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WEB BASED DIET NUTRIENT ADVISER AND NOTIFICATION SYSTEM

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ABSTRACT

Diet is the sum of food consumed by a person or other organism and also diet is the kinds of food that a person, animal, or community habituality eats. Over the years individuals has been finding it difficult to know the classes of food they need to eat in other for their diet to be balanced, in short term, poor nutrition can contribute to stress, tiredness and our capacity to work, and over time, it can contribute to the risk of developing some illnesses and other health problems such as being overweight or obese, tooth decay, and also high blood pressure and finally no means where individual can calculate their body mass index (BMI). This paper introduces a model that gives advice to individuals with nutritional deficiencies and also notifies individuals the kind of food they need in other to avoid nutritional deficiency, and finally individuals will be able to calculate their body mass index and an alert message will be sent to their phone containing the result. Object Oriented Analysis and Design Methodology was adopted in this paper. Hypertext Pre-processor (PHP) scripting language was used for the design and My Structured Query Language (MYSQL) for the database management.

KEYWORDS: Diet Nutrient, Body Mass Index, Overweight, Nutritional deficiency

1.0 INTRODUCTION

Diet is the sum of food consumed by a person or other organism and also diet is the kinds of food that a person, animal, or community habituality eats. In order to live, grow and to protect us from various diseases we need a good, nutritious diet. Nutrition is found in various types of food. Everyone wishes for themselves and their family to remain in good health. A healthy family also makes a healthy and strong homestead. Besides this, you can also help others to be strong. If the family is sick it needs constant expense and can cause much worry. A good, nutritious and balanced diet helps to protect and release the family from sickness. A nutritious diet is not just available from expensive foods. We can also obtain and prepare a nutritious diet from easily available local and even wild foods [4].

The food system today is destroying the environment upon which future food production depends. It contributes to some 20-30% of anthropogenic greenhouse gas (GHG) emissions, is the leading cause of deforestation, land use change and biodiversity loss; accounts for 70% of all human water use and is a major source of water pollution. Moving from land to sea, unsustainable fishing practices deplete stocks of species we consume and also cause wider disruption to the marine environment. At the same time, the impacts of climatic and environmental change are starting to make food production more difficult and unpredictable in many regions of the world [12].

The body requires many different vitamins and minerals that are crucial for both body development and preventing disease. These vitamins and minerals are often referred to as micronutrients. They aren't produced naturally in the body, so you have to get them from your diet. A nutritional deficiency occurs when the body doesn't absorb or get from food the necessary amount of a nutrient. Deficiencies can lead to a variety of health problems. These can include digestion problems, skin disorders, stunted or defective bone growth, and even dementia.

The amount of each nutrient you should consume depends on your age. In the United States, many foods that you buy in the grocery store (such as cereals, bread, and milk) are fortified with nutrients that are necessary to prevent nutritional deficiency. But sometimes your body is unable to absorb certain nutrients even if you're consuming them [5].

Over the years individuals has been finding it difficult to know the classes of food they need to eat in other for their diet to be balanced, in short term, poor nutrition can contribute to stress, tiredness and our capacity to work, and over time, it can contribute to the risk of developing some illnesses and other health problems such as being overweight or obese, tooth decay, and also high blood pressure and finally no means where individual can

calculate their body mass index (BMI), body mass index is a measurement of a person's weight with respect to his or her height, this means that as the BMI score increases, so does a person's total body fat. So therefore BMI chart is used to categorize a person as underweight, normal, overweight, or obese. These form this project title diet nutrient adviser and notification system that will give advice to individuals with nutritional deficiencies and also notify individuals the kind of food they need to eat in other to avoid nutritional deficiency, and finally individuals will be able to calculate their body mass index and an alert message will be sent to their phone containing the result [6].

1.1 Statement of the Problem

Over the years individuals has been finding it difficult to know the classes of food they need to eat in other for their diet to be balanced, in short term, poor nutrition can contribute to stress, tiredness and our capacity to work, and over time, it can contribute to the risk of developing some illnesses and other problems such as the following:

1. There is no means where individual can calculate their body mass index which is usually a means to know if one is underweight, normal, overweight or obese
2. No platform where individual can receive alert on their mobile phone concerning the result of their calculated body mass index
3. No platform for checking healthy weight plan which usually leads to overweight or obese
4. There is no platform where individual can be advise on diet to take in other to avoid poor nutrition, stress, tiredness, tooth decay, and high blood pressure.

