Test Report

For

Natural Language Understanding Module

Version 1.5

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# Introduction

## Purpose

The purpose of this User Guide document is to describe the functional and operational procedure of the Memory Magic application. The goal of this user guide document is to help non-technical people to operate the app properly and to solve problems without expert assistance.

## Overview

Short Term Memory (STM) is how the brain stores small amounts of information it is just taken in for a relatively short time (usually up to 30 second). When people have a short-time memory loss, they forget things they heard, saw, or did recently. Forgetting things could be normal when people get older, but it is also a sign of short-term memory loss. People with STM loss ask the same question repeatedly, forgetting recent events.

There are many causes for the short-term memory loss. Some of the potential causes are aging, Alzheimer, brain tumors, head injuries, substance use disorder, stress, illness, or any conditions that damage brain tissue, inadequate sleep, anxiety medication and anti-seizure drugs.

To assist people with STM, the Memory Magic App has been developed, and the Natural Language Understanding (NLU) module has been incorporated to make the life of people with STM better.

## Abbreviations/Acronyms/Definition

Table 1 shows acronyms/abbreviations and their definitions:

**Table 1**

Acronyms, Abbreviations, and Definitions

|  |  |
| --- | --- |
| **Acronyms and Abbreviations** | **Definitions** |
| iOS | iPhone Operating System |
| NLU | Natural Language Understanding |
| STM | Short-Term Memory |
|  |  |
|  |  |

# Hardware and Software Specification

The Memory Magic Application is designed to run on smartphones, no hardware interface needed. The mobile application can be installed on the android and iOS platform. The application is deigned to run on Android 8.0, iOS 10 and up.

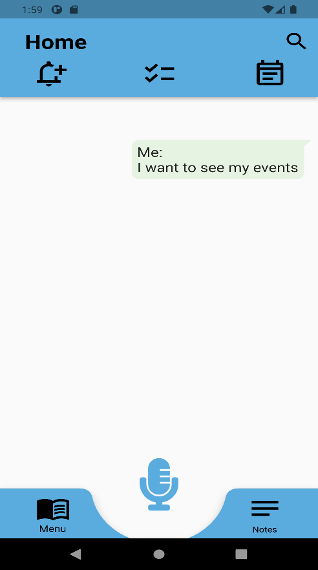
# Application Page

## Application Calendar Page

The application calendar page will open when the user states “I want to see my events”. This command will instruct the NLU Module to direct the user to the calendar screen. While on this page, the user will be able to view different events that have be placed on the calendar. While on this page, events may be selected and removed as the user sees fit.

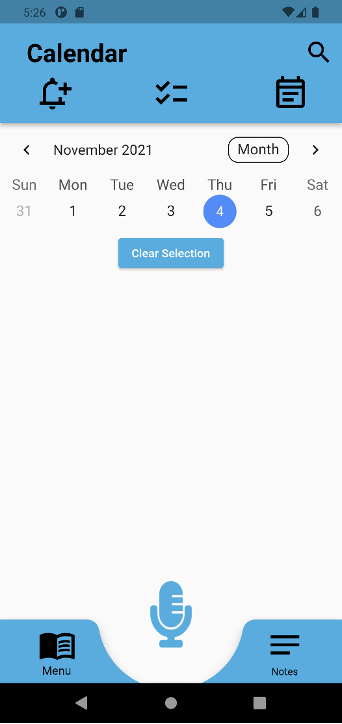
**Figure 1**

*Events Request*



**Figure 2**

*Calendar Display*

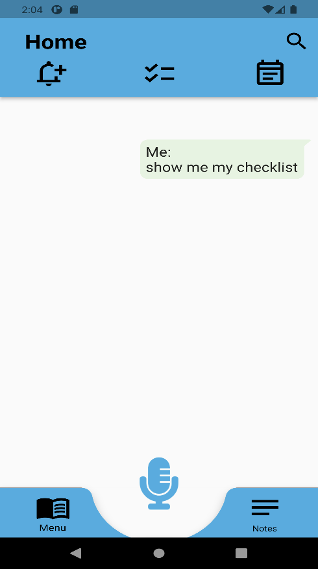


## Application Checklist Page

The application checklist page will open when the user states “show me my checklist”. This command will instruct the NLU Module to direct the user to the checklist list page. This screen will display the checklist items save under the selected date.

