A

Project Report

On

"BMI Calculator"

In the partial fulfillment of requirement for the award of

DIPLOMA IN COMPUTER ENGINEERING

(Maharashtra State Board of Technical Education, Mumbai)

[2022-2023]

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CERTIFICATE

This is to Certified that the Project Work Entitled

"BMI Calculator"

Is a Bonafide work carried out in the Sixth semester in partial fulfillment for the award of Diploma in computer Engineering from Government polytechnic, Khamgaon During the academic year 2022-2023

[2022-2023]

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INDEX

1. Introduction

In today's fast-paced world, people are becoming more and more health-conscious. They are paying more attention to their diet, exercise, and overall well-being. One of the most important measures of a person's health is their body mass index (BMI). BMI is a simple calculation of a person's weight in relation to their height and age. It is a widely accepted method of determining whether a person is underweight, normal weight, overweight, or obese.

A BMI calculator app for Android can be a handy tool for anyone who wants to keep an eye on their health. It allows users to set goals for themselves and track their progress over time. By keeping track of their BMI, users can make informed decisions about their diet and exercise regimen. They can also consult with a healthcare professional if they are concerned about their BMI.

The great thing about BMI calculator apps for Android is that they are incredibly user-friendly. They are designed to be easy to use, with clear instructions and intuitive interfaces. Users simply need to input their height and weight, and the app does the rest. Some apps even provide additional features, such as the ability to track body fat percentage, track calories, or set reminders for exercise and meals.

Another advantage of BMI calculator apps for Android is that they are portable. Users can access the app from anywhere, at any time. Whether they are at home, at work, or on the go, they can easily check their BMI and keep track of their progress. This makes it easier for users to stay motivated and on track with their health goals.

2. Objective

The primary objective of a BMI calculator developed in Android is to provide a convenient and easy-to-use tool for users to calculate their body mass index (BMI) based on their weight and height. The BMI is a widely accepted measure of a person's overall health and can be used to determine whether a person is underweight, normal weight, overweight, or obese.

By providing an accurate and reliable calculation of BMI, an Android BMI calculator can help users better understand their current health status and make informed decisions about their diet, exercise, and overall wellness. It can also be used to set and track health goals, such as weight loss or muscle gain, and monitor progress over time.

In addition to calculating BMI, some Android BMI calculators may also offer additional features such as tracking body fat percentage, providing nutritional advice, and offering exercise suggestions. These features can help users achieve their health goals more effectively and efficiently.

Overall, the objective of an Android BMI calculator is to empower users with the information and tools they need to take control of their health and achieve their wellness goals. It can help users make better decisions about their diet and exercise, monitor progress, and ultimately live a healthier, happier life.

3. Literature Survey

1. BMI Calculation: The Body Mass Index (BMI) is calculated using the weight, age and height of a person. The formula to calculate BMI is weight (in kilograms) divided by height (in meters) squared. The resulting value is then used to categorize a person as underweight, normal weight, overweight, or obese.

2. Android Development: Android is an open-source operating system used to develop mobile applications. Android applications are typically developed using the Java programming language and the Android Studio development environment.

3. XML Layout: XML is a markup language used to create user interfaces in Android applications. The XML layout defines the structure and appearance of the user interface elements, such as buttons, text fields, and labels.

4. Java Programming: Java is a popular programming language used for developing Android applications. Java is used to write the logic behind the user interface elements, such as the BMI calculation, as well as handling user input and output.

5. User Interface Design: The user interface (UI) design of the BMI calculator should be intuitive and easy to use. The UI should include input fields for height and weight, a button to calculate the BMI, and an output field to display the result.

6. Performance Optimization: The performance of the BMI calculator should be optimized to ensure that it runs smoothly on different Android devices. Performance optimization can include minimizing the use of resources, such as memory and CPU, and optimizing the code for faster execution.

7. Documentation: The BMI calculator should be well-documented to help developers and users understand how to use the application. Documentation can include code comments, user manuals, and online help resources.

4. Problem Statement

Body Mass Index (BMI) is a widely used method to determine whether an individual is underweight, normal weight, overweight, or obese. The BMI is calculated by dividing the weight of an individual in kilograms by the square of their height in meters. The resulting value is then compared to standard BMI ranges to determine their weight category.

The purpose of this project is to develop a BMI calculator application for Android devices using Java programming language. The application should be user-friendly and allow users to input their height and weight, and then calculate their BMI value. The application should then display the calculated BMI value along with the weight category that the user falls into.

The application should also include additional features to enhance the user experience. For example, it should have the ability to save user data so that users can track their progress over time. The application could also include a chart or graph that shows the user's BMI history over time, allowing them to see if their BMI is increasing or decreasing.

Another feature that could be included is a personalized plan that suggests diet and exercise modifications based on the user's BMI value. This could be done by incorporating information on healthy eating habits and exercise routines that are tailored to the user's weight category.

In terms of implementation, the application should be developed using Android Studio, which provides a comprehensive integrated development environment for Android applications. The application should also be designed with an attractive and user-friendly interface that is easy to navigate.

