STeMS Test Report

UMGC SWEN 670

Team B

Summer 2023

August 5, 2023

Version 1.0

Version	Date Created	Version Description
0.1	07/24/2023	Initial Revision
1.0	08/05/2023	Milestone 4 Submission

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Executive Summary

The following report is for the result of testing done on the ConvoBuddy application for the backend services generated by Team B of the Summer 2023 SWEN 670 UMGC Capstone course. The tests were conducted to ensure that the application meets all the requirements that were discussed with the client and to detail any defects or limits that the application has. The testing consists of functional and nonfunctional tests as well as breaking up the functional tests into those that reference the BESie browser extension and the various APIs. There are a total of 44 functional tests and 8 nonfunctional tests that were originally planned, but 28 functional tests were executed as well as 5 nonfunctional tests. The results of each test are documented within their specific table and any defects will be listed at the end of the report in the Test Results section.

Introduction

Purpose

This document, test report (TR), intends to lay out the scope, test strategy, test suite, test execution findings, if any, and metrics for a single test session of the application under test, the STeMS DevSecOps Continuous Integration/Continuous Deployment (CI/CD) pipeline within GitHub Actions. The test report therefore shall be a summary of the conducted test cycle and include the activities, details, and results of the testing performed. It is a deliverable that can be utilized by stakeholders to evaluate and/or measure the application's quality. Results are a representation of the application state in its current version. Defects identified, if any, can be analyzed to inform for remediation, amelioration, or next steps before release. If corrective action is required, the development team can use the information provided in the "Functional Test Execution Findings" section to assist in resolution. This TR documents the results of developmental, system, user acceptance, and regression testing as of August 5, 2023. Explicitly, it consists of:

- Definition of the system functions tested.
- Assessment of the performance of the functions tested.
- Analysis of the system capabilities demonstrated during Testing.
- Identification specific deficiencies and any indicated improvements in system design or operation based on the results of the Testing.
- Demonstration of the workflow processes to be automated or supported.
- Presentation of determination concerning the readiness of the system for deployment.

Scope

The test cycle scope consists of core functionality of the Continuous Integration/Continuous Deployment pipeline and its various use case scenarios. To confirm actual output compared to expected behavior, the team set the verification of the system functionality. It includes the use of configurations and options to enable, disable, or control the flow of development operations processes. Therefore, it allows verifying that the CI/CD pipeline meets requirements as specified. Out-of-scope components include, and are not limited to, external testing activities such as usability testing, penetration testing, and performance testing of the exclusive and open-source tools used to build STeMS project.

Project Documents

To adequately manage, control and deliver the STeMS backend application, a suite of vital documents is created including this Test Report. Artifacts that are provided within the document package contain important information for the application's ongoing support and operation throughout its life cycle. The documents created with the specific project milestones are included within the "Project Documentation Package" in the following table.

Table 1. Project Documentation Package

	Document	Version	Date
1	Project Management Plan (PMP)	4.0	8/04/2023
2	Software Requirements Specification (SRS)	4.0	7/24/2023
3	Technical Design Document (TDD)	3.0	7/24/2023
4	Programmers Guide (PG)	2.0	7/24/2023
5	Deployment and Operations (DevOps)	2.0	8/04/2023
6	User Guide (UG)	1.0	8/05/2023
7	Test Report (TR)	1.0	8/05/2023

Stakeholders

The project stakeholders are included in the following table:

Table 2. Project stakeholders

Stakeholder Name	Project Role
Mir Assadullah	Professor, Program Manager
Roy Gordon	Project Mentor
Robert Wilson	DevSecOps Mentor
Babers, David	Project Manager
Nagy, Jonathan	Team Lead
Babers, David	
Hicks, Collin	
Iko, Benny	
Mccrillis, Scott	Developers

Thomare, Amol	
Ben Lakbir, Mohamed	
De Souza, Robson	
Huynh, Johnny	
Mekonnen, Kidanu	
Nagy, Jonathan	QA/Testers

Definitions, Abbreviations, and Acronyms

The definitions, abbreviations, and acronyms used in this document are included in the following table:

Table 3. Project abbreviations and acronyms

Abbreviation/Acronym	Definition
CI/CD	Continuous Integration/Continuous Deployment
DEV	Development
DevSecOps	Development, Security, and Operations
iOS	iPhone Operating System
PM	Project Manager
PMP	Project Management Plan
PO	Product Owner
QA	Quality Assurance
SDLC	Software Development Lifecycle
SRS	Software Requirements Document
STeMS	Short-Term Memory System
STP	Software Test Plan
SWEN	Software Engineering
TDD	Technical Design Document
TRTM	Test Requirements Traceability Matrix
UAT	User Acceptance Testing
UI	User Interface
UMGC	University of Maryland Global Campus

UX	User Experience

References

IBM. (n.d.). What is software testing? Retrieved July 31, 2023, from
https://www.ibm.com/topics/software-testing

Testing

Testing provides a multitude of benefits to a software product as part of the software development life cycle (SDLC). Testing helps ensure reliability and stability of a software created during the construction phase and provides a way to ensure that the result of the projects efforts matches the requirements specified at the initiation phase and is up to quality standards in regard to functionality, security, user experience, and contains a minimal number of defects. While testing is expensive with respect to monetary costs, requiring planning, preparation, and many person-hours of execution, companies save millions per year on building software with proper testing and QA processes (IBM, n.d.).

Test Approach

All software flaws will be reported on the GitHub board. They will be logged with their type, actual results, expected results, level of criticality, and traced to a specific requirement.

Unit/Widget Testing – Unit tests will provide the foundation for STeMS testing, verify the validity of classes and algorithms employed in the STeMS backend services. Widget testing is at a minimum as widgets are primarily a UI concern and the front-end team is responsible for developing that part of the application.

Integration/Regression Testing – As individual components of the application are built, a robust testing cycle to help integrate the application with local device and minimize re-work and defects must be ensured. With each new software build, the team will make sure that new code will not influence current functionalities. Both integration and regression testing can be achieved with assistance from test automation suite via Flutter integration tests. Flutter integration tests provide a similar environment to developing unit tests, reducing the learning curve, and increasing speed and proficiency of developers writing integration tests. Automated testing will considerably reduce effort later by reducing the criticality of manual regression testing each component. A test that would normally take minutes to execute, will be completed in seconds.

Testing Tools

- Android Studio (2022 Flamingo)
    - Android Emulator
    - Device File Explorer
- Android Command Line Tools (11.0)
    - ADB – Android Debug Bridge

Testing with an emulator or a physical Android device, Android Studio is an invaluable resource. Android Studio is an easy way to set up one or more emulated Android devices, but also provides tooling for working with Android OS file systems. The Device File Explorer allows testers to view the file contents of the device app documents folder of debug builds. Release builds are designed to isolate the contents of each app's documents folder, including the Device File Explorer.

Figure 1. Android Studio Device File Explorer
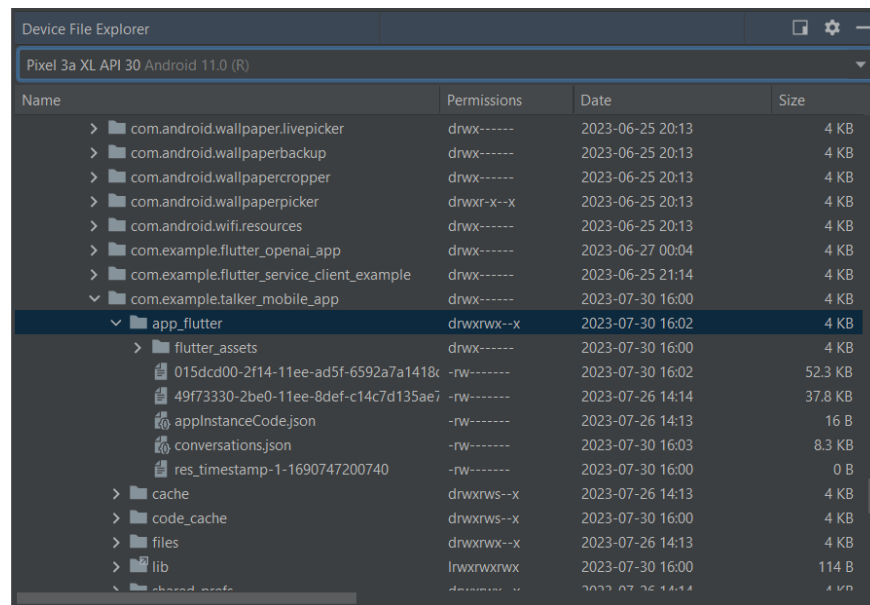
The ADB tool provides a command line tool for interfacing with Android devices. It provides shell access to the device and can redirect points for testing. When running BESie locally, the tcp port 8080 can be directed from the device to the host PC, allowing ConvoBuddy to connect to BESie on the host machine through http://localhost:8080/.

```
> adb reverse tcp:8080 tcp:8080
```

Pass/Fail Criteria

- Tests considered successful once no Major or Critical bugs are observed over repeated consecutive testing sessions.
- Audio and transcription quality will be considered when performing tests. Low quality audio will be rerecorded to improve before failing a test.
- Any test where a Major or Critical bug exists or is uncovered is considered a failure.

