Test Plan

Team 11: Multi-Factor Identity Authentication

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May 7, 2021

Version 1.1

Objectives

The goal of this test plan is to assure basic functionality of the program's modules. Once this has been confirmed, we will test the performance of our system.

Test Cases

Test case #1 Written by Tamarr. Performed by Navid on 05/02/2021					
Test Case Name: Username			**Test Type:** Functional/Module Testing		
Test Case Description: Ensure that unregistered users can not access the system					
Step No.	**Action**	**Expected Result**	**Actual Result**	**Test Result**	**Comments**
1	Run the program and choose option #2 for current user	The program asks for a username	Entered 2 for current user and the program asked for a username	pass	
2	Enter an unregistered username	Invalid input and should receive an error	Received error message and was prompted to try again	pass	Three attempts were allowed
3	Entered the unregistered username two more times	Invalid input and should receive an error, get locked out of the system for some predefined time and get redirected to the program main menu	Re-entered the username two more times, received error message, got locked out, was redirected to the program main menu	pass	

Test case #2. Written by Navid. Performed by Danny Wu on 05/02/2021					
Test Case Name: Valid username - Invalid/valid PIN Code			**Test Type:** Functional/Module Testing		
Test Case Description: To make sure the module is working properly and as expected. Ensure that only four digits pins are accepted and to lock people out who fail to meet this criteria.					
Step No.	**Action**	**Expected Result**	**Actual Result**	**Test Result**	**Comments**
1	Run the program and choose option “2” for the current user. Enter username	The program should prompt to enter his username and after validating it should ask for the pin	Entered 2 and the program prompted to enter the username. Entered the username and the program asked for the pin	pass	
2	Enter less than 4 digits	Invalid input and should receive an error	Received error message and was prompted to try again	pass	
3	Enter more than 4 digits	Invalid input and should receive an error	Received error message and prompted to try again	pass	
4	Enter 4 values in which at least one is not a number	Invalid input and should receive an error	Letters and characters worked as long as they were four characters	fail	Change the code to check pin is only numbers
5	Repeat step 1 and enter the pin wrong three times.	All attempts should fail and then lock the system for some time	After the third attempt, I was locked out for x seconds	pass	How many seconds/minutes do we want to lock users out for?
6	Repeat step 1 and enter the pin correctly	Should pass and allow the user to continue	Was able to move to voice analysis	pass	

Test Case #3. Uzias wrote and tested on 02/25/2021					
Test Case Name: Verifying GPS Coordinates			**Test Type:** Functional/Module Testing		
Test Case Description: Make sure the module is working properly and as expected.					
Step No.	**Action**	**Expected Result**	**Actual Result**	**Test Result**	**Comments**
1	Run the module of the usb GPS device	Should receive and output the coordinates in a message	Coordinates were displayed but they weren't the correct ones...	fail	Need to look at the serial data again and see why the numbers aren't correct
2	Run the module and record 20 samples	At least 90% of samples should be within a 10 foot radius		fail	Did not run since coordinates were off in the previous step

Test case #4. Written by Navid. Performed by Danny on 05/15/2021					
Test Case Name: Imposter login for voice analysis			**Test Type:** Performance Test		
Test Case Description: Enter the system as an imposter and try to pass the voice authentication.					
Step No.	**Action**	**Expected Result**	**Actual Result**	**Test Result**	**Comments**
1	Run the program and choose option #2 for current user	The program should ask for username	Entered 2 for current user and the program asked for username	pass	
2	Enter Tamarr's username and pin	Should enter the system as Tamarr after entering his username and pin. Then, the program should direct the user to voice module	Entered Tamarr's username and pin and entered the system as Tamarr and was redirected to voice module	pass	In this case we assumed that tamarr username/pin were compromised
3	Press "r" to record the phrase "this is Tamarr"	Should fail and be asked to try again	Pressed "r" and recorded the phrase "this is Tamarr"	pass	After the 1st failed access, two more attempts are allowed
4	Repeat step 3 two more times	Should fail, get locked out of the system for some time and get sent to the program's main menu	I repeated step 3 two more times, was locked out of the system for some time and was sent to program's main menu	pass	
5	Repeat steps 2-4 for Navid, and Uzi			pass	Danny enters the system as Navid and Uzi and tries to pass the voice module. Store data in the spreadsheet.

Test Case #5. Written by Danny and tested by Danny on 05/17/2021					
Test Case Name: User login for voice analysis.			**Test Type:** Performance Test		
Test Case Description: Run the system and login as an authorized user (i.e. login as ourselves)					
Step No.	**Action**	**Expected Result**	**Actual Result**	**Test Result**	**Comments**
1	Run the program and choose option #2 for current user. Enter your username and pin	The program should ask the user for username and pin and redirect the user to voice analysis after validating username/pin	Selected current user then was prompted to enter username/pin and was redirected to voice analysis module	pass	
2	Press “r” to record your phrase	The program prompts the user to say the phrase	Pressed “r” and the program asked for the phrase	pass	
3	Authenticating the voice and recognizing the accessing user and calling the GPS module	Should pass and allow the program to call GPS module	It passed and called GPS module	pass	
4	Program calls GPS module	GPS coordinates should be displayed	GPS coordinates were displayed	pass	
5	Danny, Uzias and Tamarr repeat steps 1-4	At least 80% of the times they should be able to pass		pass	Store results in the spreadsheet.

Test Case #6. Written by Danny performed by Uzias on 05/20/2021					
Test Case Name: Registration of new user			**Test Type:** Performance Test		
Test Case Description: Run the system in order to add a new profile to the database and check for errors					
Step No.	**Action**	**Expected Result**	**Actual Result**	**Test Result**	**Comments**
1	Run the program and choose option #1 for “new user”	Should be prompted by program to create username	I was asked to create a username	pass	
2	Enter an existing username	Should fail and notify the user that the name has been taken	Entered username as “danny ” and was rejected	fail	I entered as danny_ (with a space) and this passed. Although it is different, it’s very similar. We should reject this
3	Enter a non-existing username	Should pass, be stored in the database and ask user to create pin	Entered as “sam” and passed to pincode part	pass	
4	Enter a non-4 digit PINs as the following ● 3 digits ● 5 digits ● enter characters ● enter 4 values but not all numbers	Should all fail and notify the user of the error	Received error message for each of the steps listed. Only worked when it was 4 digits.	pass	We fixed this issue from the previous test case and no longer experience it.
5	Enter a 4 digit pin and re-enter a different pin a few times	Should get an error message until the correct pin is confirmed	I got an error message each time up until I entered the right pin.	pass	Note: We don’t have any limit on attempts for this.
6	Enter voice input 15 times	All inputs should be taken and used to create profile	I was prompted to say the phrase 15 times	pass	Add a delay so it isn’t so quick from one

					recording to another
7	Login with new user profile 15 times	At least 80% of samples should pass	Had my sister create a profile and she passed most of the time (93%)	pass	

References

- User Manual
- Requirements Document

Resources

- A PC capable of running Python (Windows 10 system used for these tests)
- A microphone to be able to provide voice inputs
- A device capable of obtaining GPS coordinates
- The following python libraries/modules
    - os
    - time
    - sys
    - string
    - numpy
    - array
    - scipy.io.wavfile
    - re
    - scipy.fftpack dct
    - pyaudio
    - wave
    - pickle
    - warnings
    - sklearn preprocessing
    - scipy.io.wavfile read
    - python_speech_features
    - sklearn.mixture GaussianMixture
    - Pyserial