1.2 Research Aim/Specific Objectives

The aim of this paper is to develop a web based diet nutrient adviser and notification system that will give advice to individuals with nutritional deficiencies and also notify them on their mobile phone concerning the result of their calculated body mass index. The following are the specific objectives:

1. To develop a platform where individuals can calculate their body mass index in other to know their body fat status
2. To create a platform where individuals will be notified on their mobile phone concerning the result of their calculated body mass index
3. To create a module where individual will be able to check for healthy weight plan
4. To develop a platform that will give advice and notify individuals the kind or classes of food they need in other to avoid nutritional deficiency

1.3 Scope of the Study

This paper diet nutrient adviser and notification system focuses on how individual will calculate their body mass index; receive alert on mobile phone concerning the result of the calculated body mass index, and finally the system give advice and notify them the causes and what to do to have a good diet nutrient.

1.4 Review of Related Works

Nutrients are consumed through the food that we eat, and through metabolic processes in the digestive system these nutrients are absorbed at a cellular level in the body [1]. Optimum nutrition contributes to health, wellbeing, normal development, and high quality of life [1]. However, undernutrition, overnutrition, and malnutrition are linked to suboptimal health outcomes [2]. Such poor diets have been linked to the occurrence of chronic diseases, including cardiovascular disease, Type-2 diabetes, cancer, osteoporosis and anaemia [10]. For example, research reports that low intake of fruit and vegetables increases the risk for developing cancer [11], as well as cardiovascular disease [7], whereas low intake of dietary fibre has been linked to being overweight [9].

Obesity is often a consequence of over nutrition, and it is an ever-increasing problem in both developing and food-secure countries, such as Australia [1]. A recent longitudinal study conducted in Victoria report on the significant increase of obesity from adolescence to adulthood [18]. This study of 1520 adolescents tracked over a period of 10 years also highlights the decreased likelihood of overweight adolescents achieving a normal weight in adulthood [20]. Frequently linked with a greater proneness to Type-2 diabetes [16], obesity severely affects health-related quality of life in a range of domains, including, physical, social and psychological [15]. However, factors influencing obesity and chronic diseases are more complex than diet alone. For example, together with increased sedentary behaviour, decreased physical activity has been shown to play a crucial role in becoming overweight and obese [17].

Individuals' reasons for buying and eating particular foods have been described as a "complex biopsychosocial process that is relative to person, place and time" [19].

Most researchers believe that dietary habits and food preferences develop in childhood, are established by age 15, and become habitual in due course [13]. Adolescence is thus still a key formative period in the development of eating habits [14]. Of interest is that some studies have identified a negative shift in the recommended nutrient consumption during adolescence, with reports that few adolescents are meeting recommend dietary guidelines [3].

For example, [8] conducted a large-scale longitudinal study of youth between the ages of 8 and 14, and found that their diets became less nutrient-dense over time. In particular, this study found that during adolescence young people's diets showed an increase in fat, saturated fat and sodium, and a decrease in vitamins, minerals and fibre these nutrients are all those implicated in chronic disease [8]. Adolescents have also been found to consume less than adequate amounts of fruits and vegetables. A large-scale study of 16,262 U.S. youth (with a mean age of 16 years) identified that only 22% of young women and 29% of young men consumed the recommended daily fruit and vegetable serves [9].

1.5 Proposed System

The proposed system is design in such a way that there will be two users, the general users and the administrator. The general uses will register with the system in other to acquire username and password which they will be using to login to the system subsequently. On login in users will be automatically get a message on BMI calculator and healthy weight plan, after reading it users will be able to edit their profile, calculate BMI after users will be ask to input their weight and height after which the system automatically calculate the body mass index, if the BMI is high then the system will give advice to the user on what to do and eat in other to have good diet and the advice will equally be sent to the user's phone through SMS.

Users can also check past history of calculated BMI. On the other hand the administrator will login with specified user name and password and view all registered users and can delete any user the administrator can create the advice the system will be given to users after calculating the body mass index and can edit and delete the advice from time to time. And finally admin can add diet time table to the system.

The diet formula is Diet = kg/m2 where kg is a person's weight in kilograms and m2 is their height in metres squared.

1.6 Flowchart of the Proposed System

Figure 1 and 2 describe how the user and the administrator will use the system and the various processes involve.