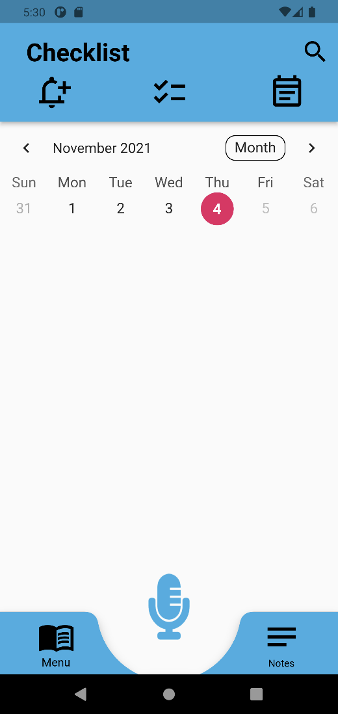
**Figure 3**

*Checklist Request*



**Figure 4**

*Checklist Response*

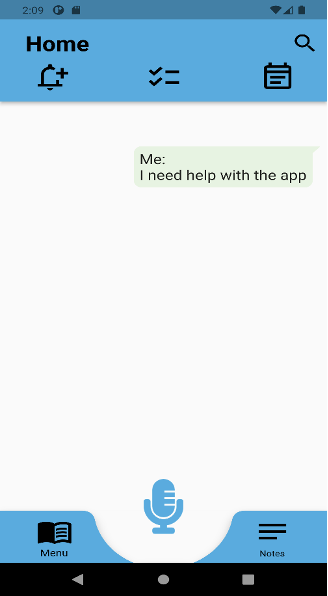


## User Help Page

The User Help page will open when the user states “I need help with the app”. This command will instruct the NLU Module to direct the user to the user help page. The User will have the option of selecting one of the 4 buttons shown below on this screen.

**Figure 5**

*Help Request*



**Figure 6**

*Help Response*



## Application Menu Page

The Application Menu page will open when the user states “take me to the home page”. This command will allow the user to select from 4 distinct options: “Sync to Cloud”, “Trigger”, “Settings”, and “Help”. The selection of any of the options will direct the user to the selected screen.

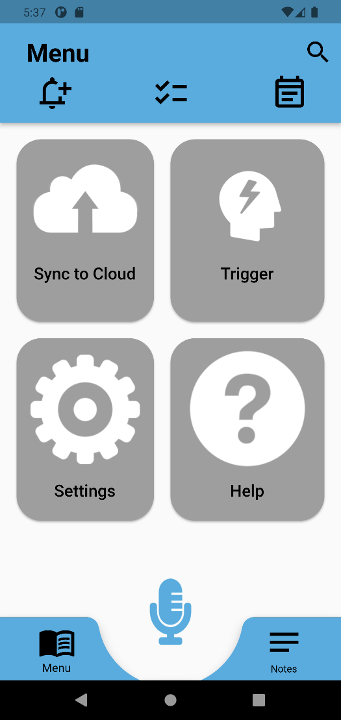
**Figure 7**

*App Navigation Request*



**Figure 8**

*App Navigation Response*

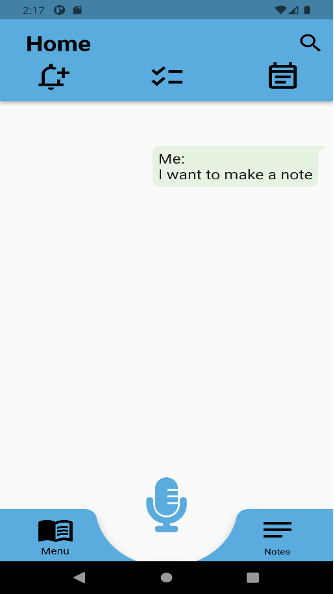


## Application Notes Page

The Application Notes page will open when the user states “I want to make a note”. This command will direct the user to the Application Notes page, where any notes previously created and saved will be showcased to the user. When the user clicks on the “+” icon, they will be directed to another page for the creation of a note.

