

BMI Calculator

I used Dialogflow agent in Dialogflow for my final project.

Step 1:

I aim to develop a BMI calculator application. This tool will enable users to conveniently monitor their BMI, ensuring they stay within a healthy range. By offering offline accessibility, individuals can track their BMI anytime, anywhere, without relying on an internet connection. Moreover, the app will provide valuable insights into maintaining a healthy BMI, empowering users to make informed choices regarding their lifestyle, diet, and exercise routines.

Step 2:

Intent 1: Calculate BMI

This intent allows users to input their height and weight information, and the application calculates their BMI based on the provided data and provides the result along with a BMI interpretation value such as normal weight, underweight or overweight.

NOTE: the weight is in lbs and the height is in feet

15 sample utterances:

- Calculate my BMI with a height of 6 feet and a weight of 150 lbs.
- I am 5 feet tall and weigh 170 lbs. What's my BMI?
- What's my BMI if I'm 6 feet tall and weigh 180 lbs?
- Please calculate my BMI. My height is 5 feet and weight is 160 lbs.
- I weigh 160 lbs and am 5 feet tall. Can you calculate my BMI?
- Calculate my BMI based on height 5 feet and weight 170 lbs.
- I'm 6 ft tall and weigh 180 pounds. What's my BMI?
- My height is 6 feet and weight is 180 lbs. Calculate my BMI, please.
- Could you calculate my BMI? I'm 5 feet tall and weigh 160 lbs.
- What's my Body Mass Index if I weigh 200 lbs and I am 5 feet tall?
- Please calculate my BMI. Height is 6 feet, weight is 200 lbs.
- Calculate my BMI with a height of 5 feet and a weight of 160 pounds.
- What is my BMI if I'm 6 feet tall and weigh 158 lbs?
- I weigh 154 lbs and am 5 feet tall. Can you calculate my BMI?
- Calculate my BMI based on height 6 feet weight 154 lbs.

Intent 2: BMI Information

This feature educates users about various BMI categories and their health implications. For instance, the application clarifies the significance of being underweight, normal weight, or overweight based on specific BMI ranges.

15 sample utterances:

- What does it mean to have a BMI of 18.5?
- Can you tell me about the health implications of a BMI of 24?
- If my BMI is 28, what does that indicate?
- Explain the significance of having a BMI of 22.
- What are the health risks of being underweight with a BMI of 17?
- How does a BMI of 26 affect my health?
- What does a 29 BMI range mean?
- Is having a BMI of 30 considered overweight?
- Can you describe what a BMI of 19 means for my health?
- What are the dangers of having a BMI of 35?
- Tell me about the health implications of a BMI of 40.
- What does it mean if my BMI is in the 35 range?
- Explain the health risks associated with a 35 BMI.
- What does a BMI of 29 indicate for my health?
- If my BMI is 25, what category does that fall into and what does it mean?

Intent 3: Health Tips

This intent allows users to provide the BMI value and the application gives the user some tips for maintaining a healthy weight and lifestyle.

15 sample utterances:

- What should I do if my BMI is in the overweight range?
- Can you give me health tips for maintaining a normal BMI?
- What are some weight loss tips for someone overweight?
- How can I gain weight healthily if my BMI is underweight?
- What are some general health tips for someone with an obese BMI?
- How can I manage my weight if I am overweight?
- What dietary changes should I make if I have a normal BMI?
- Can you provide fitness tips for someone with an overweight BMI?
- What are the best exercises for reducing a overweight BMI range?
- How can I improve my health if my BMI is categorized as obese?
- What lifestyle changes should I consider if my BMI is in the normal range?

- What are some nutrition tips for maintaining a healthy normal BMI?
- Can you suggest some habits to adopt if my BMI is in the overweight category?
- What are effective ways to lower my BMI from obese ?
- How can I ensure my BMI stays in the normal range?

3 slot parameters:

- Slot name: **Height**
 - Slot type: @sys.number
 - Description: This allows to capture the user's height input
 - Example: 5 feet, 6 feet

- Slot name: **Weight**
 - Slot type: @sys.number
 - Description: This allows to capture the user's weight input
 - Example: **120 lbs, 150 lbs**
- Slot name: **BMI Interpretation**
 - Slot type: custom
 - Description: This allows to capture the user's BMI interpretation
 - Example: **underweight, obese, overweight, normal weight**
- Slot name: **BMI**
 - Slot type: @sys.number
 - Description: This allows to capture the BMI of the user
 - Example: 18.9, 20.1

Step 3:

Calculate BMI Intent:

1. Retrieve Parameters from the Agent:

Obtain the user's height and weight from the input parameters.

