Umm Al-Qura University
College of Engineering and Computers

Healthy Life Application

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Idea of the Program	Reem Yousif Alfaqeeh
Introduction	Roaa Ahmed
The Purpose	Roaa Ahmed
Functional Requirements	Reem Yousif Alfaqeeh
Nonfunctional Requirements	Roaa Ahmed
Survey	Reem Yousif Alfaqeeh
Comparison	Roaa Ahmed
Healthy Life App Features	Reem Yousif Alfaqeeh
App Interface	Roaa Ahmed
Healthy Life App Main Interfaces	Reem Yousif Alfaqeeh
System Architecture	Roaa Ahmed
Database	Reem Yousif Alfaqeeh
Data Model for Healthy Life App	Roaa Ahmed
Server	Reem Yousif Alfaqeeh
Popular Cloud Hosting Providers	Roaa Ahmed
Conclusion	Reem Yousif Alfaqeeh
Healthy Life Application Conclusion	Roaa Ahmed
References	Reem Yousif Alfaqeeh

Table 1: Table of Sections and Assigned Students

Contents

0.1 Abstract

Health is a valuable asset that impacts various aspects of our everyday lives. The Healthy Life app aims to promote public health by providing advanced health technologies, disease detection, and personalized health management. By tracking vital signs, offering guidance, and maintaining a secure database, the app ensures an easy and enjoyable experience for users. With user-specific interfaces and robust database management, the application caters to the diverse needs of nutritionists, personal trainers, and health-conscious individuals, ultimately facilitating a healthier lifestyle.

Chapter 1

INTRODUCTION

1.1 General Introduction to Health

Health is one of the greatest blessings that a person possesses, and it is the basis of a healthy and productive life. Health also has many aspects, including physical, mental, and psychological, where diversity between these elements is important, necessary, and always complete health. Health is guaranteed by building a healthy lifestyle that includes proper nutrition for a long time, which leads to smoking and overeating unhealthy food. Health care plays a major role in promoting public health through disease prevention, early and continuous reproduction, and providing better opportunities. Technological developments in the health field help improve the quality of health care and improve solutions to help improve the individual's life, such as smart applications for advanced health technologies and disease detection. Maintaining health requires cooperation between the individual and society, where support can be enabled by providing a healthy environment, easy health care services, and awareness aimed at healthy smoking in a healthy way.

The Healthy Life program is a comprehensive app designed to help individuals achieve their health goals and improve their overall lifestyle. It utilizes the latest technology in digital health to provide a unique experience that allows users to track daily activities such as nutrition, exercise, and mental health.

The importance of the Healthy Life app lies in the solutions it offers for common problems, including:

- **Difficulty Tracking Daily Activities:** It can be hard to keep track of diet, exercise, and other activities.
- **Awareness of Mental Health:** People often struggle to manage stress and anxiety in their daily lives.
- **Chronic Illness Management:** Individuals with chronic illnesses can find it challenging to monitor vital signs, like blood pressure and blood sugar levels, without medical tools.

- **Important Appointments:** People often forget important appointments, such as medication times and doctor visits.

These challenges make it difficult for individuals to reach their health goals and manage their lives in a balanced and healthy way. Therefore, the Healthy Life app plays an important role in addressing these issues by enhancing and improving personal health care.

1.2 The purpose

The purpose of using a Healthy Life app is to organize important health information and make it easily accessible from one secure place. It helps improve healthy living and manage different aspects of personal health in an integrated way. The app allows users to track daily activities like nutrition, exercise, and mental health, which contributes to better overall health. It helps users achieve fitness goals, manage weight, and reduce the risk of chronic diseases. Additionally, it provides support for mental health by monitoring emotional well-being and offering tips to improve mental and physical balance, helping users lead a healthy and balanced life.

1.3 Survey

Here's some of the information we've gathered through this questionnaire to understand individual needs in maintaining their health.

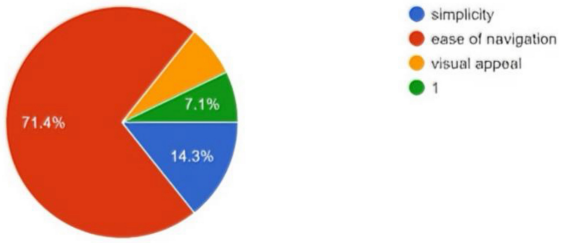

Figure 1.1: "UI Features of Healthy Life"

- **Q1:** What features do you find most important in a health app's user interface?

