

Deliverable 2B - AI Test Report
CMPE 187 - Software Quality Engineering
San Jose State University
Group 2

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<ul style="list-style-type: none"> • This test for detecting the User’s mental illness and providing mental health support covers the app’s capability to test the following 	106

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Section 1 - AI Function Test Requirement Analysis

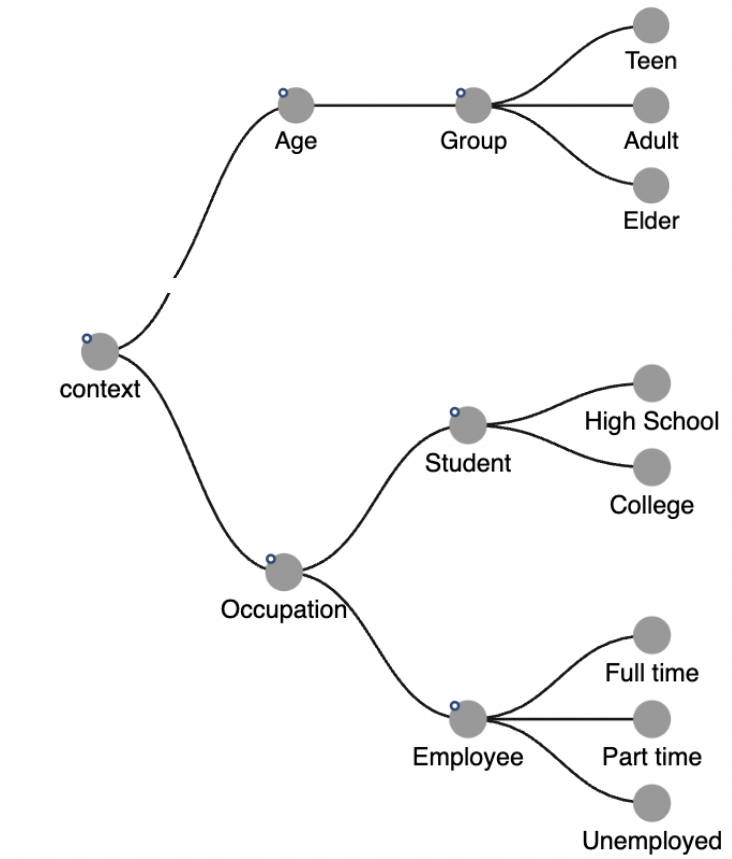
- We designed the test case based on AI test modeling
- Then we proceed to augmented the test case input
- We then test those test cases towards Wysa
- Wysa should pass if it behaves similar to the way we expected it to

Section 2 - AI Test Modeling for your selected AI Features using 3D AI test tool (from Deliverable #2)

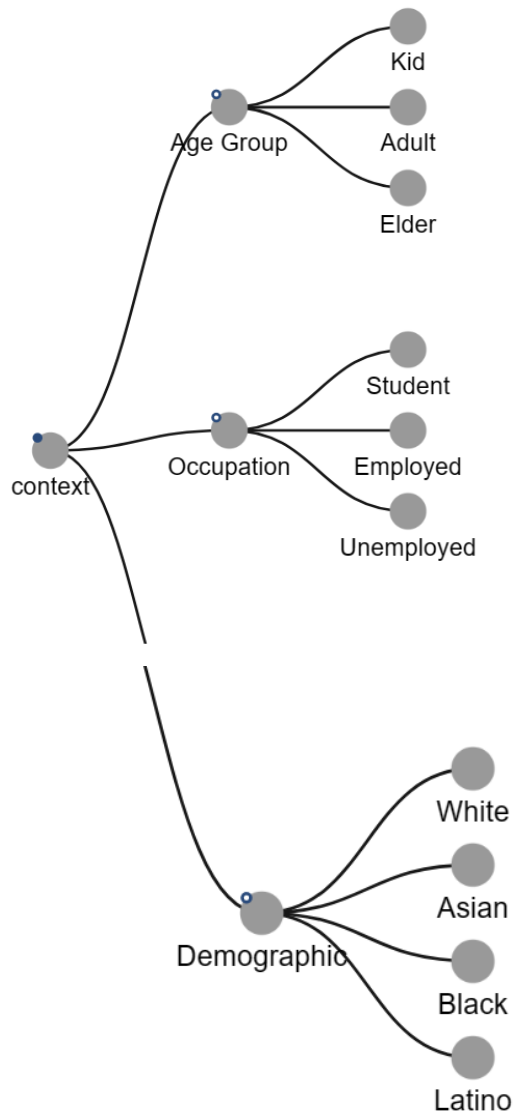
Some of the AI Test Modeling has been changed from Deliverable 2A

Section 2.1 Context Modeling for AI Features

Mental Illness function



Exercise function



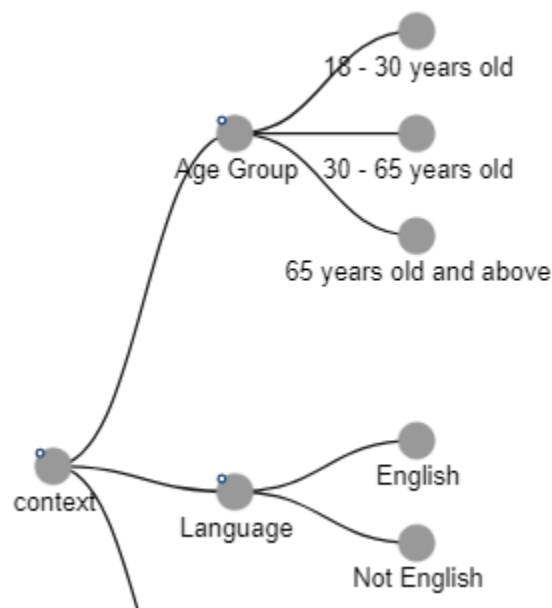
Feeling Detection function

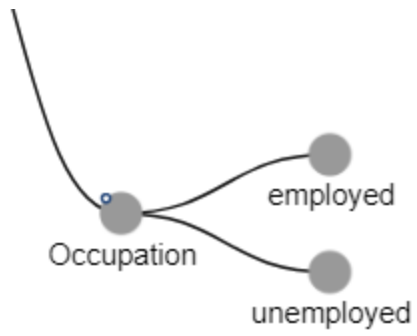
The context classification spanning tree for feeling detection encompasses four major cases and ten minor cases, providing a comprehensive framework to evaluate Wysa's performance in various contextual scenarios. The first major case focuses on age groups, encompassing three distinct age ranges: 18 to 30 years old, 30 to 65 years old, and 65+ years old. This allows for testing Wysa's functionality and effectiveness across different age groups, considering potential variations in emotional expression and needs across different age groups.

The second major case in the spanning tree is language, aiming to assess Wysa's ability to understand languages other than English. This case recognizes the importance of linguistic diversity and evaluates Wysa's performance in comprehending and responding to emotions expressed in languages other than English..

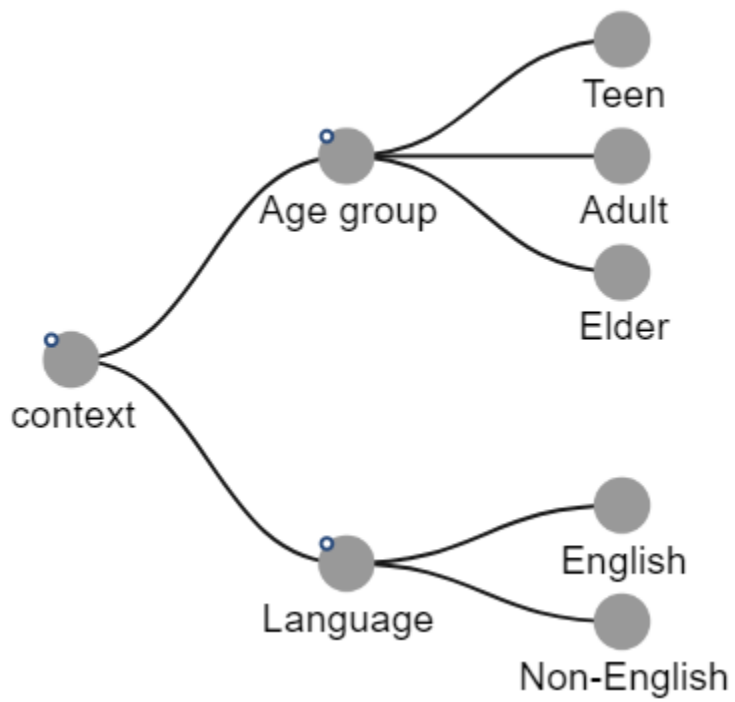
The last major case in the spanning tree is occupation, encompassing the user's occupation as a contextual factor. This case recognizes that an individual's occupation could impact their emotions, and evaluates Wysa's ability to understand and respond to emotions expressed in different professional contexts.

The seven minor cases within the major cases of age group, language, and occupation further provide an evaluation of Wysa's performance in various specific scenarios within each major case. This structured approach to testing allows for a comprehensive assessment of Wysa's capabilities in different contexts, providing insights into its effectiveness and potential areas for improvement in detecting and addressing emotions across diverse populations.



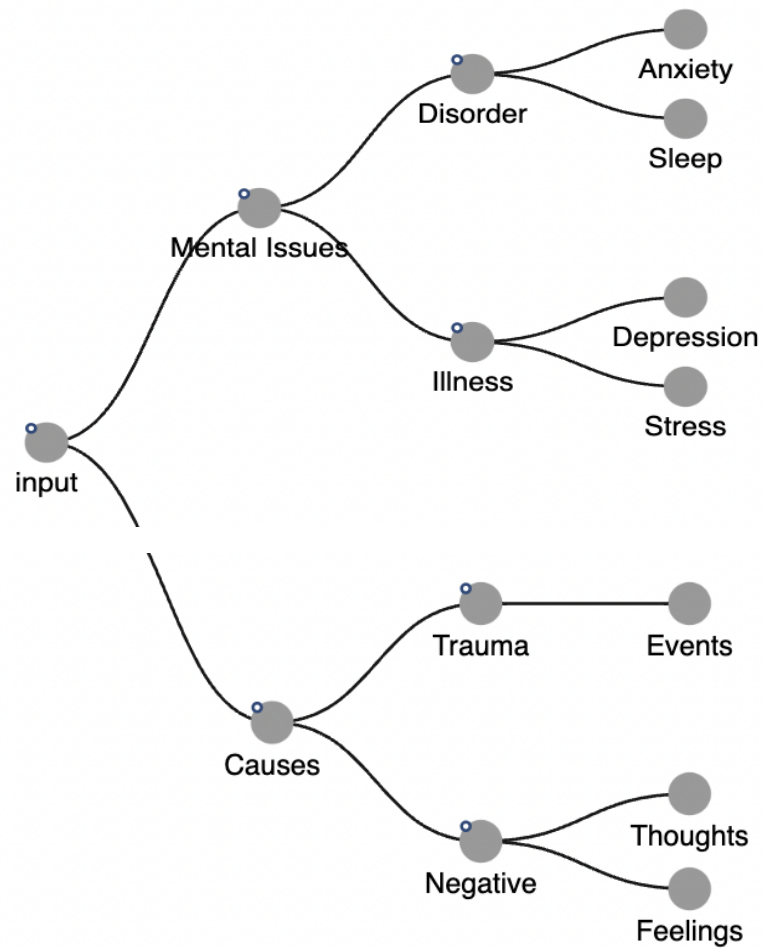


Invalid Topics Function



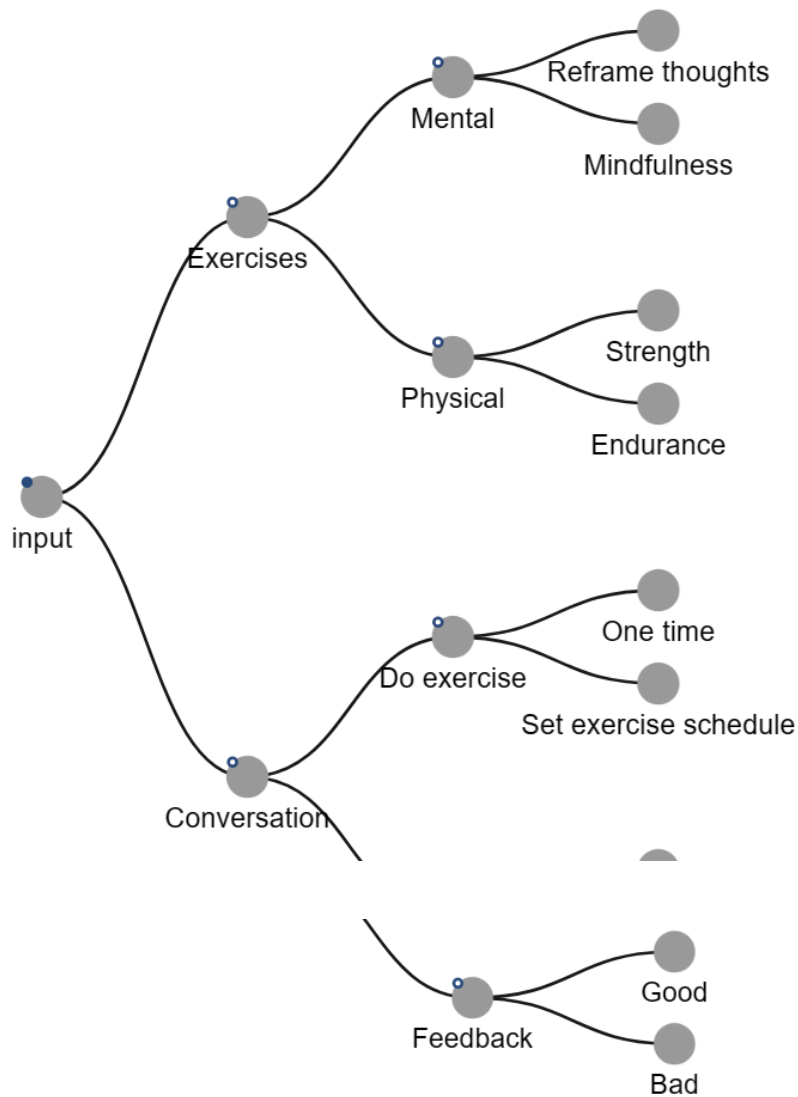
Section 2.2 AI Function Input Classifications

