



Project : CSE 228(Data Structures)

Project Name : Basic BMI Calculator

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Declaration

I, Gagan Ruthwik Chowdary hereby declare that this project report titled "Basic BMI Calculator" represents my original work.

All the content, research, analysis, and conclusions presented in this document are the result of my own effort and have not been previously submitted for any academic or professional evaluation.

I further affirm that:

The project, " Basic BMI Calculator", was developed based on the description provided, with the functionalities of managing book records and handling user searches.

Any assistance or guidance received during the project is appropriately acknowledged in the acknowledgment section.

The report adheres to the formatting guidelines, including font, font size, headings, and line spacing, as specified in the project requirements.

I understand that any deviation from these principles may result in academic or professional consequences.

Date: 16-10-2023

Gagan Ruthwik Chowdary Kolluri

Acknowledgement

I would like to express my sincere gratitude to all those who contributed to the successful completion of the " Basic BMI Calculator " project. Their support and assistance were invaluable throughout the project's development.

I extend my heartfelt thanks to:

Waseem Ud Din Wani:63869 for their guidance, mentorship, and expertise in steering this project in the right direction.

Waseem Ud Din Wani:63869 for their cooperation and providing access to the necessary resources and information.

for their support in various capacities, be it technical, design, or testing, which significantly contributed to the project's success. The collaboration and assistance received from the above-mentioned individuals and entities played a pivotal role in shaping the " Basic BMI Calculator" project into a reality.

I acknowledge and appreciate their contributions and support.

Gagan Ruthwik Chowdary Kolluri

Abstract:

The Body Mass Index (BMI) Calculator project is a Java-based application designed to compute BMI values based on user-provided weight and height inputs. This report outlines the project's objectives and scope, along with the methodology employed in BMI calculation.

The program utilizes Java as the primary programming language and provides an interactive text-based interface.

By inputting weight and height, users can determine their BMI and obtain an interpretation of their health status, whether they are underweight, have a healthy weight, are overweight, or fall into the obese category.

The project serves as a basic yet informative tool for health assessment and provides a fundamental understanding of BMI calculations.

This report also includes relevant screenshots, and an annexure for further insights and potential improvements.

Introduction

The BMI Calculator Program is a software application designed to provide a straightforward and accessible means of calculating an individual's Body Mass Index (BMI). In an era where health and fitness have become paramount concerns, this program addresses the need for a user-friendly tool that can assist individuals in assessing their weight and health status. BMI is a widely recognized indicator of body composition, and it serves as a valuable metric for individuals looking to gauge their overall health and make informed decisions about their fitness goals.

The program's primary objective is to simplify the BMI calculation process by allowing users to input their weight and height, while also providing a categorization of their BMI into familiar weight classes, including underweight, healthy weight, overweight, and obese. This report delves into the development and functionality of the BMI Calculator, shedding light on the underlying methodologies and algorithms used to achieve precise results.

Objectives and Scope of the Project

The project's primary objectives encompass the creation of a user-friendly BMI calculator capable of handling weight and height inputs. The program calculates the BMI and classifies it into distinct weight categories such as underweight, healthy weight, overweight, and obese. This project's scope includes the development of the BMI Calculator program, covering user interaction, data processing, and results presentation.

Application Tools

The BMI Calculator program was meticulously crafted using the Java programming language. Java was chosen due to its cross-platform compatibility and the ease with which it handles mathematical computations, making it a suitable choice for a BMI calculator application.

Methodology/Flowchart or Algorithm Implementation

The methodology adopted in the project involves several essential steps. First, the program takes user input for weight and height. Next, it converts

height from centimeters to meters for consistency with the BMI formula.

The BMI is then calculated using the formula: $BMI = \text{weight (kg)} / (\text{height (m)} * \text{height (m)})$.

Subsequently, the program categorizes the user's BMI into weight categories, namely underweight, healthy weight, overweight, or obese.

