmation of deletion.

		Deleted note is no longer displayed in the View Notes list.		<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	<ul style="list-style-type: none">•
Test Case ID	TC-7 View Note	Test Name		Abandoning Edits to a Note	
Tester	Tyler P.	Test Date		04 Aug 2021	
Witness	Damion S.				
Pre-Condition(s)	<ul style="list-style-type: none">• Application is open, a text note was previously saved.• Tester is viewing the “View Notes” screen				
Action		Expected Output		Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester selects a note to Edit.		System shows the full content of the selected note in an editable format. System shows Save and Cancel options.		<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	<ul style="list-style-type: none">•
Tester adds the word “TEST” at the beginning of the text note and again at the end of the text note.				N/A	
Tester selects the Back option.		System shows the View Note screen again without “TEST” at the beginning of the text note or at the end of the text note.		<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	<ul style="list-style-type: none">•
Test Case ID	TC-7 View Note	Test Name		Abandoning Deletion of a Note	
Tester	Tyler P.	Test Date		04 Aug 2021	
Witness	Damion S.				

Pre-Condition(s)	<ul style="list-style-type: none"> Application is open, a text note was previously saved, and the tester is viewing a text note. 		
Action	Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester selects the Delete option.	System asks for a confirmation that the note should be deleted.	<ul style="list-style-type: none"> Pass Pass w/ exceptions Fail 	•
Tester selects No.	System returns to the View Note screen with the complete text note and options for Edit and Delete.	<ul style="list-style-type: none"> Pass Pass w/ exceptions Fail 	•

2.2.8 Test Case 8: View Settings

Test Case ID	TC-8 View Settings	Test Name	Successfully Viewing Application Settings
Tester	Tyler P.	Test Date	04 Aug 2021
Witness	Damion S.		
Pre-Condition(s)	<ul style="list-style-type: none"> Application is open. 		
Action	Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester selects the “View Settings” option from the menu.	Application displays the settings screen.	<ul style="list-style-type: none"> Pass Pass w/ exceptions Fail 	
	Settings screen includes the note purge option.	<ul style="list-style-type: none"> Pass Pass w/ exceptions Fail 	

		Settings screen includes the silence delay option.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	<ul style="list-style-type: none">•
Test Case ID	TC-8 View Settings	Test Name	Changing Note Purge Setting	
Tester	Tyler P.	Test Date	04 Aug 2021	
Witness	Damion S.			
Pre-Condition(s)	<ul style="list-style-type: none">• Application is open, and the user is on the “View Settings” page.			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester changes the text note purge setting, and selects the Save option.		The system shows the changed note purge setting value.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	<ul style="list-style-type: none">•
Tester restarts the app, and returns to the settings page.		The system shows the changed note purge setting value.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	<ul style="list-style-type: none">•

2.2.9 Test Case 9: Search Notes By Voice

Test Case ID	TC-9 Search Notes By Voice	Test Name	Successfully Searching for a Note
Tester	Tyler P.	Test Date	04 Aug 2021
Witness	None (Teams interfered with microphone during formal testing, tests were executed offline.)		
Pre-Condition(s)	<ul style="list-style-type: none">• Application is open, test case 6.1 has been executed.• Tester is viewing the “View Notes” screen.		

Action	Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester speaks the Search trigger (“Ok so, what did I talk about...”) followed by, “brown fox.”	The system speaks the following text note contents, “The quick brown fox jumps over the lazy dog 1 2 3 4 5 6 7 8 9 0“ through the phone’s speaker.	<ul style="list-style-type: none"> • Pass • Pass w/ exceptions • Fail 	Testing was unable to search by voice trigger.

2.2.10 Test Case 10: View Notes

Test Case ID	TC-10 View Notes	Test Name	Successfully Viewing All Notes	
Tester	Tyler P.	Test Date	04 Aug 2021	
Witness	Damion S.			
Pre-Condition(s)	<ul style="list-style-type: none">Application is open, a text note was previously saved.			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester selects the “View Notes” options.		The system shows the first 100 characters of all saved notes, the date/time saved for each note, and whether the text note is favorited for each note.	<ul style="list-style-type: none">PassPass w/ exceptionsFail	
Test Case ID	TC-10 View Notes	Test Name	Successfully Viewing No Notes	
Tester	Tyler P.	Test Date	04 Aug 2021	
Witness	Damion S.			
Pre-Condition(s)	<ul style="list-style-type: none">Application is open, no text notes were previously saved.			

Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester selects the “View Notes” options.		The system shows a message that no text notes were found.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	
Test Case ID	TC-10 View Notes	Test Name	Successfully Searching for a Note	
Tester	Tyler P.	Test Date	04 Aug 2021	
Witness	Damion S.			
Pre-Condition(s)	<ul style="list-style-type: none">• Application is open, test case 6.1 has been executed, and the View Notes option has been selected.			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester selects the search bar button, types in “brown fox,” and then selects the Search button.		The system shows the following text note as a matching result, “The quick brown fox jumps over the lazy dog 1 2 3 4 5 6 7 8 9 0“.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	
Test Case ID	TC-10 View Notes	Test Name	Searching With No Results	
Tester	Tyler P.	Test Date	04 Aug 2021	
Witness	Damion S.			
Pre-Condition(s)	<ul style="list-style-type: none">• Application is open, test case 6.1 has been executed, and the View Notes option has been selected.			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues

Tester selects the search bar button, types in “twas brillig” and then selects the Search button.		The system shows an indication that no text notes were found that matched that phrase and that the user should search again.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	
		The system does not play any text notes through the system speakers.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	<ul style="list-style-type: none">•
Test Case ID	TC-10 View Notes	Test Name	Searching Without a Filter	
Tester	Tyler P.	Test Date	04 Aug 2021	
Witness	Damion S.			
Pre-Condition(s)	<ul style="list-style-type: none">• Application is open, test case 6.1 has been executed, and the View Notes option has been selected.			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester selects the search bar button, types in no text, and then selects the Search button.		The system shows the full list of current text notes without filtering them through a search.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	<ul style="list-style-type: none">•

2.2.11 Test Case 11: Stop Application

No test - Not tested. The application is not installed for testing, and would have to be re-deployed to the emulator if it were stopped.

2.2.12 Test Case 12: Encrypt Documents

Test Case ID	TC-12 Encrypt Documents	Test Name	Successfully Encrypt documents
Tester	Tyler P.	Test Date	04 Aug 2021
Witness	N/A, code review only.		

Pre-Condition(s)	<ul style="list-style-type: none"> User has previously saved a note. 		
Action	Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
<p>Tester reviews the note saving code, and verifies the application is using encryption when saving files.</p> <p><i>Saved notes are not available to non-rooted phones since they are not saved in a location that users are allowed to access.</i></p>	Code includes encryption for saving files.	<ul style="list-style-type: none"> Pass Pass w/ exceptions Fail 	<ul style="list-style-type: none">

2.2.13 Test Case 13: Favorite Pages

Test Case ID	TC-13 Favorite Pages	Test Name	Successfully save note to Favorite Page	
Tester	Tyler P.	Test Date	04 Aug 2021	
Witness	Damion S.			
Pre-Condition(s)	<ul style="list-style-type: none">• The user must have previously saved notes.• The notes screen is open.			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester selects the note screen.		The system displays the available notes.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	
Tester marks a note as a favorite.		The system indicates the note is favorited.	<ul style="list-style-type: none">• Pass• Pass w/ exceptions• Fail	There is no available option for marking a notes as a favorite.

2.2.14 Test Case 14: Notifications

No Test - Not Implemented

2.2.15 Test Case 15: Training Videos

Test Case ID	TC-15 Training Videos	Test Name	Successfully view Training Videos	
Tester	Tyler P.	Test Date	04 Aug 2021	
Witness	Damion S.			
Pre-Condition(s)	<ul style="list-style-type: none">The application is currently open and the user is under the <i>Settings</i> screen.			
Action		Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester selects the “Training Videos” option.		The system displays the training video for the application.	<ul style="list-style-type: none">PassPass w/ exceptionsFail	
Testers selects the video to play.		The system begins playing the selected video.	<ul style="list-style-type: none">PassPass w/ exceptionsFail	