This image shows the results of a survey about the most important features in the Healthy Life app UI:

- 71.4% of respondents believe that *"ease of navigation"* is the most important feature.

- 14.3% believe that *"simplicity"* is the most important feature.
- 7.1% consider *"visual appeal"* to be the most important feature.
- 7.1% chose another option (represented by green).

In conclusion, most people consider ease of navigation to be the most important feature This image shows the results of a survey on the most important technical aspects of a health
'As shown in Figure[1]'

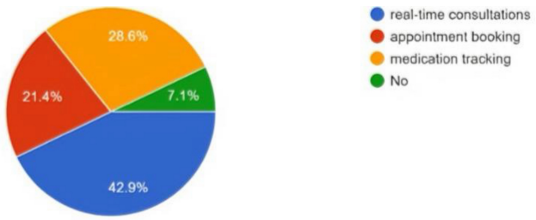

Figure 1.2: "Services in a Health App"

- **Q2:** What health services would you like to see included in a new health app?

The image shows the results of a survey on the health services that participants would like to see in a new health app:

- 42.9% want *"instant consultations"* as a main service.
- 28.6% prefer *"tracking medications"*.
- 21.4% want *"booking appointments"*.
- 7.1% chose another option (represented in green).

Conclusion: Instant consultations are the most requested service in a new health app.
'As shown in Figure[2]'

- **Q3:**Are there any health-related services or features that you feel are missing in current. Please specify.
- 57.1% of participants consider *"reliability"* to be the most important aspect.
- 21.4% consider *"minimal errors"* to be the most important.
- 14.3% prefer *"loading speed"*.

Figure 1.3: "Technical Aspects"

- 7.1% chose another option (represented in green).

Thus, most participants consider reliability to be the most important technical aspect of Healthy Life apps.
'As shown in Figure[3]'

- **Q4:** What types of notifications and reminders would you find most useful in a health app?

The image shows the results of a survey showing the types of notifications and reminders users prefer in a Healthy Life app:

- 35.7% of respondents prefer *medication notifications* (blue).
- 35.7% prefer *appointment alerts* (orange).
- 21.4% prefer *general reminders* (red).
- 7.1% did not need any notifications (green).

Conclusion: Most respondents prefer medication and appointment.
'As shown in Figure[4]'

- **Q5:** How concerned are you about the privacy and security of your health data in a health app? What measures would make you feel more secure?

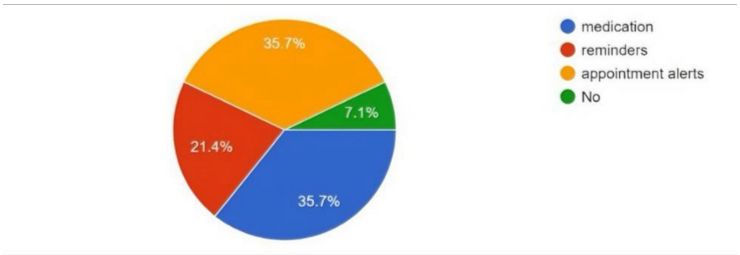

Figure 1.4: "Notification Preferences"

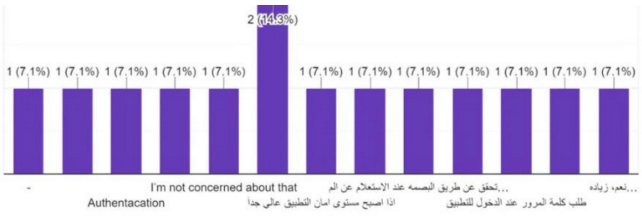

Figure 1.5: "Types of Notifications"

The image shows the results of a survey on the types of notifications and reminders users prefer in a Healthy Life app:

- 35.7% of respondents prefer *medication notifications* (blue).
- 35.7% prefer *appointment alerts* (orange).
- 21.4% prefer *general reminders* (red).
- 7.1% do not need any notifications (green).

Chapter 2

ANALYSIS

2.1 REQUIREMENTS

2.1.1 Functional requirements

- **Account Creation and Login:** Users should have the option to create a new account or log in to their existing accounts. This requires entering an email address or phone number, allowing the application to create a profile for each user and save data related to daily activities and general health, while ensuring that the user's health data is protected and secure.
- **Selecting the Language:** A list of languages available in the application will appear. The user chooses the appropriate language for them.
- **Access to the Personal Control Panel:** The user can access the main control panel where they can see the tools that will help them calculate calories, track steps, and monitor their psychological state.
- **Customize a Health Plan:** Based on the data entered, the application creates a health plan and recommendations to improve the lives of individuals. This plan is adjustable according to the user's preferences.
- **Reminders and Notifications:** Based on the user's goals, daily reminders are activated to alert them to eat healthy meals, exercise, or take a break to relax. These notifications help the user stay committed to their health plan.