Mental Illness function



Exercise function

Input tree

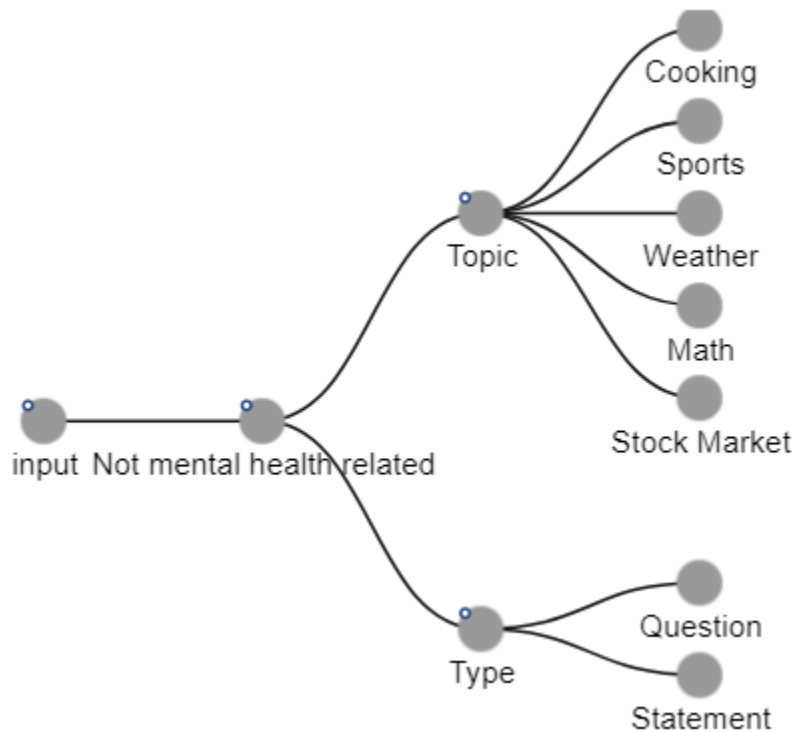


For our exercise input, we test 2 types of exercise, mental or physical.

For mental health we have the reframe thoughts exercise and mindfulness. Wysa has reframe thoughts functionality in order to reframe bad thoughts into positive ones, in order to help mental health problems. For physical exercise we have strength and endurance.

For conversation we have doing the exercise and feedback. For doing the exercise we have one time and then set an exercise schedule. For feedback we have good or bad feedback

Invalid Topics Function



Feeling Detection Function

Input model

The input classification spanning tree for feeling detection encompasses a comprehensive framework that categorizes emotions into two major cases and five minor cases. The first major case is centered around negative or unpleasant feelings, which encompasses three minor cases including stress, sadness, and anxiety. These emotions are typically associated with distress, discomfort, or unease, and may manifest in various ways in different individuals.

The second major case in the classification spanning tree pertains to positive or pleasant feelings, including emotions such as happiness and excitement. These emotions are typically associated with joy, contentment, and enthusiasm, and are often characterized by a sense of well-being and positivity.

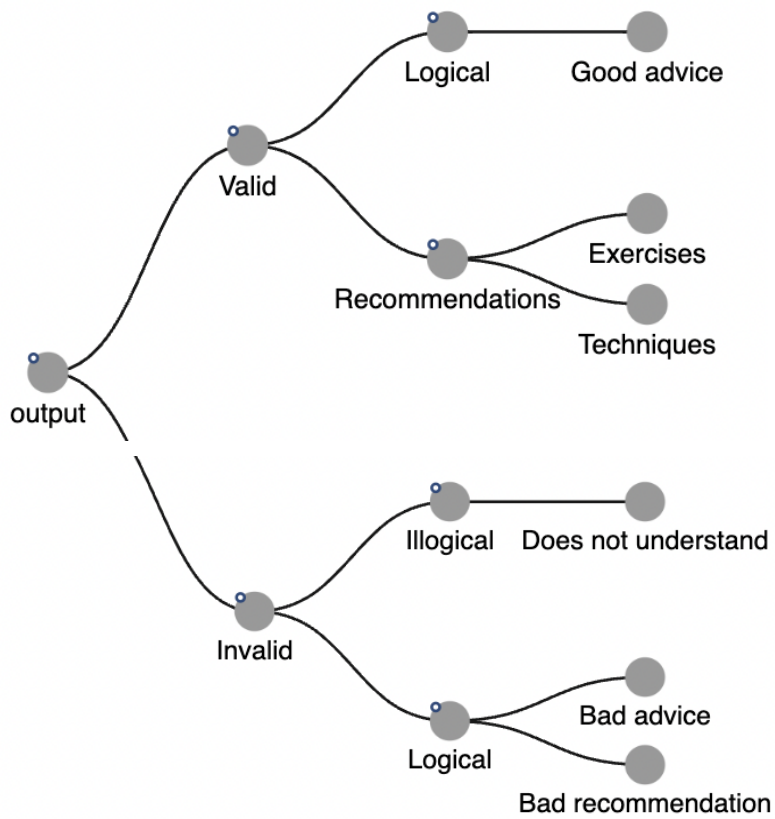
The aim of testing Wysa, the chatbot, was to evaluate its ability to accurately detect the user's emotions based on this classification spanning tree. By identifying and categorizing emotions into major and minor cases, Wysa aims to provide insights and support to users by understanding their emotional state and providing appropriate responses and guidance. Through this evaluation, it can be determined if Wysa is

effective in accurately detecting and responding to the user's emotions, thus offering valuable insights into the capabilities of the chatbot in the field of emotion detection and support.

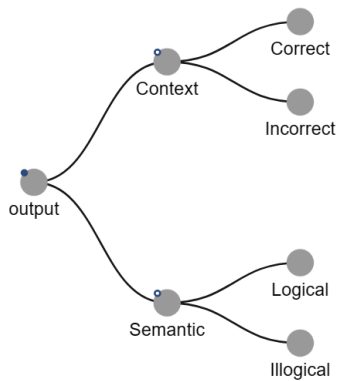


Section 2.3 AI Function Output/Event/Action Classifications

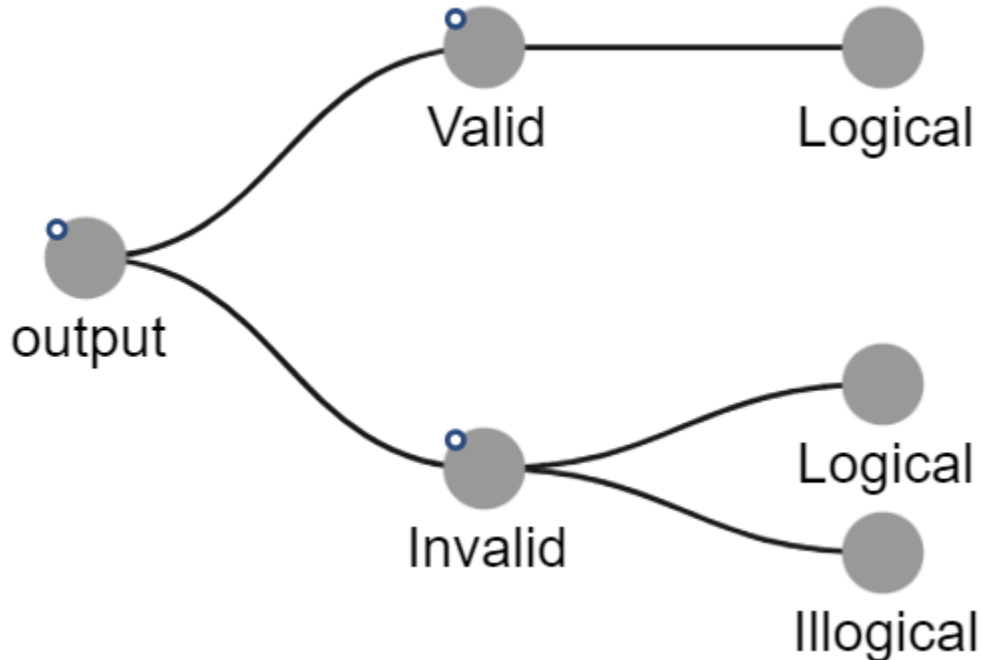
Mental Illness function



Exercise function



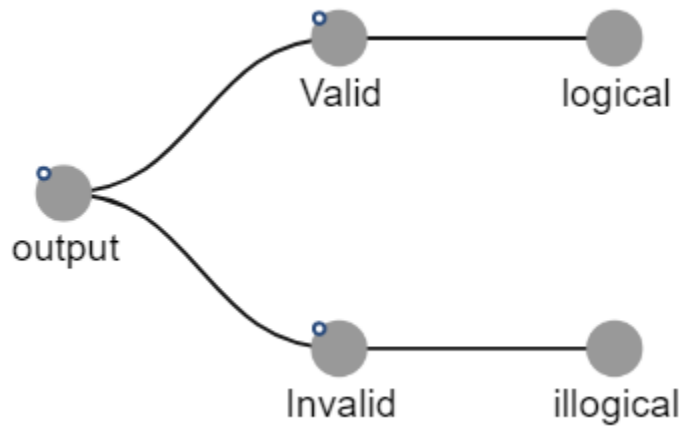
Invalid Topics Function



Feeling detection function

The output classification spanning tree for feeling detection comprises two major cases and two minor cases, providing a framework for evaluating the accuracy and logic of its responses. The first major case is labeled as "valid," which encompasses responses that are logical and coherent, aligning with the expected output from Wysa. These responses are deemed accurate and reliable, indicating that Wysa is providing meaningful and relevant answers to user queries.

The second major case in the classification tree is labeled as "invalid," encompassing responses that are illogical. The minor case of "illogical" includes responses that may not make sense or lack coherence, indicating that Wysa may not be providing logical answers.



Section 2.4 AI Function Classification Decision Table (3D tables)

Mental Illness function

id	Age.Group	Occupation.Employee	Occupation.Student
1	Teen	Full time	High School
2	Teen	Part time	High School
3	Teen	Unemployed	High School
4	Teen	Full time	College
5	Teen	Part time	College
6	Teen	Unemployed	College
7	Adult	Full time	High School
8	Adult	Part time	High School
9	Adult	Unemployed	High School
10	Adult	Full time	College

id	Invalid.Logical	Invalid.Logical	Valid.Logical	Valid.Recommendations
1	undefined	undefined	undefined	undefined
2	undefined	undefined	undefined	undefined
3	undefined	undefined	undefined	undefined
4	undefined	undefined	undefined	undefined
5	undefined	undefined	undefined	undefined
6	undefined	undefined	undefined	undefined
7	undefined	undefined	undefined	undefined
8	undefined	undefined	undefined	undefined

id	Invalid.Logical	Invalid.Logical	Valid.Logical	Valid.Recommendations
1	undefined	undefined	undefined	undefined
2	undefined	undefined	undefined	undefined
3	undefined	undefined	undefined	undefined
4	undefined	undefined	undefined	undefined
5	undefined	undefined	undefined	undefined
6	undefined	undefined	undefined	undefined
7	undefined	undefined	undefined	undefined
8	undefined	undefined	undefined	undefined

id	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
1	Thoughts	Events	Anxiety	Depression
2	Feelings	Events	Anxiety	Depression
3	Thoughts	Events	Anxiety	Stress
4	Feelings	Events	Anxiety	Stress
5	Thoughts	Events	Sleep	Depression
6	Feelings	Events	Sleep	Depression
7	Thoughts	Events	Sleep	Stress
8	Feelings	Events	Sleep	Stress

Exercise function

</									

Id	Age Group	Demographic	Occupation
1	Kid	White	Student
2	Kid	Asian	Student
3	Kid	Black	Student
4	Kid	Latino	Student
5	Kid	White	Employed
6	Kid	Asian	Employed
7	Kid	Black	Employed
8	Kid	Latino	Employed
9	Kid	White	Unemployed
10	Kid	Asian	Unemployed

Invalid Topics Function

id	Invalid	Valid	id	Not mental health related.Topic	Not mental health related.Type
1	undefined	undefined	1	Cooking	Question
2	undefined	undefined	2	Stock Market	Statement
3	undefined	undefined	3	Cooking	Statement
4	undefined	undefined	4	Sports	Question
5	undefined	undefined	5	Sports	Statement
6	undefined	undefined	6	Weather	Question
7	undefined	undefined	7	Weather	Statement
8	undefined	undefined	8	Math	Question
9	undefined	undefined	9	Math	Statement
10	undefined	undefined	10	Stock Market	Question

id	Age group	Language
1	Teen	English
2	Teen	Non-English
3	Adult	English
4	Adult	Non-English
5	Elder	English
6	Elder	Non-English

Feeling detection function
3D decision table



Context model decision table

ID	Age Group	Language	Occupation
C1	18 - 30 years old	-	-
C2	-	Not English	-
C3	-	-	Employed

Input model Decision table

ID	Good Feelings	Bad Feelings
I1	Happy	-
I2	Excited	-
I3	-	Stress
I4	-	Sad
I5	-	Anxious

Output model decision table

ID	Output
O1	Logical
O2	Illogical

Test case design table

I have devised 8 test cases that encompass both the input and context model spanning trees. Each minor case will have a corresponding test case to ensure that Wysa accurately detects feelings, whether they are positive or negative, in various contextual scenarios. The first two test cases will focus on feeling detection with both invalid and valid conversation formats. The subsequent three test cases will solely test the accuracy of feeling detection. Lastly, the last three test cases will evaluate both feeling detection and contextual scenarios, such as age group, language, and occupation.

