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# **BELLISSIMA!: DIET MONITORING SYSTEM FOR HEALTHY LIFESTYLE**

**OLIVER GADING ANAK JINGGAN**



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**FACULTY OF COMPUTER ARTS AND CREATIVE  
INDUSTRIES  
UNIVERSITI PENDIDIKAN SULTAN IDRIS**

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BELLISSIMA! : DIET MONITORING SYSTEM FOR HEALTHY LIFESTYLE

OLIVER GADING ANAK JINGGAN

FINAL YEAR PROJECT REPORT SUBMITTED TO FULFILL THE REQUIREMENTS FOR  
OBTAINING A BACHELOR OF SOFTWARE ENGINEERING (EDUCATIONAL  
SOFTWARE) WITH HONORS

FACULTY OF COMPUTER ARTS AND CREATIVE INDUSTRIES  
UNIVERSITI PENDIDIKAN SULTAN IDRIS

2023



## FACULTY OF COMPUTER ARTS AND CREATIVE INDUSTRIES

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I confirm that all the materials contained in this final year project report are the result of my own effort. If there is work of other people or parties, whether published or not (such as books, articles, working papers, or materials in other forms such as audio and video recordings, electronic publications or the Internet) that have been used, I have already recorded recognition of their contributions through appropriate academic conventions. I also acknowledge that the materials contained in this final year project report have not yet been published or submitted for any other program or diploma / degree at any university.

26 February 2023

**Date**

**Student Signature**

#### Supervisor's Declaration:

I acknowledge that I have read this work and in my opinion, this work is sufficient in scope and quality for the purpose of awarding a Bachelor of Software Engineering (Educational Software) with Honors.

26 February 2023

**Date**

**Supervisor's Signature**

Madam Marzita Binti Hj Mansor



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“Do whatever you love, whatever you like, and whatever grows you, mom and dad will always support and love you. We believe in you.” I am humbled by my parents, Jingga Anak Jubang and Antie Anak Nyelang, for their unconditional love, support, and encouragement. They have been my biggest cheerleader, and their faith in me has been my driving force. I could not have achieved this without their constant prayers and motivation.

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This verse has served as a guiding principle for me throughout my FYP journey, teaching me that success is not a destination, but rather a journey. I hope this thesis will serve as a springboard to further success, and I will be eternally thankful to those who have played a key role in getting me here.

## ABSTRAK

Menjaga gaya hidup yang sihat dalam dunia yang kian berkembang pesat darsawarsa ini adalah penting, dan diet yang seimbang dapat membantu melestarikannya. Kemajuan teknologi telah menghasilkan penciptaan wahana mudah alih yang dapat digunakan untuk mengesan dan mengekalkan diet yang sihat. Tujuan kajian ini adalah untuk mengetengahkan aplikasi mudah alih baharu yang dinamakan Bellissima! nescaya mampu membantu pengguna memilih pilihan diet yang sesuai dengan keperluan pemakanan serta objektif penurunan berat badan mereka. Methodologi model inkremental digunakan untuk membina aplikasi Bellissima!, dan terbukti menjadi strategi yang berjaya. Fungsi asasnya, susunan mesra pengguna, dan sistem pengurusan badan yang peribadi menjadikannya wadah yang sempurna untuk orang muda yang ingin mengikuti pola pemakanan yang sihat disamping menurunkan berat badan. Aplikasi Bellissima! merupakan tamsilan yang menakjubkan yang mana teknologi dapat meningkatkan kehidupan individu ketika populariti aplikasi kesihatan dan kesejahteraan mudah alih meningkat. Keupayaan aplikasi yang efisien membolehkan pengguna mencatat pengambilan makanan harian dan memantau keberkesanan objektif penurunan berat badan mereka. Selain itu, sistem pengurusan badan yang peribadi menawarkan pengguna perancangan makanan yang disesuaikan berdasarkan keperluan pemakanan dan minat mereka. Aplikasi Bellissima! mempunyai banyak swadaya, termasuk kemudahan seperti aksesibiliti, dan mampu milik. Ia membolehkan pengguna mencatat informasi pengambilan makanan dan kemajuan penurunan berat badan mereka pada bila-bila masa dan dari seantero lokasi. Tuntasnya, aplikasi Bellissima! adalah sumber yang berkaliber untuk sesiapa yang ingin mengikuti pola pemakanan yang sihat dan menurunkan berat badan. Aplikasi ini menyediakan pendekatan yang mudah dan pragmatis untuk mengesan pengambilan makanan dan memantau kemajuan ke arah objektif penurunan berat badan berkat daripada susunan mesra pengguna, fungsi asas, dan sistem pengurusan badan yang bertepatan. Aplikasi Bellissima! adalah entiti mithali yang cemerlang dimana teknologi dapat meningkatkan kualiti kehidupan seseorang sejajar arus peningkatan aplikasi kesihatan dan kesejahteraan mudah alih yang giat menempah nama.