Defect Severity Levels

There are four levels of severity that will be used to track any found defects:

1. Low – Meant for non-functional, non-essential issues that do not take away from functional or performance requirements (minor text/display bugs).
2. Moderate – Includes both functional and non-functional bugs that can be worked around.
3. Major – Functional requirement bugs that may delay further development and need to be addressed immediately.
4. Critical – An issue that prevents any further development of one or more features required for project success.

Tests Conducted

Test No	Requirement No	Application Area	Test Type	Prerequisite	Description
1A	1	Recording API	Functional	A recording must be successfully created to edit its metadata. Access to local storage must be enabled.	The ConvoBuddy application can update recording metadata.
2A	2	Recording API	Functional	A recording must exist for metadata to be retrieved. Access to local storage must be enabled.	The ConvoBuddy application can get recording metadata.
5A	5	Recording API	Functional	One or more recordings must exist in local storage. Access to local storage must be enabled.	The ConvoBuddy application can get a list of all recording titles.
6A	6	Recording API	Functional	One or more recordings must exist in local storage. Access to local storage must be enabled.	The ConvoBuddy application can request the deletion of a recording and it will be removed.
7A	7	Recording API	Functional	Microphone access must be enabled. Local storage must have the remaining capacity to store the recording file. Access to local storage must be enabled.	The ConvoBuddy application can store a recording when it is stopped.
9A	9	Recording API	Functional	OpenAI API key needs to be set up. A recording file must be available in local storage.	The ConvoBuddy application can send a request to convert a recording to text and receive text back.
SR1	SR1	Recording API	Functional	A recording file must exist.	All recordings are to be stored in the device's local storage.

SR2	SR2	Recording API	Functional	Microphone access must be enabled. Access to local storage must be enabled. Background services must be enabled.	Recording will continue in the background even while the application is not open.
SR3 A	SR3	Recording API	Functional	Microphone access must be enabled. Access to local storage must be enabled. Sufficient storage must be available.	Only one recording can be recorded at a time.
SR3 B	SR3B	Recording API	Functional	Microphone access must be enabled. Access to local storage must be enabled. Sufficient storage must be available.	An error will be generated when more than one recording is attempted at a time.
11A	11	Browser Extension API	Functional	None	Verify an app instance code can be requested from and returned by the system.
12A	12	Browser Extension API	Functional	None	Verify newly generated app instance codes are stored on local storage.
13A	13	Browser Extension API	Functional	When the ConvoBuddy application requests the app instance code, the code stored on local storage is returned.	Verify an existing app instance code can be requested from and returned by the system.
14A	14	Browser Extension API	Functional	An app instance code has been previously generated by the system.	They system shall verify that the app instance code is included in requests to extract form values.
14B	14	Browser Extension API	Functional	An app instance code has been previously generated by the system.	The system shall verify that form fields to extract are included in requests to extract form values.
15A	15	Browser Extension API	Functional	An app instance code has been previously generated by the system.	Verify that currently selected recording transcript and list of form fields to be populated is used to generate a ChatGPT prompt.

17A	17	Food Orders Summary	Functional	Transcription must be validated prior to creation of query to be sent to OpenAI.	When the ConvoBuddy application sends an audio transcript and the user profile to the Food Orders API endpoint, the transcript is validated, the text is sent to OpenAI/ChatGPT via API.
20A	20	Food Orders Summary	Functional	None	ConvoBuddy app determines the audio transcription is invalid and does not allow the user to submit a Food Order request.
21A	21	Food Orders Summary	Functional	Req. ID 17	ConvoBuddy app has query ready for OpenAI, but the OpenAI API service is unavailable, which causes an error message.
24A	24	STML Reminders	Functional	Transcription must be validated prior to creation of query to be sent to OpenAI.	ConvoBuddy app validates audio transcription and generates a STML Reminders prompt with those details along with user profile information to OpenAI for processing.
27A	27	STML Reminders	Functional	None	ConvoBuddy app determines the audio transcription is invalid when generating a STML Reminders prompt.
28A	28	STML Reminders	Functional	Req. ID 24	ConvoBuddy app has query ready for OpenAI, but the OpenAI API service is unavailable, which causes an error message.
38A	38	User Profile	Functional	User profile data must exist.	When the ConvoBuddy application sends a request for user profile, the system returns the text of the user profile.
39A	39	User Profile	Functional	None	When the ConvoBuddy application sends a request for user profile and the user profile is unavailable, an error response is returned to the application.

40A	40	User Profile	Functional	User profile data must exist.	When the ConvoBuddy application sends a request to set user profile, the system validates the input and if valid overwrites the text of user profile.
41A	41	User Profile	Functional	User profile data must exist.	When the ConvoBuddy application sends a request to set user profile, the system validates the input and if validation fails, an error response is returned.
43A	43	Reminder Notifications	Functional	None	Reminder date and time has passed without a reminder being shown causing a separate reminder to be sent to the device's operating system.
44A	44	Reminder Notifications	Functional	Req. ID 43	Once ConvoBuddy app sends notification to the local operating system to be shown to the user, the metadata for that reminder instance will be updated to reflect that it has been shown.
NF2 A	NF2	Non-Functional	Non-Functional	None	Data transmission security to include communication protocols, such as HTTPS.
NF3 A	NF3	Non-Functional	Non-Functional	Internal communications protocols have been implemented to any outgoing transmission.	Data transmission security level for internet communications.
NF4 A	NF4	Non-Functional	Non-Functional	None	Separation of authentication details and the program's source code.
NF5 A	NF5	Non-Functional	Non-Functional	None	ConvoBuddy app will perform at a monthly level of 99% uptime.

NF8A	NF8	Non-Functional	Non-Functional	Load balancers should be planned for the architecture of the system.	Verify that API can handle increased user load.
F1A	F1	Future	Non-Functional	None	Third-party storage compatibility.

Requirements Traceability Matrix

Requirement				Traceability		Test Case		
No	System Area	Source	Status	Doc(s)	Use Case No	Test Case No		Test Case Description
1	Recordings API	Customer	Active	SRS	3.1.1	1A		Metadata Update
2	Recordings API	Customer	Active	SRS	3.1.2	2A		Metadata Retrieval
~~3~~	~~Recordings API~~	~~Customer~~	~~Deleted~~	~~SRS~~	~~3.1.3~~	~~3A~~		~~Search Recordings~~
~~4~~	~~Recordings API~~	~~Customer~~	~~Deleted~~	~~SRS~~	~~3.1.3~~	~~4A~~		~~Dynamic Search~~
5	Recordings API	Customer	Active	SRS	3.1.4	5A		Get List of Recordings
6	Recordings API	Customer	Active	SRS	3.1.5	6A		Delete Recording
7	Recordings API	Customer	Active	SRS	3.1.6	7A		Save Recording
~~8~~	~~Recordings API~~	~~Customer~~	~~Deleted~~	~~SRS~~	~~3.1.6~~	~~8A~~		~~Insufficient Storage~~
9	Recordings API	Customer	Active	SRS	3.1.7	9A		Request Transcription
~~10~~	~~Recordings API~~	~~Customer~~	~~Deleted~~	~~SRS~~	~~3.1.7~~	~~10A~~		~~Transcription Error Response~~
SR1	Recordings API	Customer	Active	SRS	N/a	SR1A		Recording File Location
SR2	Recordings API	Customer	Active	SRS	N/a	SR2A		Record in Background
SR3	Recordings API	Team	Active	SRS	N/a	SR3A		Single Recording Session
			Active			SR3B		Single Recording Session
11	Browser Extension API	Customer	Active	SRS	3.1.8	11A		Create App Instance Code
12	Browser Extension API	Customer	Active	SRS	3.1.8	12A		Store App Instance Code
13	Browser Extension API	Customer	Active	SRS	3.1.9	13A		Get App Instance Code
14	Browser Extension API	Customer	Active	SRS	3.1.10	14A		App Instance Code Required in Extract Field Values Request
			Active			14B		Form Fields Required in Extract Field Values Request