Overall, the BMI calculator application will provide a valuable tool for users to monitor their weight and make informed decisions about their health. The application could also be expanded in the future to include additional features such as calorie tracking or personalized workout plans.

5. System Specifications

To develop a BMI Calculator in Android using XML and Java, the following minimum system requirements are recommended:

1. Operating System: Windows 7 or newer, or macOS 10.10 or newer.
2. Integrated Development Environment (IDE): Android Studio 4.1 or newer.
3. Java Development Kit (JDK): JDK 8 or newer.
4. Processor: Intel i3 or equivalent.
5. RAM: 8GB or more.
6. Disk space: At least 4GB of free disk space.
7. Android Emulator: An emulator that supports at least Android 5.0 (Lollipop) or higher.

6. Functional Requirements

Here are some functional requirements for a BMI calculator:

1. User Input: The BMI calculator should allow the user to input their weight and height values in either metric or imperial units.

2. Unit Conversion: The calculator should be able to convert units entered by the user to a common unit of measurement, either metric or imperial, for accurate calculation.

3. BMI Calculation: The calculator should accurately calculate the user's BMI based on the inputted weight and height values. The formula for BMI calculation is BMI = weight (kg) / height (m)2 or BMI = weight (lb) / height (in)2 x 703.

4. BMI Classification: The calculator should provide a clear and accurate classification of the user's BMI, such as underweight, normal weight, overweight, or obese.

5. Feedback and Suggestions: The calculator should provide feedback and suggestions to the user based on their BMI classification. For example, if the user's BMI is in the overweight range, the calculator could suggest a daily calorie limit.

7. Non-Functional Requirements

Here are some non-functional requirements for a BMI calculator:

1. Usability:

   The calculator should have a simple and intuitive interface that is easy to navigate, with clear labels and instructions.

2. Reliability:

   The calculator should provide accurate and reliable results.

3. Compatibility:

   The calculator should be compatible with a wide range of Android devices, operating systems, and screen sizes.

4. Maintainability:

   The code for the calculator should be well-structured and maintainable, with comments and documentation to aid in future updates and modifications.

8. Methodology & Design

1. MainActivity.java

The MainActivity class extends the AppCompatActivity class and implements the View.OnClickListener interface. The onCreate() method is the entry point of the activity, and it initializes the UI components of the app by calling the findViewById() method to retrieve the views from the XML layout file.

The weightCardView and ageCardView are CardView widgets that allow the user to increase or decrease their weight and age, respectively, by clicking on the buttons represented by FloatingActionButton views. The countWeight and countAge variables hold the current weight and age values, respectively, and are displayed on the TextView widgets weightCounterText and ageCounterText, respectively.

The feetPicker and inchPicker NumberPicker widgets allow the user to select their height in feet and inches, respectively. The heightValueIs() method is called every time the user changes the height values, which updates the TextView widget height_title_text to display the selected height.

The calculateBmi() method calculates the BMI based on the user's weight, height, and age values and starts a new activity called BmiActivity using an intent. The calculated BMI value is passed to the BmiActivity as an extra, and it is displayed on the screen.

In the onClick() method, the switch statement handles the clicks on the weight and age CardView and FloatingActionButton views to increase or decrease the weight and age values. The counterInit() method initializes the weight and age values and sets the default values for the feet and inch NumberPicker widgets.

