An Android Application to Monitor Health Condition


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Abstract—Mobile phones are a more convenient device for people all over the world for daily activities. Apart from the ease and automation of its use, it also minimizes the overall time needed for a task manually. In contrary, to the scenario, few years back smart mobile phones were affordable and each day a new upgrade in the technology was established each day. With keeping pace with the increasing use of smart phone, we have created an android application naming it, Health Guardian. The ultimate goal of this application is to notify about the calorie level in a food and monitor the amount of calorie burned after performing exercise. The additional benefit that the app will provide is the identification of food calories you consume. The application features a monitoring system to count your daily nutrients and food consumption. The list of registered food items along with their calorie amount and other details are also recorded within the app. The early test of the app found were very helpful, as it will notify the user about the calorie level of the food and what exercise will burn out those calories. The results obtained were very positive and we look forward to increasing the users of this app throughout.

Keywords—Android, application, health, monitoring, calorie

INTRODUCTION

In the modern world, underweight and overweight is a common issue. This can lead to many severe diseases. Underweight person are weight deficient. They have a weight 15-20% below the normal of their BMI (body mass index). Underweight can cause due to genetic disorder, lack of food, eating disorder, illness and drug use. Due to underweight, a person can have malnutrition, vitamin deficiencies, anemia, osteoporosis, weak immune system and growth development problems. Overweight is also a serious condition. Person who have excess weight than the usual BMI are overweight or obese. Overweight or obesity might lead to conditions like heart disease, stroke, high blood pressure, diabetes and many more. To solve this problems changing the eating habit and following a balanced diet is necessary [1].

An Android phone is a more convenient device for people all over the world for daily activities. Apart from the ease and automation of its use, it also minimizes the overall time needed for a task manually. In contrary, to the scenario, few years back smart mobile phones were affordable and each day a new upgrade in the technology was established each day. With keeping pace with the increasing use of smart phone, we have created an android application naming it, Health Guardian. The ultimate goal of this application is to notify about the calorie level in a food and monitor the amount of calorie burned after performing exercise. The additional benefit that the app will provide is the identification of food calories you consume. The application features a monitoring system to count your daily nutrients and food consumption. The list of registered food items along with their calorie amount and other details are also recorded within the app. The early test of the app found were very helpful, as it will notify the user about the calorie level of the food and what exercise will burn out those calories. The results obtained were very positive and we look forward to increasing the users of this app throughout.

Keywords—Android, application, health, monitoring, calorie

At this date, android devices are the mostly used in everyday life. Life has become much easier with Android applications in our daily life. In Bangladesh, less amount of people join gymnasium or take a proper care of their health. Therefore, among various applications, fitness applications are also developed. Our application “Health Guardian” is a health and fitness based android application. It is a calorie counter application. It will let the user know about the calorie level in a food and monitor the amount of calorie burned after performing exercise. No more travelling to gym and doing heavy exercises. The gym trainer is in your fingertips now.

To maintain health, people seek for an advice from an experienced gym trainer who can advise them, which diet plan and routine exercises they can follow. Training at a gym can be time consuming and expensive for some. Therefore, our application will help people achieve their goal. Every person has a busy schedule and keeping a gym trainer in the palm of his or her hands makes life much easier. Our application will notify the user about the calorie level of the food and how much calorie will be burnt by doing specific exercises. Android diet apps are nothing new. For decades, people have been using these apps [2-4]. We are bringing a revolution in health system. Some apps, which are well-rated in 2018, are: My Fitness Pal: Studies show that keeping a track of the food intake we can easily lose weight. This app has a huge database of calorie counts of all kinds of food. The user logs the food by clicking a picture or manually inserting the name and they will find out how much calorie is in a particular food item.

Ultimate Workout Nutrition: This app tells us about the food and proper nutrition we can have besides doing exercise. This app will show what the user can have before and after the exercise and which food will help us to gain nutrition and be healthy.

Life Sum: This app helps to maintain a balanced diet easily. It gives us a plan to follow, the food diary and calorie counter keeps a track of the food intake. We can also find healthy recipes to follow the diet [5-9].

METHODOLOGY

With the launch of the app, an interface asking the user to “Sign up”, “Login” and “Forget password ?” will be displayed. In the process of signing up and creating an account, the user will input their name, age, height and current weight. These details will be saved as initial data about the user and can be later used when login process is followed. Forget password will allow you to reset your password with a self-generated link sent to your registered email. After signing in the app, in the next step two there will be options available named “Food criteria” and “Exercise”. If the user selects the Food criteria tab then it will ask them to select the type of food
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After selecting the desired category, a vast list of that particular food type will be provided to choose from. Upon selecting the specific item from the list, the user will then be asked in the following step to input the amount intended to be consumed. Finally, the total amount of gained calorie through the consumption of that food item in that particular amount will be calculated and displayed in the “Calorie gain” section. These data will be saved and available to the user if they make any future enquiries.