Source code:

```
import java.util.Scanner;
```

```
public class BMICalculator {  
    public static void main(String[] args) {  
        // Create a Scanner object for user input  
        Scanner scanner = new Scanner(System.in);  
  
        // Prompt the user to enter their weight in kilograms  
        System.out.print("Enter your weight in kilograms: ");  
        double weight = scanner.nextDouble();
```

```
// Prompt the user to enter their height in
centimeters

System.out.print("Enter your height in centimeters:
");

double height = scanner.nextDouble();

// Close the scanner to release resources
scanner.close();

// Convert height from centimeters to meters (1
meter = 100 centimeters)

double heightInMeters = height / 100.0;

// Calculate BMI using the formula: BMI = weight
(kg) / (height (m) * height (m))

double bmi = weight / (heightInMeters *
heightInMeters);

// Determine the BMI category and provide a
description

String category;
if (bmi < 18.5) {
    category = "Underweight";
} else if (bmi < 24.9) {
    category = "Healthy Weight";
} else if (bmi < 29.9) {
    category = "Overweight";
```



```
    } else {  
        category = "Obese";  
    }  
    // Display the calculated BMI and category  
    System.out.println("Your BMI is: " + bmi);  
    System.out.println("You are categorized as: " +  
category);  
    }  
}
```

How the Program Works

The user is prompted to enter their weight in kilograms and their height in centimeters.

The program converts the height from centimeters to meters (1 meter = 100 centimeters) to ensure consistency with the BMI formula.

It calculates the BMI using the formula: $BMI = \text{weight (kg)} / (\text{height (m)} * \text{height (m)})$.

The program then determines the user's weight category based on the calculated BMI using the following categories:

Underweight: $\text{BMI} < 18.5$

Healthy Weight: $18.5 \leq \text{BMI} < 24.9$

Overweight: $25 \leq \text{BMI} < 29.9$

Obese: $\text{BMI} \geq 30$

Finally, the program displays the calculated BMI and the corresponding weight category, providing the user with insight into their current health status.

Program Description

The program takes user input for weight and height, performs the necessary calculations, and provides the BMI value along with a corresponding text description of the user's weight category.

Usage

To use the BMI Calculator program, you need to:

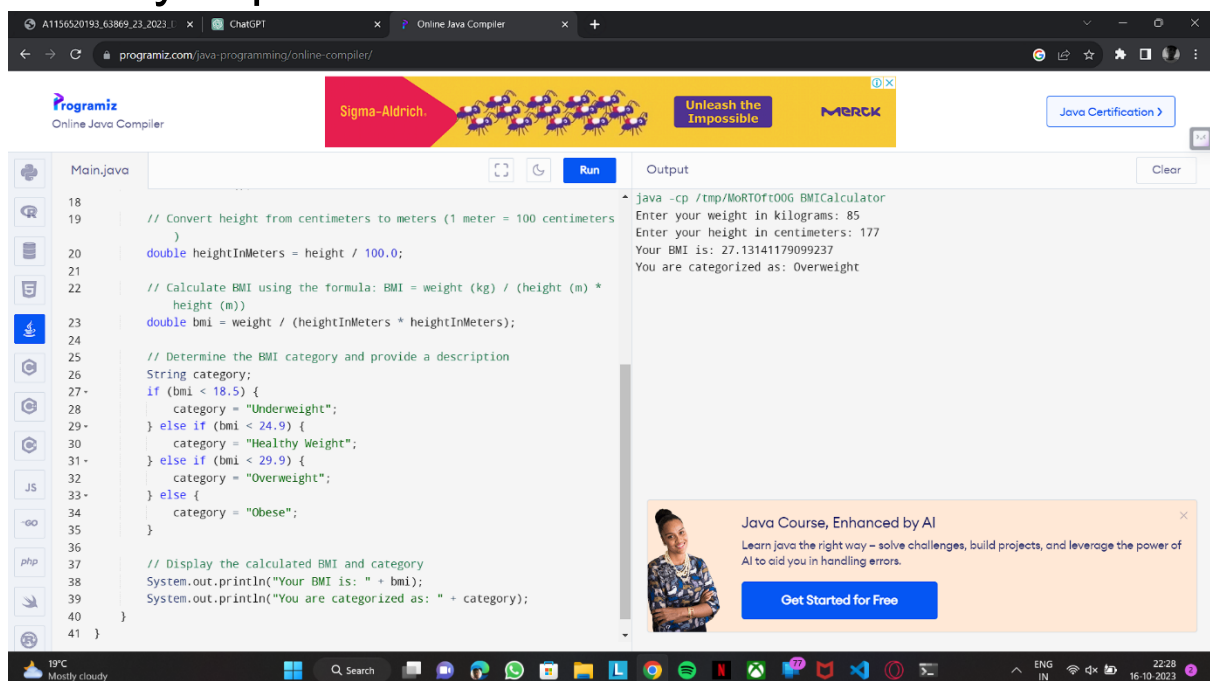
Enter your weight in kilograms.