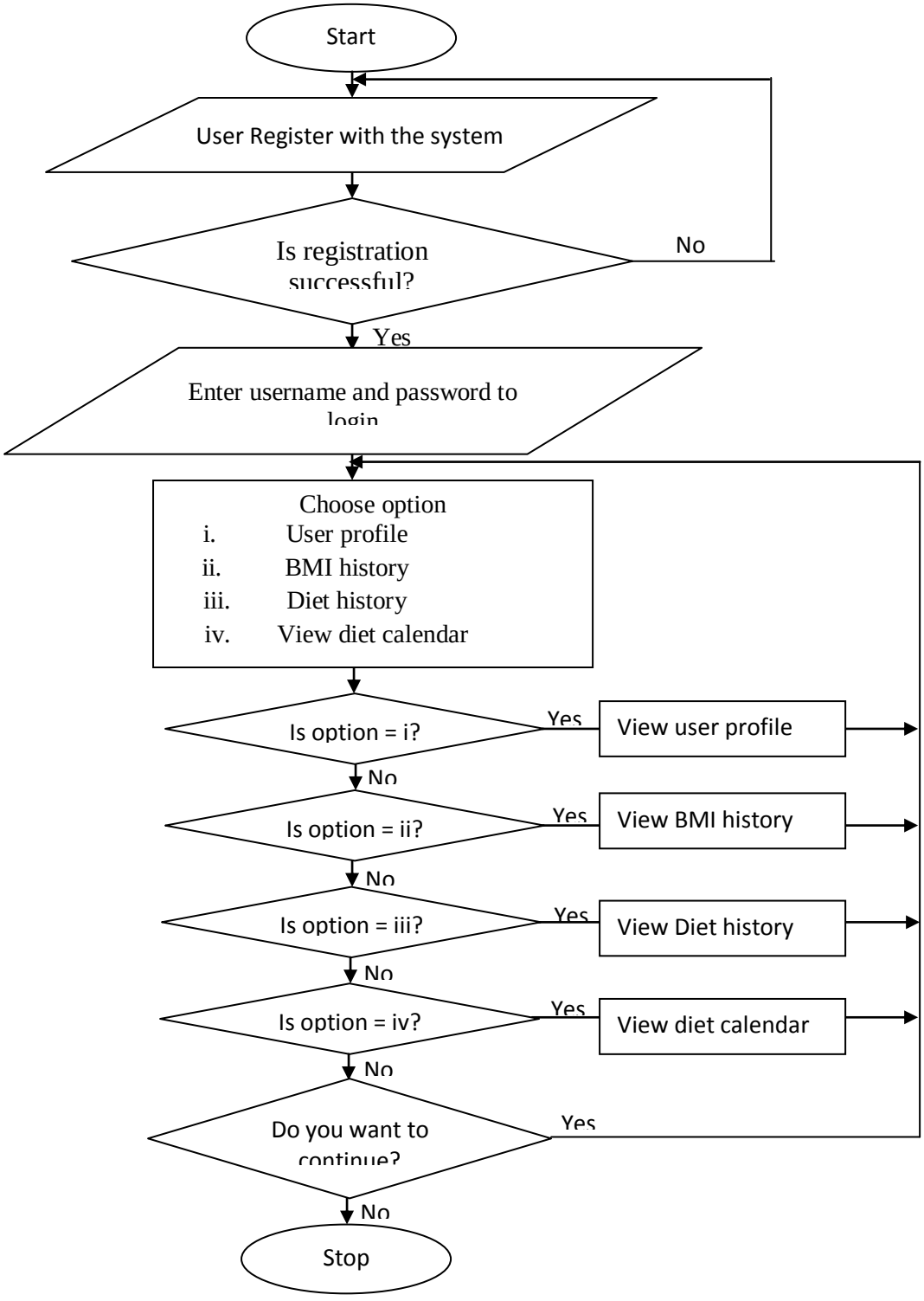

Figure 1: User Flowchart of the Proposed System

Figure 1 describes how the user will make use of the system. The user will first of all register with the system, if registration is successful then he or she will login with correct username and password, if user successfully log in, the user will be able to enter body weight and height in other for the system to calculate his or her body mass index (BMI) and also advice and send message to the user, user can also view and edit profile, check body mass index history, check diet history and finally view diet calendar.

