

Get Fit BMI Calculator App

A SUMMER TRAINING REPORT

Submitted by

Atharva Rana

Enrollment Number: 01514813120

5-ITE-1

Information Technology & Engineering

Submitted to

Ms. Sapna Gupta

Dr. Ajay Kumar Kaushik

Ms. Tejna Khosla



**MAHARAJA AGRASEN INSTITUTE OF TECHNOLOGY ROHINI,
NEW DELHI**

INDEX

| Contents | Page no. |
|----------------------|-----------------|
| Acknowledgement..... | 3 |
| Declaration..... | 4 |
| Certificate..... | 5 |
| Introduction..... | 6 |
| Methodology..... | 15 |
| Data Analysis..... | 17 |
| Findings..... | 17 |
| Conclusion..... | 19 |
| Bibliography..... | 20 |

Acknowledgement

I offer my sincere thanks and humble regards to Maharaja Agrasen Institute of Technology, Rohini for imparting us very valuable professional training in B.Tech.

I pay my gratitude and sincere regards to Ms. Sapna Gupta, my mentor for giving me the cream of her knowledge. I am thankful to her as she has been a constant source of advice, motivation and inspiration. I am also thankful to her for giving her suggestions and encouragement throughout the project work.

I take the opportunity to express my gratitude and thanks to our computer Lab staff and library staff for providing me with an opportunity to utilize their resources for the completion of the project.

I am also thankful to my family and friends for constantly motivating me to complete the project and providing me with an environment, which enhanced my knowledge.

Atharva Rana

01514813120

5-ITE-1

Declaration

To Whom It May Concern

I , Atharva Rana , Enrollment No. 01514813120 , student of Bachelors of Technology (ITE), a class of 2020-24, Maharaja Agrasen Institute of Technology, Delhi hereby declare that the Summer Training project report entitled “Get Fit BMI Calculator App” is an original work and the same has not been submitted to any other Institute for the award of any other degree.

Date: 27-09-2022

Place: New Delhi

Atharva Rana

01514813120

5-ITE-1

Certificate of the Course



Certificate no: UC-c3fa3e02-87ea-4424-bdab-4d0e37e050ff
Certificate url: ude.my/UC-c3fa3e02-87ea-4424-bdab-4d0e37e050ff
Reference Number: 0004

CERTIFICATE OF COMPLETION

Flutter & Dart - The Complete Guide [2022 Edition]