Test Case ID	Input	Context	Output
1	I1	-	O1
2	I2	-	O2
3	I3	-	O1
4	I4	-	O1
5	I5	-	O1

6	I1	C1	O2
7	I3	C2	O2
8	I5	C3	O2

Section 3 – AI Function Test Cases with Inputs/Expected Outputs

Section 3.1 Test data models

Feeling Detection function

Test case ID	1
Description	Happiness detection with valid conversation format
Purpose	To test Wysa to see if Wysa could detect happiness
Input	"I'm feeling so happy today!"
Output	"I'd love to hear about what makes you feel happy today" "What would make today better"
Expected Output	"That's great to hear! What made you happy today?"
Result	Passed

Test case ID	2
Description	excitement detection with invalid conversation format
Purpose	To test Wysa to see if Wysa could detect excitement
Input	"I won the lottery today!" "I just got promoted at work!"
Output	"What would you require to focus on that?"
Expected Output	"I'm having trouble understanding your message. Can you

	please provide more details or follow a proper conversation format?"
Result	failed

Test case ID	3
Description	Stress detection
Purpose	To test Wysa to see if Wysa could detect stress
Input	"Work has been really overwhelming lately, and I'm feeling stressed."
Output	"That's an uncomfortable feeling, I know. Observe how it feels for a bit, just allowing it to exist."
Expected Output	"It sounds like you're going through a stressful time with your exams. Remember to take breaks and practice self-care during this period"
Result	Passed

Test case ID	4
Description	Sad detection
Purpose	To test Wysa to see if Wysa could detect sadness
Input	"I'm feeling really sad today"
Output	"I understand you're feeling sad. It's only natural to feel this way"
Expected Output	"I'm sorry to hear that you're feeling sad. Remember to take care of yourself and reach out to supportive people around you"
Result	Passed

Test case ID	5
Description	Anxiety detection
Purpose	To test Wysa to see if Wysa could detect anxiety
Input	"I'm feeling really anxious about my presentation tomorrow"
Output	"I'm here to help you feel more in control"
Expected Output	"It sounds like you're feeling anxious about your presentation. Remember to practice deep breathing and positive self-talk to manage your anxiety"
Result	Passed

Test case ID	6
Description	Happy detection with context of a person who is from 18 - 30 years old
Purpose	To test Wysa to see if Wysa could detect happiness expressed by a user who is from 18 to 30 years old
Input	"I aced my exam and I'm so happy!"
Output	"Scientists say that positive emotions increase one's awareness and encourage novel thoughts and actions. This could be a fantastic day to start something creative."
Expected Output	"Congratulations on acing your exam! That's awesome! How do you plan to celebrate?"
Result	Failed

Test case ID	7
Description	Stress detection in non English language
Purpose	To test Wysa to see if Wysa could detect stress in non English language
Input	"Estoy muy estresado por los exámenes" (Spanish for "I am very stressed about exams").

Output	<p>“That looks like a bunch of letters that don’t make a lot of sense together”</p> <p>“Are you testing my AI capabilities?”</p>
Expected Output	"Comprendo que te sientas estresado(a) por los exámenes. Trata de descansar y respirar profundamente" (Spanish for "I understand that you feel stressed about exams. Try to rest and breathe deeply")
Result	Failed

Test case ID	8
Description	Anxiety for a employed user
Purpose	To test Wysa to see if Wysa could detect anxiety expressed by a employed user
Input	"I'm feeling really anxious about the upcoming presentation at work"
Output	“This kind of distress can feel overwhelming. I can help you learn ways to feel more in control”
Expected Output	"It's understandable to feel anxious about the upcoming presentation. Remember to take deep breaths and practice self-care"
Result	Failed

Data Augmentation for Feeling detection function

This section involves conducting tests on eight previously identified test cases using data augmentation techniques. The aim is to check Wysa's capability to identify emotions in input text, even with certain variations in the input caused by data augmentation. The three types of data augmentation techniques employed are random word swap, random word insertion, and random word deletion. Through this analysis, we can evaluate Wysa's performance in identifying emotions and its robustness to handle variations in input text.

Test Case ID	1.1
Description	excitement detection with invalid conversation format
Data Augmentation	Random word swap
Input	"I'm happy feeling today!"
Result	Passed
Test Case ID	1.2
Data Augmentation	Random word delete
Input	"feeling so today!"
Result	Failed
Test Case ID	1.3
Data Augmentation	Random word insert
Input	"I'm feeling so glad happy today!"
Result	Failed
Expected output	"That's great to hear! What made you happy today?"

Test Case ID	2.1
Description	Happiness detection with valid conversation format
Data Augmentation	Random word swap
Input	"I today! the lottery won"
Result	failed
Test Case ID	2.2

Data Augmentation	Random word delete
Input	"won the today!"
Result	failed
Test Case ID	2.3
Data Augmentation	Random word insert
Input	"I won win the lottery today!"
Result	failed
Expected output	"I'm having trouble understanding your message. Can you please provide more details or follow a proper conversation format?"

Test Case ID	3.1
Description	Stress detection
Data Augmentation	Random word swap
Input	"Work has stressed. really overwhelming lately, and I'm feeling been"
Result	failed
Test Case ID	3.2
Data Augmentation	Random word delete
Input	"has been overwhelming lately, and I'm"
Result	failed
Test Case ID	3.3
Data Augmentation	Random word insert
Input	"Work has been really overwhelming lately, and I'm feeling real stressed."

Result	failed
Expected output	"It sounds like you're going through a stressful time with your exams. Remember to take breaks and practice self-care during this period"

Test Case ID	4.1
Description	Sad detection
Data Augmentation	Random word swap
Input	"I'm today really sad feeling"
Result	Passed
Test Case ID	4.2
Data Augmentation	Random word delete
Input	"feeling really today"
Result	Failed
Test Case ID	4.3
Data Augmentation	Random word insert
Input	"I'm feeling really sad intuitive feeling today"
Result	Passed
Expected output	"I'm sorry to hear that you're feeling sad. Remember to take care of yourself and reach out to supportive people around you"

Test Case ID	5.1
Description	Anxiety detection

Data Augmentation	Random word swap
Input	"I'm really feeling anxious about my presentation tomorrow"
Result	Passed
Test Case ID	5.2
Data Augmentation	Random word delete
Input	"feeling really about my presentation tomorrow"
Result	Failed
Test Case ID	5.3
Data Augmentation	Random word insert
Input	"I'm intuitive feeling feeling really anxious about my presentation tomorrow"
Result	failed
Expected output	"It sounds like you're feeling anxious about your presentation. Remember to practice deep breathing and positive self-talk to manage your anxiety"

Test Case ID	6.1
Description	Happy detection with context of a person who is from 18 - 30 years old
Data Augmentation	Random word swap
Input	"I my aced exam and I'm so happy!"
Result	Passed
Test Case ID	6.2
Data Augmentation	Random word delete

Input	“aced my and I'm so happy!”
Result	Passed
Test Case ID	6.3
Data Augmentation	Random word insert
Input	"I sail through aced my exam and I'm so happy!"
Result	Passed
Expected output	"Congratulations on acing your exam! That's awesome! How do you plan to celebrate?"

Test Case ID	7.1
Description	Stress detection in non English language
Data Augmentation	Random word swap
Input	“Estoy los estresado por muy exámenes”
Result	Failed
Test Case ID	7.2
Data Augmentation	Random word delete
Input	“muy estresado los exámenes”
Result	Failed
Test Case ID	7.3
Data Augmentation	Random word insert
Input	"Estoy muy estresado por los exámenes"
Result	Failed
Expected output	"Comprendo que te sientas estresado(a) por los exámenes. Trata de descansar y

	respirar profundamente" (Spanish for "I understand that you feel stressed about exams. Try to rest and breathe deeply")
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Test Case ID	8.1
Description	Anxiety detection for an employed user
Data Augmentation	Random word swap
Input	"I'm feeling work anxious about the upcoming presentation at really"
Result	Failed
Test Case ID	8.2
Data Augmentation	Random word delete
Input	"feeling really about the upcoming presentation"
Result	Failed
Test Case ID	8.3
Data Augmentation	Random word insert
Input	" I'm feeling really anxious about the upcoming presentation at intuitive feeling work"
Result	Failed
Expected output	"It's understandable to feel anxious about the upcoming presentation. Remember to take deep breaths and practice self-care"

Mental Illness function

id	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
1	Thoughts	Events	Anxiety	Depression
2	Feelings	Events	Anxiety	Depression
3	Thoughts	Events	Anxiety	Stress
4	Feelings	Events	Anxiety	Stress
5	Thoughts	Events	Sleep	Depression
6	Feelings	Events	Sleep	Depression
7	Thoughts	Events	Sleep	Stress
8	Feelings	Events	Sleep	Stress

Decision Table

	Causes			Mental Illnesses			
	Negative		Trauma	Disorder		Illness	
	Thought s	Feeling s	Events	Anxiety	Sleep	Depressio n	Stress
1	X		X	X		X	
2		X	X	X		X	
3	X		X	X			X
4		X	X	X			X
5	X		X		X	X	
6		X	X		X	X	
7	X		X		X		X

8		X	X		X		X
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Test case 1: Recommends an exercise/technique

Test Case ID	M1			
Test Case Description	User has anxiety and depression that is caused by negative thoughts and traumatic events.			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Thoughts	Events	Anxiety	Depression
Steps	Wysa		User	
1	Asks User how they are feeling			
2			Says, "I'm feeling depressed"	
3	Asks User why they are depressed			
4			Says, "I have anxiety"	
5	Asks User to share one thought about the situation			
6			States a thought	
7	Lists different thoughts that might cause the way the User is feeling			
8	Asks User which thought applies to them			
9			Chooses which thought they relate to most	
10	Guides User on ways to make them feel better based on the User's thought			
11			Follows guide	
Expected	Wysa recommends an exercise/technique to help the User feel better.			

Output	
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Test case 2: Change in User's conversation format

Test Case ID	M2			
Test Case Description	User has anxiety and depression that is caused by negative feelings and traumatic events.			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Anxiety	Depression
Steps	Wysa		User	
1	Asks how the User is feeling			
2			Says, “What are different exercises that will help with my anxiety?”	
3	Asks what the cause of their anxiety			
4			States that negative feelings is the cause of their anxiety	
5	Provides a list of types of feelings that the user might be going through			
6			Chooses the feeling that they relate to most	
7	Asks to confirm if this feeling is what they are feeling			
8			Says, “Let’s do something else”	
9	Asks User what they want to do			
Expected Output	Wysa should be able to adjust to the User’s conversation format and respond to the User’s mental issue.			

Test case 3: Short Term Memory

Test Case ID	M3			
Test Case Description	User is a student that is feeling stressed because of too much homework and creates a positive thought			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Thoughts	Events	Anxiety	Stress
Steps	Wysa		User	
1	Asks User how they are feeling			
2			Says "I'm feeling stressed"	
3	Asks if User is also anxious			
4			Clicks "Yes"	
5	Asks if it is affecting the User physically too			
6	Prompts User to choose, "Mostly mind", "Mostly physical", or "A bit of both"			
7			User chooses "Mostly mind"	
8	Asks User what thought comes to mind that causes their stress			
9			User says "I have a lot of homework"	
10	Asks the user what change they would hope for			
11			User says what they would like to change	
12	Restates the user's thought, "I have a lot of homework" and asks what positives about the situation/themselves have been			

	ignored	
13		User creates positive thought
Expected Output	Wysa should be able to remember User's mental health and thought input to help User feel better.	

Test case 4: Long Term Memory

Test Case ID	M4			
Test Case Description	User is a student that is feeling stressed because of a midterm and starts a new conversation after creating a positive thought.			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Anxiety	Stress
Steps	Wysa		User	
1	Asks User how they are feeling			
2			Says "I'm feeling stressed"	
3	Asks if User is also anxious			
4			Clicks "Yes"	
5	Asks if it is affecting the User physically too			
6	Prompts User to choose, "Mostly mind", "Mostly physical", or "A bit of both"			
7			User chooses "Mostly mind"	
8	Asks User what thought comes to mind that causes their stress			
9			User says "I have a midterm today"	
10	Asks the user what change they			

	would hope for	
11		User says what they would like to change
12	Restates the user's thought, "I have a lot of homework" and asks what positives about the situation/themselves have been ignored	
13		User creates positive thought
14	Prompts the User to "Start new Chat"	
15		User presses "Start new Chat"
16	Wysa states that User has mentioned that they're "feeling stressed"	
Expected Output	Wysa should be able to remember the User's feeling of stress and event that causes it even after the User creates a new chat	

Test case 5: Recommends a Sleep Exercise

Test Case ID	M5			
Test Case Description	User needs help to sleep.			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Thoughts	Events	Sleep	Depression
Steps	Wysa		User	
1			Says, "I am lacking in sleep"	
2	Asks User if they would like to help them sleep			
3			Clicks, "Yes"	

4	Asks if they are also feeling tired	
5		Can choose, "Yes" or "Not really"
6	Asks User if they would like to try a meditation to help them sleep	
7		Clicks, "No"
8	Provides all sleep meditations and relaxation exercises	
9		User chooses a sleep recommendation and follows it
Expected Output	Wysa should be able to provide sleep meditations and relaxation exercises to help the User sleep.	