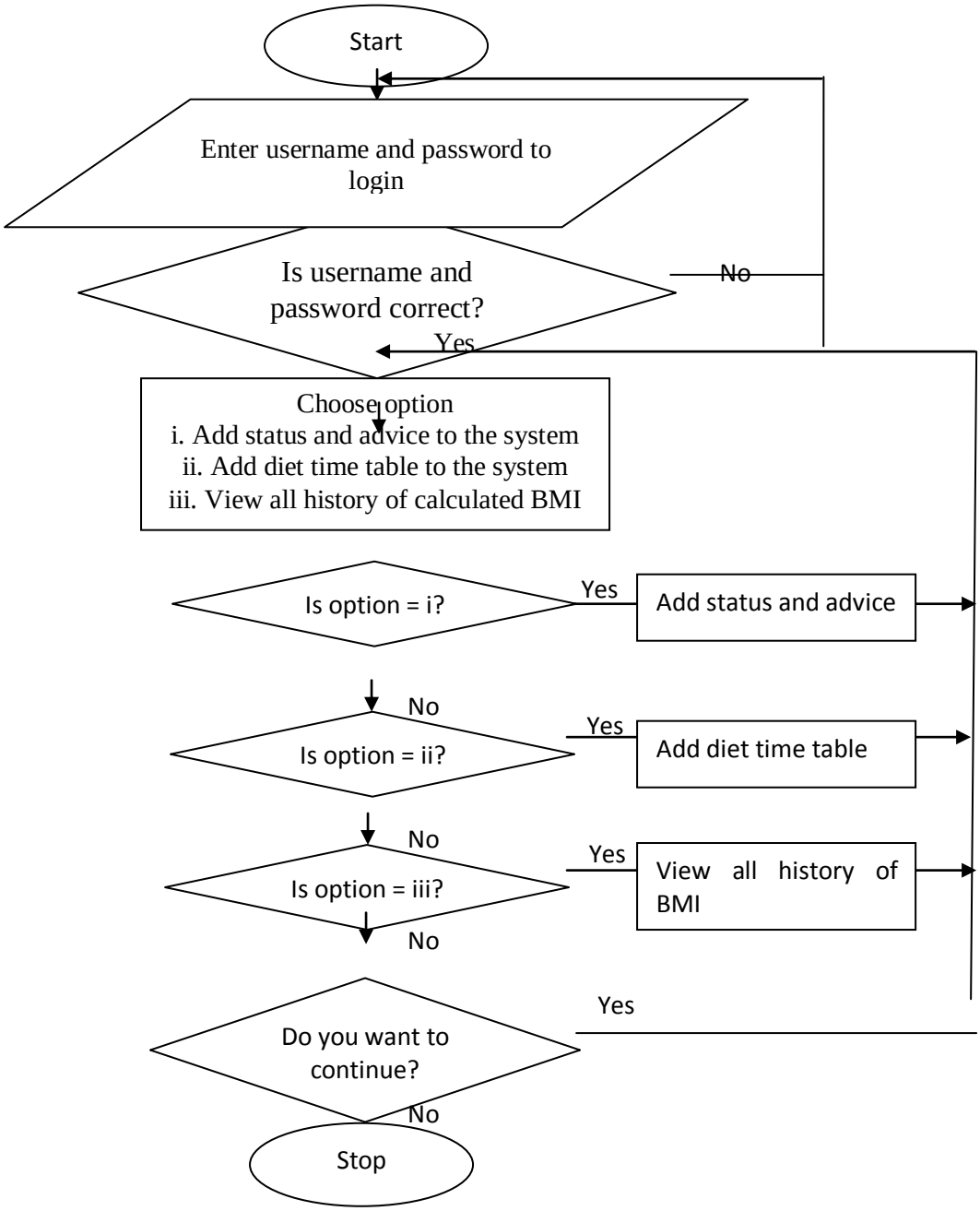

Figure 2: Admin Flowchart of the Proposed System

Figure 2 shows how the admin will interact with the system. Here the admin will supply login details to the system if the login details are correct access will be granted to the admin, if the admin successfully login to the system he will be able to add status and advice to the system, add diet time table to the system and finally view all history of calculated body mass index BMI in the system.

1.7 Dataflow Diagram of the Proposed System

A DFD is often used as a preliminary step to create an overview of the system without going into great detail, which can later be elaborated. Data flow diagrams are used to graphically represent the flow of data in information system. The diagram below explains the flow of data in the proposed system.