2.1.2 non functional requirements

- **Security and Privacy:** Protect sensitive user data by encrypting it and complying with data protection standards.
- **Performance:** Ensure a fast response time of less than one second during peak usage.

- **Usability:** Provide an intuitive user interface that is easy to navigate, with clear instructions for new users.
- **Maintenance:** The system should be easy to maintain, allowing for quick updates and fixing any problems that may arise.
- **Ease of Use:** The system should be easy to use and simple, so that new users can quickly learn how to navigate it.

Conclusion: Most respondents prefer medication and appointment notifications, indicating that these types of notifications are the most important in Healthy Life apps.
'As shown in Figure[5]'

2.2 Comparison

Application	Advantages	Disadvantages
MyFitnessPal	- Ease of use: Simple and easy-to-access user interface. - Diversity of services: Provides booking of medical appointments and doctor consultations. - Customer support: Good technical support to solve problems.	- Performance issues: Users may experience slow performance. - Lack of comprehensive features: Missing multiple payment options and integration with other apps. - Complexity of the user interface.
Sehaty	- Easy to use and navigate through the app. - Extensive database of foods and ready-made meals. - Ability to easily track and log each meal and its components.	- Accuracy of tracking and measurement is not perfect, especially for homemade foods. - Some common foods are missing from the database, requiring manual addition.

Table 2.1: Comparison of MyFitnessPal and Sehaty apps

2.3 Healthy Life App Features

The Healthy Life app features easy-to-understand and user-friendly interfaces, along with high performance to reduce loading times, as users prefer applications that respond quickly. It also boasts high measurement accuracy, which enhances data reliability for making precise health decisions. Additionally, our app has a large database that provides a variety of information, such as a diverse list of foods and physical activities. Because of these improvements, the Healthy Life app ensures an easy and enjoyable experience for our users.

Chapter 3

DESIGN

3.1 Introduction

The Healthy Life application is designed to monitor users daily by tracking vital signs such as apparent weight, heart rate, exercise level, and nutrition. Users receive guidance to ensure their healthy quality of life through direct and accurate connection to their health data. For the application to work effectively, it requires a strong system architecture, flexible data models, and well-defined specifications. The system must also incorporate updates to manage various elements, particularly within the Emirati region. This comprehensive discussion will cover the principles of technological design, data modeling, and new technology techniques to enhance user experience and deliver effective service.

3.2 App Interface

The Healthy Life app features a variety of user interfaces, each specifically created to meet the company's core needs, such as personal trainers, nutrition assistance, and individuals striving for healthier lifestyles. These interfaces are designed to provide a seamless, user-friendly experience that enhances the platform's services. By catering to the diverse requirements of different user groups—whether it's monitoring diet and exercise, assessing health status, offering individualized health advice, or efficiently designing an active diet—the application aims to improve user convenience, satisfaction, and overall enjoyment. The program achieves this by providing a reliable and user-friendly environment, tailored to meet the demands of various user profiles.

3.2.1 Healthy Life App Main Interfaces

The three main user interfaces of the Healthy Life app are designed specifically for different users: nutritionists, personal trainers, and individuals seeking

healthier lifestyles. Each interface is tailored to meet the specific needs of its users, ensuring a focused and effective experience.

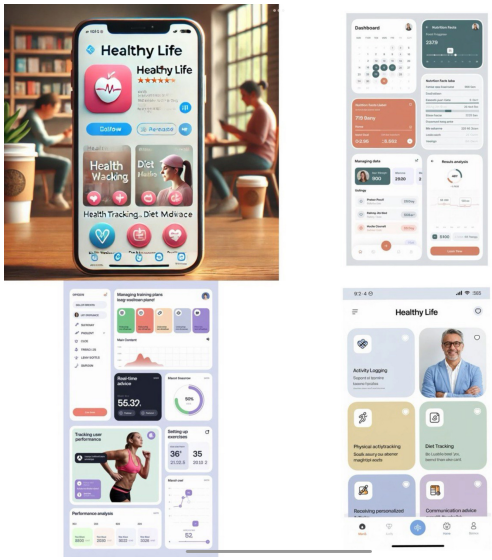

Figure 3.1: Healthy Life App Interfaces

3.1 Individual Interface

- **Health Monitoring:** Users can monitor their health indicators, such as heart rate and daily activity levels.
- **Skills Recording:** Individuals can record and track their exercise over time.
- **Diet Tracking:** The app allows users to record their daily meals and the nutritional values for each meal.
- **Get Personalized Advice:** The app provides personalized health and nutrition advice tailored to different user types.
- **Connect with Creators:** Participants can interact with trainers and nutritionists to receive instant guidance or modify their health programs.