15	Browser Extension API	Customer	Active	SRS	3.1.10	15A	Verify Transcript and Form Fields to be Filled
16	Browser Extension API	Customer	Deleted	SRS	3.1.10	16A	Generate Field Extraction Prompt
17	ChatGPT Query API: Food orders	Customer	Active	SRS	3.1.11	17A	Validate Audio Transcript and Generate Prompt
18	ChatGPT Query API: Food orders	Customer	Deleted	SRS	3.1.11	18A	Request Food Order Job Status
19	ChatGPT Query API: Food orders	Customer	Deleted	SRS	3.1.11	19A	Return Food Order Response
20	ChatGPT Query API: Food orders	Customer	Active	SRS	3.1.11	20A	Validate Audio Transcript
21	ChatGPT Query API: Food orders	Customer	Active	SRS	3.1.11	21A	Validate OpenAI Service is Available
22	ChatGPT Query API: Food orders	Customer	Deleted	SRS	3.1.11	22A	Return OpenAI Service Response Errors
23	ChatGPT Query API: Food orders	Customer	Deleted	SRS	3.1.11	23A	Food Order Timeout
24	ChatGPT Query API: STML Reminders	Customer	Active	SRS	3.1.12	24A	Validate Audio Transcript and Generate Prompt
25	ChatGPT Query API: STML Reminders	Customer	Deleted	SRS	3.1.12	25A	Request STML Reminder Job Status
26	ChatGPT Query API: STML Reminders	Customer	Deleted	SRS	3.1.12	26A	Return STML Reminder Response
27	ChatGPT Query API: STML Reminders	Customer	Active	SRS	3.1.12	27A	Validate Audio Transcript
28	ChatGPT Query API: STML Reminders	Customer	Active	SRS	3.1.12	28A	Validate OpenAI Service is Available

29	ChatGPT Query API: STML Reminders	Customer	Deleted	SRS	3.1.12	29A	Return OpenAI Service Response Errors
30	ChatGPT Query API: STML Reminders	Customer	Deleted	SRS	3.1.12	30A	STML Reminder Timeout
31	ChatGPT Query API: Global Search	Team	Deleted	SRS	3.1.13	31A	Global Search Prompt Generation
32	ChatGPT Query API: Global Search	Team	Deleted	SRS	3.1.13	32A	Query Global Search Job Status
33	ChatGPT Query API: Global Search	Team	Deleted	SRS	3.1.13	33A	Return Global Search Response
34	ChatGPT Query API: Global Search	Team	Deleted	SRS	3.1.13	34A	Validate One or More Transcripts for Global Search
35	ChatGPT Query API: Global Search	Team	Deleted	SRS	3.1.13	35A	Return OpenAPI Unavailable Error
36	ChatGPT Query API: Global Search	Team	Deleted	SRS	3.1.13	36A	Return OpenAI Service Response Error
37	ChatGPT Query API: Global Search	Team	Deleted	SRS	3.1.13	37A	Return Timeout Error
38	User Profile	Team	Active	SRS	3.1.14	38A	Get User Profile
39	User Profile	Team	Active	SRS	3.1.14	39A	Get User Profile Error
40	User Profile	Customer	Active	SRS	3.1.15	40A	Set User Profile Data
41	User Profile	Customer	Active	SRS	3.1.15	41A	Set User Profile Data Input Error
42	User Profile	Customer	Deleted	SRS	3.1.15	42A	Set User Profile Data Write Error
43	Reminder Notifications	Customer	Active	SRS	3.1.16	43A	Display Reminder Notification
44	Reminder Notifications	Customer	Active	SRS	3.1.16	44A	Mark Reminder as Displayed

NF1	Non-functional	Team	Deleted	SRS	N/a	NF1A	Response Performance Testing
NF2	Non-functional	Team	Active	SRS	N/a	NF2A	Encrypt Communication Transmissions
NF3	Non-functional	Team	Active	SRS	N/a	NF3A	Use API Secrets
NF4	Non-functional	Team	Active	SRS	N/a	NF4A	No API Keys in Source
NF5	Non-functional	Team	Active	SRS	N/a	NF5A	Service Availability
NF6	Non-functional	Team	Deleted	SRS	N/a	NF6A	Common Response Object
NF7	Non-functional	Team	Deleted	SRS	N/a	NF7A	Exception Handling
NF8	Non-functional	Team	Active	SRS	N/a	NF8A	Scalability
F1	Future	Customer	Active	SRS	N/a	F1A	Cloud Storage

List of Requirements Changes

No	Description	Status	Reasoning
3	The talker application can search recordings with a text parameter.	Deleted	Search handled on ConvoBuddy UI, requirement 3.1.3 deleted as duplicate functionality with Team A requirements, approved by client.
4	The talker application can search for different records by changing the input text.	Deleted	Requirement 3.1.3 deleted
8	When the talker application attempts to store a recording and local storage is full, the recording is not stored.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
10	When an invalid request is sent from the talker application an error is returned from Whisper API.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
16	When the Browser Extension API has a recording transcript and a list of form fields to populate, it will generate a prompt for ChatGPT's consumption in order to extract the form field values from the transcript.	Deleted	Duplicate test case, deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
17	When the talker application sends an audio transcript and the user profile to the Food Orders API endpoint, the transcript is valid, the text is sent to OpenAI via API.	Modified	Combined with 18A & 19A by internal Team B consensus. 7/24/2023 (Change Request form pending)
18	The Food Orders API will poll OpenAI to determine job status.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)

19	When the Food Orders API determines that OpenAI has processed its request, it parses the response from OpenAI and passes the result back to the front-end.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
22	When the talker application sends an audio transcript and the user profile to the Food Orders API endpoint, OpenAI returns an error, an error response is returned to the talker application.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
23	When the talker application sends an audio transcript and the user profile to the Food Orders API endpoint, polling job status times out, an error response is returned to the talker application.	Deleted	Duplicate test case, deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
24	When the talker application submits a job to send audio transcript for processing on the STML reminders endpoint, the system validates the transcript and if valid the system generates a reminders prompt containing the transcript and user profile data and sends the prompt to OpenAI.	Modified	Combined with 25A & 26A by internal Team B consensus. 7/24/2023 (Change Request form pending)
25	When the STML reminder endpoint submits a prompt for processing to OpenAI, it will poll to determine job status.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
26	When the STML reminder endpoint submits a prompt for processing to OpenAI and recieves a response, it will parse the text and pass the results to the front-end.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
29	When the talker application submits a job to send audio transcript for processing on the STML reminders endpoint, the system validates the transcript and it is valid, and OpenAI returns an error, the endpoint returns an error response.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
30	When the talker application submits a job to send audio transcript for processing on the STML reminders endpoint, the system validates the transcript and it is valid, and polling of Open AI times out, the endpoint returns an error response.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
31	When the talker application submits a global search request, the global search endpoint validates transcripts and if 1 or more are valid it generates a relevant ChatGPT prompt with the user's query, the relevant user profile data, and the set of audio transcripts concatenated together.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)