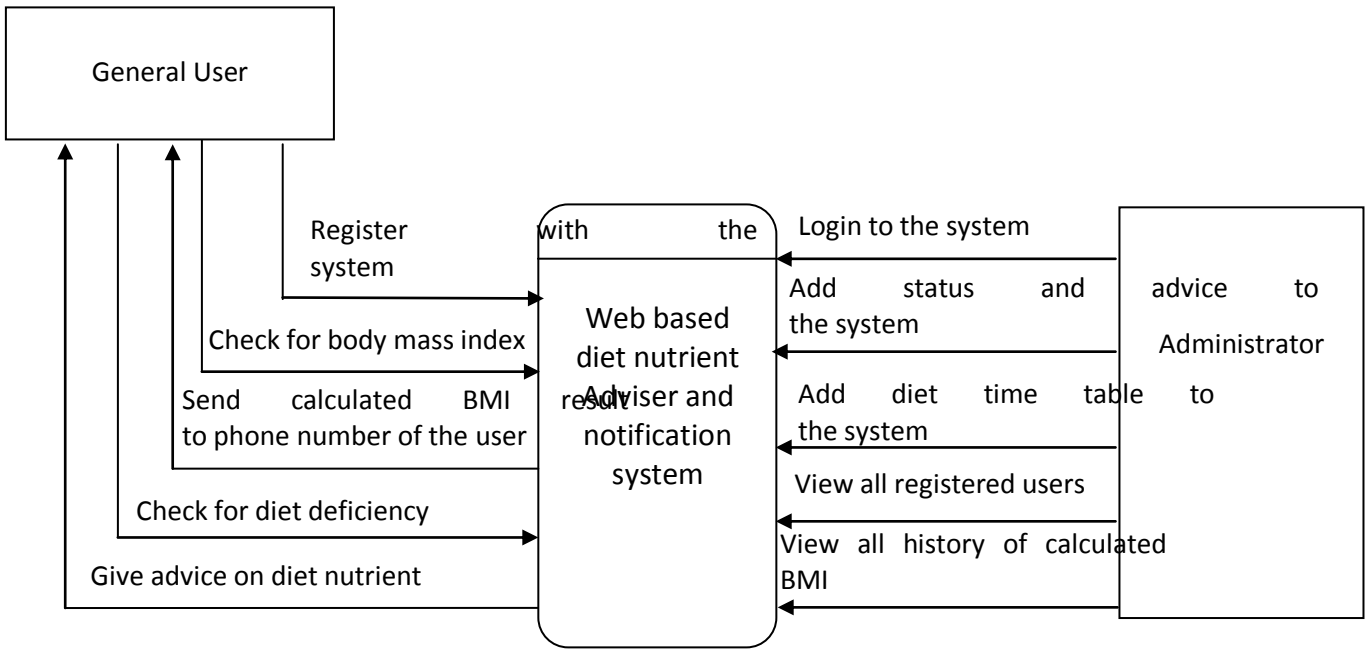

Figure 3: Dataflow Diagram of the Proposed System

Figure 3 explain the various users to the system and how they interact with the system in other to get a clear picture of the system.

1.8 Use Case Diagram of the proposed system

A use case diagram graphically depicts the interactions between the system, the external system and the user. Use case diagrams play a major role in system design because it acts as a roadmap in constructing the structure of the system; it also defines who will use the system and in what way the user expects to interact with the system. It involves the interaction of the Actor (users) and the system. The use case diagram of system is shown below:

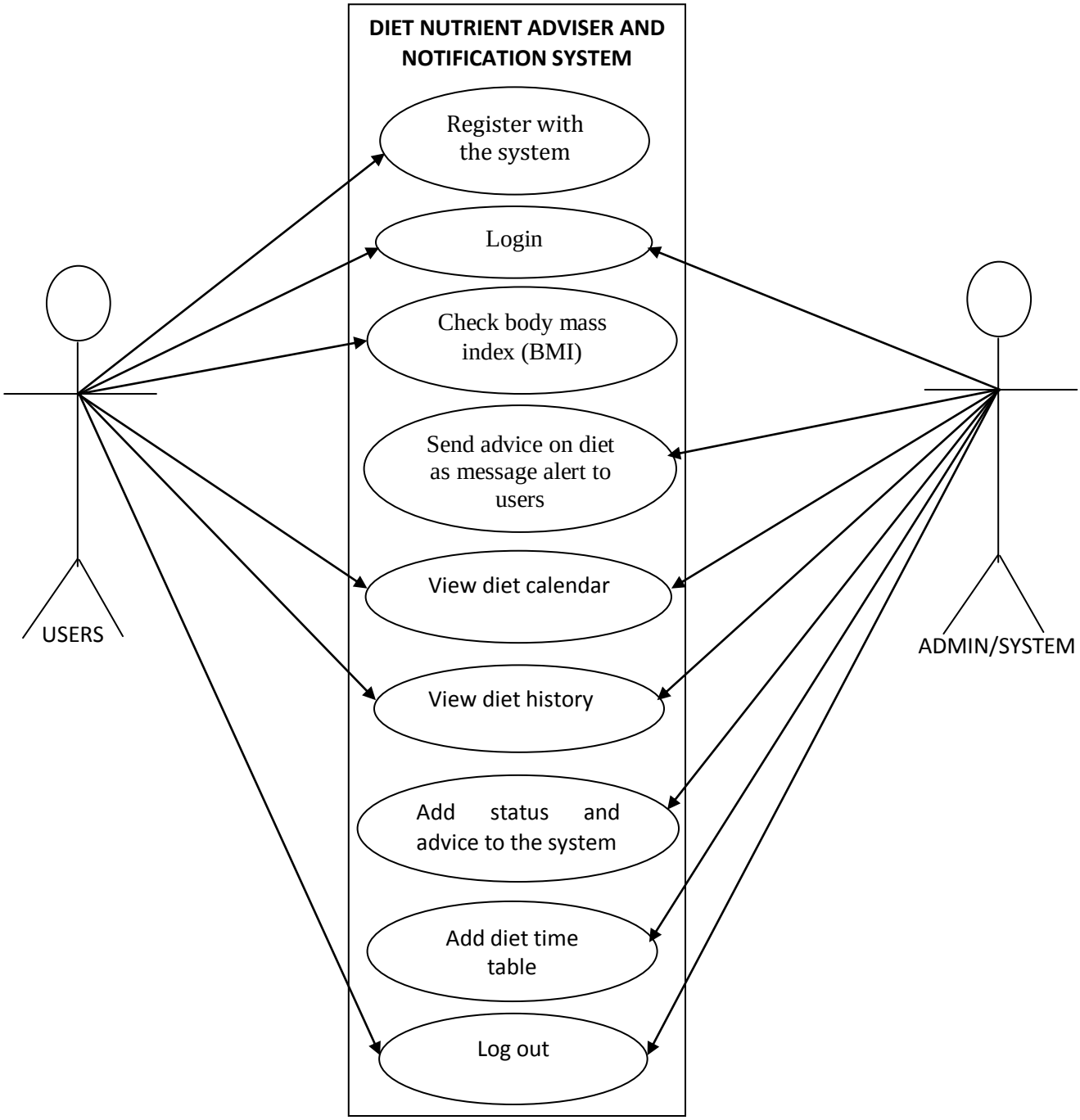

Figure 4: Use Case Diagram of the Proposed System

Figure 4 describe the various users and actors to the system. There are two users to the proposed system the general users and the administrator; general users will register with the system login with username and password is successful they will be able to check body mass index while the system will automatically calculate and send the result to users phone through test message, view diet calendar, view diet history and logout while the admin will login to the system to add status and advice to the system, add diet time table, and logout.

1.9 Implementation Phase

The main menu serve as the centre point in every structured program through which the user of the software is provided with several options to choose from. The main menu is a link to other forms and subsystems in the system. It consists of the menus and submenus that display another form on click event. Figure 5 is the main menu implementation with its various inputs and buttons.