3.2 Trainers Interface

- **Training Management:** Trainers can create personalized training programs based on users' goals and fitness levels.
- **User Performance Tracking:** The app allows trainers to track users across a wide range and monitor performance improvements.
- **Instant Setup Provider:** The app facilitates direct communication with users to provide personalized advice or modify exercises.
- **Exercise Settings:** Trainers can add new exercises or modify core exercises for trainees.
- **Weight Analysis:** The app enables trainers to report on and improve training programs based on user performance.

3.3 New Nutrition Interface

- **Preparing Meals:** The application provides nutritionists with specially designed meal plans for different user categories and health goals.
- **Tracking Users' Access:** Nutritionists can monitor what users eat daily and analyze the nutritional values of each meal.
- **Providing Meals:** Users can be contacted for nutritional advice or updates on the latest health developments.
- **Managing User Data:** The application organizes user files and facilitates access to their health data.
- **Analyzing Results:** The app generates reports on users' diets to assist specialists in setting nutritional goals.

The entire interface is designed for a smooth and easy-to-use user experience, ensuring that the needs of all user groups are met while providing reliable and accessible services.

3.3 System Architecture

The Healthy Life app supports the following operating systems:

1. **iOS:** The app can be downloaded from the App Store on your iPhone or iPad.
2. **Android:** The app is available for download from the Google Play Store and is fully compatible with all Android devices.
3. **Windows:** Users can download the app from the Microsoft Store or the official website if their device runs Windows.
4. **macOS:** The app is available for Mac and can be obtained from the Mac Software Store.
5. **Wear OS:** Users can track their activities from their wrists using this software, accessible via Wear OS smart wearable devices.

3.4 Database

To manage large volumes of data, including user information, health records, dietary and activity data, and medical reports, the Healthy Life platform requires a robust database. For the application to function effectively, a reliable and scalable database is essential. The application is likely to utilize a relational database, such as MySQL or PostgreSQL, which interacts with data requirements using SQL to facilitate data management and retrieval.This database will ensure the efficient and secure storage of health data while providing users with accessible and relevant information.

3.5 Data model

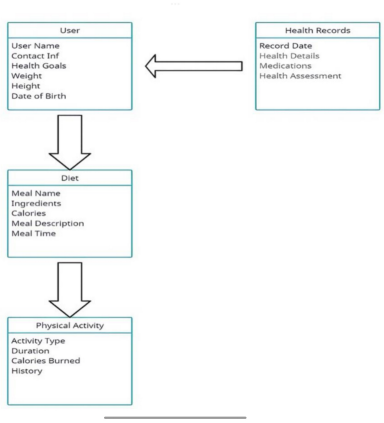

Figure 3.2: Class Diagram

Class Diagram Explanation

The Class Diagram is a static representation of the system's structure, outlining the classes, their characteristics, methods, and their connections. It serves as a system blueprint, demonstrating how the Healthy Life app's many components interact with each other.

Key Components

- **User:** Attributes include username, contact information, health objectives, weight/height, and date of birth.
- **Health Record:** Attributes include the record date, health information, prescription drugs, and a health evaluation.

- **Diet:** Attributes include meal name, ingredients, meal description, meal timing, and nutritional values.
- **Physical Activity:** Attributes include exercise type, duration, calories burned, and activity history.

Relationships

- Users can have several Health Records and Diet entries.
- Each Diet category can be related to many Physical Activities.