Instructors **Academind by Maximilian Schwarzmüller, Maximilian Schwarzmüller**

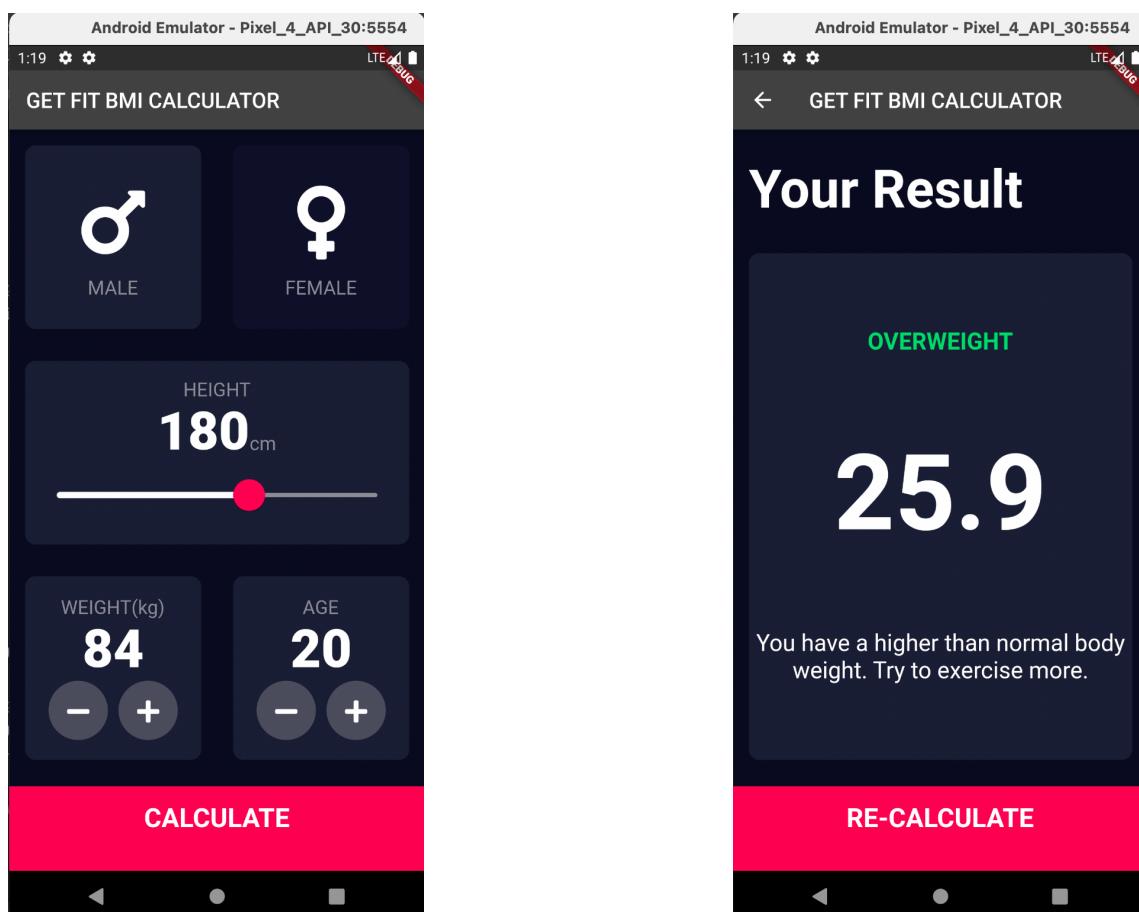
Atharva Rana

Date **Sept. 22, 2022**

Length **42.5 total hours**

INTRODUCTION

In this project I have made an app called “**Get Fit BMI Calculator**” that determines your BMI by taking height , weight and age as inputs from the user.



The app “**Get Fit BMI Calculator**” is made using **Flutter** and **Dart** through which you can build apps that can run on android as well as iOS.

What is Body mass index (BMI) ?

Body mass index (BMI) is a value derived from the mass (weight) and height of a person. The BMI is defined as the body mass divided by the square of the body height, and is expressed in units of kg/m^2 , resulting from mass in kilograms and height in metres.

The BMI may be determined using a table or chart which displays BMI as a function of mass and height using contour lines or colours for different BMI categories, and which may use other units of measurement (converted to metric units for the calculation).

The BMI is a convenient rule of thumb used to broadly categorize a person as *underweight*, *normal weight*, *overweight*, or *obese* based on tissue mass (muscle, fat, and bone) and height. Major adult BMI classifications are underweight (under 18.5 kg/m^2), normal weight (18.5 to 24.9), overweight (25 to 29.9), and obese (30 or more). When used to predict an individual's health, rather than as a statistical measurement for groups, the BMI has limitations that can make it less useful than some of the alternatives, especially when applied to individuals with abdominal obesity, short stature, or unusually high muscle mass.

What is Flutter ?

Flutter is an Open-Source UI SDK developed by **Google**. It allows the development of iOS/Android apps and uses Dart as the programming language.

It is used to develop cross platform applications for Android, iOS, Linux, macOS, Windows, Google Fuchsia, and the web from a single codebase.

First described in 2015, Flutter was released in May 2017.

The first version of Flutter was known as "Sky" and ran on the Android operating system. It was unveiled at the 2015 Dart developer summit with the stated intent of being able to render consistently at 120 frames per second. During the keynote of Google Developer Days in Shanghai in September 2018, Google announced Flutter Release Preview 2, the last major release before Flutter 1.0. On December 4th of that year, Flutter 1.0 was released at the Flutter Live event, denoting the first stable version of the framework. On December 11, 2019, Flutter 1.12 was released at the Flutter Interactive event.

On May 6, 2020, the Dart software development kit (SDK) version 2.8 and Flutter 1.17.0 were released, adding support for the Metal API which improves performance on iOS devices by approximately 50%, as well as new Material widgets and network tracking development tools.

On March 3, 2021, Google released Flutter 2 during an online Flutter Engage event. This major update brought official support for web-based applications with a new Canvas Kit renderer and

web specific widgets, early-access desktop application support for Windows, macOS, and Linux and improved Add-to-App APIs. This release also utilized Dart 2.0 that featured sound null-safety, which caused many breaking changes and issues with many external packages; however, the Flutter team included instructions and tools to mitigate these issues.

On September 8th, 2021, Dart 2.14 and Flutter 2.5 were released by Google. The update brought improvements to the Android full-screen mode and the latest version of Google's Material Design called Material You. Dart received two new updates, standardising lint conditions and marking support for Apple Silicon as stable.