**Figure 9**

*A Note Creation*



**Figure 10**

*A Note Being Created*

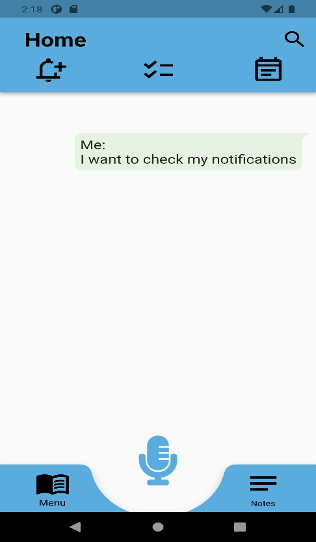


## Application Notification Page

The Application Notification page will open when the user states “I want to check my notifications”. The command will direct the user to a page where they will see the notification settings options open to modifying as the user sees fit.

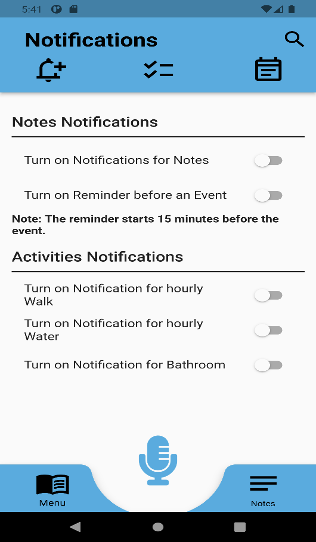
**Figure 11**

*A Notification Request*



**Figure 12**

*A Notification Response*

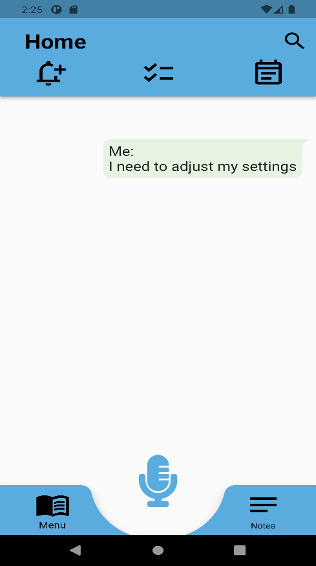


## User Settings Page

The User Settings page will open when the user states “I need to adjust my settings”. This command will direct the user to the User Settings page, where the settings for the user will appear. The page will allow the user to modify the font size, language and theme used within the application.

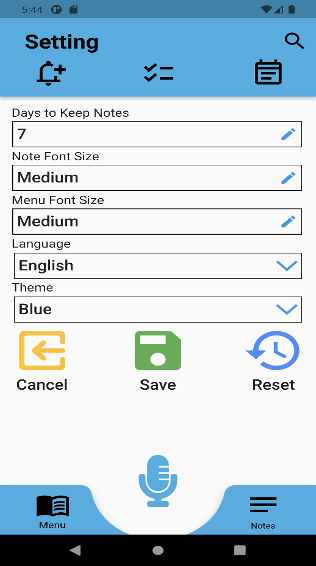
**Figure 13**

*An Application Change Request*



**Figure 14**

*An Application Change Request Response*

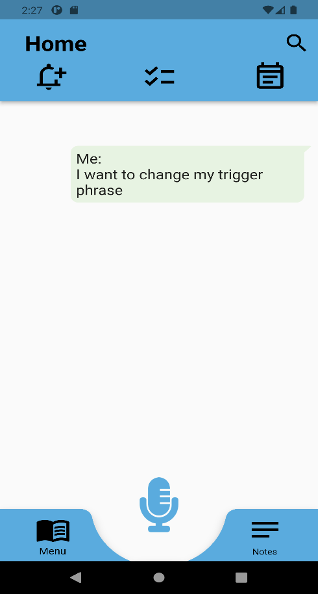


## User Trigger Page

The User Trigger page will open when the user states “I want to change my trigger phrase”. This command will direct the user to the User Trigger page, where the guide for the creation of a new trigger phase will appear for the user. The page holds a “save” icon for the user to complete the task and also a “cancel” icon if the user chooses to cancel the entry made.

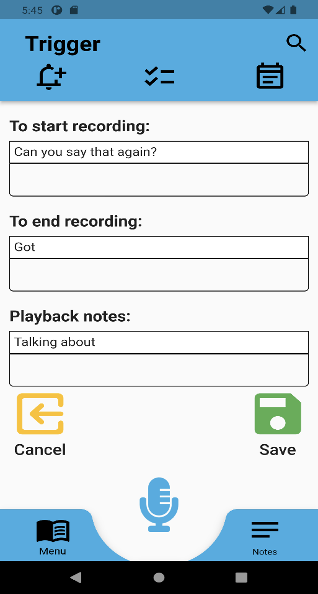
**Figure 15**

*Changing the Trigger Phrase Request*



**Figure 16**

*Changing the Trigger Phrase Response*



# Launching the application

## Memory Magic Splash

The Memory Magic splash screen, as shown below, is a 6-second animation of the Memory Magic logo that appears when the application is first open. It will lead to the screens that will assist the user with onboarding.