## **BELLISSIMA! : DIET MONITORING SYSTEM FOR HEALTHY LIFESTYLE**

### **ABSTRACT**

Maintaining a healthy lifestyle in today's fast-paced world is critical, and a well-balanced diet can help you get there. Technology improvements have resulted in the creation of mobile applications that can be used to track and maintain a healthy diet. The goal of this study is to offer a novel mobile app called Bellissima! that assists users in selecting a diet plan that is suited to their specific nutritional needs and weight loss goals. The incremental model methodology was used to construct the Bellissima! app, which proved to be a successful strategy. Its basic functions, user-friendly layout, and individualized body management system make it a perfect tool for young people who want to follow a healthy eating pattern and lose weight. The Bellissima! app is an amazing illustration of how technology can enhance people's lives as the popularity of mobile health and wellness apps grows. The app's capabilities allow users to log their food consumption and monitor their progress toward their weight loss objectives. Furthermore, the individualized body management system offers consumers a tailored meal plan based on their nutritional requirements and interests. The Bellissima! app has numerous advantages, including ease, accessibility, and affordability. It enables users to track their food consumption and progress at any time and from any location. To summarise, the Bellissima! app is an excellent resource for anyone who wants to follow a healthy eating pattern and reduce weight. The app provides an easy and economical approach to tracking food consumption and monitoring progress toward weight loss objectives thanks to its user-friendly layout, basic functionalities, and tailored body management system. The Bellissima! app is a shining example of how technology can improve people's lives as mobile health and wellness apps continue to gain popularity.

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## LIST OF ABBREVIATIONS

FYP	Final-Year Project
S/O	Son Of
WHO	World Health Organization
BMI	Body Mass Index
UPSI	Universiti Pendidikan Sultan Idris
UAT	User Acceptance Testing
MPV	Minimal Viable Product
EP	Equivalence Partitioning
BVA	Boundary Value Analysis

## LIST OF APPENDICES

A	Software Requirement Specification (SRS)
B	Software Design Description Document (SDD)
C	Software Testing Description Document (STD)

## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

Mobile applications have become essential to our daily lives as technology has advanced. One field where mobile applications can have a huge impact is health and fitness. A balanced diet is recommended by the World Health Organization (WHO) as a major component in preventing chronic diseases and sustaining general well-being (World Health Organization, 2022). Finding the perfect diet plan that meets an individual's needs and tastes, on the other hand, can be a difficult undertaking. This chapter will go over the research background, problem statement, research objectives, scope and limitations, project justification and significance, and lastly the definition.