On May 12, 2022, Google announced the release of Flutter 3 and Dart 2.17. This update expanded the total number of platforms supported to six, including stable support for Linux and macOS on both Intel and Apple Silicon processors.

The current stable channel of Flutter is 3.3.1 and the Dart version is 2.18.0.

Flutter consists of two important parts:

- An SDK (Software Development Kit): A collection of tools that are going to help you develop your applications. This includes tools to compile your code into native machine code (code for iOS and Android).
- A Framework (UI Library based on widgets): A collection of reusable UI elements (buttons, text inputs, sliders, and so on) that you can personalize for your own needs.

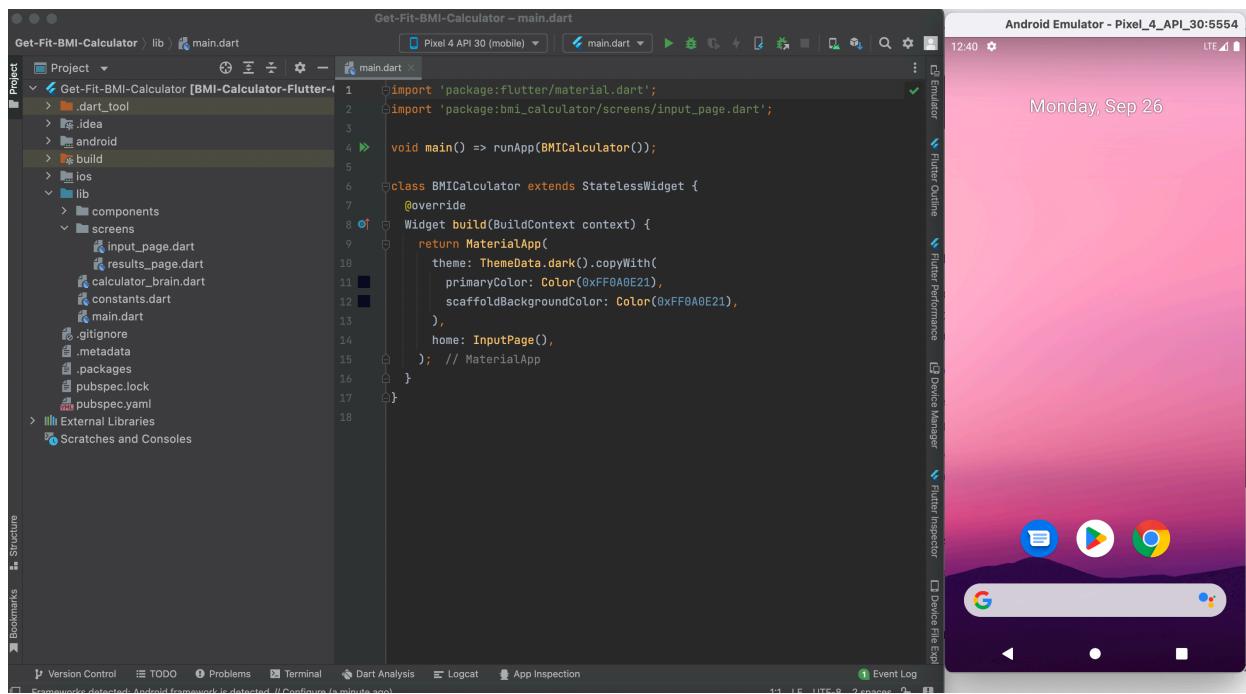
What is Dart?

Dart is a client-optimized language for developing fast apps on any platform. Its goal is to offer the most productive programming language for multi-platform development, paired with a flexible execution runtime platform for app frameworks.