Test case 6: Improper Conversation Format

Test Case ID	M6			
Test Case Description	User needs help staying awake and wants to know why they are depressed and having trouble sleeping			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Sleep	Depression
Steps	Wysa		User	
1			Asks, "Why am I having trouble sleeping?"	
2	Asks what kind of sleeping problems the User has			
3			Asks, "Can you help me stay up?"	
4	Provides physical activities that will help the User stay awake			
5			Asks, "Why am I depressed?"	
6	Asks what happened that made			

	the user feel depressed	
Expected Output	Wysa should be able to provide the right recommendations to the user and ask questions that will help determine the User's mental condition.	

Test case 7: Different Language

Test Case ID	M7			
Test Case Description	User tells Wysa their mental illness in a different language.			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Thoughts	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how the User is feeling			
2			Says, “ストレスがたまります”	
3	Asks why the user is feeling stressed			
4			Says, “仕事は疲れる”	
5	Asks what thought the User is having that causes the stress			
Expected Output	Wysa should be able to understand the User in a different language and ask questions regarding their condition.			

Test case 8: Text Data Augmentation

Test Case ID	M8			
Test Case Description	User states that they are stressed out. Using the AI tool, we will be able to input different augmented text inputs for Step 2.			
Input	Causes.Negative	Causes.Trauma	Mental	Mental

		a	Issues.Disorder	Issues.Illness
	Feelings	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how is the User's day			
2			User responds "I am feeling stressed out."	
3	States that this feeling brings a lot of unpleasantness and advises User to take this as a positive push.			
4	Asks User why they are feeling stressed			
Expected Output	Wysa should be able to recognize that the User is stressed.			

Exercise function

New exercise function test models been made and as below

id	Conversation.Do exercise	Conversation.Feedback	Exercises.Mental	Exercises.Physical
1	One time	Good	Reframe thoughts	Target muscle groups
2	One time	Bad	Mindfulness	Target muscle groups
3	Set exercise schedule	Good	Mindfulness	Target muscle groups
4	Set exercise schedule	Bad	Mindfulness	Target muscle groups
5	One time	Good	Mindfulness	Full body workout
6	One time	Bad	Mindfulness	Full body workout
7	Set exercise schedule	Good	Mindfulness	Full body workout
8	Set exercise schedule	Bad	Reframe thoughts	Target muscle groups
9	One time	Bad	Reframe thoughts	Target muscle groups
10	Set exercise schedule	Good		

New decision table because the one above generated by AI testing is overflow

Decision table

	Exercises				Conversation			
	Mental		Physical		Exercises		Feedback	
	Mindfulness	Reframe thought	Strengt h	Durabili ty	Do one time	Set schedu le	Good	Bad

		s						
1	X				X			
2	X					X		
3	X						X	
4	X							X
5		X			X			
6		X				X		
7		X					X	
8		X						X
9			X		X			
10			X			X		
11			X				X	
12			X					X
13				X	X			
14				X		X		
15				X			X	
16				X				X

Test 1:

Test case ID	E1	
Test case description	User wants to do mindfulness exercises (once)	
Steps	Wysa	User
1		"Give me some mindfulness exercises for Asian elders"
2	Wysa offers some specialized mindfulness	

	exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		User asks what exercises been done
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through exercises and remember what exercises been done 	

Test 2:

Test case ID	E2	
Test case description	User wants to set exercise routines for mindfulness exercises	
Steps	Wysa	User
1		"I want to set some exercise routines as an Latino adult"
2	Wysa guides user the exercise routine process	User follows the exercise routine process
3		User asks what exercises routines been set up
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through exercise routines and remember the routines set up 	

Test 3:

Test case ID	E3	
Test case description	User wants to give good feedback to mindfulness exercises	
Steps	Wysa	User
1		"Give me some mindfulness exercises for Asian elders"

2	Wysa offers some personalized mindfulness exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was helpful for me"
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through exercises and incorporate the feedback 	

Test 4:

Test case ID	E4	
Test case description	User wants to give bad feedback to mindfulness exercises	
Steps	Wysa	User
1		"Give me some mindfulness exercises for Asian elders"
2	Wysa offers some personalized mindfulness exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was not helpful for me"
6	Wysa was able to recognize the conversation overall was not helpful but does not realize it was about the exercise	
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through exercises and 	

	incorporate the feedback
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Test 5:

Test case ID	E5	
Test case description	User wants to do reframe thoughts (once)	
Steps	Wysa	User
1		"I want to reframe thoughts to feel better as a Latino kid"
2	Wysa guides user through reframe thoughts	User follows it and reframe their thoughts
3		"Give me the thoughts that I change"
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through the process and remember what had been discussed 	

Test 6:

Test case ID	E6	
Test case description	User wants to do set schedule for reframe thoughts	
Steps	Wysa	User
1		"As a Latino kid, I want to set schedule to reframe thoughts every Wednesday"
2	Wysa guides user through the schedule set up	User follows the setup
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through the routine 	

Test 7:

User wants to give good feedback for reframe thoughts

Test case ID	E7	
Test case description	User wants to give good feedback for reframe thoughts	
Steps	Wysa	User
1		"I want to reframe thoughts to feel better as an Asian teen"
2	Wysa guides user through reframe thoughts	User follows it and reframe their thoughts
3		"The exercise was helpful"
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through reframing thoughts process, offer some personalization and incorporated the feedback 	

Test 8:
User wants to give bad feedback for reframe thoughts

Test case ID	E8	
Test case description	User wants to do reframe thoughts (once)	
Steps	Wysa	User
1		"I want to reframe thoughts to feel better as an Asian teen"
2	Wysa guides user through reframe thoughts	User follows it and reframe their thoughts
3		"The exercise was unhelpful"
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through reframing thoughts process and incorporated the feedback for later 	

Test 9:
User wants to do physical strength exercise (once)

Test case ID	E9	
Test case description	User wants to do strength exercises (once)	
Steps	Wysa	User
1		"Give me some strength exercises for Asian elders"
2	Wysa offers some specialized strength exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		User asks what exercises been done
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through exercises and remember what exercises been done 	

Test 10:

User wants to set routine for physical strength exercise

Test case ID	E10	
Test case description	User wants to set exercise routines for physical strength exercises	
Steps	Wysa	User
1		"I want to set some strength exercise routines as an Asian elder"
2	Wysa guides user the exercise routine process	User follows the exercise routine process
3		User asks what exercises routines been set up
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through exercise routines and remember the routines set up 	

Test 11:

User wants to give good feedback for physical strength exercise

Test case ID	E11	
Test case description	User wants to give good feedback to physical strength exercises	
Steps	Wysa	User
1		"Give me some strength exercises for Asian elders"
2	Wysa offers some personalized physical exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was helpful for me"
Expected output	<ul style="list-style-type: none">Wysa should be able to guide user through exercises and incorporate the feedback	

Test 12:

User wants to give bad feedback for physical strength exercise

Test case ID	E12	
Test case description	User wants to give bad feedback to strength exercises	
Steps	Wysa	User
1		"Give me some strength exercises for Asian elders"
2	Wysa offers some personalized strength exercises	
3		User chooses one of the exercises

4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was not helpful for me"
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through exercises and incorporate the feedback 	

Test 13:

User wants to do durability exercise (once)

Test case ID	E13	
Test case description	User wants to do durability exercises (once)	
Steps	Wysa	User
1		"Give me some durability exercises for unemployed adult"
2	Wysa offers some physical exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		User asks what exercises been done
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through exercises and remember what exercises been done 	

Test 14:

User wants to set routine for durability exercise

Test case ID	E14	
Test case description	User wants to set exercise routines for mindfulness exercises	
Steps	Wysa	User

1		"I want to set routine to do mindfulness every Monday as an Latino adult"
2	Wysa guides user the exercise routine process	User follows the exercise routine process
3		User asks what exercises routines been set up
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through exercise routines and remember the routines set up 	

Test 15:

User wants to give good feedback for durability exercise

Test case ID	E15	
Test case description	User wants to give good feedback to mindfulness exercises	
Steps	Wysa	User
1		"Give me some mindfulness exercises for Asian elders"
2	Wysa offers some personalized mindfulness exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was helpful for me"
Expected output	<ul style="list-style-type: none"> Wysa should be able to guide user through exercises and incorporate the feedback 	

Test 16:

User wants to give bad feedback for durability exercise

Test case ID	E16
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Test case description	User wants to give bad feedback to durability exercises	
Steps	Wysa	User
1		"Give me some durability exercises for Asian elders"
2	Wysa offers some personalized durability exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was not helpful for me"
Expected output	<ul style="list-style-type: none"> Wysa should be able to offer personalized mindfulness exercises and incorporate the feedback 	

Test 17:

Ask different languages

Test case ID	E17	
Test case description	User wants to give feedback to physical exercises	
Steps	Wysa	User
1		"Tôi muốn tập thể dục" (I want to exercise but in Vietnamese)
2	Wysa should either: 1. Respond in the appropriate language 2. Tell the user to respond in English as it currently does not support this language or	

	other language than English	
Expected output	Wysa should be able to detect different language and asks to clarify	

Test 18:

Ask in improper conversation format

Test case ID	E18	
Test case description	User wants to change exercises to physical exercises	
Steps	Wysa	User
1		User asks to do mindfulness exercises
2	Wysa offers some mindfulness exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"I want to do physical exercises instead"
6	Wysa offers some physical exercises	
7		User chooses one of the physical exercises
8	Wysa guides user through the exercises	User keep asking to change exercises instead of doing the exercises
9	Wysa should be able to detect the improper conversation format and detect based on the outline	

Expected output	Wysa should be able to detect the improper conversation format and detect based on the outline
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Augmented test case

For AI testing augmented test cases, we will use test case 1 as the base case

ID	Augment Profile	Augment Result	Wysa able to recognize request for mindfulness exercise	Wysa offers exercise personalization
1	random word swap	Give some me mindfulness exercises for Asian elders	Expected to	Expected to
2	random word delete	me some exercises for Asian elders	Expected to	Expected to
3	random word insert	Give heedfulness me some mindfulness exercises for Asian elders	Expected to	Expected to
4	synonym augmentation	Afford me some heedfulness exercises for Asian elders	Expected to	Expected to
5	ocr augmentation	Give me some mindfolne88 exercises for Asian eldeks	Expected to	Expected to
6	keyboard augmentation	Give me some mindfulness exe3dises for Asian #lders	Expected to	Expected to
7	random char insert	wGive me some mindfulness exercises for	Expected to	Expected to

		A2sian elders		
8	random char swap	Gvie me some mindfulness exercises for Asian eldres	Expected to	Expected to
9	random char delete	Give me som mindfulness exercises for Asian elers	Expected to	Expected to

Invalid Topics Function

Decision Table

id	Not mental health related.Topic	Not mental health related.Type
1	Cooking	Question
2	Stock Market	Statement
3	Cooking	Statement
4	Sports	Question
5	Sports	Statement
6	Weather	Question
7	Weather	Statement
8	Math	Question
9	Math	Statement
10	Stock Market	Question

	Not mental health related						
	Topic					Type	
	Cooking	Stock Market	Sports	Weather	Math	Question	Statement
1	X					X	

2	X						X
3		X				X	
4		X					X
5			X			X	
6			X				X
7				X		X	
8				X			X
9					X	X	
10					X		X

Test case 1:

Test case ID	I1	
Input	Topic: Cooking	Type: Question
Steps	Wysa	User
1	Ask how the user is doing	
2		How do you know if a burger is done or not?
3	Should be able to detect that the conversation is not about the user's mental state	
Expected output	Should be able to detect that the conversation is not about the user's mental state	

Test case 2:

Test case ID	I2	
Input	Topic: Cooking	Type: Statement

Steps	Wysa	User
1	Ask how the user is doing	
2		Chicken is safe to eat at 165 degrees Fahrenheit
3	Should be able to detect that the conversation is not about the user's mental state	
Expected output	Should be able to detect that the conversation is not about the user's mental state	

Test case 3:

Test case ID	I3	
Input	Topic: Stock Market	Type: Question
Steps	Wysa	User
1	Ask how the user is doing	
2		What is Downey's stock looking like right now?
3	Should be able to detect that the conversation is not about the user's mental state	
Expected output	Should be able to detect that the conversation is not about the user's mental state	

Test case 4:

Test case ID	I4	
Input	Topic: Stock Market	Type: Statement
Steps	Wysa	User
1	Ask how the user is doing	

2		The general rule of thumb in the stock market is to buy low and sell high
3	Should be able to detect that the conversation is not about the user's mental state	
Expected output	Should be able to detect that the conversation is not about the user's mental state	

Test case 5:

Test case ID	I5	
Input	Topic: Sports	Type: Question
Steps	Wysa	User
1	Ask how the user is doing	
2		Why were the Washington Redskins renamed?
3	Should be able to detect that the conversation is not about the user's mental state	
Expected output	Should be able to detect that the conversation is not about the user's mental state	

Test case 6:

Test case ID	I6	
Input	Topic: Sports	Type: Statement
Steps	Wysa	User
1	Ask how the user is doing	
2		American football is not the same as football in other

		countries
3	Should be able to detect that the conversation is not about the user's mental state	
Expected output	Should be able to detect that the conversation is not about the user's mental state	