#### 1.2 Research Background

Many mobile dietary self-monitoring apps have been developed and introduced in the market (Ahn et al., 2019). Despite the availability of numerous diet plans and mobile applications that track daily calorie consumption, there is a market need for a comprehensive mobile application that provides tailored body management systems and allows users to select from a variety of diet plans. Most smartphone applications only track daily calorie intake and do not provide tailored body management or a variety of diet programmes to pick from. As a result, a holistic mobile application that incorporates both elements could considerably increase user experience and diet

plan adherence. Thus, the goal of this project is to create a mobile application called Bellissima! that lets people choose from a variety of diet plans, track their calorie intake based on various diet programmes, and give individualized body management systems to help users achieve their weight loss goals. The application tries to address the issue of sustaining continuous adherence to a diet plan in the absence of monitoring systems and support.

### 1.3 Problem Statement

#### ***Problem Statement 1: Lack of dietary monitoring mechanism***

The lack of a monitoring tool to keep track of calorie consumption is a significant issue for many people who follow diet plans. Individuals are more likely to consume more calories than they require if there is no effective mechanism to regulate food intake, resulting in weight gain and other health concerns. This is especially problematic for persons with hectic schedules who may not have the time to track their calorie intake properly.

#### ***Problem Statement 2: Difficulty in maintaining consistency and discipline***

One of the most difficult obstacles when following a diet plan is maintaining consistency and discipline. A lack of consistency in adhering to a diet plan might result in poor outcomes, but a lack of discipline can force people to abandon their weight loss goals entirely. As a result, an effective solution is required to assist people in maintaining their attention and staying on course.

#### ***Problem Statement 3: Lack of personalized body management support***

Another major issue with current diet plans is the lack of personalized support. While nutritionists provide a variety of diet programmes, each person's body is different, and there is no "one-size-fits-all" approach. In a nutshell, there is a demand for a personalized body management system to assist users in tailoring their food regimens to their specific needs and goals.

## 1.4 Research Objective

The objectives of this research are:

1. To develop a mobile diet plan application that provides an effective dietary monitoring mechanism for users. This application will allow users to track their daily food intake, and log their personal BMI.
2. To design a system within the application that encourages consistency and discipline by providing personalized diet plans. The system will also provide positive reinforcement and feedback to users to keep them motivated and engaged with the application.
3. To incorporate personalized body management support features within the application to cater to individual user needs. This will be achieved by providing personalized meal plans based on the user's unique dietary needs.

These research objectives aim to overcome the identified problem statements of lack of dietary monitoring mechanism, difficulty maintaining consistency and discipline, and lack of personalized body management support. By achieving these objectives, Bellissima! will provide users with an effective tool for managing their dietary habits and ultimately leading to a healthier lifestyle.

## 1.5 Research Scope

This research aims to develop a mobile application named Bellissima! that provides a mechanism for allowing youth aged 19 to 23 years old to choose from a variety of diet plans and monitor their calorie intake based on their chosen plan. This application will also provide a personalized body management system to assist users in achieving their weight loss goals. The geographical area of interest for this study is Universiti Pendidikan Sultan Idris (UPSI) in Perak, Malaysia.

Youth aged 19 to 23 years old, on the other hand, are particularly vulnerable to harmful dietary habits due to their hectic lifestyle and lack of information about the need for a balanced diet.



Therefore, a mobile application that provides an easy-to-use and tailored mechanism for following a healthy food plan is required.

The planned application will allow users to choose from various diet regimens tailored to their unique nutritional needs. The programme will also have a monitoring system that will measure users' calorie consumption based on their diet plan of choice. Furthermore, the software will include individualized body management tools such as a BMI calculator and progress chart to assist users in meeting their weight loss objectives.

This application's target users are college students aged 19 to 23, as they are more inclined to employ technology-based solutions to maintain a healthy lifestyle (Shaw et al., 2018). UPSI in Malaysia is the geographical area of interest, as it has a diverse student population with varying dietary requirements.

Essentially, the goal of this study is to create a smartphone application that will help youngsters follow a healthy diet plan by providing an easy-to-use and customizable mechanism for tracking calorie intake and managing body weight. The suggested application has the potential to improve the health and well-being of UPSI's young adults and others.