2.2.16 Test Case 16: IOS Support

Test Case ID	TC-16 IOS Support	Test Name	IOS Support
Tester	Elshaday M.	Test Date	03 Aug 2021
Witness	No Witness due to IOS availability		
Pre-Condition(s)	None		

Action	Expected Output	Test Result (Pass/Fail)	Comments / Deviations / Issues
Tester verifies all functionality listed in Test Cases 1-15 on an IOS device.	All features function the same as on Android.	<ul style="list-style-type: none"> • Pass • Pass w/ exceptions • Fail 	<ul style="list-style-type: none"> • Menu text displays half of text- added margin around it. • Voice, speech recognition and recording not initializing with a click of microphone. Upon installation of app, it does initially ask for permission settings.

3 Items Not Tested

Test cases 1-5 were originally designed to test the initial startup process of recognizing the user's voice and defining the triggers for starting and stopping recording, as well as the trigger for searching for recordings. Harkify's use of the Picovoice libraries means that the user does not need to configure triggers when starting the application for the first time, making the originally defined test cases meaningless.

Test case 14 was designed to test notification functions in the application; however, notifications were not implemented in the final tested version due to development time constraints.

The testing of Harkify did not include having users with short-term memory problems test the application. Users testing the application would have proven to be very difficult given the limited time for this project. At best feedback could have been solicited from prospective users by showing them prototypes and asking them to complete use cases using these mockups of the system under construction.

Common smartphone tools that are common among expected Harkify users, such as screen magnifiers and narrators were not tested to be compatible with Harkify. Performance testing was not conducted, due to the time required and the fact that the backend consists of requests to local libraries, and REST API calls to Microsoft Azure, therefore testing of load was not a concern. It would be useful to know how Harkify uses system resources uses data, but unit/widget testing and user acceptance testing are more important at this time.

4 Conclusion

4.1 Defects Identified

Summary	Created	Updated	Status	Resolution
Microphone and recording not initialized for IOS	Today 4:06 PM	Today 4:20 PM	To Do	Unresolved
Testing was unable to search by voice trigger.	Today 2:45 AM	Today 2:45 AM	To Do	Unresolved
Using the command "Ok so, what did I talk about test" throws an exception	Friday 1:47 AM	Friday 2:14 AM	Done	Done
Voice searching for notes by "today" causes the View Notes screen to go blank	Friday 1:37 AM	Monday 4:53 AM	Done	Done
Starting a recording from a screen other than the Record Notes screen does not open the Record Notes screen.	Friday 1:29 AM	Friday 2:11 AM	To Do	Unresolved
App does not provide any feedback that the wake word or Start recording command was successful.	Friday 1:23 AM	Friday 2:10 AM	To Do	Unresolved
Note recording does not save with End word	Friday 1:21 AM	Today 2:36 AM	To Do	Unresolved
Voice note does not automatically save after a period of silence	Friday 1:18 AM	Today 2:36 AM	To Do	Unresolved
Phone back button goes through too much history.	Friday 1:03 AM	Friday 2:10 AM	To Do	Unresolved
Personal Details edit screen uses an edit icon instead of a save icon.	Friday 12:58 AM	Friday 2:11 AM	Done	Done
Personal Details delete button overflows the screen	Friday 12:57 AM	Friday 2:11 AM	Done	Done
Inputting a no-result search value still prompts a voice response	26/Jul/21 2:15 AM	29/Jul/21 9:20 PM	Done	Done

Delete note does not prompt user to confirm deletion.	26/Jul/21 2:12 AM	29/Jul/21 11:35 PM	Done	Done
Selecting the "Edit" option for a note returns the user to the View Notes screen.	26/Jul/21 2:11 AM	29/Jul/21 9:19 PM	Done	Done

[14 issues](#)

4.2 Exit Criteria

- All test cases have been executed, and results recorded.
- All defects have been recorded in JIRA.
- Not all critical defects have been fixed and re-tested due to development time constraints.

4.3 Conclusion/Sign Off

Name	Signature	Date
Professor Dr. Mir Assudullah		
Team Bravo Harkify Project Manager Raul Benavides		