Test case 7:

Test case ID	17	
Input	Topic: Weather	Type: Question
Steps	Wysa	User
1	Ask how the user is doing	
2		Will it rain next week?
3	Should be able to detect that the conversation is not about the user's mental state	
Expected output	Should be able to detect that the conversation is not about the user's mental state	

Test case 8:

Test case ID	18	
Input	Topic: Weather	Type: Statement
Steps	Wysa	User
1	Ask how the user is doing	
2		California experienced turbulent weather changes in 2023
3	Should be able to detect that the conversation is not about the	

	user's mental state	
Expected output	Should be able to detect that the conversation is not about the user's mental state	

Test case 9:

Test case ID	I9	
Input	Topic: Math	Type: Question
Steps	Wysa	User
1	Ask how the user is doing	
2		What is the derivative of 8?
3	Should be able to detect that the conversation is not about the user's mental state	
Expected output	Should be able to detect that the conversation is not about the user's mental state	

Test case 10:

Test case ID	I10	
Input	Topic: Math	Type: Statement
Steps	Wysa	User
1	Ask how the user is doing	
2		4 is the square of 2
3	Should be able to detect that the conversation is not about the user's mental state	
Expected output	Should be able to detect that the conversation is not about the user's mental state	

Section 3.2 Test case reports

Mental Illness Function

Test case 1: Recommends an exercise/technique

Test Case ID	M1			
Test Case Description	User have anxiety and depression that is caused by negative thoughts and traumatic events.			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Thoughts	Events	Anxiety	Depression
Steps	Wysa		User	
1	Asks User how they are feeling			
2			Says, "I'm feeling depressed"	
3	Asks User why they are depressed			
4			Says, "I have anxiety"	
5	Recommends the "Reframe Thoughts" exercise			
6			Does exercise	
Actual Output	Instead of asking what thoughts the User has, Wysa recommends the "Reframe Thoughts" exercise that will reduce the intensity of emotions that the User's thoughts can affect.			
Invalid/Valid	Valid			

Test case 2: Change in User's conversation format

Test Case ID	M2			
Test Case Description	User has anxiety and depression that is caused by negative feelings and traumatic events.			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness

	Feelings	Events	Anxiety	Depression
Steps	Wysa		User	
1	Asks how the User is feeling			
2			Says, “What are different exercises that will help with my anxiety?”	
3	Asks, “Can I help you with your feelings of anxiety?”			
4	Prompts User to choose, “I’d like that”, “Let’s keep talking”, “You misunderstood me”			
5			Presses, “You misunderstood me”	
6	Asks, “Shall we go back to what we were talking about?”			
Actual Output	Wysa was able to understand that the User had anxiety. However, Wysa didn’t provide different exercises that will help the User.			
Invalid/Valid	Invalid			

Test case 3: Short Term Memory

Test Case ID	M3			
Test Case Description	User is a student that is feeling stressed because of too much homework and creates a positive thought			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Thoughts	Events	Anxiety	Stress
Steps	Wysa		User	
1	Asks User how they are feeling			
2			Says "I'm feeling stressed"	

3	Asks if User is also anxious	
4		Clicks "Yes"
5	Asks if it is affecting the User physically too	
6	Prompts User to choose, "Mostly mind", "Mostly physical", or "A bit of both"	
7		User chooses "Mostly mind"
8	Asks User what thought comes to mind that causes their stress	
9		User says "I have a lot of homework"
10	Asks the user what change they would hope for	
11		User says, "I want to be happy"
12	Restates the user's thought, "I have a lot of homework" and asks what positives about the situation/themselves have been ignored	
13		User says, "I am smart"
14	Restates User's positive thought and congratulates the User for creating a positive thought	
Actual Output	Wysa was able to remember the User's mental health and thought input. Lead the User to create a positive thought that will help boost their confidence.	
Invalid/Valid	Valid	

Test case 4: Long Term Memory

Test Case ID	M4
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Test Case Description	User is a student that is feeling stressed because of a midterm and starts a new conversation after creating a positive thought.			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Anxiety	Stress
Steps	Wysa		User	
1	Asks User how they are feeling			
2			Says "I'm feeling stressed"	
3	Asks if User is also anxious			
4			Clicks "Yes"	
5	Asks if it is affecting the User physically too			
6	Prompts User to choose, "Mostly mind", "Mostly physical", or "A bit of both"			
7			User chooses "Mostly mind"	
8	Asks User what thought comes to mind that causes their stress			
9			User says "I have a midterm today"	
10	Asks the user what change they would hope for			
11			User says what they would like to change	
12	Restates the user's thought, "I have a lot of homework" and asks what positives about the situation/themselves have been ignored			
13			User says, "I want to be happy"	

14	Restates the user's thought, "I have a lot of homework" and asks what positives about the situation/themselves have been ignored	
15		User says, "I am smart"
16	Restates User's positive thought and congratulates the User for creating a positive thought	
17	Prompts the User to "Start new Chat"	
18		User presses "Start new Chat"
19	Wysa states that User has mentioned that they're "feeling stressed"	
Actual Output	Wysa was able to remember that the User was feeling stressed after the User created a new chat.	
Invalid/Valid	Valid	

Test case 5: Recommends Sleep Exercises

Test Case ID	M5			
Test Case Description	User needs help to sleep.			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Thoughts	Events	Sleep	Depression
Steps	Wysa		User	
1			Says, "I am lacking in sleep"	
2	Asks User if they would like to help them sleep			
3			Clicks, "Yes"	

4	Asks if they are also feeling tired	
5		Can choose, "Yes" or "Not really"
6	Asks User if they would like to try a meditation to help them sleep	
7		Clicks, "No"
8	Provides all sleep meditations and relaxation exercises	
9		User chooses a sleep recommendation and follows it
Actual Output	Wysa was able to provide sleep meditation and relaxation exercises to help the User sleep.	
Invalid/Valid	Valid	

Test case 6: Improper Conversation Format

Test Case ID	M6			
Test Case Description	User needs help staying awake and wants to know why they are depressed and having trouble sleeping			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Sleep	Depression
Steps	Wysa		User	
1			Asks, "Why am I having trouble sleeping?"	
2	Advises User to check the self-care section for sleep stories			
3			Asks, "Can you help me stay up?"	
4	Provides a slider with quick features that contain, "Privacy", "Relax and Calm", "SOS", "Emotive Reflections" and advises the User			

	to check out the self-care kit	
5		Asks, "Why am I depressed?"
6	Asks what happened that made the user feel depressed	
Expected Output	Wysa should be able to provide the right recommendations to the user and ask questions that will help determine the User's mental condition.	
Actual Output	Wysa was able to provide information about the self-care section that contains sleep stories. Wysa provides quick features that were irrelevant to the User's question, "Can you help me stay up?" Wysa was able to recognize the User's question, "Why am I depressed?" and asks why they are depressed.	
Invalid/Valid	Invalid (because Wysa did not answer one question right)	

Test case 7: Different Language

Test Case ID	M7			
Test Case Description	User tells Wysa their mental illness in a different language.			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Thoughts	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how the User is feeling			
2			Says, "ストレスがたまります"	
3	Says, "That looks like a bunch of letters that don't make a lot of sense together. 😞"			
4	Asks, "Are you testing my AI capabilities"			
5	Prompts for User to choose, "No, I'm not", "Yes", "It's my language"			

6		User presses, "It's my language"
7	Says, "I can only respond in English right now. I hope to learn more languages soon."	
Actual Output	Wysa wasn't able to understand the User's Japanese language. Wysa can only respond in English.	
Invalid/Valid	Invalid	

Test case 8: Text Data Augmentation

Test case 8.0: Normal Text

Test Case ID	M8.0			
Test Case Description	User states that they are stressed out.			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how is the User's day			
2			User responds "I am feeling stressed out."	
3	States that this feeling brings a lot of unpleasantness and advises User to take this as a positive push.			
4	Asks User why they are feeling stressed			
Actual Output	Wysa was able to recognize that the User is stressed and ask why they are feeling that way.			
Invalid/Valid	Valid			

Test case 8.1: Random Word Swap

Test Case ID	M8.2			
Test Case Description	Original Text Input: I am feeling stressed out Text data augmentation type: random word swap Step 2 is being augmented			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how is the User's day			
2			User responds "I out. feeling stressed am"	
3	Says, "Do help me understand you better. Tell me what isn't working for you."			
Actual Output	Wysa wasn't able to understand the User but tells the User to tell Wysa what isn't working for them.			
Invalid/Valid	Invalid			

Test case 8.2: Random Word Delete

Test Case ID	M8.2			
Test Case Description	Original Text Input: I am feeling stressed out Text data augmentation type: random word delete Step 2 is being augmented			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how is the User's day			
2			User responds "am feeling out."	

3	Says, "Oh... Tell me more. You may feel better talking about it."	
Actual Output	Wysa wasn't able to understand the User but tells the User to tell Wysa to tell them more.	
Invalid/Valid	Invalid	

Test case 8.3: Random Word Insert

Test Case ID	M8.3			
Test Case Description	Original Text Input: I am feeling stressed out Text data augmentation type: random word insert Step 2 is being augmented			
Input	Causes.Negative	Causes.Traum a	Mental Issues.Disorde r	Mental Issues.Illness
	Feelings	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how is the User's day			
2			User responds "I am feeling stressed intuitive feeling out."	
3	Says, "Oh... Tell me more. You may feel better talking about it."			
Actual Output	Wysa wasn't able to understand the User but tells the User to tell Wysa to tell them more.			
Invalid/Valid	Invalid			

Test case 8.4: Synonym Augmentation

Test Case ID	M8.4			
Test Case Description	Original Text Input: I am feeling stressed out Text data augmentation type: synonym augmentation Step 2 is being augmented			
Input	Causes.Negative	Causes.Traum	Mental	Mental

		a	Issues.Disorder	Issues.Illness
	Feelings	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how is the User's day			
2			User responds "1 am feeling stressed out."	
3	Says, "That's an uncomfortable feeling, I know. Observe how it feels for a bit, just allowing it to exist."			
4	Asks User what is making them feel this way			
Actual Output	Wysa was able to understand the User's feelings and asks why they feel that way.			
Invalid/Valid	Valid			

Test case 8.5: OCR Augmentation

Test Case ID	M8.5			
Test Case Description	Original Text Input: I am feeling stressed out Text data augmentation type: ocr augmentation Step 2 is being augmented			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how is the User's day			
2			User responds "1 am feeling stressed out."	
3	Says, "That's an uncomfortable feeling, I know. Observe how it			

	feels for a bit, just allowing it to exist.”	
4	Asks User what is making them feel this way	
Actual Output	Wysa was able to understand the User’s feelings and asked why they felt that way.	
Invalid/Valid	Valid	

Test case 8.6: Keyboard Augmentation

Test Case ID	M8.6			
Test Case Description	Original Text Input: I am feeling stressed out Text data augmentation type: keyboard augmentation Step 2 is being augmented			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how is the User's day			
2			User responds "I am feeling stressed out."	
3	Says, "Oh! Tell me more about that"			
Actual Output	Wysa wasn't able to understand the User's feelings but told the user to tell them more about what they said.			
Invalid/Valid	Invalid			

Test case 8.7: Random Char Insert

Test Case ID	M8.7
Test Case Description	Original Text Input: I am feeling stressed out Text data augmentation type: random char insert Step 2 is being augmented

Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Sleep	Stress
Steps	Wysa			User
1	Asks how is the User's day			
2				User responds "I am feeling stressed out."
3	Says, "Oh, I'm here for you. Tell me more about what happened."			
Actual Output	Wysa wasn't able to understand the User's feelings but told the user to tell them more about what they said.			
Invalid/Valid	Invalid			

Test case 8.8: Random Char Swap

Test Case ID	M8.8			
Test Case Description	Original Text Input: I am feeling stressed out Text data augmentation type: random char swap Step 2 is being augmented			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how is the User's day			
2			User responds "I am feeling stressed out."	
3	Says, "I understand how unpleasant emotions can disrupt our day to day life. How do you think this is impacting the way you see yourself?"			