## 1.6 Research Limitation

One research limitation of the development of Bellissima! is the need for more monetary support. Developing a mobile application requires a significant amount of resources, including funding for development, testing, and documentation. Completing the project within the allotted time frame may be challenging without adequate financial support. This limitation can impact the scope and functionality of the application, as well as the quality of the user interface and user experience.

Another problem is the study's potential for limited generalizability. Bellissima! app is intended to provide users with a personalized body management system suited to their unique nutritional demands and weight loss goals. But, depending on characteristics such as age, gender, cultural

background, and other individual differences, the app's effectiveness may vary. As a result, the study's findings may not apply to all populations. As Creswell (2014) points out, researchers should be aware of the potential constraints of their investigations and consider how these may affect the validity and reliability of the findings.

### **1.7 Justification and Significance of Project**

College life is when students experience many changes and transitions, including dietary habits. In most cases, college students' diets consist of unhealthy foods, which may lead to various health problems (Cocores & Goldstein, 2019). Bellissima! mobile application will provide various advantages to college students aged 19 to 23. To begin, the application will give an effective mechanism for students to select from a selection of diet programmes that cater to their specific nutritional needs. Second, the application will monitor users' calorie consumption to ensure they follow a steady diet. This function will aid in the prevention of weight gain and the promotion of good eating habits. Moreover, the tailored body management system will help students meet their weight loss objectives, a prevalent worry among university students. Finally, the ease of the smartphone application will allow college students to keep a nutritious diet despite their hectic schedules.

Nevertheless, Bellissima! smartphone application is crucial in supporting university students in maintaining a healthy diet. The software will provide several benefits, such as diet plans, calorie tracking, individualized body management systems, and ease. The application will promote good eating habits and prevent weight gain by addressing the issue of inconsistent food patterns, thereby adding to the student's overall well-being.

### **1.8 Definition**

This study aims to develop a mobile application called Bellissima! that assists UPSI university students aged 19 to 23 in maintaining a healthy lifestyle through proper diet management. A proper diet plan is essential for maintaining a healthy lifestyle, and consistency in diet maintenance is difficult to achieve without any monitoring mechanism (Azucar et al., 2021). The

Bellissima! app allows the user to choose any diet plans offered, keeps track of the user's calorie intake based on the selected diet program, and provides a personalized body management system to assist users in achieving their weight loss objectives. The app's ability to track the user's calorie intake helps users monitor their dietary habits and make informed decisions about their food choices. The personalized body management system assists users in achieving their weight loss objectives by providing them with customized diet plans based on their specific requirements. Bellissima is an Italian word that translates to "most beautiful." The name was chosen for this application as it aligns with the project's objective of assisting users in achieving their weight loss objectives and maintaining a healthy lifestyle. The name evokes a feeling of beauty and elegance, which is what the app aims to help users achieve.

Figure 1.1: Bellissima! Application Logo



## 1.9 Conclusion

In conclusion, the goal of this project is to create a comprehensive mobile application that provides tailored body management systems and allows users to select from a variety of diet plans. The application aims to address the issues of sustaining continuous adherence to a diet plan in the absence of monitoring systems and support.

The research has identified three problem statements, including the lack of dietary monitoring mechanism, difficulty maintaining consistency and discipline, and lack of personalized body management support. The research objectives aim to overcome these problem statements by developing a mobile diet plan application that provides an effective dietary monitoring mechanism, a system that encourages consistency and discipline, and personalized body management support features.

The research scope aims to develop a mobile application named Bellissima! that provides a mechanism for allowing youth aged 19 to 23 years old to choose from a variety of diet plans and monitor their calorie intake based on their chosen plan. The application will also provide a personalized body management system to assist users in achieving their weight loss goals. The target users are university students aged 19 to 23, as they are more inclined to employ technology-based solutions to maintain a healthy lifestyle. Lastly, one research limitation of the development of Bellissima! is the need for more monetary support. Another limitation is the study's potential for limited generalizability.