2. BmiActivity.java

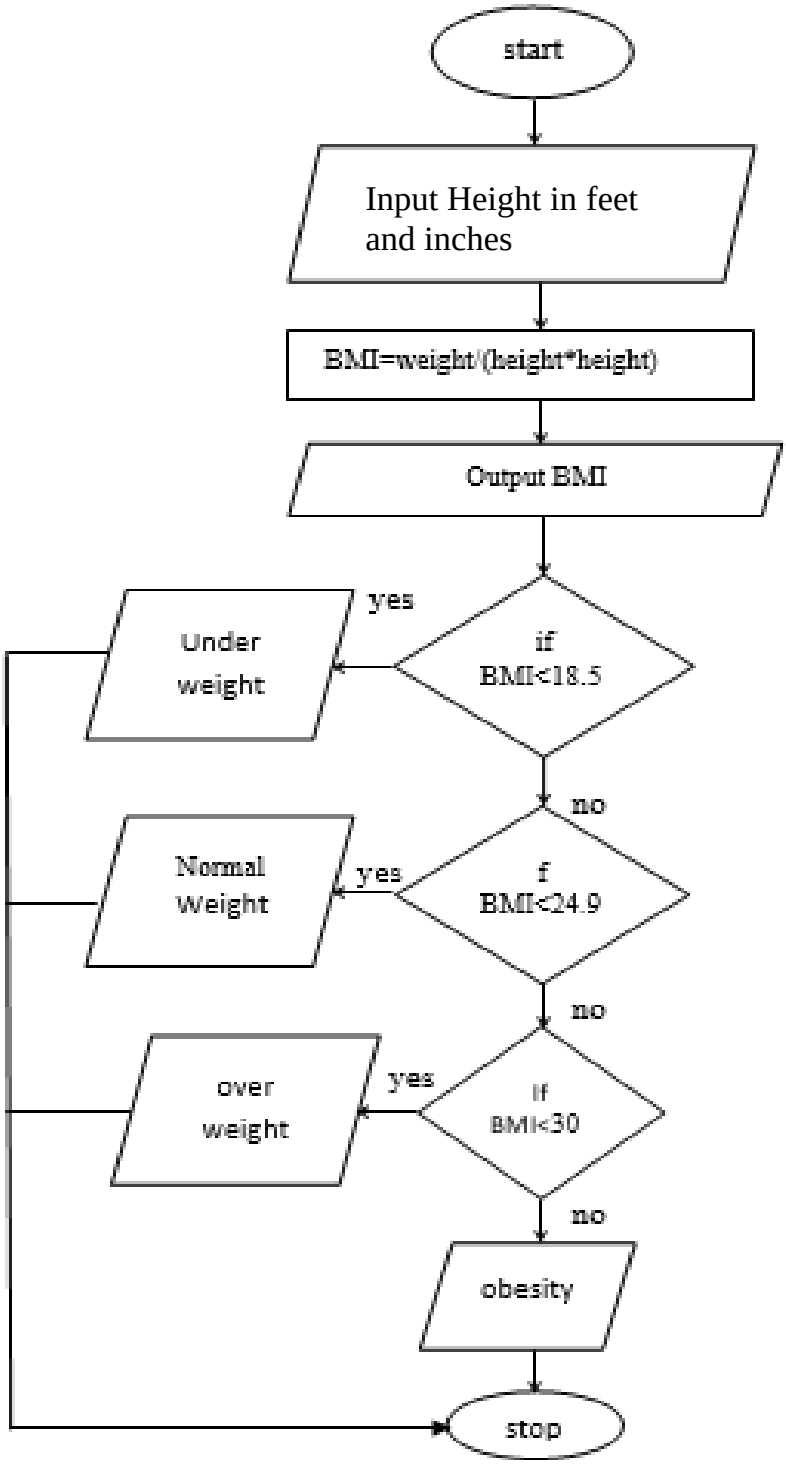
In the `onCreate` method, the layout is set using the `setContentView()` method, and the `TextView`, `Button` variables and `String` arrays are initialized. Then, the `bmiValue` `TextView` is set with the value passed from the previous activity via an intent using `getIntent().getStringExtra("bmiVal")`.

The `findCategory()` method is called to find the category of BMI based on the value passed from the previous activity. The category is displayed in the `bmiCategory` `TextView`.

The `categoryTips()` method is then called to display some tips based on the category of the BMI. This method first converts the `bmiValOutput` `String` to a `double` value and then, using a series of `if-else` statements, checks the value of the BMI to display the relevant tip in the `bmiTips` `TextView`.

Finally, the `calculateAgainBtn` `Button` is set with an `OnClickListener` which is used to navigate back to the previous activity when clicked, using the `onBackPressed()` method.

9. Flowchart


start
Input Height in feet and inches
BMI=weight/(height*height)
Output BMI
if BMI<18.5
yes
Under weight
no
f BMI<24.9
yes
Normal Weight
no
If BMI<30
yes
over weight
no
obesity
stop

10. Outputs

1.Front Page

2.Result Page

11. Future Scope

There are several potential areas of future development for the BMI calculator developed in Android using XML and Java:

1. Integration with fitness tracking devices: In the future, the BMI calculator could be integrated with fitness tracking devices such as smartwatches, Fitbit, etc., to provide more accurate and personalized results based on daily activities and calorie intake.

2. Adding a diet plan feature: Another potential area of future development is to add a diet plan feature to the application. Users could input their dietary preferences, and the application could generate a meal plan based on their BMI category.

3. Adding a social feature: The application could be developed further to add a social feature where users can share their progress and connect with others to provide motivation and support.

4. Integration with health apps: The BMI calculator could be integrated with other health apps, such as calorie counting apps or fitness apps, to provide a more holistic approach to health management.

5. Personalization: The BMI calculator could be further developed to provide personalized results based on the user's age, gender, and other factors such as muscle mass.

6. Expansion to other platforms: The BMI calculator could be expanded to other platforms such as iOS, web, or desktop applications, to reach a wider audience and provide accessibility to people who do not have access to Android devices.

12. Conclusion

In conclusion, the BMI calculator developed in Android using XML and Java is a simple yet useful application for calculating BMI and determining the weight category based on the BMI value. The application has a user-friendly interface and allows users to enter their weight and height, which is then used to calculate the BMI. The application also displays the weight category and provides tips for maintaining a healthy weight. The code uses various Android classes and methods to implement the functionality, such as TextViews, Buttons, String arrays, and OnClickListeners. Overall, the BMI calculator application is a good example of an Android app that can be developed using XML and Java.

13. References

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