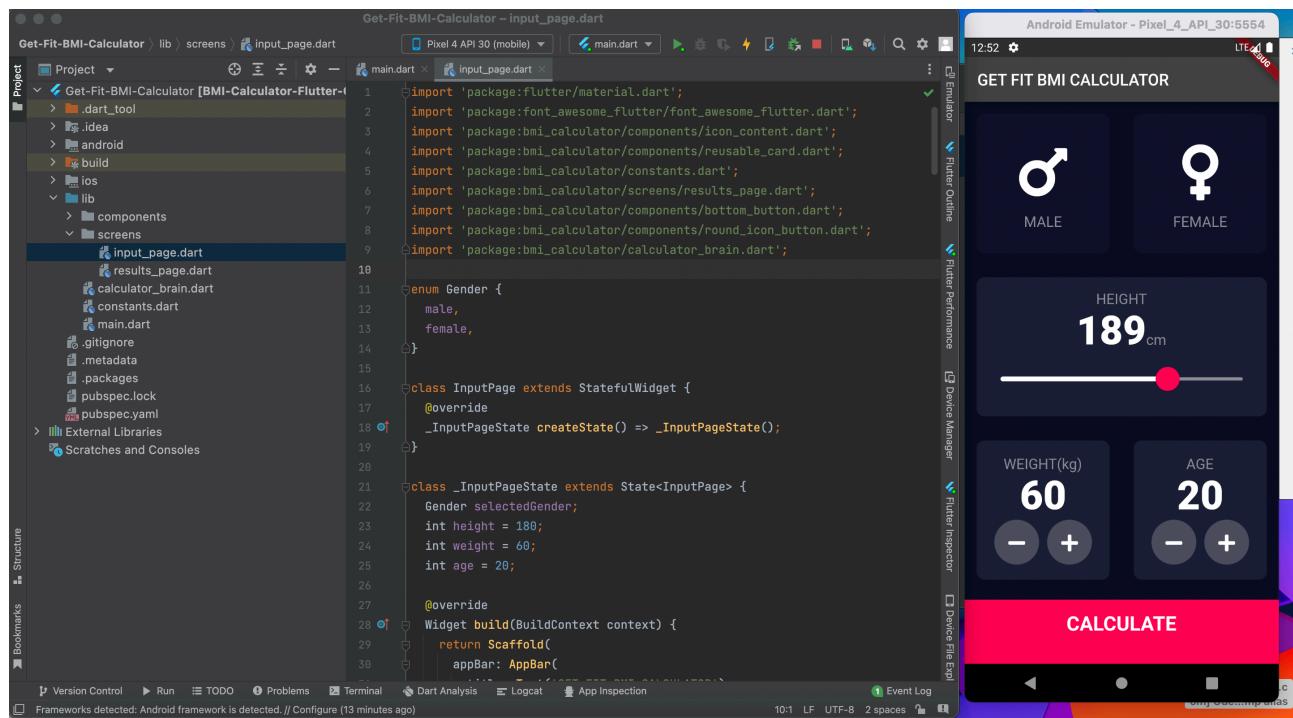
Languages are defined by their *technical envelope*—the choices made during development that shape the capabilities and strengths of a language. Dart is designed for a technical envelope that is particularly suited to client development, prioritizing both development (sub-second stateful hot reload) and high-quality production experiences across a wide variety of compilation targets (web, mobile, and desktop).

Dart also forms the foundation of Flutter. Dart provides the language and runtimes that power Flutter apps, but Dart also supports many core developer tasks like formatting, analyzing, and testing code.

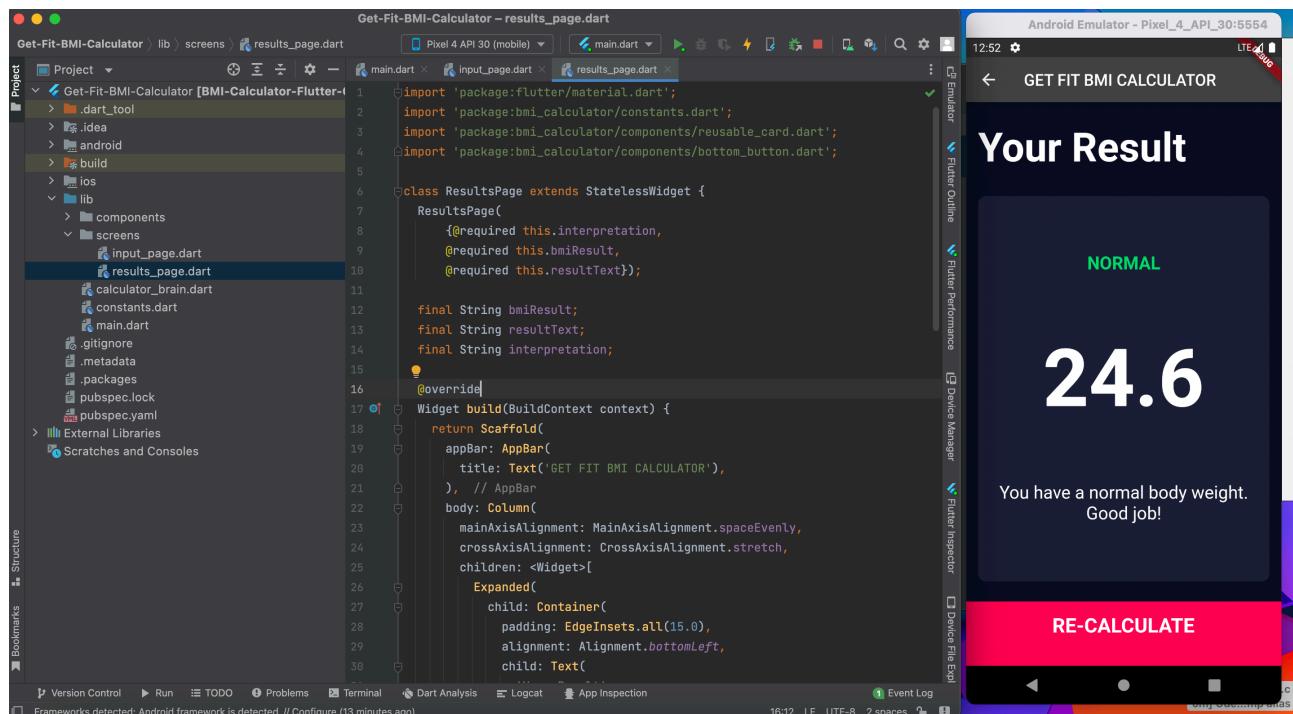
Code of the main.dart page(before running the app) :