Actual Output	Wysa was able to understand what the User was feeling and asks a valid question.
Invalid/Valid	Valid

Test case 8.9: Random Char Delete

Test Case ID	M8.9			
Test Case Description	Original Text Input: I am feeling stressed out Text data augmentation type: random char delete Step 2 is being augmented			
Input	Causes.Negative	Causes.Trauma	Mental Issues.Disorder	Mental Issues.Illness
	Feelings	Events	Sleep	Stress
Steps	Wysa		User	
1	Asks how is the User's day			
2			User responds "I am feeling stressed out."	
3	Says, "I understand how unpleasant emotions can disrupt our day to day life. How do you think this is impacting the way you see yourself?"			
Actual Output	Wysa was able to understand what the User was feeling and asks a valid question.			
Invalid/Valid	Valid			

Exercise function

Test case 1:

Test case ID	E1
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Test case description	User wants to do mindfulness exercises	
Steps	Wysa	User
1		"Give me some mindfulness exercises for Asian elders"
2	Wysa offers mindfulness exercises but without any specialization	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"What exercises did I do"
6	Wysa was not able to understand user question and recommend new exercises instead	
Actual output	<ul style="list-style-type: none"> Wysa was able to recognize the request for mindfulness exercises but no specialization Wysa was not able to answer memory question 	

Test case 2

Test case ID	E2	
Test case description	User wants to set exercise routines for mindfulness exercises	
Steps	Wysa	User
1		"I want to set some exercise routines as an Latino adult"
2	Wysa wants to offer some physical activity	
Actual output	<ul style="list-style-type: none"> Wysa was not able to recognize the request for routine exercises 	

Test case 3

Test case ID	E3	
Test case description	User wants to give good feedback to mindfulness exercises	
Steps	Wysa	User
1		"Give me some mindfulness exercises for Asian elders"
2	Wysa offers some personalized mindfulness exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was helpful for me"
6	Wysa was able to recognize the conversation overall was not helpful but does not realize it was about the exercise	
Actual output	<ul style="list-style-type: none"> Wysa offers thumbs up and down after completing an exercise but does not realize the input after that 	

Test case 4

Test case ID	E4	
Test case description	User wants to give bad feedback to mindfulness exercises	
Steps	Wysa	User
1		"Give me some mindfulness exercises for Asian elders"

2	Wysa offers some personalized mindfulness exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was not helpful for me"
6	Wysa was able to recognize the conversation overall was not helpful but does not realize it was about the exercise	
Actual output	<ul style="list-style-type: none"> Wysa offers thumbs up and down after completing an exercise but does not realize the input after that 	

Test case 5

Test case ID	E5	
Test case description	User wants to do reframe thoughts (once)	
Steps	Wysa	User
1		"I want to reframe thoughts to feel better as a Latino kid"
2	"Unhelpful thoughts can sap our energy and affect the way we see things." "Would you like to find a fresh perspective with me?"	User follows it and reframe their thoughts
3		"Give me the thoughts that I change"
Actual output	<ul style="list-style-type: none"> Wysa guided user through the process Did remember what had been discussed without the 	

	questions <ul style="list-style-type: none"> • Offer no personalization for Latino or kid
--	--

Test case 6

Test case ID	E6	
Test case description	User wants to do set schedule for reframe thoughts	
Steps	Wysa	User
1		"As a Latino kid, I want to set schedule to reframe thoughts every Wednesday"
2	"Unhelpful thoughts can sap our energy and affect the way we see things." "Would you like to find a fresh perspective with me?"	
Actual output	<ul style="list-style-type: none"> • Wysa was not able to recognize the request for scheduling and mistaken for just reframing thoughts 	

Test case 7

Test case ID	E7	
Test case description	User wants to give good feedback for reframe thoughts	
Steps	Wysa	User
1		"I want to reframe thoughts to feel better as an Asian teen"
2	Wysa guides user through reframe thoughts	User follows it and reframe their thoughts

3		"The exercise was helpful"
Actual output	<ul style="list-style-type: none"> Wysa was able to guide user through the reframing thoughts process Wysa did not offer personalization Wysa realized the good feedback 	

Test case 8

Test case ID	E8	
Test case description	User wants to do reframe thoughts (once)	
Steps	Wysa	User
1		"I want to reframe thoughts to feel better as an Asian teen"
2	Wysa guides user through reframe thoughts	User follows it and reframe their thoughts
3		"The exercise was unhelpful"
Actual output	<ul style="list-style-type: none"> Wysa was able to guide user through the reframing thoughts process Wysa did not offer personalization Wysa realized the unhelpful feedback 	

Test case 9

Test case ID	E9	
Test case description	User wants to do strength exercises (once)	
Steps	Wysa	User
1		"Give me some strength exercises for Asian elders"

2	Wysa offers some physical exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		User asks what exercises been done
Actual output	<ul style="list-style-type: none"> Wysa offers physical exercises Wysa offers no personalization Wysa ignored the question for what exercises been done 	

Test case 10

Test case ID	E10	
Test case description	User wants to set exercise routines for physical strength exercises	
Steps	Wysa	User
1		"I want to set some strength exercise routines as an Asian elder"
2	Wysa offers some physical exercises	
Actual output	<ul style="list-style-type: none"> Wysa mistaken request for physical exercise routine as doing exercise 	

Test case 11

Test case ID	E11	
Test case description	User wants to give good feedback to physical strength exercises	
Steps	Wysa	User
1		"Give me some strength exercises for Asian elders"

2	Wysa offers some personalized strength exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was helpful for me"
Actual output	<ul style="list-style-type: none"> Wysa was able to guide through the exercises Wysa was not able to offer personalized exercises Wysa realized the feedback was good 	

Test case 12

User wants to give bad feedback for physical strength exercise

Test case ID	E12	
Test case description	User wants to give bad feedback to mindfulness exercises	
Steps	Wysa	User
1		"Give me some strength exercises for Asian elders"
2	Wysa offers some physical exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was not helpful for me"
6	Wysa acknowledged the feedback	
Actual output	<ul style="list-style-type: none"> Wysa was able to guide the user through the exercise Wysa did not offer physical exercises personalization Wysa acknowledged the feedback 	

Test case 13

Test case ID	E13	
Test case description	User wants to do durability exercises (once)	
Steps	Wysa	User
1		"Give me some durability exercises for unemployed adult"
2	Wysa offers some physical exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		User asks what exercises been done
Actual output	<ul style="list-style-type: none"> Wysa only offered same exercises as strength exercises Wysa offered no personalization Wysa had no knowledge of what exercises been done 	

Test case 14:

Test case ID	E14	
Test case description	User wants to set exercise routines for mindfulness exercises	
Steps	Wysa	User
1		"I want to set routine to do mindfulness every Monday as an Latino adult"
2	Wysa offers mindfulness exercises instead	
Actual output	<ul style="list-style-type: none"> Wysa was not able to offer routine and mistaken for wanting to do exercises 	

Test case 15:

User wants to give good feedback for durability exercise

Test case ID	E15	
Test case description	User wants to give good feedback to mindfulness exercises	
Steps	Wysa	User
1		"Give me some mindfulness exercises for Asian elders"
2	Wysa offers some personalized mindfulness exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was helpful for me"
Actual output	<ul style="list-style-type: none">Wysa was able to acknowledge that the exercises was helpful	

Test case 16:

Test case ID	E16	
Test case description	User wants to give bad feedback to durability exercises	
Steps	Wysa	User
1		"Give me some durability exercises for Asian elders"
2	Wysa offers some personalized durability exercises	
3		User chooses one of the exercises

4	Wysa guides user through the exercise	User follows the exercises
5		"This exercise was not helpful for me"
Actual output	<ul style="list-style-type: none"> Wysa was able to acknowledge that the exercises was not helpful 	

Test case 17:

Test case ID	E17	
Test case description	User wants to give feedback to physical exercises	
Steps	Wysa	User
1		"Tôi muốn tập thể dục" (I want to exercise but in Vietnamese)
2	<p>"You can explore the slider below for quick access to some of the features."</p> <p>"You can also check your self-care kit for something that might help you"</p> <p>Show many exercises</p>	
Actual output	<ul style="list-style-type: none"> Wysa was not able to detect different languages 	

Test case 18

Test case ID	E18	
Test case description	User wants to change exercises to physical exercises	
Steps	Wysa	User

1		"Let's get mindfulness"
2	Wysa offers some mindfulness exercises	
3		User chooses one of the exercises
4	Wysa guides user through the exercise	
5		"Let's get active"
6	Wysa offers some physical exercises	
7		"Let's get active"
8	Wysa offers some physical exercises	
Actual output	<ul style="list-style-type: none"> Wysa was able to change according to the request user made 	

Augmented test case

For AI testing augmented test cases, we will use test case 1 as the base case

ID	Augment Profile	Augment Result	Wysa able to recognize request for mindfulness exercise	Wysa offers exercise personalization
1	random word swap	Give some me mindfulness exercises for Asian elders	Yes	No
2	random word delete	me some exercises for Asian elders	Yes	No
3	random word insert	Give heedfulness me some mindfulness exercises for Asian elders	Yes	No

4	synonym augmentation	Afford me some heedfulness exercises for Asian elders	No (offer physical exercises instead)	No
5	ocr augmentation	Give me some mindfolne88 exercises for Asian eldeks	Yes	No
6	keyboard augmentation	Give me some mindfulness exe3dises for Asian #lders	Yes	No
7	random char insert	wGive me some mindfulness exercises for A2sian elders	Yes	No
8	random char swap	Gvie me some mindfulness exercises for Asian eldres	Yes	No
9	random char delete	Give me som mindfulness exercises for Asian elers	Yes	No

Invalid Topics Function

Test case 1:

Test case ID	I1	
Input	Topic: Cooking	Type: Question
Steps	Wysa	User
1	Ask how the user is doing	
2		How do you know if a burger is

		done or not?
3	Let's talk about that. Go on...	
Actual output	Wysa was not able to realize that the question was not related to mental health	
Result	Completely illogical	

Test case 2:

Test case ID	I2	
Input	Topic: Cooking	Type: Statement
Steps	Wysa	User
1	Ask how the user is doing	
2		Chicken is safe to eat at 165 degrees Fahrenheit
3	Let's talk about that. Go on...	
Actual output	Wysa was not able to realize that the question was not related to mental health	
Result	Not completely illogical but not correct	

Test case 3:

Test case ID	I3	
Input	Topic: Stock Market	Type: Question
Steps	Wysa	User
1	Ask how the user is doing	
2		What is Downey's stock looking like right now?
3	Let's talk about that. Go on...	

Actual output	Wysa was not able to realize that the question was not related to mental health
Result	Completely illogical

Test case 4:

Test case ID	I4	
Input	Topic: Stock Market	Type: Statement
Steps	Wysa	User
1	Ask how the user is doing	
2		The general rule of thumb in the stock market is to buy low and sell high
3	What's got you feeling this way, [user]?	
Actual output	Wysa was not able to realize that the question was not related to mental health	
Result	Completely illogical	

Test case 5:

Test case ID	I5	
Input	Topic: Sports	Type: Question
Steps	Wysa	User
1	Ask how the user is doing	
2		Why were the Washington Redskins renamed?
3	Scientists say that positive emotions increase one's awareness and encourage novel	

	thoughts and actions. This could be a fantastic day to start something creative.	
4	What's the main focus for today?	
Actual output	Wysa was not able to realize that the question was not related to mental health	
Result	Completely illogical	

Test case 6:

Test case ID	16	
Input	Topic: Sports	Type: Statement
Steps	Wysa	User
1	Ask how the user is doing	
2		American football is not the same as football in other countries
3	Scientists say that positive emotions increase one's awareness and encourage novel thoughts and actions. This could be a fantastic day to start something creative.	
4	What's the main focus for today?	
Actual output	Wysa was not able to realize that the question was not related to mental health	
Result	Completely illogical	

Test case 7:

Test case ID	17
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Input	Topic: Weather	Type: Question
Steps	Wysa	User
1	Ask how the user is doing	
2		Will it rain next week?
3	Oh! Go on, [user]. I'm listening.	
Actual output	Wysa was not able to realize that the question was not related to mental health	
Result	Completely illogical	

Test case 8:

Test case ID	18	
Input	Topic: Weather	Type: Statement
Steps	Wysa	User
1	Ask how the user is doing	
2		California experienced turbulent weather changes in 2023
3	Is that still bothering you, [user]?	
Actual output	Wysa was not able to realize that the question was not related to mental health	
Result	Logical but incorrect response	

Test case 9:

Test case ID	19	
Input	Topic: Math	Type: Question
Steps	Wysa	User

1	Ask how the user is doing	
2		What is the derivative of 8?
3	Let's talk about that. Go on...	
Actual output	Wysa was not able to realize that the question was not related to mental health	
Result	Completely illogical	

Test case 10:

Test case ID	I10	
Input	Topic: Math	Type: Statement
Steps	Wysa	User
1	Ask how the user is doing	
2		4 is the square of 2
3	Okay...	
4	[user], if you were to try and find your mood now, what kind of an 'okay' are you feeling right now?	
Actual output	Wysa was not able to realize that the question was not related to mental health	
Result	Completely illogical	

Augmented test case

Test case 1 is used as the example

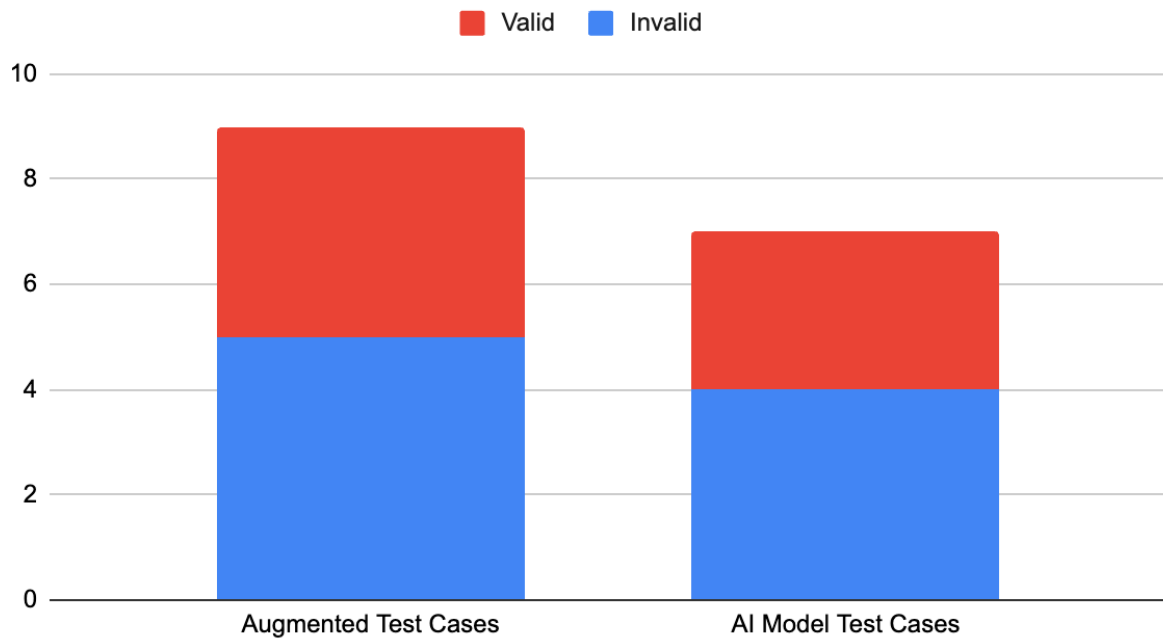
ID	Augmentation	Augmentation result	Wysa is able to detect that it is not a valid topic
1	random word swap	How do or know if a burger is done you not?	No
2	random word delete	do you if a burger is not?	Yes but not really