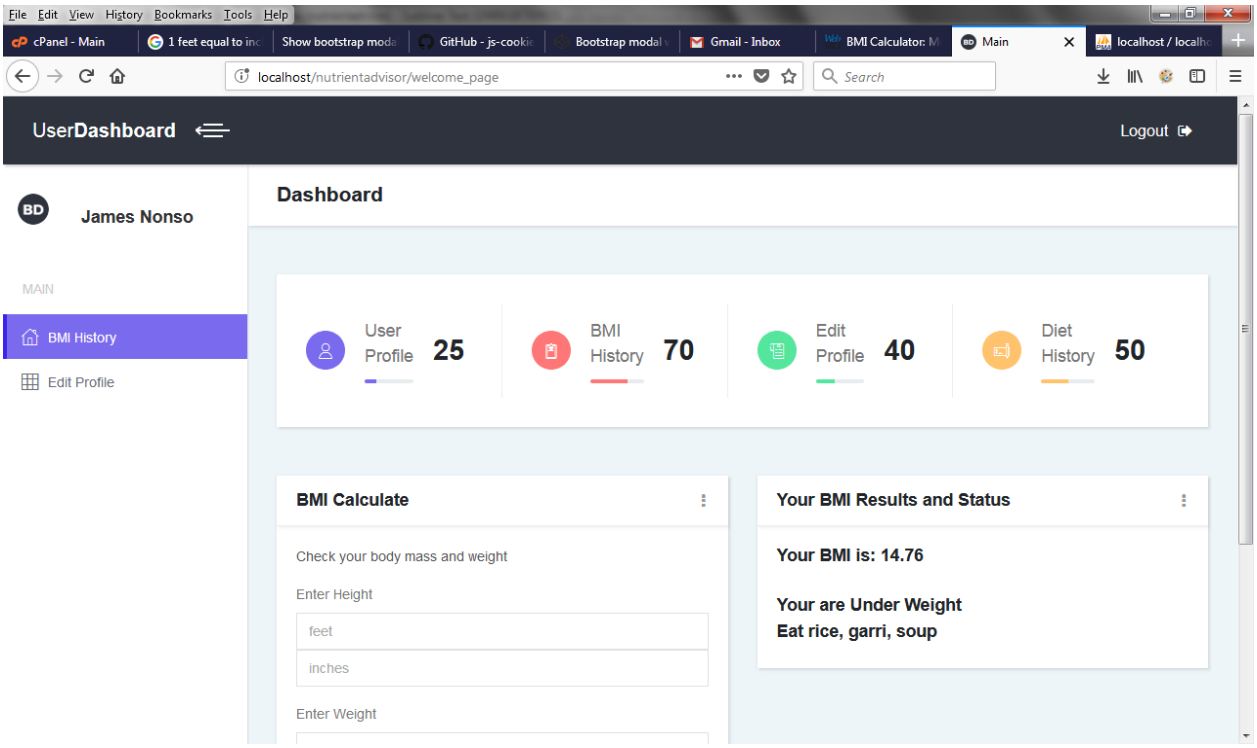

Figure 5: Main Menu Implemmentation

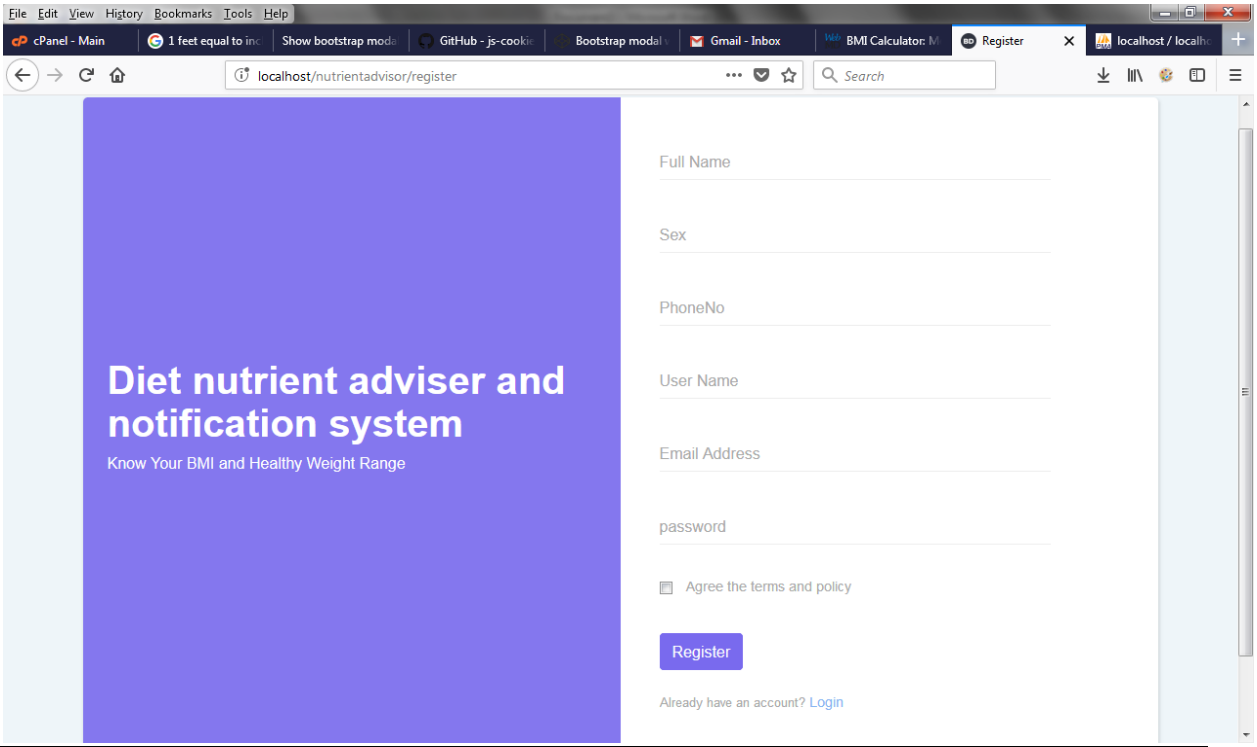

Figure 6: Input Implementation

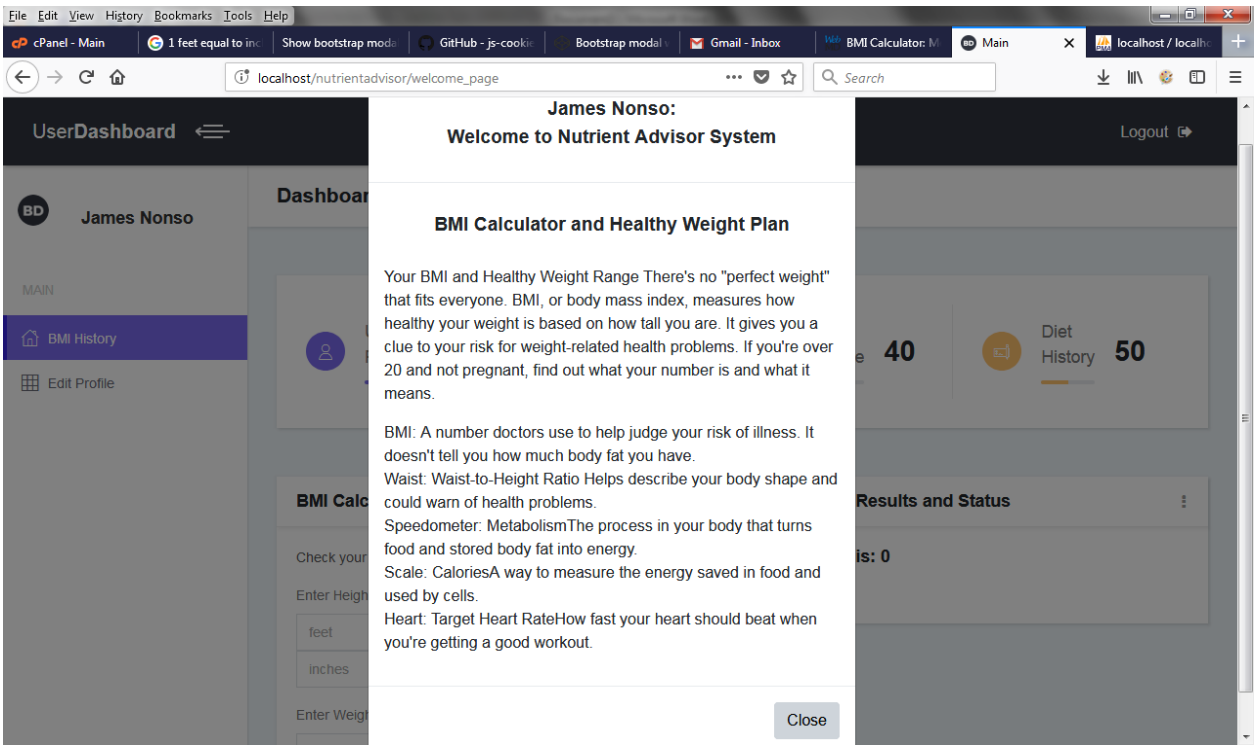

Figure 7: Output Implementation

1.10 Database Implementation

Database specifies the structure of the database that will be used in the system. There is one database the name of the database is nutrientdb contains relational table that stores information of all records. It's an updatable database and it's made up of six tables, whose name, data type and description are shown in a tabular form below.

Table 1: Table for Storing Administrator Information

FIELD NAME	DATA TYPE	SIZE	DESCRIPTION
Id	Int	11	Identification number in the database
Fname	Varchar	20	First name of the administrator
Phone	Varchar	15	Phone number of the administrator
Uname	Varchar	15	Username of the administrator
Pword	Varchar	15	Password of the administrator
Datetime	Varchar	20	The date and time the administrator login

Table 1 is one of the tables in the database that store the information of administrator in the database.

Table 2: Table Containing Information of Body Mass Index (BMI) Calculator

FIELD NAME	DATA TYPE	SIZE	DESCRIPTION
Id	Int	11	Identification number in the database
Feet	Varchar	10	The feet size of the user
Inches	Varchar	10	The inches of the user
Pounds	Varchar	10	The pounds of the user
Results	Varchar	10	The result of the user
Datetime	Varchar	20	The date and time the user did the diagnoses
Status	Varchar	10	The status of the user
Advise	Varchar	20	The advise the system gives to the user
Uname	Varchar	20	The username of the user

Table 2 is one of the tables in the database that stores the information of calculated body mass index as well as the result and status of the user.

Table 3: Table Containing Users Information

FIELD NAME	DATA TYPE	SIZE	DESCRIPTION
Id	Int	11	The identification number in the database
Fname	Varchar	30	The first name of the user
Sex	Varchar	6	The gender of the user
Phone	Varchar	15	The phone number of the user
Uname	Varchar	10	The username of the user
Email	Varchar	15	The email address of the user
Pword	Varchar	20	The password of the user
Datetime	Varchar	25	The date and time of the user

Table 3 is one of the tables in the database that stores information of all users in the database