**Figure 17**

*Memory Magic Splash Screen*

A close-up of a cell phone

Description automatically generated with medium confidence



## Onboarding Select Language Screen

The first screen after the splash introduction is the select language screen which begins the onboarding process. This allows the user to select the preferred language by clicking the dropdown button, as shown below. After selecting the language, the user can proceed to the next screen by selecting the next button.

**Figure 18**

*Selecting the Primary Language for Application*



When the user clicks the dropdown button on the select language screen, the user can change the default language, as shown below. These languages are English, Spanish (Castilian), Portuguese, Chinese, and Arabic; English is the default language.

**Figure 19**

*Displaying a Different Language for Application*

Graphical user interface, application

Description automatically generated

When the user selects a different language on the select language screen, the text will be translated on the screen, as shown below. Below, the language has been changed to Chinese which will be reflected throughout the entire application.



## Onboarding Permission Screen

If the user does not allow the application to access the microphone, the user will see the warning message “features will be limited without allowing access to your microphone”, as shown below, and the user can press the next button and proceed with restrictions.

**Figure 20**

*The Language Options of Application*



If the user allows the application to access the microphone, the “features will be limited without allowing access to your microphone” message will disappear, as shown below, and the user can press the next button and proceed without restrictions.

**Figure 21**

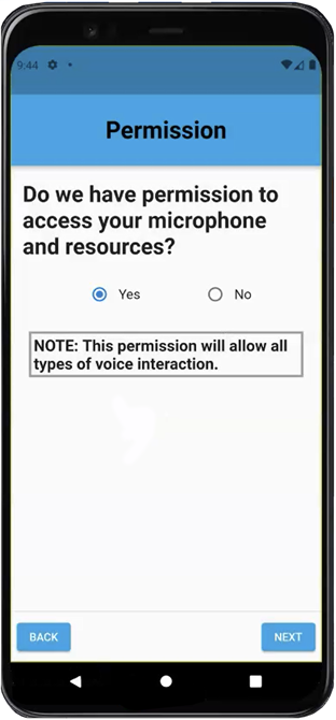
*Requesting Access to Smartphone Microphone*

Graphical user interface, text, application

Description automatically generated

**Figure 22**

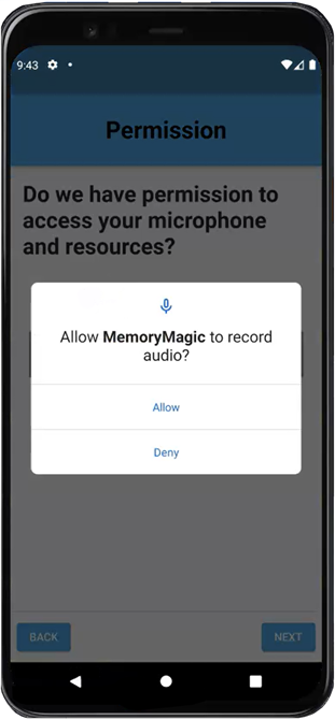
*Requesting Access to Smartphone Microphone*



When the user selects “YES,” and clicks the next button to proceed to the next screen, a window will appear, as shown below, asking the user to allow/deny access to record audio. The user can either allow or deny.

**Figure 23**

*Asking for Audio Recording*

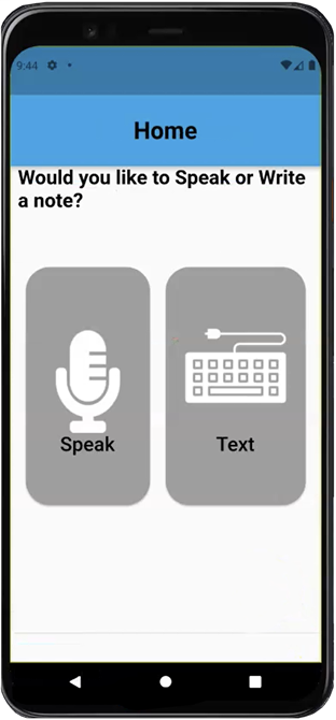


## Onboarding Introduction Screen

The onboarding introduction screen has several videos that will give the user a comprehensive overview/walkthrough of how to use the application, as shown below.