2. Ensure Height and Weight are Provided:

Check if both height and weight are given. If either is missing, respond with an error message and stop the process.

3. Convert Height from Feet to Centimeters:

Convert the provided height from feet

to centimeters.

4. Convert Weight from Pounds to Kilograms:

Convert the provided weight from pounds to kilograms.

5. Calculate BMI:

Calculate the BMI using the converted height and weight.

6. Print the BMI Result:

Respond with a message indicating the calculated BMI value.

BMI Information Intent

1. Retrieve parameters from the agent bmi = parameter of bmi number
2. Check if BMI is provided and is a valid number if cannot find the bmi: print error message that “the bmi is invalid” return;
3. Determine BMI category if (bmi < 18.5)
Category is underweight
else if (bmi >= 18.5 and bmi < 24.9)
Category is normal weight
else if (bmi >= 25 and bmi < 29.9)
Category is overweight
else if (bmi >= 30 and bmi < 39.9)
Category is obese
else
Category is severe obese
4. Print the

bmi ranges

switch

(bmiCategory)

Case underweight:

BMI less than 18.5 = underweight

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    break;
case Normal weight:
    BMI between 18.5 and 24.9 = normal weight
    break;
case Overweight
    BMI between 25 and 29.9 = overweight
    break;
case Obese
    BMI between 30 and 39.9 = obese
    break;
case Severe obese
    BMI 40 or greater = severe obese
    break;
default:
    Print error message "Unable to determine BMI ranges"
    Print "the bmi category and the bmi range"

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Health Tips Intent

1. Retrieve parameters from the agent
2. bmiCategory = parameters of BMI Interpretation
3. Create a mapping of BMI categories to health tips
4. healthTipsMap = {
 - 'underweight': "Here are some tips for gaining weight healthily if your BMI is underweight: 1. Eat more frequent, smaller meals. 2. Focus on nutrient-rich foods like nuts, seeds, avocados, and dairy products. 3. Incorporate strength training exercises to build muscle mass.",
 - 'normal': "To maintain a normal BMI, consider these health tips: 1. Eat a balanced diet with plenty of fruits, vegetables, lean proteins, and whole grains. 2. Stay physically active with regular exercise. 3. Get enough sleep and manage stress levels.",
 - 'overweight': "If your BMI is in the overweight range, try these health tips: 1. Focus on portion control and mindful eating. 2. Increase your physical activity with regular exercise, including cardio and strength training. 3. Seek support from a healthcare professional or registered dietitian.",
 - 'obese': "For managing weight with an obese BMI, consider these health tips: 1. Set realistic weight loss goals. 2. Focus on long-term lifestyle changes rather than short-term diets. 3. Seek support from a healthcare provider, dietitian, or weight loss support group.",
 - 'severe obese': "I'm sorry, I don't have specific health tips for that BMI category."

5. Select the health tips based on the BMI category
6. Map to health tips
7. Print the health tips
8. If healthTips exists for the bmiCategory, print the health tips.
Otherwise, print "I'm sorry, I don't have specific health tips for that BMI category."

Step 4:

Name: FitPal

Description:

FitPal is a friendly and knowledgeable virtual health assistant designed to simplify BMI monitoring and provide personalized health guidance. With a supportive and approachable demeanor, FitPal aims to empower users to achieve and maintain their health goals effectively.

Step 5:

DialogFlow link: <https://bot.dialogflow.com/a64bf0bc-c4f6-4e2b-831d-4172ed0dac6d>

Part 1:

User A- Pooja: Adult, health-conscious, familiar with using mobile apps and voice assistants.

User B- Sara: Adult, tech-savvy, interested in fitness and health, frequently uses technology for health tracking.

They were chosen as one user understands how a voice assistant works, and the other is a fitness freak so both seem like good users to test this application.