32	When the talker application generates a global search ChatGPT prompt, it sends it to OpenAI and polls for job status.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
33	When the talker application sends a global search ChatGPT prompt to OpenAI and receives a response, it passes the results back to the front-end.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
34	When the talker application sends a global search request to the global search endpoint and the endpoint determines that all transcripts are invalid, an error is returned to the front-end.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
35	When the talker application sends a global search request to the global search endpoint and the endpoint determines that 1 or more transcripts are valid and OpenAI API service is unavailable, an error is returned to the front-end.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
36	When the talker application sends a global search request to the global search endpoint and the endpoint determines that 1 or more transcripts are valid and OpenAI API service returns error response, an error is returned to the front-end.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
37	When the talker application sends a global search request to the global search endpoint and the endpoint determines that 1 or more transcripts are valid and polling times out, an error is returned to the front-end.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
42	When the talker application sends a request to set user profile, the system validates the input, validate succeeds, and the write operation to local file fails, an error response is returned.	Deleted	Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
NF1	All API endpoints not calling an external service should have a response time of 200 milliseconds or less for single user load.	Deleted	Not enough resources to test. Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
NF6	API endpoints should expose a common response base object that includes required status code and optional error message fields.	Deleted	Not in scope. Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)
NF7	API endpoints should not throw an exception, but instead catch it to ensure the client can rely on either getting a successful response or a well formatted error response.	Deleted	Not in scope. Deleted on internal Team B consensus. 7/24/2023 (Change Request form pending)

Unit and Integration Test Results

Unit tests and integration tests were used to validate internal logic and test functionality of various methods made available through the STeMS backend services. All tests were in pass status as of last run and the total includes 10-unit tests and 19 integration tests, all implemented using the Flutter test framework. These types of tests are most effective at ensuring a working baseline of functionality while adding additional functionality and refactoring existing code during the development process.

Figure 2. Unit and Integration Test Results

Functional Test Execution Findings

Recordings API

Test 1A

Requirement Number ID	1
Requirement Description	The ConvoBuddy application can update recording metadata.
Test Prerequisite	A recording must be successfully created to edit its metadata. Access to local storage must be enabled.
Test Steps	1. The ConvoBuddy application utilizes the Flutter package for access to audio file metadata and calls the package's set method to define new metadata values.
Expected Result	The audio file's metadata is overwritten with the defined values in the set method call.
Assumptions	
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/07/29 12:17 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy Updated a recording's title from "NewConversation" to "GitHub Reminder". Verified "GitHub Reminder" was shown in conversation list. Opened GitHub Reminder details screen and observed GitHub Reminder on title bar. Closed and reopend app and observed "GitHub Reminder" in conversation list again.
First Test Result	Pass

Test 2A
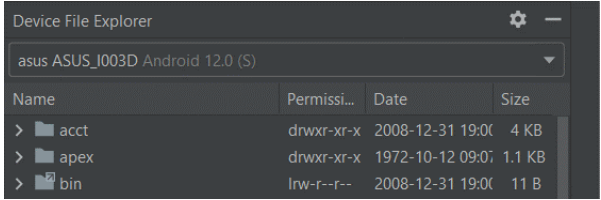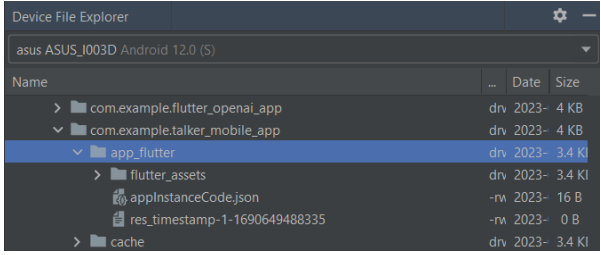
Requirement Number ID	2
Requirement Description	The ConvoBuddy application can get recording metadata.
Test Prerequisite	A recording must exist for metadata to be retrieved. Access to local storage must be enabled.
Test Steps	1.The ConvoBuddy application utilizes the Flutter package for access to audio file metadata and calls the package's get method to retrieve the audio file's metadata.

Expected Result	The audio file's metadata is retrieved and returned to the ConvoBuddy application.
Assumptions	
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/07/29 12:19 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy Updated a recording's title from "NewConversation" to "GitHub Reminder". Verified "GitHub Reminder" was shown in conversation list. Opened GitHub Reminder details screen and observed GitHub Reminder on title bar. Closed and reopend app and observed "GitHub Reminder" in conversation list again.
First Test Result	Pass

Test 5A

Requirement Number ID	5
Requirement Description	The ConvoBuddy application can get a list of all recording titles.
Test Prerequisite	One or more recordings must exist in local storage. Access to local storage must be enabled.
Test Steps	1.The ConvoBuddy application utilizes the Flutter package for access to recording metadata and calls the package's get method to retrieve the recording's metadata for each recording in local storage.
Expected Result	A list of all recording file names is returned from local storage.
Assumptions	
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/07/29 12:32 PM Tester: Jonathan Nagy Added 3 recordings to the current set of 1 and set title on each. Closed the app and then opened again and observed all the conversations in place with the titles I have given them.
First Test Result	Pass

Test 6A

Requirement Number ID	6
Requirement Description	The ConvoBuddy application can request the deletion of a recording and it will be removed.
Test Prerequisite	One or more recordings must exist in local storage. Access to local storage must be enabled.
Test Steps	1.The ConvoBuddy application utilizes the Flutter package for access to the recording file and calls the package's delete method to delete the recording file with the file path in local storage.
Expected Result	The recording file and recording metadata is deleted from local storage.
Assumptions	
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/07/29 1:15 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy Installed the debug version of the apk as it is required to access the app documents. Connected the phone to a desktop computer via USB cable, and opened Android Studio and verified there was an active connection in the Device File Explorer. Browsed to /data/data/com.example.talker_mobile_app/app_flutter folder in Device File Explorer. Made a recording and verified .m4a audio file is created.

Tapped the trash icon on the Conversation Details screen and confirmed by tapping Okay. In Android Studio, right clicked and Synchronize

Saw the .m4a still at first but waited a few seconds and clicked Synchronize again and the file was no longer present.

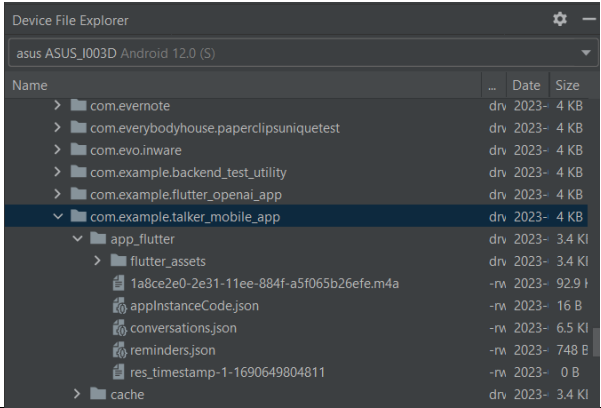| First Test Result	Pass
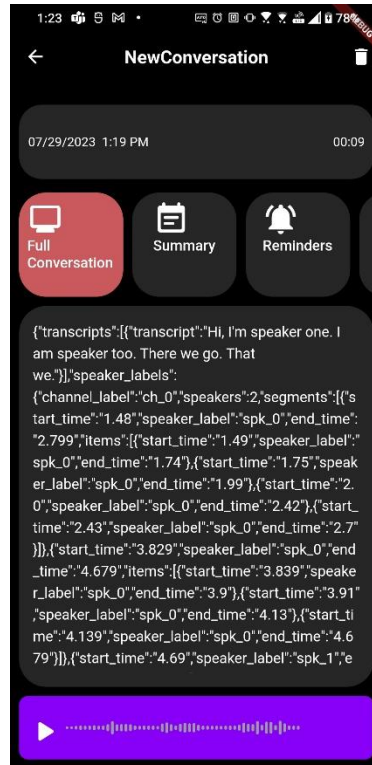
Test 7A

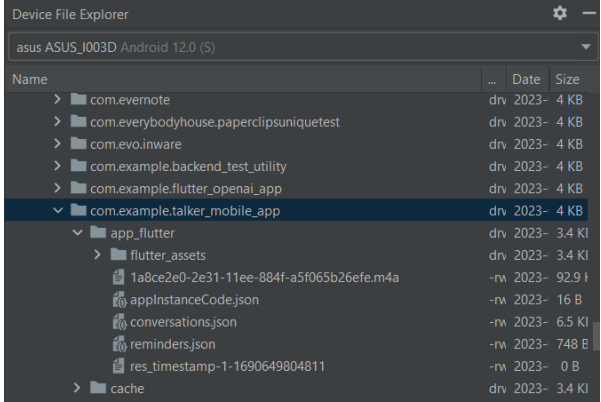| Requirement Number ID	7
Requirement Description	The ConvoBuddy application can store a recording when it is stopped.