**Figure 24**

*Application Home Screen*



## Onboarding Home Screen

The last onboarding screen is the onboarding home screen, as shown below. This screen asks the user’s preference to create notes: speaking into the microphone or texting the note with the keypad. If the user did not allow the application access to the device’s microphone, the speak option will not work.

## Home Screen

Onboarding is complete and the figure shown below, shows the official home screen. There is a microphone at the bottom of the screen that the user can press to record a note. The top navigation icons (from left to right) are the notifications screen, checklist, and calendar. The bottom navigation (from left to right) is the access the menu and notes screens.

**Figure 25**

*Application Home Screen*



# Step-by-Step Guides

The purpose of this section is to provide a detailed overview of how to use the NLU application.

## Start a Conversation with the NLU

**Figure 26**

*Showcasing the Application Microphone*

A screenshot of a phone

Description automatically generated with medium confidence

Upon pressing the microphone button, the NLU app is triggered. As the user, speak into the microphone and the NLU app will automatically detect the languages spoken and process your speech.

**Figure 27**

*Simple request and response*

A screenshot of a phone

Description automatically generated with low confidence

This screenshot is an example of a response that can be given by the NLU app. The app moves to this chat screen once a dialog has been started. You can repeat step 1 as needed to continue the conversation.

**Figure 28**

*Showcasing various questions and answers*

A screenshot of a phone

Description automatically generated with medium confidence

Note: This screenshot is an extension of the conversation initiated in the last screenshot.

## Navigate to the Notes Screen

At any point, you can tell the NLU that you want to see another part of the application, such as your notes or calendar. To do this, click the microphone again as you did in step 1 and tell the application where you want to go. The below screenshots show what happens when you tell the NLU that you want to see your notes.

**Figure 29**

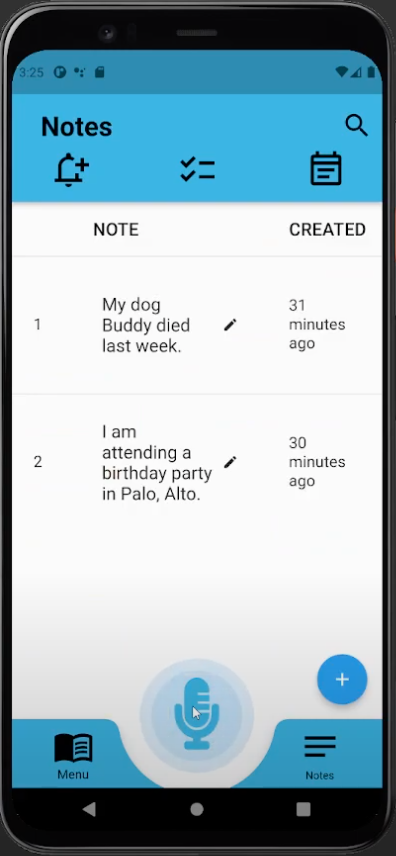
*Requesting to see notes*

A screenshot of a phone

Description automatically generated with medium confidence

**Figure 30**

*Displaying Notes Screen*



After speaking the command, the app takes the user to the Notes screen.

## Create A Note

The NLU app can do more than respond to simple tasks. For instance, the user might want to create a note. Press the microphone button and tell the application the content you want to go into the note (i.e., tell the NLU “I have a son named David”).

**Figure 31**

*Creating a Note Request, Response, Confirmation*

A screenshot of a phone

Description automatically generated with medium confidence

After speaking the contents of the note, the system will ask “Should I create a note?”. If you say yes, the system will then generate the note.

**Figure 32**

*Displaying Notes*

A screenshot of a phone

Description automatically generated with medium confidence

As shown in the above screenshot, a new note was added to the bottom of the list showing the speech the user just input moments before.

## Create an Event

Notes that have a date and a time become events. This section will walk you through how to create an event with speech. First, tell the application that an event is coming. The system will ask “On what date?” Say the date, then the NLU will prompt you for the time.