Code of the input.dart page with output :



Code of the results.dart page with output :



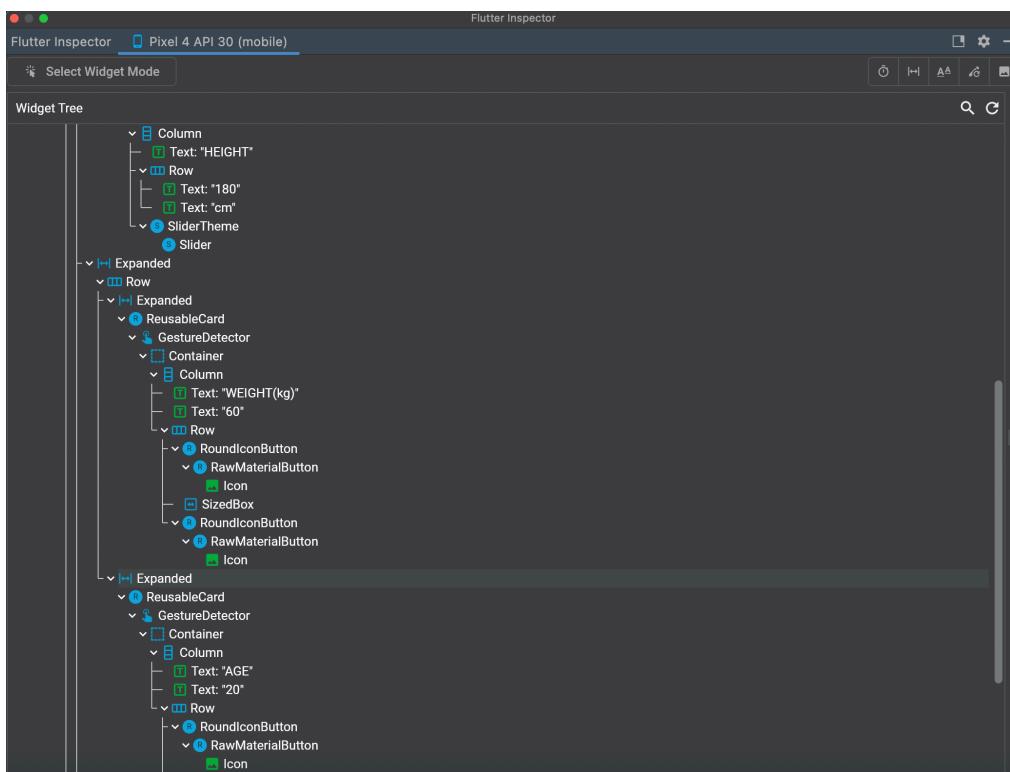
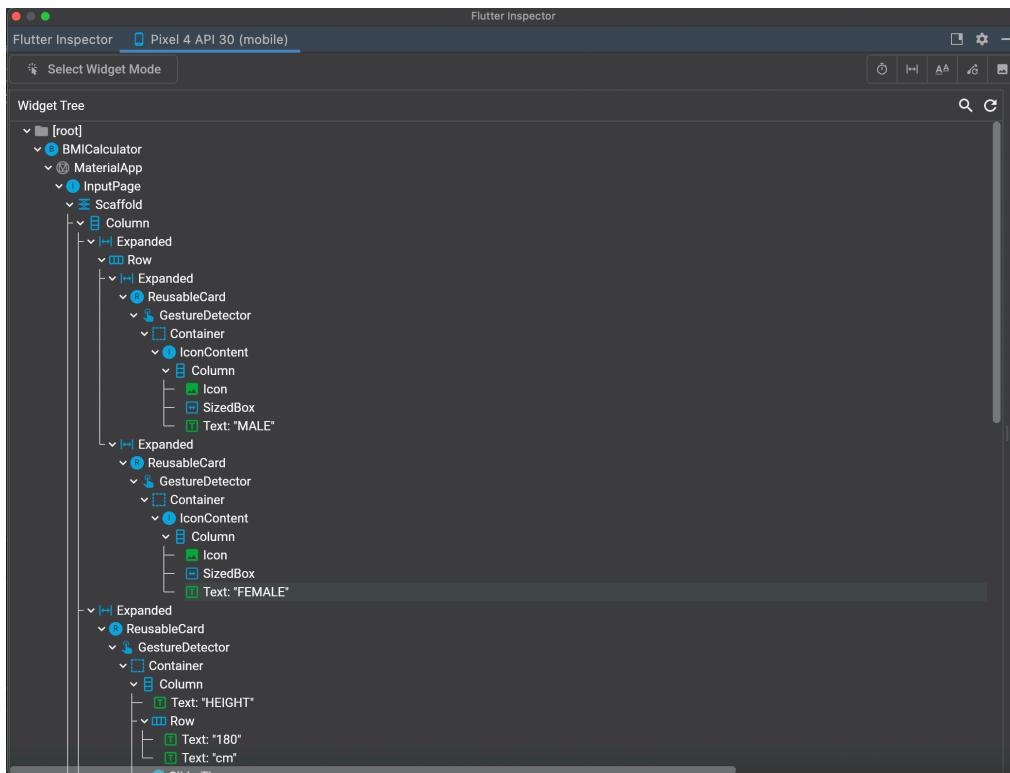
Using of the BMI formula in the app :