Test Prerequisite	Microphone access must be enabled. Local storage must have the remaining capacity to store the recording file. Access to local storage must be enabled.
Test Steps	1. The ConvoBuddy application utilizes the Flutter package to check if permission is granted for recording functionality. 2. Then, the start record method is called with the desired destination path as a parameter for the recording to be saved. 3. The ConvoBuddy application calls the stop method to stop the recording after a certain period of time.
Expected Result	A recording file is created at the defined path.
Assumptions	
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/07/29 1:15 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy Verified recording .m4a file created with debug build of the apk and Android Studio Device File Explorer.
First Test Result	Pass

Test 9A

Requirement Number ID	9
Requirement Description	The ConvoBuddy application can send a request to convert a recording to text and receive text back.
Test Prerequisite	OpenAI API key needs to be set up.

	A recording file must be available in local storage.
Test Steps	1.ConvoBuddy initializes the package with the API key. 2.An OpenAI audio model is instantiated. 3.The model object calls the create transcription method by providing the following parameters: a.file path b.model type c.response format (JSON)
Expected Result	The audio transcription is returned as a JSON object. Transcript must include speaker identification (numerical or otherwise) for each continuous set of words from one speaker in the original audio recording.
Assumptions	
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/07/29 1:20 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy Verified transcript returned with speaker diarization.
First Test Result	Pass

Test SR1

Requirement Number ID	SR1
Requirement Description	All recordings are to be stored in the device's local storage.
Test Prerequisite	A recording file must exist.
Test Steps	1. By code inspection verify that all methods for saving recordings are routed to local storage.
Expected Result	No instance of use of remote storage is found.
Assumptions	
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/07/29 1:26 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy Verified with Android Studio Device File Explorer.
First Test Result	Pass
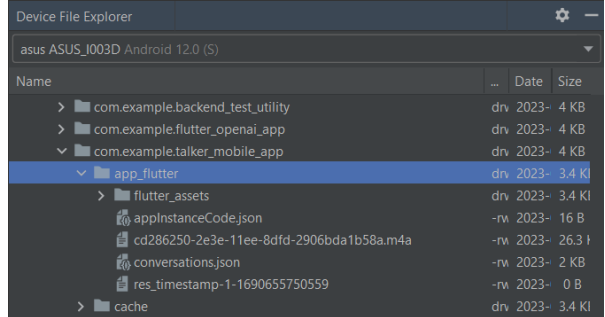
Test SR2

Requirement Number ID	SR2
Requirement Description	Recording will continue in the background even while the application is not open.
Test Prerequisite	Microphone access must be enabled. Access to local storage must be enabled. Background services must be enabled.
Test Steps	1.The ConvoBuddy application calls the foreground service. 2.The record action is called from the on-start property of the foreground service. 3.The pause action is called from the on stopped property of the foreground service.

Expected Result	The record action runs in the background without the app actively open.
Assumptions	
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/07/29 2:27 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy Verified the recording continued in the background and returned in the still recording state when app was put back into the foreground. Was unable to start a second recording while the original was going. I closed the app from the task list while recording, and the recording was lost. When I went to record another conversation, the old recording content was not included.
First Test Result	Pass

Test SR3A

Requirement Number ID	SR3A
Requirement Description	Only one recording can be recorded at a time.
Test Prerequisite	Microphone access must be enabled. Access to local storage must be enabled. Sufficient storage must be available.

Test Steps	1.A recording request is received. 2.A stop request is received. 3.A single recording is saved into local storage.
Expected Result	Single record session is executed upon request.
Assumptions	
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/07/29 2:34 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy Verified a single recording is created on recording stop in Android Studio Device File Explorer.
First Test Result	Pass

Test SR3B
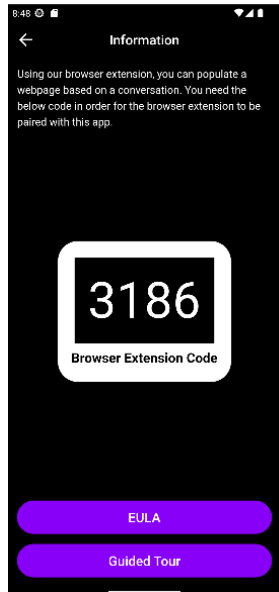
Requirement Number ID	SR3B
Requirement Description	An error will be generated when more than one recording is attempted at a time.
Test Prerequisite	Microphone access must be enabled. Access to local storage must be enabled. Sufficient storage must be available
Test Steps	1.The ConvoBuddy application is launched the record method. 2.The system returns indicating that the recording has started 3.Some audio is produced for recording. 4.The user attempts to start a second recording. 5.Additional audio is produced for recording. 6.The ConvoBuddy application is launched to stop the recording.
Expected Result	The second request to start recording is not allowed. The recording produced should contain all audio produced for recording from the initial recording start.

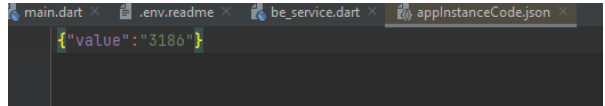|	
Assumptions	
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/07/29 2:27 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy Verified the recording continued in the background and returned in the still recording state when app was put back into the foreground. Was unable to start a second recording while the original was going. I closed the app from the task list while recording, and the recording was lost. When I went to record another conversation, the old recording content was not included.
First Test Result	Pass

Form Filler Browser Extension API

Test 11A

Requirement Number ID	11A
Requirement Description	Verify an app instance code can be requested from and returned by the system.
Test Prerequisite	N/A

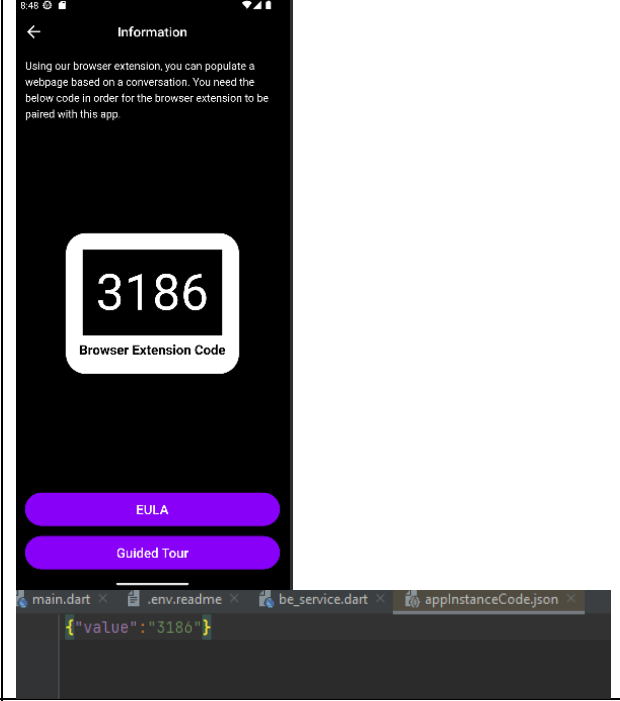| Test Steps	1. The ConvoBuddy application calls the system method for generating an app instance code.
Expected Result	The system returns a response containing a generated app instance code. The app instance code is stored in local storage on the device.
Assumptions	
Actual First Result	Device: Google Pixel 3a Android Version: API 34 Time: 2023/07/31 10:01 PM ConvoBuddy Build Date: 2023/07/31 Tester: Amol & Johnny Confirmed that the app instance code is generated upon opening a ConvoBuddy app session. App instance code persists across screens.
First Test Result	Pass

Test 12A

Requirement Number ID	12
Requirement Description	Verify newly generated app instance codes are stored on local storage.
Test Prerequisite	N/A
Test Steps	1.The ConvoBuddy application calls the system method for getting the app instance code.
Expected Result	The generated app instance code is stored in local storage.