3	random word insert	How do you know if a burger is done bonk or not?	No
4	synonym augmentation	How serve you know if a burger is done or non?	No
5	ocr augmentation	How do you know if a borger i8 done or n0t?	No
6	keyboard augmentation	How do you knkw if a b*rger is doBe or not?	No
7	random char insert	How do you knobw if a burDger is d4one or not?	No
8	random char swap	How do you nkow if a bruger is odne or not?	No
9	random char delete	How do you knw if a burge is don or not?	No

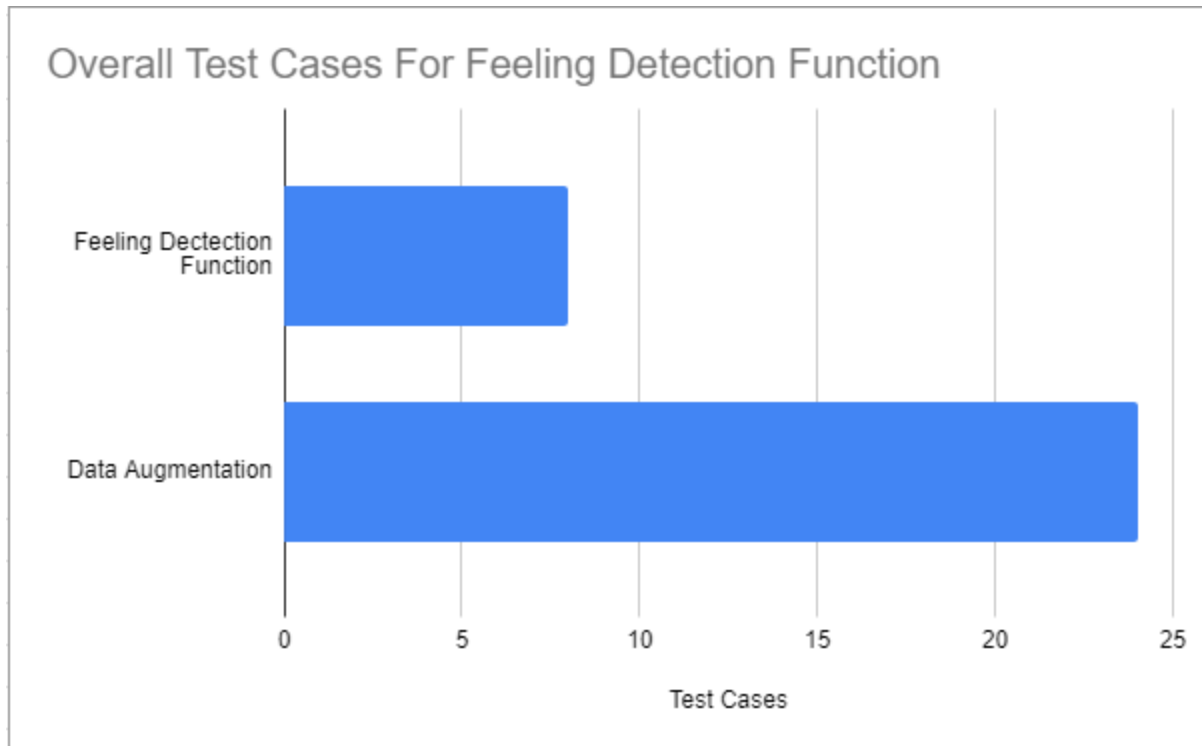
Section 3.3 Test case analysis (statistics)

Mental Illness Function

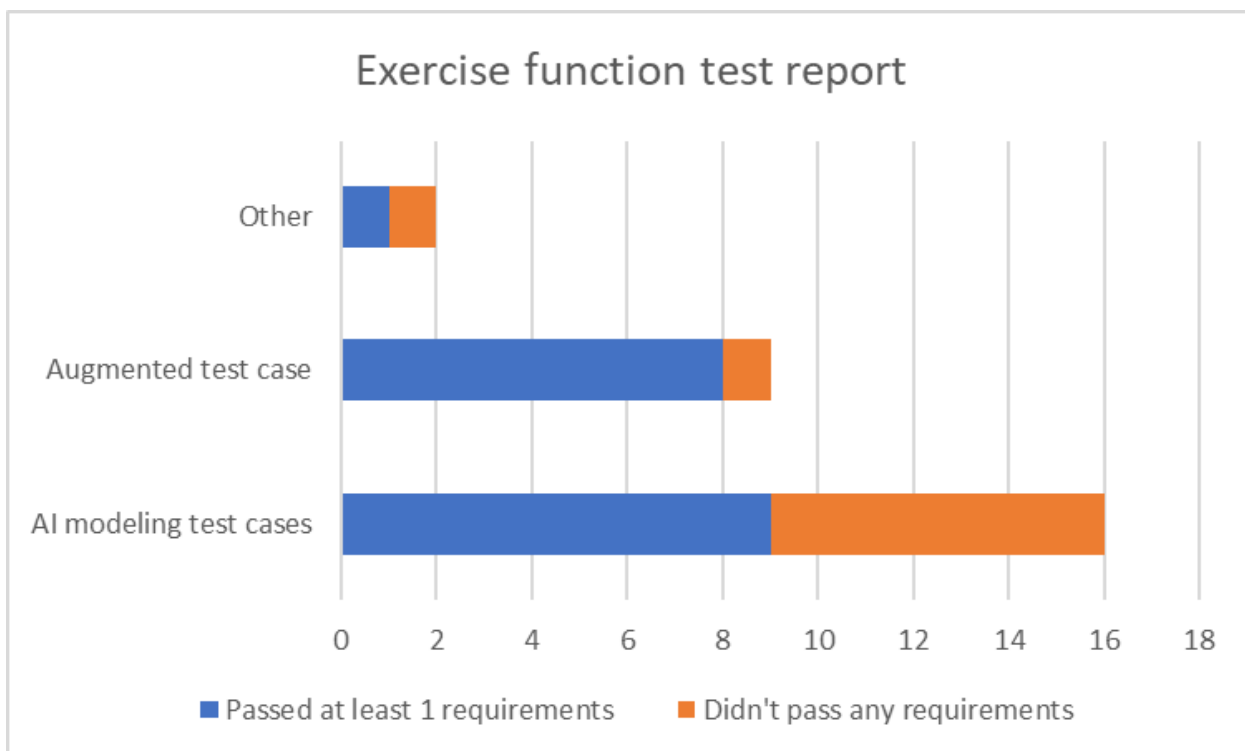
Mental Illness Test Case Analysis



Feeling Detection Function

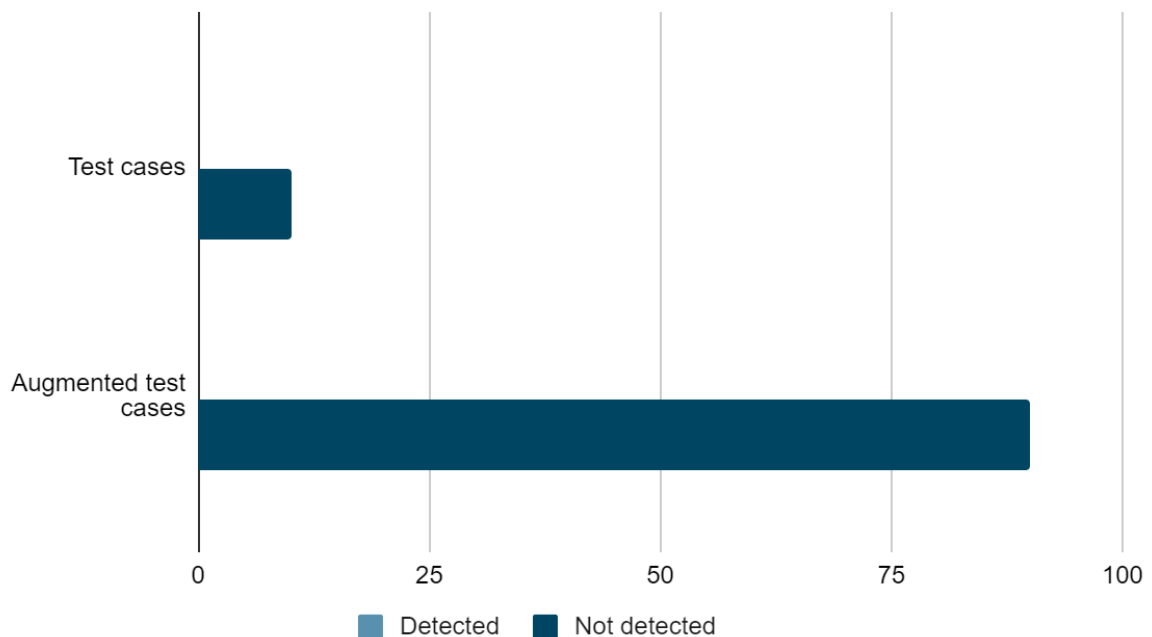


Exercise function



Invalid Topics Function

Invalid Topic Detection



Section 4 – AI Function Test Results and Test Criteria

Section 4.1 AI test model-based test results analysis test complexity, and test result statistics

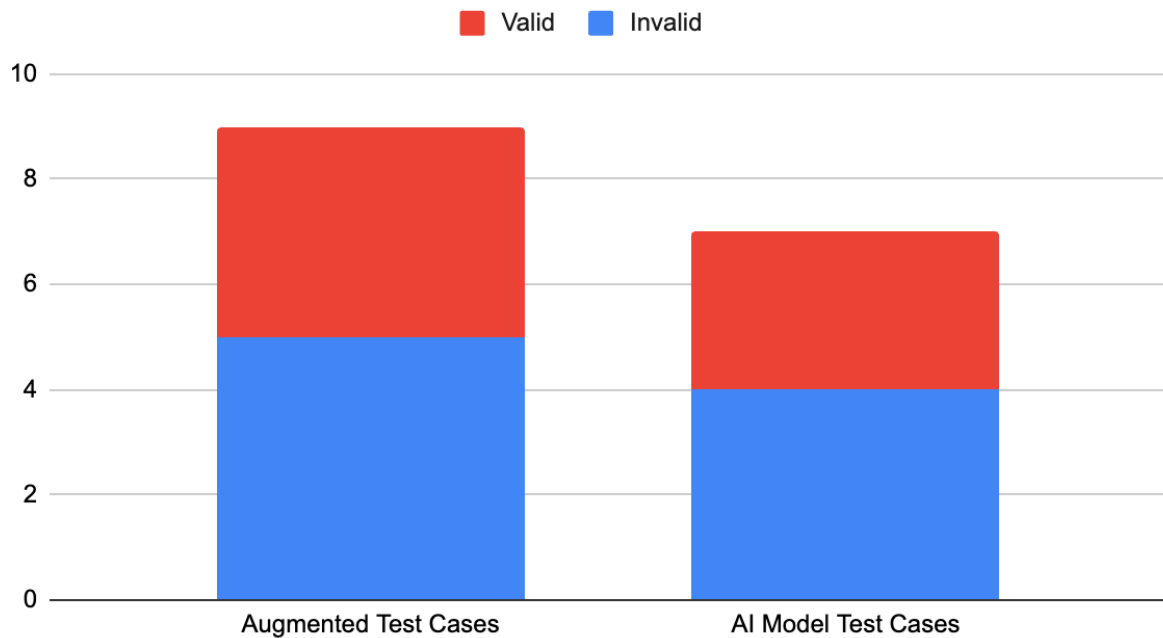
Mental Illness Function

Test case number:

- There are 8 test cases, 9 augmented test cases
- The test complexity is 17
- Each test covers:
 - Input
 - Mental Issues
 - Disorder
 - Anxiety, Sleep
 - Illness
 - Depression, Stress
 - Causes

- Trauma
 - Events
 - Negative
 - Thoughts, Feelings
- Context
 - Age
 - Group
 - Teen, Adult, Elder
 - Occupation
 - Student
 - High School, College
 - Employee
 - Full Time, Part Time, Unemployed
- Conversation Format
- Memory
 - Short term memory
 - Long term memory
- Different languages
- Text Data Augmentation