If the Exercise tab is selected instead, the user will suggest a variety of exercise routines (e.g. Cardio, Weight lifting, Pilates etc). Upon selecting the desired exercise, in the upcoming step the user will have to input the time duration for that specific routine. In the following step, the amount of lost calories will be calculated and shown to the user. These data will be saved and available to the user if they make any future enquiries. Below is a full illustration of the procedure of the app:

In the following step, a final calculation will be done to figure out the remaining amount of calories by comparing the gained and lost calorie amounts and ultimately at the final stage the result will be revealed to the user, which will be either calories gained or calories lost including the amount of it. The basic equation used here is rather a simple algorithm of subtraction;
Let, calories gained = x and calories lost= y;
So, Final Amount of Calories = (calories gained, x – calories lost, y)

Therefore, if the result comes in negative it explains that the gained amount of calories is less than the lost amount of calories; but if the result is in the positive it states that the gained amount of calories is greater than the lost amount of calories.

CASE STUDY
The ‘Health Guardian’ android application has been implemented on four individuals who belonged to different ages, societies and life styles.

This experiment was done to collect results that would be benevolent for the desired app establishment that is user friendly for all users of different age groups and field of work. The participants of this experiment are:

Participant 1
A 25 years old man, who is working as a banker. He remains busy with his banking issues for 8-10 hours a day and does not need to move a lot to accomplish his daily duties. He is very flexible to use android platform to maintain his social life.
Participant II
A 57-year-old man, who has retired from his service. He is suffering from asthma and diabetes. He can barely use a smart phone and that is why he needs additional support to run different android applications.

Participant III
A 30-year-old male, who is working in an advertising firm and spends major portions of his day in outdoor shooting. He is using android devices since 2006 but still strive to gain expertise.

Participant IV
A 22-year-old female student, who spends most of her time in university. She is very busy with classes and struggling to maintain a proper diet. She is using an android device for the last three years and she is very comfortable in using related applications.

EXPERIMENT DESIGN
The overall procedure has been designed to gather appropriate feedback from the participants to understand its effectiveness. To run the overall procedure smoothly, we divide the whole process into few parts. The procedure are such that is given below:

At first, we tried to judge users according to their previous experience with similar kinds of applications. Experienced users provided three to four sessions to understand the basic usage of the application and others were given five to six sessions to get used to it.

Second, our volunteers provided support to the participants who were facing difficulties to run the application. After attending two to three sessions, participants were asked to run the application without any external support. Followed by, the assignment of their own customized and registered profiles, which allowed them to evaluate their innate means of using the application all by themselves.

Later on, we focused on determining the difficulties in choosing an option from both the sections of the application and the clarity of understanding each and every section of the application and to run the application with ease.

To conclude, we assimilate the beneficial functions of the application in a person’s routine and health care who struggles to locate and balance the therapeutic regime in the rush of their daily lives.

The ultimate outcome of this study was to provide the participants a better way to maintain a balance health with effective calorie count [10-14].

RESULTS
Participant-1 was able to operate the application effortlessly but for his busy schedule, initially he was lagging behind. Although he coped-up and was able to run the application smoothly after 7 sessions. Along with that, he found the application to be very useful for a person who lives on junk food.

This senior participant faced many difficulties during his prior sessions of the trials. He needed extra few sessions to learn the usability of the application and run it without support from others. However, the technicalities of handling was the most difficult part for him. By the end of tenth session, he ran the application flawlessly by himself.

Despite of being an expert user of android device, this participant struggled with his time management and other features of this application. Although he had full enthusiasm about understanding the app and learnt to run the application in a short period of 7 sessions. He seemed very satisfied with the content of this application overall.

Our final participant has immense interest to learn the application to maintain a proper diet. She is a quick learner, individually run the application by the end of eighth session, and already started to use it for maintaining a formidable diet.

The overall results were schemed and tabulated in the following table.

Table 1: Participants responses

<table>
<thead>
<tr>
<th>Participant</th>
<th>Previous Experience</th>
<th>Adaptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant I</td>
<td>This participant is an experienced user and using various android applications to maintain his network with social communities.</td>
<td>Because of limited time scale, user was struggling to adjust but by the end of 7th sessions, run it fluently.</td>
</tr>
<tr>
<td>Participant II</td>
<td>Participant had no experience in android device use but was competent about learning and understanding.</td>
<td>He developed his skill over the application in the beginning of this trial period. After completing 10 sessions, he run it smoothly.</td>
</tr>
<tr>
<td>Participant III</td>
<td>Participant has previous experience regarding android devices. However, not with this kind of apps.</td>
<td>By our volunteer’s help participant took hold of the app in a steady pace.</td>
</tr>
<tr>
<td>Participant IV</td>
<td>Participant has decent experiences with android applications; however, she is very new to this particular type of applications.</td>
<td>She developed the command over the application in a minimum amount of time and managed to utilize the application skilfully.</td>
</tr>
</tbody>
</table>

In short, it can be stated that, by the end of 10th session, all four participants were comfortable with the application and they utilized the application effectively without any external help. Besides, they were also very enthusiastic with the application to maintain a proper diet and routine exercise daily [15-16].

CONCLUSION
After making the application, we have come to realize that there are some sectors in which the app can be further improvised. A major improvement would be to
synchronize this app with more food categories, which will allow the user to use the application to maintain a flawless diet controlling procedure. Besides that, we are trying to implement a different section of feedback or suggestion, where users will get a proper diet and exercise plan to have a healthier life. The entire interface can be made more professional in outlook [17, 18]. Although we have some difficulties in the beginning and need to improve in few sections, still it can be said that the overall reaction on the android application is quite positive and it seems the ultimate solution of saving time to maintain a proper fitness system by choosing appropriate food and exercise is to achieve our fitness goals.

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REFERENCES