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AUTOMATED INFORMATION SYSTEM “DAILY CALORIE CALCULATION OF THE HUMAN DIET”

Many people want to change their figure, they know that the key approach is nutrition. Providing calorie counting and calculating nutrition is the main goal of creating our program. By obtaining results on how many calories to consume per day, based on the completed profile, you can easily determine what you need to eat per day to achieve the result. is an important task in the field of health.

It is to solve these problems that the program calories+- was developed, which provides functions for simplified calculation and control of the diet for the day. It provides the ability to manage your diet based on the completed profile form and provides detailed information on how many calories you need to consume per day. The program also offers the right theory and tips to help you achieve the desired results.

Keywords: *automated information system, desired results, human diet, weight control, daily calorie calculation*

The calories+- automated information system provides the following features:

search for products and dishes, as well as add and remove information;

a simple calculation of calorie and nutritional value (BJU) per day.

For the successful implementation of this project, it is necessary:

study the scientific literature on the topic of diet and achieving the desired weight;

to analyze and highlight the most rational ways to achieve the goals;

design and develop the calories+- program, which will effectively help users control their nutrition and achieve the desired results.

The relevance of our project is caused by the need to solve the problem of adaptation of people suffering from obesity, anorexia, as well as for people engaged in sports activities. The program will help to quickly calculate the content of proteins, fats, carbohydrates in products, energy value (for the day and for a separate meal) and balance the diet.

The object of research in this project is information systems.

The subject of this research is the program automated information system "Daily calorie calculation of the human diet" Calories+-.

The goal of this project is to create an automated information system "Daily calorie calculation of the human diet", which will make it easy to control the calorie content of the diet to create conditions for high-quality support of the rehabilitation process in people suffering from obesity or anorexia, as well as athletes.

To achieve this goal, the following tasks were formulated :

to study the scientific literature on the topic of the project;

to analyze and highlight the most rational ways to achieve the goals.

To design and develop a calories+- program that will effectively help users control their nutrition and achieve the desired results.

The research methods in this project were the following:

analysis of scientific literature on the topic of the project;

classification method;

the method of comparison;

descriptive method.

The hypothesis "calories +/- – automated information system "Daily calculation of calories of the human diet" can become a competitive development for improving the regulation of nutrition and weight control.

The theoretical significance of the work lies in the fact that we have contributed to the creation of "calories +/- – an automated information system capable of helping people improve control over their eating behavior and achieve the desired body weight.

The practical significance of the work lies in the fact that we proposed and designed a program to support the processes of regulating human weight. The program will make it possible to lead a healthy lifestyle and count the calories of the amount of food eaten per day.

The objectives of this project are to provide software opportunities for beginners or more advanced athletes to simplify the calculation of the total diet per day. Based on the completed profile form, detailed information is determined about exactly how many calories a particular person needs to consume per day and the correct theory is provided to help understand the processes taking place.

Automated information system: "Daily calorie calculation of the human diet" automates:

- search for products and dishes, as well as add and remove information;
- simple calculation of calorie content and nutrition per day.

The following development tools were chosen: the Microsoft Visual Studio 2012 integrated development environment, the C# programming language for the .NET Framework 3.5 and the Microsoft Access 2013 DBMS.

The project "Calories +/-" aims to research and apply modern methods of data analysis and machine learning for a more accurate and individualized determination of caloric intake. As part of the project, experiments and tests are carried out to create accurate models and algorithms that can assess the caloric content of food and physical activity. This will allow users to get more reliable information about their calorie balance and make informed decisions about their diet.

The "calories +/-" project aims to collaborate with partners in the field of healthy nutrition and fitness to provide the user with personalized recommendations and advice. By analyzing data and understanding the individual needs of users, the project creates tools to help develop healthy habits and achieve the desired results in the field of weight management and physical fitness.

Overall, the "calories+/-" project aims to provide an innovative solution for controlling and managing calorie intake, helping people make more informed decisions about their diet and achieve their healthy goals.

Object-oriented DBMS are designed for the design of complex databases based on the object-oriented approach, which use non-standard data types: document, graphic image, map, sound. A relational data model is used for simpler projects based on a table and a tuple.

The relational DBMS type was chosen for the design, since the database being developed will be based on tables, and will not operate with non-standard data types.

The database will be managed using a specially developed program, the development tools of which were: the Microsoft Visual Studio 2012 integrated development environment and the C# programming language for the .NET Framework 4.5.