1.11 Hardware and Software Specification

Hardware and software specifies the type of hardware and software that will enable the system to run effectively.

1. **Hardware Specification**

Working stations with the following:

i. At least a Pentium IV and Above
ii. Minimum of 256MB Random Access Memory.
iii. A minimum of 120GB hard disk drive.
iv. A CD-ROM Drive.
v. A super Video Graphic Adapter (SVGA) Monitor.
vi. An uninterruptible Power Supply Unit (UPS).

2. **Software Requirement**

i. Microsoft XP (all versions), Windows Vista, Windows 7, Windows8 and 10.
ii. Web server - the term web server can refer to either the hardware or the software that helps to deliver web content that can be accessed through the Internet.
iii. XAMPP - XAMPP is a free and open source cross-platform web server solution stack package, consisting mainly of the Apache HTTP Server, MySQL database, and interpreters for scripts written in the PHP and Perl programming languages. Our choice of MySQL database is due to the fact that it can be used to set up a query which, when applied to a database typically returns a set of records that matches your SQL (Structured Query Language) query. It is also used to handle large databases

1.12 Conclusion

The more we eat healthy, the less natural it feels to reach for a piece of cookie or a bag of chips when we get hungry. It is then not a matter of depriving ourselves or forcing ourselves, but simply a conscious recognition of respecting what feels the best for our body in the long-term run. When we eat healthy, we physically feel good. We mentally have more energy to do the things that matter. When we are both globally conscious and personally healthy in our eating choices, we are contributing to the welfare of the planet. Our decision to practice healthy eating habits has so many consequences in so many ways. Now that you have all the information you need on eating healthy, the most important action step you can do is to maintain this lifestyle choice as much as possible. Post intents when you need motivation

from others. Keep a diary of your food choices on your blog or journal. Talk to other people when you are feeling tempted to indulge in unhealthy desserts.

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