Assumptions	
Actual First Result	Device: Google Pixel 3a Android Version: API 34 Time: 2023/07/31 10:21 PM ConvoBuddy Build Date: 2023/07/31 Tester: Amol & Johnny Verified that the app instance code is defined in the generated app instance code JSON file.
First Test Result	Pass
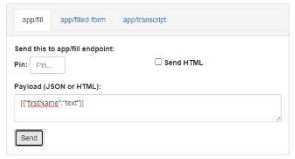
Test 13A

Requirement Number ID	13
Requirement Description	Verify an existing app instance code can be requested from and returned by the system.
Test Prerequisite	When the ConvoBuddy application requests the app instance code, the code stored on local storage is returned.
Test Steps	1. The ConvoBuddy application calls the system method for getting the app instance code.
Expected Result	The system returns the previously generated app instance code.
Assumptions	
Actual First Result	Device: Google Pixel 3a Android Version: API 34 Time: 2023/07/31 9:56 PM ConvoBuddy Build Date: 2023/07/31 Tester: Amol & Johnny Confirmed that the app instance code matches the value in the generated app instance code JSON file and is returned to ConvoBuddy.

First Test Result	Pass
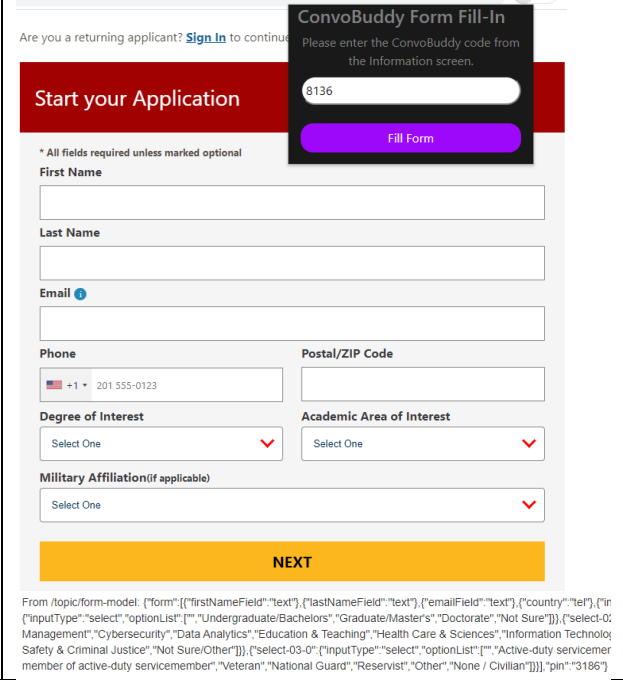
Test 14A

Requirement Number ID	14
Requirement Description	The system shall verify that the app instance code is included in requests to extract form values.
Test Prerequisite	An app instance code has been previously generated by the system.
Test Steps	1.The Browser Extension calls the system method to extract form values without an app instance code.
Expected Result	The system returns an error response stating that app instance code is missing.
Assumptions	
Actual First Result	Device: Google Pixel 3a Android Version: API 34 Time: 2023/07/31 10:35 PM ConvoBuddy Build Date: 2023/07/31 Tester: Amol & Johnny I deleted the pin and left it blank. Then, I clicked send. No error message or handling is visible on BESie or ConvoBuddy.

First Test Result	Fail
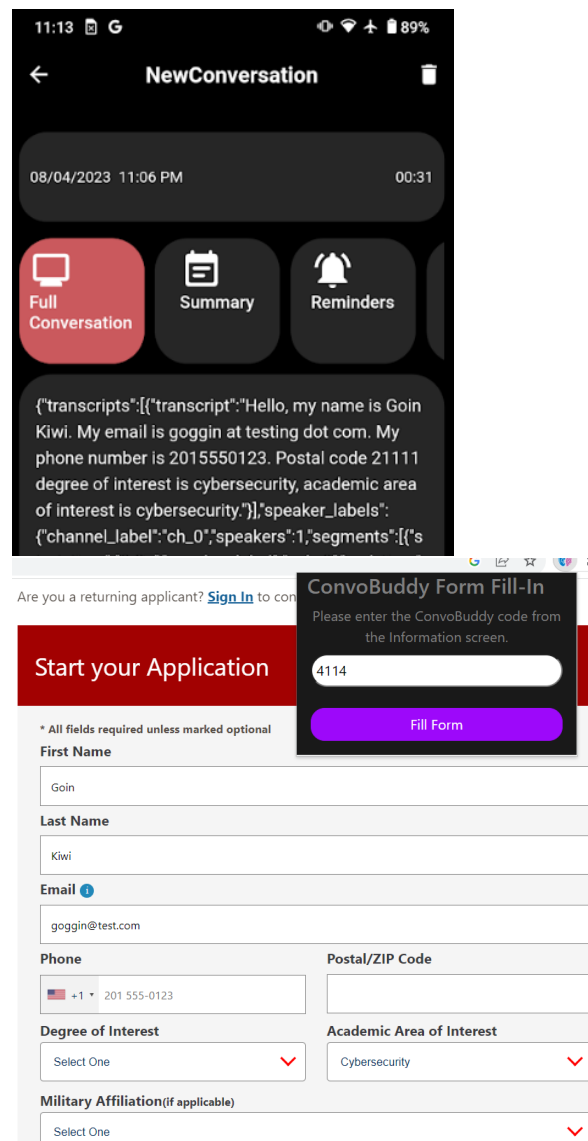
Test 14B

Requirement Number ID	14
Requirement Description	The system shall verify that form fields to extract are included in requests to extract form values.
Test Prerequisite	An app instance code has been previously generated by the system.
Test Steps	1. The Browser Extension calls the system method to extract form values with an app instance code and without form fields to populate.
Expected Result	The system returns an error response stating that no form fields were specified.
Assumptions	
Actual First Result	Device: Google Pixel 3a Android Version: API 34 Time: 2023/07/31 9:59 PM ConvoBuddy Build Date: 2023/07/31 Tester: Amol & Johnny I left the form fields blank on the UMGC registration form and clicked "Fill Form" with an app instance code. Error responses or handling is not visible.

First Test Result	Fail

Test 15A

Requirement Number ID	15
Requirement Description	Verify that currently selected recording transcript and list of form fields to be populated is used to generate a ChatGPT prompt.
Test Prerequisite	An app instance code has been previously generated by the system.
Test Steps	1.The Browser Extension calls the system method to extract form values with an app instance code and form fields to populate.
Expected Result	All fields are filled based on information from the transcript or ChatGPT's inference.
Assumptions	
Actual First Result	Device: Motorola G6 Android Version: 10 Time: 2023/08/03 8:01 PM ConvoBuddy Build Date: 2023/08/03 Tester: Johnny I made a recording on ConvoBuddy. I navigated to UMGC's registration page. I clicked on the form filler extension. I inputted my device's app instance code. I clicked the Fill Form button. I

	received a prompt in ConvoBuddy to select a conversation. I selected a conversation, and the online form was filled with fields. Some fields not mentioned in the conversation were not filled.
First Test Result	Pass