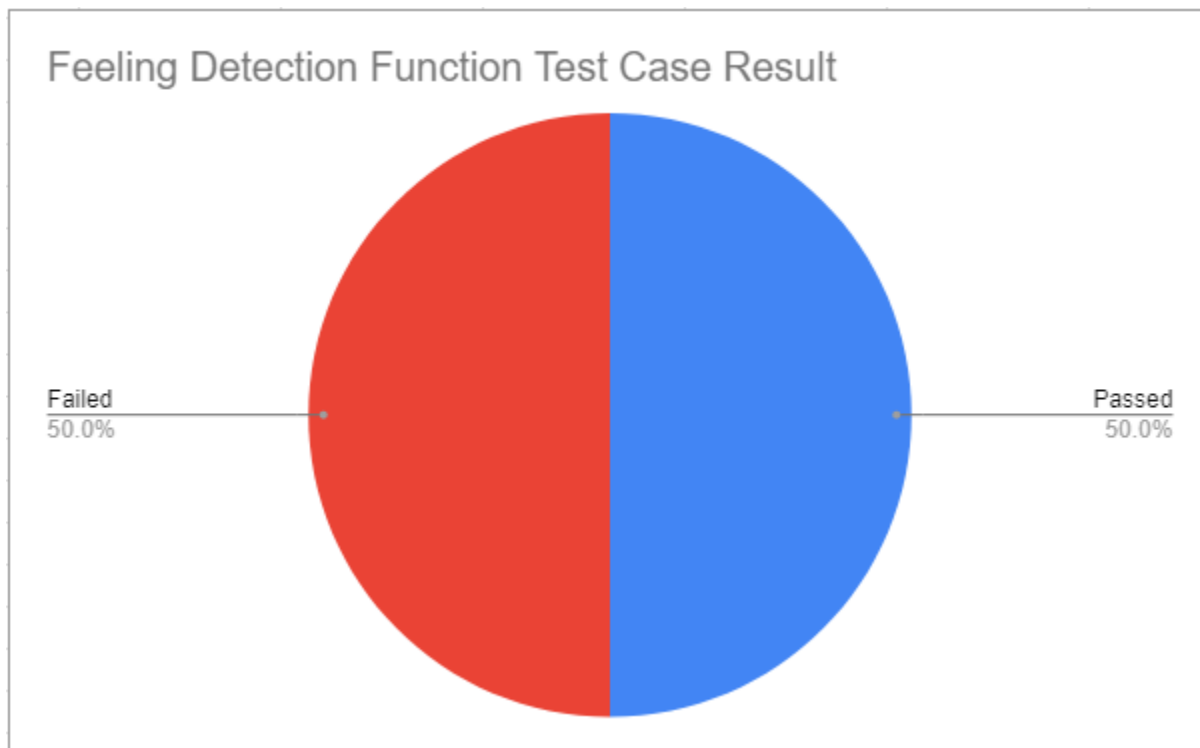
Mental Illness Test Case Analysis

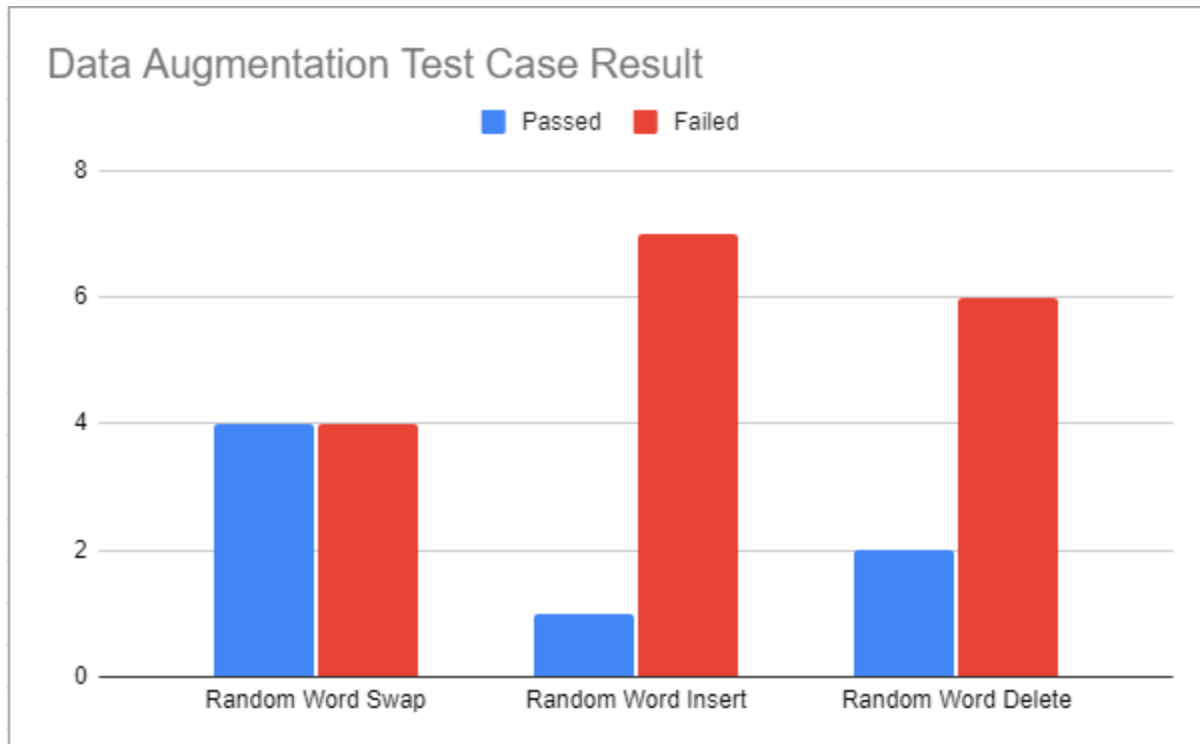


Feeling Detection Function

Test case number:

- There are 8 test cases, 24 augmented test cases
- The test complexity is 32
- Each test covers the following topics:
 - Input:
 - Good Feelings: Happy, Excited
 - Sad Feelings: Sad, Anxious, Stress
 - Context:
 - Age group: Teen, Adult, Elder
 - Occupation: Employee, Unemployed
 - Language: English, and Non-English
 - Data Augmentation
 - Random word swap
 - Random word insert
 - Random word delete
 - Conversation Format





Exercise function

Test complexity:

We have 27 AI test model-based test cases total:

- 16 AI-modeling test cases
- 9 augmented test cases
- 1 test case to test different language
- 1 test case to test conversation format

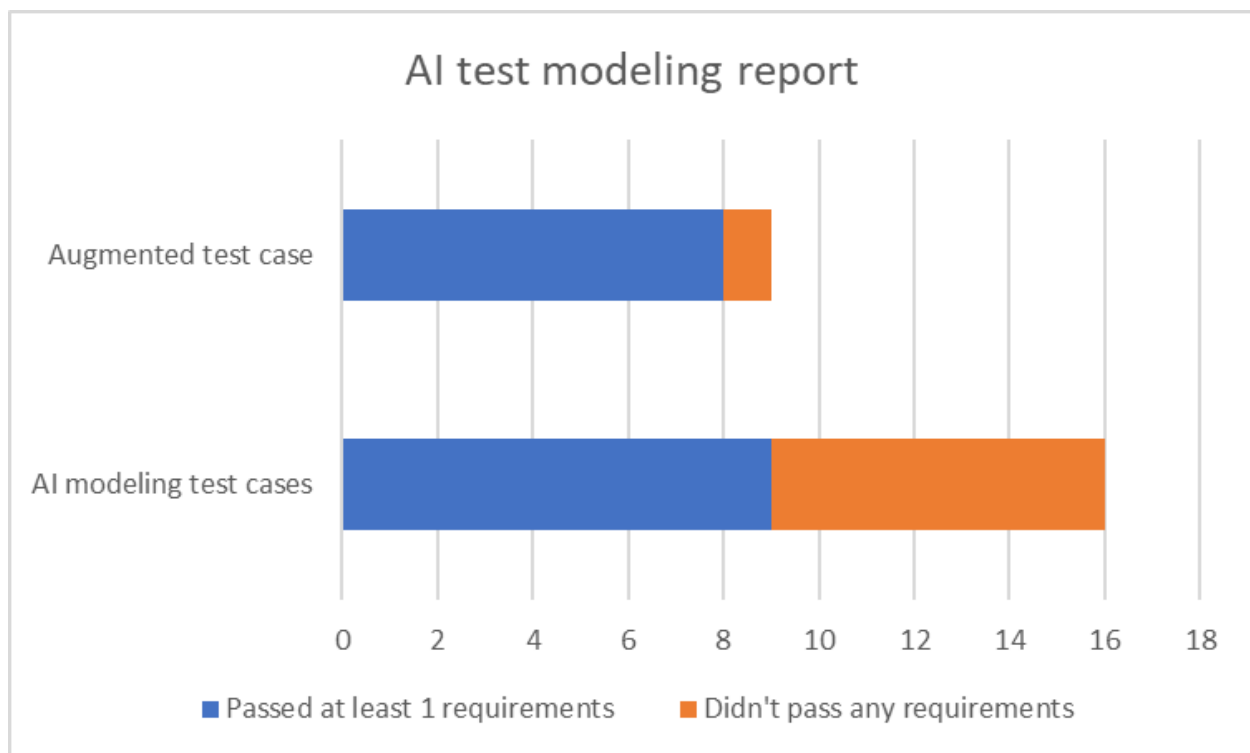
For exercise input, there is at least one test case cover each type of input

- Exercises
 - Mental
 - Reframe thoughts
 - Mindfulness
 - Physical
 - Strength
 - Endurance
- Conversation
 - Do exercise
 - One time
 - Set exercise schedule

- Feedback
 - Good
 - Bad

Data augmentation for test case 1:

- random word swap
- random word delete
- random word insert
- synonym augmentation
- ocr augmentation
- keyboard augmentation
- random char insert
- random char swap
- random char delete



- For AI test modeling report
 - Augmented test case passed 8 out of 9, 88.889% passed
 - AI modeling test cases passed 9 out of 16, 56.25% passed

Invalid Topics Function

Test case amount:

- There are a total 10 test case with 9 augmentations each for a total 90 augmented test cases

- Test complexity is 100
- Test coverage:
 - Input:
 - Question: Cooking, Stock market, Sports, Weather, Math
 - Statement: Cooking, Stock market, Sports, Weather, Math
 - Context:
 - Age: Teen, Adult, Elderly
 - Language: English, Non-English
 - Augmentation:
 - random word swap
 - random word delete
 - random word insert
 - synonym augmentation
 - ocr augmentation
 - keyboard augmentation
 - random char insert
 - random char swap
 - random char delete

Section 4.2 AI Function bug analysis

Mental Illness Function

- Wysa is not able to understand different languages and can only respond in english
- When User doesn't follow Wysa's conversation format, Wysa will provide irrelevant suggestions/recommendations or will not understand the User's needs
- Wysa was able to remember short term mental health and causes inputs and long term mental health and causes inputs
- Wysa fails 55.55% of the text data augmentation test cases
- Wysa fails 57.143% of the AI Model test cases

Feeling Detection Function:

Age Group: During our testing, we conducted an assessment to determine whether Wysa, the emotional support chatbot, could accurately identify the age group of its users. We tested a variety of age groups to determine Wysa's proficiency in identifying different age ranges. However, our results showed that Wysa is unable to detect the age group of its users with precision. This means that Wysa's ability to provide support and guidance is not affected by the age group of the user.

Language: During our testing, we tested Wysa to see if it is able to communicate with different languages to its users. However, our results showed that Wysa is not capable

of comprehending languages other than English. This means that Wysa's language proficiency is limited to English, and it cannot provide effective emotional support to users who communicate in other languages.

Occupation: As part of our testing process, we evaluated Wysa's ability to identify the occupation of its users. We conducted several tests to assess whether Wysa could detect and respond appropriately to users with different occupations. However, our results showed that Wysa is unable to identify the occupation of its users accurately. Wysa's ability to provide emotional support and guidance is not influenced by the user's profession.

Exercise function

- Based on our testing analysis, Wysa exercise function is very limited, the only thing it offers is guiding users through either mental or physical exercises.
- Wysa, at the time of testing, does not offer exercise personalization based on different age groups, occupation, etc.
- Feedback on Wysa exercise is also limited
- Wysa did not pass the different language test
- Wysa likely to offer mindfulness exercise if the word 'mindfulness' is in the sentence
- Wysa likely to offer physical exercise if the word 'exercise' or 'active' is in the sentence

Invalid Topics Function

- Analyzing the test results dictate that Wysa is unable to detect if the conversation is actually related to mental health. This is fundamentally an issue because this means the app will interpret anything and everything as related to the user talking about their mental state.
- The app is also incompatible with languages other than English. This is obviously inconvenient for people that are unable to speak or understand English.

Section 4.3 AI function test quality assessment

Mental Illness Function

- This test for detecting the User's mental illness and providing mental health support covers the app's capability to test the following
 - Different types of mental illnesses (disorders and illnesses)
 - Depression and Stress are being tested
 - Sleep and Anxiety are being tested
 - Different types of causes to their mental illnesses
 - Traumatic events
 - Negative thoughts and feelings
- In addition to the app's main functionality, we tested their capability to understand incomprehensible text using the AI test tool's data augmentation
- We tested Wysa's ability to understand or respond in a different language
- Tested different conversation formats that tested Wysa's ability to adjust mid conversation
- We also tested Wysa's capability to have a short term and long term memory

Exercise function

- The test suite for exercise function is still very basic but we believe that it covers enough depth for an exercise chat app, such as
 - Cover different type of exercises, such as mental and physical
 - In mental we asks for mindfulness and reframe
 - In physical we ask for strength and durability
 - Cover different type of others
 - Such as setting up schedule
 - Give feedback
 - Cover user's occupation, age, group, etc
- We have not testing advanced topics such as calorie tracking, set custom timer, etc
- However, this test suite is enough to test Wysa's exercise functionality since Wysa was not able to support all of the test suite requirements

Invalid Topics Function

- The test results show that while the app is capable of detecting mental states relatively well, it fails to detect topics that are not related to mental health correctly, such as but not limited to:

- Cooking
 - Stock market trends
 - Sports
 - Weather
 - Math
- While there is an infinite amount of alternate topics that could also be used for testing, we opted to test a limited topic list that would help us infer the overall pass rate for the app.