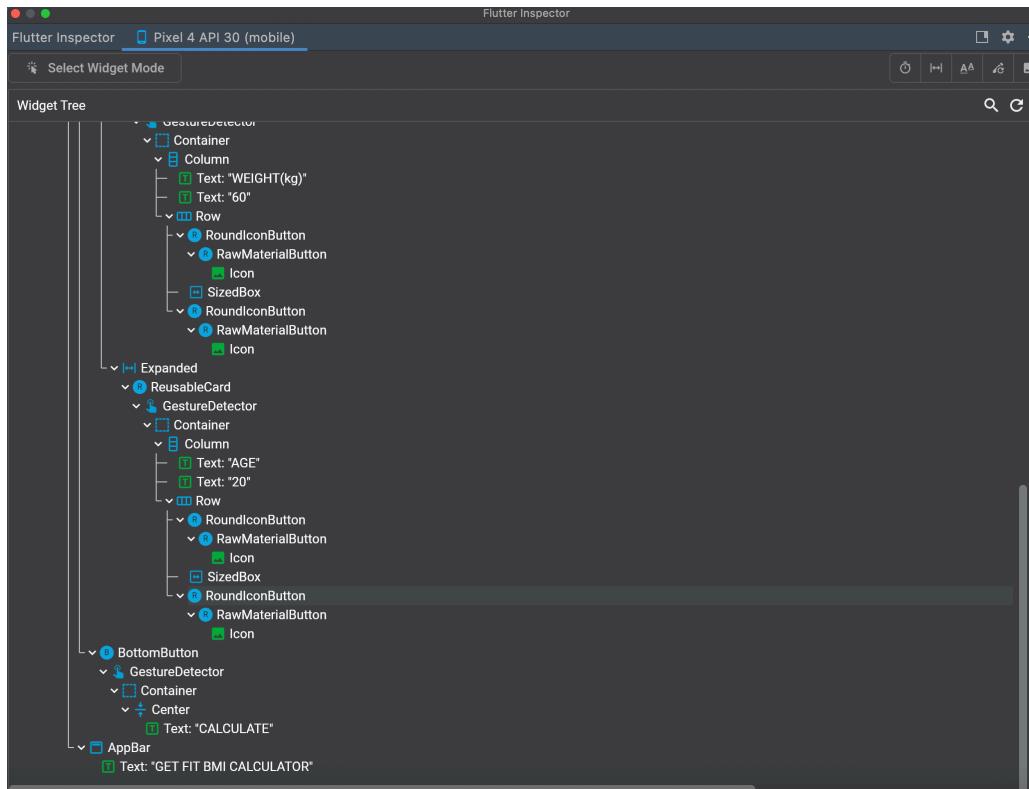
```
String calculateBMI() {
    _bmi = weight / pow(height / 100, 2);
    return _bmi.toStringAsFixed(1);
}

String getResult() {
    if (_bmi >= 25) {
        return 'Overweight';
    } else if (_bmi > 18.5) {
        return 'Normal';
    } else {
        return 'Underweight';
    }
}

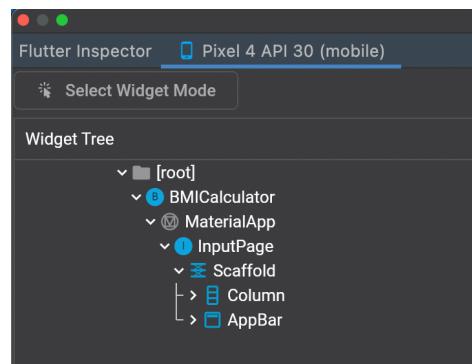
String getInterpretation() {
    if (_bmi >= 25) {
        return 'You have a higher than normal body weight. Try to exercise more.';
    } else if (_bmi >= 18.5) {
        return 'You have a normal body weight. Good job!';
    } else {
        return 'You have a lower than normal body weight. You can eat a bit more.';
    }
}
```