3.6 Activity model

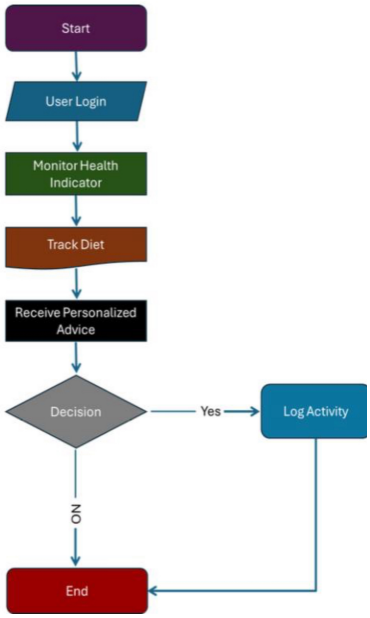

Figure 3.3: Activity Diagram

Activity Diagram Explanation

The Activity Diagram depicts the flow of operations inside the Healthy Life app. It displays the sequence of events conducted by the users and the system, giving insight into how tasks are completed from beginning to end.

Key Components

- **Start Node:** Represents the start of a process, such as a user login into the application.
- **Actions:** Steps in the process, such as monitoring health indicators, tracking diet, or obtaining personalized guidance.
- **Choice Nodes:** Points in the process when a choice is taken, such as whether to log a new action or review previous data.
- **End Node:** Denotes the conclusion of a procedure, such as successfully storing a new diet entry.

3.7 Data Model for Healthy Life App

Model	Attributes
User Model	Username, Contact Information (Email, Phone Number), Date of Birth, Weight and Height, Health Goals (e.g. Weight Loss, Muscle Gain), Health Activity History
Health Record Model	Record Date, Health Condition Details, Prescribed Medications, Health Assessments (e.g. Blood Pressure, Sugar Level), Medical Examination History
Diet Model	Meal Name, Ingredients, Calories, Meal Description, Meal Times
Physical Activity Model	Activity Type (e.g. Walking, Running, Weightlifting), Activity Duration, Calories Burned, Activity History, Activity Rating
Rating and Feedback Model	User Rating for the App, User Comments, Rating Date
Payment Details Model	Payment Method (Credit Card, Bank Transfer), Payment Date, Amount Paid, Payment Status (Paid, Pending)

In this way, Healthy Life App can manage data effectively and help users follow up their health and lifestyle

3.8 Server

The Health Life App Server is the system that runs the application, manages data, and interacts with users.

3.8.1 Server Technician

Programming languages such as Python, Node.js, Java, and others can be used to create the application server. For data requirements, MySQL or MongoDB can be utilized. In any case, the Health Life App Server enhances the user experience and supports all features of the application.

3.9 Popular Cloud Hosting Providers

Some of the most popular cloud hosting providers are:

- Amazon Web Services (AWS)
- Microsoft Azure
- Google Cloud Platform (GCP)
- Heroku

3.10 Conclusion

For a new healthy living app to succeed, it requires careful design, trustworthy data models, the use of advanced, large-scale services capable of supporting a substantial user base, and regular updates. User privacy, collaboration among developers, data management, and security must all be considered. Thanks to the unique experience these components provide, individuals are better equipped to track their health and

3.11 Healthy Life Application Conclusion

At the end of the Healthy Life Application, the importance and ease of use of the app become evident through the outstanding services it offers to the community. The application provides comprehensive summaries about users' health, including key information such as calorie consumption, heart rate, and physical activity levels. This data enables individuals to monitor their health continuously, helping them improve their lifestyle for the better. Through these features, the significance of our app is highlighted in addressing various health and mental challenges individuals may face, offering them the ability to track their well-being and take the necessary steps towards a healthier life.

Chapter 4

REFERENCES

- World Health Organization. (n.d.). *Digital health*. World Health Organization. Retrieved October 12, 2024, from https://www.who.int/health-topics/digital-health
- Nielsen Norman Group. (n.d.). *Search results for"interface design"*. Nielsen Norman Group. Retrieved October 12, 2024, from https://shorturl.at/uharB
- Interaction Design Foundation. (n.d.). *Topics*. Interaction Design Foundation. Retrieved October 12, 2024,from https://shorturl.at/ZKBmz
- *Health Informatics: Practical Guide for healthcare and information technology professionals (Sixth Edition)*. (n.d.). Google Books. Retrieved October 12, 2024, from https://shorturl.at/3C8WJ
- Alencar, G. A., De S Oliveira, F. V., Da Silva Correia-Neto, J., & Teixeira, M. M. (2019). Non-Functional Requirements In Health Information Systems: Non-Functional Requirements in Health Information Systems. In *CISTI 2019 - 14th Iberian Conference on Information Systems and Technologies*. https://doi.org/10.23919/cisti.2019.8760720
- *Safeguarding Human Health: A Requirements Engineering Perspective*. (2023). *Journal of Systems and Software*, 000–000.