Enter your height in centimeters.

The program will then calculate your BMI and categorize it, displaying the results on the screen.

Screenshots of Execution

Below are illustrative screenshots that showcase the key aspects of the BMI Calculator's execution.



The screenshot displays the Programiz Online Java Compiler interface. The main editor shows a Java file named `Main.java` with the following code:

```
18
19 // Convert height from centimeters to meters (1 meter = 100 centimeters)
20 double heightInMeters = height / 100.0;
21
22 // Calculate BMI using the formula: BMI = weight (kg) / (height (m) *
23 // height (m))
24 double bmi = weight / (heightInMeters * heightInMeters);
25
26 // Determine the BMI category and provide a description
27 String category;
28 if (bmi < 18.5) {
29     category = "Underweight";
30 } else if (bmi < 24.9) {
31     category = "Healthy Weight";
32 } else if (bmi < 29.9) {
33     category = "Overweight";
34 } else {
35     category = "Obese";
36 }
37
38 // Display the calculated BMI and category
39 System.out.println("Your BMI is: " + bmi);
40 System.out.println("You are categorized as: " + category);
41 }
```

The `Run` button is highlighted in blue. The `Output` pane on the right shows the execution results:

```
java -cp /tmp/MoRT0ft00G BMI Calculator
Enter your weight in kilograms: 85
Enter your height in centimeters: 177
Your BMI is: 27.13141179099237
You are categorized as: Overweight
```

At the bottom of the output pane, there is a promotional banner for a "Java Course, Enhanced by AI" with a "Get Started for Free" button.

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Sigma-Aldrich.

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produced in rabbit

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Main.java

```
18
19 // Convert height from centimeters to meters (1 meter = 100 centimeters
20 )
21 double heightInMeters = height / 100.0;
22
23 // Calculate BMI using the formula: BMI = weight (kg) / (height (m) *
24 height (m))
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34     category = "Overweight";
35 } else {
36     category = "Obese";
37 }
38
39 // Display the calculated BMI and category
40 System.out.println("Your BMI is: " + bmi);
41 System.out.println("You are categorized as: " + category);
42 }
```

Run

Output

Clear

```
java -cp /tmp/MoRTOfT00G BMICalculator
Enter your weight in kilograms: 75
Enter your height in centimeters: 177
Your BMI is: 23.93948099205209
You are categorized as: Healthy Weight
```

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buffer

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Main.java

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18
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37 }
38
39 // Display the calculated BMI and category
40 System.out.println("Your BMI is: " + bmi);
41 System.out.println("You are categorized as: " + category);
42 }
```

Run

Output

Clear

```
java -cp /tmp/MoRTOfT00G BMICalculator
Enter your weight in kilograms: 50
Enter your height in centimeters: 170
Your BMI is: 17.301038062283737
You are categorized as: Underweight
```

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Summary

The BMI Calculator Program is a Java-based software application designed to simplify the calculation of Body Mass Index (BMI) for individuals. This project addresses the growing concern for health and fitness by providing a user-friendly tool that enables users to input their weight and height, facilitating the quick assessment of their health status.

The BMI Calculator project provides a valuable tool for individuals who want to assess their weight status and overall health. By simplifying the BMI calculation process, the program empowers users with clear weight category information. This allows individuals to make informed decisions about their health and fitness goals, paving the way for healthier lifestyles.

Conclusion

The BMI Calculator program is a useful tool for individuals interested in assessing their weight status and overall health. It provides a quick and easy way to calculate BMI and interpret the results in terms of weight categories. This information can be valuable for individuals striving to maintain or achieve a healthy weight.