**Figure 33**

*Application Request, Response with Dates*

A screenshot of a phone

Description automatically generated with medium confidence

**Figure 34**

*Confirming AM or PM*

A screenshot of a phone

Description automatically generated with medium confidence

After specifying the time, the NLU will ask if it should create a note. If you say yes, the app will redirect you to the new note that is created that has the event details.

**Figure 35**

*Viewing Event Details*

Graphical user interface, application

Description automatically generated

## Create a Recurring Event

Similar to creating an event in Step 4, you can create a recurring event. For instance, let’s say that you tell the NLU that once a week, you have a business meeting on Friday at 4 pm. The system will ask to create a note of that and if you say yes, the recurring event will be saved as a note.

**Figure 36**

*Setting Up Recurring Events*

A screenshot of a phone

Description automatically generated with medium confidence

**Figure 37**

*Displaying a Recurring Event within Notes*

A screenshot of a phone

Description automatically generated with medium confidence

As shown in the above screenshot, the note for the recurring event has been created.

**Figure 38**

*Displaying the Checklist Screen*

A screenshot of a phone

Description automatically generated with medium confidence

Recurring events also show up on the Checklist screen.

## Ask the NLU Questions

Now that you have created a few notes, you can start asking the NLU questions based on the notes you’ve entered. For example, you have a note stating “I have a son named David”. If you ask the NLU what your son’s name is, the system should return “David” as shown in the screenshot below.

**Figure 39**

*Asking NLU Various Questions (to query from Notes)*

A screenshot of a phone

Description automatically generated with medium confidence

# Troubleshooting

This section of the User Guide will provide troubleshooting solutions for common issues that the user may experience when attempting to interact with the NLU Module while using the Memory Magic App. Separates steps are provided for both the Android and iOS versions of the application. It is important to note however, the user does not directly interface with the NLU Module and instead interfaces with the Memory Magic Application, which in turns interfaces with the NLU Module. Therefore, troubleshooting solutions are limited to what the user can do within the Memory Magic Application and on their device.

## Microphone is Not Working

The NLU Module is only interfaced by the Memory Magic Application after the user has spoken into the microphone. Once a voice has been recorded, the recording is transcribed into text. This text is sent to the NLU Module to determine its intent and to determine what functionality would best accommodate the user. Therefore, if the microphone is not working, the user will be unable to interface with the NLU Module.

To enable the microphone on an Android device:

1. Tap the Settings icon .
2. Scroll down and tap through following menu options: Appsand then Google Play Services and then Permissions.
3. Tap the slider next to “Microphone” so that it is in the On position  .

To enable the microphone on an iOS device:

1. Tap the Settings icon Apple Settings Icon - Download in Flat Style.
2. Scroll down and find the Memory Magic Application option.
3. Tap the Memory Magic Application option.
4. Tap the slider next to “Microphone” so that it is in the On position  Icon

   Description automatically generated.

## Receiving “I’m sorry, but I don’t understand.”

Once the microphone is enabled and functioning properly, the user should be able to speak into the microphone and their voice should be transcribed into text. This text will be displayed on the screen as the user is speaking. If the user says something and the Memory Magic Application replies with “I’m sorry, but I don’t understand.”, this means that the NLU Module is unable to determine what the user is saying. If this happens, please try the following suggestions:

1. Speak loudly and clearly into the microphone
2. Reword your speech to be more concise
3. Check that the language setting for the Memory Magic Application matches the language you are speaking

If the user has done all the above and the Memory Magic Application is still replying with “I’m sorry, but I don’t understand”, the most likely problem is that the user is not connected to the internet. The NLU Module requires an internet connection to function.

To connect to the internet on an Android device:

1. Tap the Settings icon .
2. Scroll down and tap through following menu options: Connectionsand then Wi-Fi.
3. Tap the slider so that it is in the On position  . Your device will automatically search for available Wi-Fi networks.
4. If you want to connect to a different Wi-Fi network, find the Wi-Fi network listed under “Available networks” and tap it to connect.
5. Enter in the security password if it is required.

To connect to the internet on an iOS device:

1. Tap the Settings icon Apple Settings Icon - Download in Flat Style.
2. Scroll down and find the Wi-Fi option.
3. Tap the slider next to “Wi-Fi” so that it is in the On position  Icon

   Description automatically generated. Your device will automatically search for available Wi-Fi networks.
4. If you want to connect to a different Wi-Fi network, find the Wi-Fi network listed under “MY NETWORKS” and tap it to connect.
5. Enter in the security password if it is required.