The Widget Tree of Get Fit BMI Calculator app:



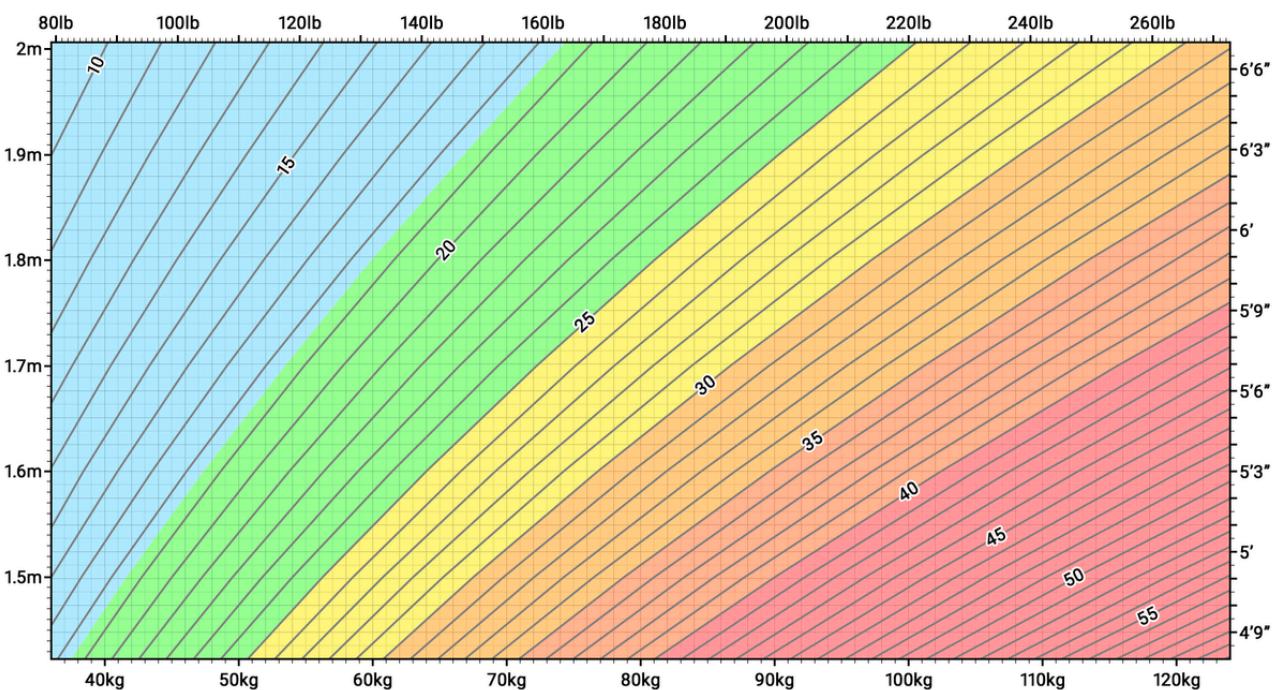


Widget Tree without Expanding:



Methodology

Adolphe Quetelet, a Belgian mathematician, statistician, and sociologist, devised the basis of the BMI between 1830 and 1850 as he developed what he called "social physics". The modern term "body mass index" (BMI) for the ratio of human body weight to squared height was coined in a paper published in the July 1972 edition of the *Journal of Chronic Diseases* by Ancel Keys and others. In this paper, Keys argued that what he termed the BMI was "if not fully satisfactory, at least as good as any other relative weight index as an indicator of relative obesity".



The interest in an index that measures body fat came with observed increasing obesity in prosperous Western societies. Keys explicitly judged BMI as appropriate for *population* studies and inappropriate for individual evaluation. Nevertheless, due to its simplicity, it has come to be widely used for preliminary diagnoses. Additional metrics, such as waist circumference, can be more useful.

The BMI is expressed in kg/m², resulting from mass in kilograms and height in metres. If pounds and inches are used, a conversion factor of 703 (kg/m²)/(lb/in²) is applied. When the term BMI is used informally, the units are usually omitted.

$$\text{BMI} = \frac{\text{mass}_{\text{kg}}}{\text{height}_{\text{m}}^2} = \frac{\text{mass}_{\text{lb}}}{\text{height}_{\text{in}}^2} \times 703$$

Data Analysis & Findings

BMI provides a simple numeric measure of a person's *thickness* or *thinness*, allowing health professionals to discuss weight problems more objectively with their patients. BMI was designed to be used as a simple means of classifying average sedentary (physically inactive) populations, with an average body composition. For such individuals, the BMI value recommendations as of 2014 are as follows: 18.5 to 24.9 kg/m² may indicate optimal weight, lower than 18.5 may indicate underweight, 25 to 29.9 may indicate overweight, and 30 or more may indicate obese. Lean male athletes often have a high muscle-to-fat ratio and therefore a BMI that is misleadingly high relative to their body-fat percentage.

A common use of the BMI is to assess how far an individual's body weight departs from what is normal for a person's height. The weight excess or deficiency may, in part, be accounted for by body fat (adipose tissue) although other factors such as muscularity also affect BMI significantly (see discussion below and overweight).

The WHO regards an adult BMI of less than 18.5 as underweight and may indicate malnutrition, an eating disorder, or other health problems, while a BMI equal to or greater than 25 is considered overweight and 30 or more is considered obese. In addition to the principle, international WHO BMI cut-off points (16, 17, 18.5, 25, 30, 35 and 40), four additional cut-off points for at-risk Asians were identified (23, 27.5, 32.5 and 37.5). These ranges of BMI values are valid only as statistical categories.

BMI, basic categories

| Category | BMI (kg/m^2) ^[c] | BMI Prime ^[c] |
|---------------------------------|---|--------------------------|
| Underweight (Severe thinness) | < 16.0 | < 0.64 |
| Underweight (Moderate thinness) | 16.0 – 16.9 | 0.64 – 0.67 |
| Underweight (Mild thinness) | 17.0 – 18.4 | 0.68 – 0.73 |
| Normal range | 18.5 – 24.9 | 0.74 – 0.99 |
| Overweight (Pre-obese) | 25.0 – 29.9 | 1.00 – 1.19 |
| Obese (Class I) | 30.0 – 34.9 | 1.20 – 1.39 |
| Obese (Class II) | 35.0 – 39.9 | 1.40 – 1.59 |
| Obese (Class III) | ≥ 40.0 | ≥ 1.60 |

Conclusion

By making this project I've got to learn a lot about dart and flutter . For example, I've used many widgets , different types of buttons , implemented state management and displayed the changes on the screen after receiving an input like a tap or swipe.

The “Get Fit BMI Calculator” can be used by individuals who want to get to know about their fitness level.

And I hope that it would be really helpful for the people who are trying to get fit by using this app to monitor their progress during their fitness journey.

Bibliography

<https://udemy.com>

<https://dart.dev/overview>

<https://docs.flutter.dev/development/ui/widgets>

[https://en.wikipedia.org/wiki/Flutter_\(software\)](https://en.wikipedia.org/wiki/Flutter_(software))