Part 2:

Task	Time to Complete	Pooja - Done?	Pooja - Time	Sara - Done?	Sara - Time
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Task 1 - Calculate BMI for a person who is 5 feet tall and weighs 130 lbs.	20 sec	Yes	30 sec	Yes	20 sec
Task 2 - Find out what category your BMI falls into.	20 sec	Yes	20 sec	Yes	10 sec
Task 3 - Ask for a health tip based on your BMI category.	12 sec	Yes	10 sec	Yes	15 sec
Task 4 - Find out what category the BMI of 29.7 falls into.	5 sec	Yes	5 sec	Yes	10 sec
Task 5 - Request a recommendation for maintaining a BMI of 23.2 (normal weight)	10 sec	Yes	15 sec	Yes	15 sec

Part 3:

User A: Pooja

Question	Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
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Question 1 - The BMI calculation process was straightforwa rd.					X
Question 2 - It was easy to understand my BMI category.					X
Question 3 - The health tips provided were helpful.					X
Question 4 - I found the application user-friendly.				X	
Question 5 - I felt confident in the accuracy of the BMI calculation.			X		
Question 6 - The health recommenda tions were relevant to my BMI category.					X
Question 7 - Navigating through the application was intuitive.			X		
Question 8 - The application					X

provided sufficient information about BMI.					
Question 9 - I would recommend this application to others.				X	
Question 10 - The system is easy to use					X

User B: Sara

Question	Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
Question 1 - The BMI calculation process was straightforward.					X
Question 2 - It was easy to understand my BMI category.					X
Question 3 - The health tips provided were helpful.					X
Question 4 - I					X

found the application user-friendly					
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Question 5 - I felt confident in the accuracy of the BMI calculation.					X
Question 6 - The health recommendations were relevant to my BMI category.					X
Question 7 - Navigating through the application was intuitive.					X
Question 8 - The application provided sufficient information about BMI					X
Question 9 - I would recommend this application to others.					X
Question 10 - The system is easy to use				X	

Part 4:

User A-Pooja:

Question 1: What did you find most helpful or valuable about using the BMI application?

The BMI application was very useful in providing me with an accurate measure of my BMI, along with valuable health tips that I found beneficial. It was convenient to simply enter my height and weight, and have the application handle the calculations for me.

Question 2: Were there any aspects of the application that you found confusing or difficult to use?

Honestly, I got stuck on the first task for quite a while. When I tried to enter my weight in kilograms, the

application didn't seem to recognize it and kept prompting me to re-enter it. This part was confusing. Additionally, I struggled with entering my weight in kilograms because I had to manually convert it to pounds using Google. It would be much better if the application accepted multiple units of measurement.

Question 3: How do you think the application could be improved to better meet users' needs or preferences?

The application could be improved by allowing users to enter height in centimeters and weight in kilograms, instead of only accepting height in feet and weight in pounds. This flexibility would make it more user-friendly and convenient.

User B-Sara:

Question 1: What did you find most helpful or valuable about using the BMI application?

I found the BMI application very useful because it provided a clear picture of my BMI (Body Mass Index), an important indicator of my overall health. Knowing my BMI helps me determine if I am within a healthy weight range or if changes are needed. This information enables me to make proactive lifestyle adjustments to achieve and maintain a healthier weight, reducing my risk of various health problems.

Question 2: Were there any aspects of the application that you found confusing or difficult to use?

I was confused by the application's requirement to enter weight in pounds, as I typically use kilograms as my primary unit of measurement. I had to convert my weight from kilograms to pounds before entering it into the application. Allowing users to enter weight in either kilograms or pounds would make it much easier for those like me to use the program without manual conversions.

Question 3: How do you think the application could be improved to better meet users' needs or preferences?

I believe the application could be improved by adding support for multiple units of measurement. Specifically, allowing users to enter their weight in kilograms and their height in either feet or centimeters would be highly beneficial

Step 6:

General Impressions:

The assignment effectively calculates BMI and provides accurate BMI ranges, meeting initial goals. Improvements include prompts for necessary information, ensuring users input all required values for BMI calculation. Challenges arose in using previous BMI values for determining ranges or offering health tips, resulting in errors. Moving forward, I aim to refine health tip algorithms by considering factors like activity levels and eating habits for personalized advice.

Time:

This project spanned approximately 1.5 weeks, with 4 days dedicated to brainstorming. Developing the flow diagram, particularly validating user input (e.g., handling pounds vs. kilograms), took about 3 hours. Implementing intents like BMI Information and Calculate BMI proved challenging, especially in handling diverse input formats. Testing and adjustments consumed roughly 6 hours, with a focus on usability and addressing user feedback.

Testing:

Usability and Likert scale testing provided valuable insights into program efficiency and user-friendliness. Feedback highlighted areas for improvement, guiding future development. To enhance user experience, I

plan to expand testing to include diverse user scenarios and prioritize error handling.

Future Work:

Future efforts will concentrate on improving error handling by validating inputs and refining prompts for re-entry when necessary. I aim to incorporate detailed BMI information, including ranges and personalized health tips based on user profiles. This project has sparked my interest in further development, potentially including features like BMI history tracking with unique user IDs