Food Orders Summary API

Test 17A

Requirement Number ID	17
Requirement Description	When the ConvoBuddy application sends an audio transcript and the user profile to the Food
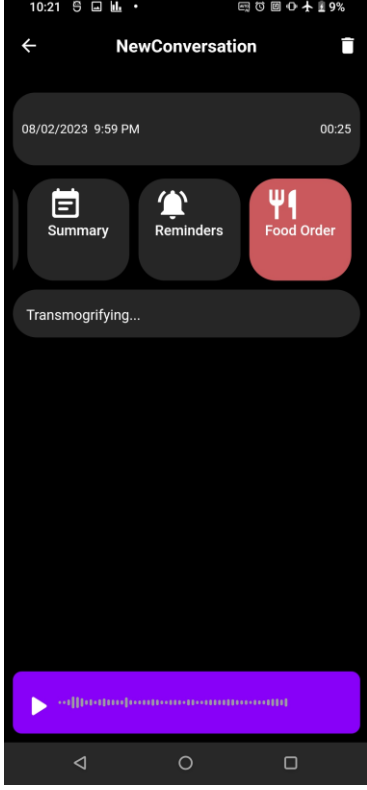
	Orders API endpoint, the transcript is validated, the text is sent to OpenAI/ChatGPT via API.
Test Prerequisite	Transcription must be validated prior to creation of query to be sent to OpenAI.
Test Steps	1.The ConvoBuddy application is used to submit a Food Orders API request with a valid transcript. 2.The tester waits until the request is completed.
Expected Result	Formatted data to be consumed by the front-end is output by the ConvoBuddy application. Data should contain a list of food orders separated by speaker identification number or name as available from ChatGPT and audio transcript.
Assumptions	In order to get transcription to work, a very short order was recorded. Also, it was found that longer transcripts caused issues with ChatGPT in raw AWS Transcribe format. A 25 second clip was used containing just drink orders, "Food Order -1 – Drink Clip.m4a".
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/08/29 9:46 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy
First Test Result	Pass

Test 20A

Requirement Number ID	20
Requirement Description	ConvoBuddy app determines the audio transcription is invalid and does not allow the user to submit a Food Order request.
Test Prerequisite	N/A
Test Steps	1. The user attempts to initiate a food order request with an invalid transcript.
Expected Result	The user is unable to request a Food Order summary without a valid transcript.
Assumptions	Able to produce no transcript recording by recording over 25-30 seconds. Recorded 60 seconds and no transcript was returned.
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/08/29 9:46 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy App displayed "Transmogrifying…" for more than a minute.
First Test Result	Fail

Test 21A

Requirement Number ID	21
Requirement Description	ConvoBuddy app has query ready for OpenAI, but the OpenAI API service is unavailable, which causes an error message.
Test Prerequisite	Test 17A
Test Steps	1.A service interruption in OpenAI API service is simulated by disabling the internet connection. 2.The ConvoBuddy app is called to perform a Food Order request with a valid transcript.
Expected Result	An error message stating OpenAI API service is unavailable is created and logged. The human readable error is returned to the ConvoBuddy app
Assumptions	
Actual First Result	Device: Asus ROG 3 Android Phone Android Version: 12 (Snow Cone) Time: 2023/08/29 9:46 PM ConvoBuddy Build Date: 7/29/2023 Tester: Jonathan Nagy Used airplane mode to disable internet.

	  App displayed "Transmogrifying…" for more than a minute.
First Test Result	Fail

STML Reminders API

Test 24A

Requirement Number ID	24
Requirement Description	ConvoBuddy app validates audio transcription and generates a STML Reminders prompt with those details along with user profile information to OpenAI for processing.
Test Prerequisite	Transcription must be validated prior to creation of query to be sent to OpenAI.
Test Steps	1. The ConvoBuddy app calls the STML reminders endpoint of the backend services with a valid transcript. 2.The tester waits until The ConvoBuddy app has completed the request.
Expected Result	Formatted data is generated and displayed on the front-end. Data should contain a list of reminders with times.

Assumptions	
Actual First Result	Device: Pixel 4XL Android Version: API 34 Time: 08/02/2023 12:21 PM ConvoBuddy Build Date: 08/02/2023 Tester: Mohamed BEN LAKBIR ConvoBuddy app validates audio transcription and generates an STML Reminders prompt with list of reminders and times along with reminding information.
First Test Result	Pass

Test 27A

Requirement Number ID	27
Requirement Description	ConvoBuddy app determines the audio transcription is invalid when generating a STML Reminders prompt.
Test Prerequisite	N/A
Test Steps	1.The ConvoBuddy app is launched to send a STML request to the backend services with an invalid transcript.
Expected Result	The user is unable to request a STML Reminder without a valid transcript.
Assumptions	
Actual First Result	Device: Pixel 4XL Android Version: API 34 Time: 08/02/2023 12:35 PM ConvoBuddy Build Date: 08/02/2023 Tester: Mohamed BEN LAKBIR When the app is launched to send a STML request to the backend services with no transcript, which is considered as an invalid transcript, the app does not define it. It does not generate any error.
First Test Result	Fail

Test 28A

Requirement Number ID	28
Requirement Description	ConvoBuddy app has query ready for OpenAI, but the OpenAI API service is unavailable, which causes an error message.
Test Prerequisite	Test 24A
Test Steps	1.OpenAI Api service interruption is simulated by disconnecting the internet or updating the host file to redirect OpenAI servers to localhost. 2.The ConvoBuddy app is launched to send a STML request to the backend services with a valid transcript.
Expected Result	A human readable error message is returned to The ConvoBuddy app for display.
Assumptions	
Actual First Result	Device: Pixel 4XL Android Version: API 34 Time: 08/02/2023 12:45 PM ConvoBuddy Build Date: 08/02/2023 Tester: Mohamed BEN LAKBIR ConvoBuddy app has query ready for OpenAI. When I put the device on Airplane mode, simulating it is disconnected from Internet. This way the OpenAI API service is considered unavailable. When the app is launched to send a STML request to the backend services with a valid transcript, there is no error handling.
First Test Result	Fail

User Profile API

Test 38A

Requirement Number ID	38
Requirement Description	When the ConvoBuddy application sends a request for user profile, the system returns the text of the user profile.
Test Prerequisite	User profile data must exist
Test Steps	1.The ConvoBuddy application is used to submit a request to get the user profile object. 2.Correct parameters corresponding to a user profile are used in the method.

	3.User profile attribute data is returned from the method.
Expected Result	User profile data is returned as an object for parsing.
Assumptions	
Actual First Result	Tester: Jonathan Nagy Time: 8/2/2023 10:15 PM User profile feature not implemented in UI.
First Test Result	Fail

Test 39A

Requirement Number ID	39
Requirement Description	When the ConvoBuddy application sends a request for user profile and the user profile is unavailable, an error response is returned to the application.
Test Prerequisite	N/A
Test Steps	1.The ConvoBuddy application is used to submit a request to get the user profile object. 2.Invalid parameters are passed into the method. 3.Request returns a response object with error details.
Expected Result	A response object with error details is returned upon invalid request.
Assumptions	
Actual First Result	Tester: Jonathan Nagy Time: 8/2/2023 10:15 PM User profile feature not implemented in UI.
First Test Result	Fail

Test 40A

Requirement Number ID	40
Requirement Description	When the ConvoBuddy application sends a request to set user profile, the system validates the input and if valid overwrites the text of user profile.
Test Prerequisite	User profile data must exist
Test Steps	1.The ConvoBuddy application is used to call the method to set a user profile object.

	2.System validates the method parameter for correct parameter types on the set method. 3.The set method is invoked, and the specified user profile's data is overwritten with request data.
Expected Result	A successful response is returned to validate successful execution
Assumptions	
Actual First Result	Tester: Jonathan Nagy Time: 8/2/2023 10:15 PM User profile feature not implemented in UI.
First Test Result	Fail

Test 41A

Requirement Number ID	41
Requirement Description	When the ConvoBuddy application sends a request to set user profile, the system validates the input and if validation fails, an error response is returned.
Test Prerequisite	User profile data must exist
Test Steps	1.The ConvoBuddy application is used to call the set method on a user profile object. 2.Incorrect parameter data type is passed into the set method call. 3.An error response is returned with error details in the response body.
Expected Result	An error response is returned to indicate a failed request back to the ConvoBuddy application.
Assumptions	
Actual First Result	Tester: Jonathan Nagy Time: 8/2/2023 10:15 PM User profile feature not implemented in UI.
First Test Result	Fail

Reminder Notifications

Test 43A

Requirement Number ID	43
Requirement Description	Reminder date and time has passed without a reminder being shown causing a separate

	reminder to be sent to the device's operating system.
Test Prerequisite	N/A
Test Steps	1.A STML reminder is generated by submitting a STML reminder request with a transcript containing an event scheduled for the next few minutes or seconds. 2.The tester waits for the reminder time to elapse and checks for a notification.
Expected Result	Notification of a passed reminder is sent to the device's operating system.
Assumptions	
Actual First Result	Tester: Jonathan Nagy Time: 7/31/2023 7:41 PM OS notifications feature not implemented.
First Test Result	Fail