At the stage of conceptual design, the subject area is studied and described, a set of data and documents about the processes and objects of the automated subject area that characterize this area is identified and information is determined that will ensure the implementation of all kinds of requests to the database, as well as the solution of user problems.

The final stage of conceptual design is information logic, where conceptual links about the composition and structure of data are determined.

A data dictionary is the documentation of data. It contains information about data sources, their formats, relationships, and the nature of operation.

ID – individual number of the client;

N – counter for deleting the product from the database;

Product name – the choice of the product to be eaten;

Intake rate is the amount of nutrients and calories that are necessary to consume per day;

You have eaten – the amount of nutrients and calories consumed by the client;

Limit (kcal) – daily calorie intake;

Water limit – daily water consumption;

Activity is the choice given to the client, his physical activity in everyday life.

The data schema reflects the logical representation of the relational data model for the database being designed. It is necessary to build a new conceptual model for the database under study in such a way that it meets the specifics of the subject area and retains all the capabilities of the model in terms of information without adding new objects.

Normalization is the process of transforming a database into a form that corresponds to one of the normal forms.

It is necessary not only to save memory, but also to eliminate possible inconsistencies in the stored data.

The table is in 1NF when each field of the table is indivisible and does not contain duplicate groups.

The second normal form (2 NFs) requires that all fields in the table depend on the primary key, that is, that the primary key uniquely identifies the record and is not redundant. Those fields that depend on the primary key should be allocated as part of separate tables.

A relationship is in 3NF if the constraints of 2NF are met, and if all non-key attributes of the relationship are mutually independent and completely dependent on the primary key.

There are no queries in the designed database. Queries are present in the program and are used to add, update, and remove data from the database.

Examples of some SQL queries in the program:

Request to update data in the Profile table:

```
comm. CommandText = "UPDATE [Profile] SET[Name] = '" + NameTextBox.Text + "', [Last  
Name] = '" + LastNameTextBox.Text + "', [Gender] = '" + GenderComboBox.Text + "', [Age] = '" +  
AgeTextBox.Text + "', [Height] = '" + HeightTextBox.Text + "', [Weight] = '" + WeightTextBox.Text  
+ "', [Body Type] = '" + BodyTypeComboBox.Text + " " WHERE ID='" + iDTextBox.Text + " " ;
```

Request to add data to the Profile table:

```
comm. CommandText = "INSERT INTO [profile] (firstname, lastname, gender, age, height,  
weight, [bodytype]) VALUES ('" + textBox1.Text + "', '" + textBox2.Text + "', '" + comboBox1.Text  
+ "', '" + textBox3.Text + "', '" + textBox4.Text + "', '" + textBox5.Text + "', '" + comboBox2.Text + "')
```

Request to delete data from the Diet table:

```
comm. CommandText = "DELETE FROM Ration WHERE N = " + dataGridView1[1, data-  
GridView1.CurrentRow.Index]. Value + " " ;
```

There are no forms in the design database. For convenient display of information, the form of the developed program is used.

When the program starts, client profiles are displayed, if they have been filled. If the program was launched for the first time, then client registration is offered.

The profile tab displays all the information about the client. After registration, you will have to supplement some information to calculate nutrition and calories.

Summing up the results of our scientific research on the development and maintenance of

software and databases, we can conclude that the goals and objectives were successfully achieved.

To implement the project, the following were used: Microsoft Access for database design and Microsoft Visual Studio 2012 for designing the graphical interface and implementing database management.

In our research work, we:

conducted a comparative analysis of literary sources on the topic under study, and also compared the created program with other analogues;

developed methods for checking the correctness and performance of individual functions and the software system as a whole;

described the hardware and software necessary for the successful operation of the system, and the sequence of actions performed by the user.

The study and analysis of materials on the topic of our study allows us to draw the following conclusions:

Calories+- is an automated information system "Daily calorie calculation of the human diet", the main function of which is to assist in the selection of proper nutrition.

The Calories+- program has an intuitive interface and universal functionality.

The developed software tool can be used by anyone who wants to change themselves. There is no need to undergo training to work, it is enough just to have basic knowledge of working with a computer.

The use of Calories+- will improve the diet and correct the body weight of a person in a shorter time.

This development is designed for ordinary users, its installation does not require material costs.

In the future, we see the use of this development in people who want to control their eating behavior and weight.

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