Test 44A

Requirement Number ID	44
Requirement Description	Once ConvoBuddy app sends notification to the local operating system to be shown to the user, the metadata for that reminder instance will be updated to reflect that it has been shown.
Test Prerequisite	Test 43A
Test Steps	1.A STML reminder is generated by submitting a STML reminder request with a transcript containing an event scheduled for the next few minutes or seconds. 2.The tester waits for the reminder time to elapse and checks for a notification.
Expected Result	Reminder metadata reflects the status of the instance as successfully shown to the user.
Assumptions	
Actual First Result	Tester: Jonathan Nagy Time: 7/31/2023 7:41 PM OS notifications feature not implemented.
First Test Result	Fail

Non-Functional Test Findings

Non-Functional Requirements

Test NF2A

Requirement Number ID	NF2
Requirement Description	The API must use secure communication protocols (e.g., HTTPS) to protect data transmission.
Test Prerequisite	N/A
Test Steps	1. Verify by code and configuration inspection that all service calls are routed through HTTPS.
Expected Result	Communications performed through STeMS are encrypted.
Assumptions	The STeMS internal network can be fully trusted.
Actual First Result	Time: 08/30/23 9:30PM Tester: Amol Thomare After, looking through the ConvoBuddy Code Base, it was seen that all communications were routed through HTTPS
First Test Result	Pass

Test NF3A

Requirement Number ID	NF3
Requirement Description	Services exposed to the internet should implement API secret or user authentication to prevent external actor use or denial of service attacks.
Test Prerequisite	Internal communications protocols have been implemented to any outgoing transmission.
Test Steps	1. Verify by inspection of code and configuration that all external data transmission is routed through encrypted means.
Expected Result	Secure transmission of encrypted data across the internet.
Assumptions	Req. ID NF2 has been successfully implemented.
Actual First Result	Time: 08/30/23 9:30PM Tester: Amol Thomare Verified that specified users and keys are used for authentication

First Test Result	Pass

Test NF4A

Requirement Number ID	NF4
Requirement Description	API keys and other secrets must be sanitized from source code.
Test Prerequisite	N/A
Test Steps	1. Verify by inspection of code that no API keys are hard coded. 2. Verify by inspection that all API keys are loaded from a local secrets file or similar non-source code integrated mechanism.
Expected Result	Source code repository will not contain the authentication database for all user profiles.
Assumptions	N/A
Actual First Result	Time: 08/30/23 9:30PM Tester: Amol Thomare Keys no longer present in checked in source code
First Test Result	Pass

Test NF5A

Requirement Number ID	NF5
Requirement Description	The API servers should have a minimum uptime of 99% per month.
Test Prerequisite	N/A
Test Steps	1. Verify the hosting services used comply with minimum uptime.
Expected Result	Minimum of 99% uptime of the application.
Assumptions	N/A
Actual First Result	Time: 08/30/23 9:30PM Tester: Amol Thomare The documentation for AWS states that they will try to maintain an uptime of 99.95%. ChatGPT maintains an uptime of 99.83% and strives to maintain it.
First Test Result	Pass

Test NF8A

Requirement Number ID	NF8
Requirement Description	The API should be designed to handle increased user load by scaling horizontally or vertically.
Test Prerequisite	Load balancers should be planned for the architecture of the system.
Test Steps	1. ConvoBuddy app maintains a record of the load expected from the app. 2. If user load crosses threshold of 85% capacity, a notification will be sent to the developers to plan for scaling the application's capacity.
Expected Result	Load balancing across all user profiles within the ConvoBuddy app.
Assumptions	N/A
Actual First Result	Time: 08/30/23 9:30PM Tester: Amol Thomare Can't be tested with how far the development of the application is
First Test Result	Fail

Future Requirements

Test F1A

Requirement Number ID	F1
Requirement Description	Recordings may be backed up or offloaded to the cloud if the user configures a third-party cloud storage service.
Test Prerequisite	N/A
Test Steps	1. User selects audio recordings to be backed up to a third-party cloud storage system. 2. ConvoBuddy app communicates with the third-party storage service and sends the data to be securely stored. 3. ConvoBuddy app removes that data from the local device.
Expected Result	Audio recordings saved to a third-party cloud storage system and more available storage on the local device.
Assumptions	User has a third-party cloud storage account with available storage.

Actual First Result	Time: 7/30/2023 5:03 PM Tester: Jonathan Nagy Requirement not implemented.
Actual Second Result	
First Test Result	Fail
Second Test Result	Pass/Fail

Test Results

Test Number	Description	Results
1A	The ConvoBuddy application can update recording metadata.	Pass
2A	The ConvoBuddy application can get recording metadata.	Pass
5A	The ConvoBuddy application can get a list of all recording titles.	Pass
6A	The ConvoBuddy application can request the deletion of a recording and it will be removed.	Pass
7A	The ConvoBuddy application can store a recording when it is stopped.	Pass
9A	The ConvoBuddy application can send a request to convert a recording to text and receive text back.	Pass
SR1	All recordings are to be stored in the device's local storage.	Pass
SR2	Recording will continue in the background even while the application is not open.	Pass
SR3A	Only one recording can be recorded at a time.	Pass
SR3B	An error will be generated when more than one recording is attempted at a time.	Pass
11A	Verify an app instance code can be requested from and returned by the system.	Pass
12A	Verify newly generated app instance codes are stored on local storage.	Pass
13A	Verify an existing app instance code can be requested from and returned by the system.	Pass
14A	They system shall verify that the app instance code is included in requests to extract form values.	Fail
14B	The system shall verify that form fields to extract are included in requests to extract form values.	Fail
15A	Verify that currently selected recording transcript and list of form fields to be populated is used to generate a ChatGPT prompt.	Fail
17A	When the ConvoBuddy application sends an audio transcript and the user profile to the Food Orders API endpoint, the transcript is validated, the text is sent to OpenAI/ChatGPT via API.	Pass
20A	ConvoBuddy app determines the audio transcription is invalid and not allow the user to submit a Food Order request.	Fail
21A	ConvoBuddy app has query ready for OpenAI, but the OpenAI API service is unavailable, which causes an error message.	Fail

24A	ConvoBuddy app validates audio transcription and generates a STML Reminders prompt with those details along with user profile information to OpenAI for processing.	Pass
27A	ConvoBuddy app determines the audio transcription is invalid when generating a STML Reminders prompt.	Fail
28A	ConvoBuddy app has query ready for OpenAI, but the OpenAI API service is unavailable, which causes an error message.	Fail
38A	When the ConvoBuddy application sends a request for user profile, the system returns the text of the user profile.	Fail
39A	When the ConvoBuddy application sends a request for user profile and the user profile is unavailable, an error response is returned to the application.	Fail
40A	When the ConvoBuddy application sends a request to set user profile, the system validates the input and if valid overwrites the text of user profile.	Fail
41A	When the ConvoBuddy application sends a request to set user profile, the system validates the input and if validation fails, an error response is returned.	Fail
43A	Reminder date and time has passed without a reminder being shown causing a separate reminder to be sent to the device's operating system.	Fail
44A	Once ConvoBuddy app sends notification to the local operating system to be shown to the user, the metadata for that reminder instance will be updated to reflect that it has been shown.	Fail
NF2A	Data transmission security to include communication protocols, such as HTTPS.	Pass
NF3A	Data transmission security level for internet communications.	Pass
NF4A	Separation of authentication details and the program's source code.	Pass
NF5A	ConvoBuddy app will perform at a monthly level of 99% uptime.	Pass
NF8A	Verify that API can handle increased user load.	Fail
F1A	Third-party storage compatibility.	Fail

Test Results Summary

Status	Total Count
Pass	19
Fail	15

Final Summary

In conclusion, the main functions of the application have been fulfilled. The application can diarize transcriptions of audio inputs and use them to generate summaries, reminders, and food orders using the application itself. The browser extension can use the transcripts from the application to fill in web pages. However, a lot of error handling and user profiles have not been done due to the time restriction of this semester and the focus on creating the main functions of the application. However, the application is able to successfully fulfil the main requirements of the project as they were established at the beginning of the semester.