PROJECT FIRECTION OVERVIEW:

I would like to make a database which can records daily diet, the name can be “TargetDiet”. This database is designed for people who wants to know what they have eaten in a day. For someone who would like to gain weight (build muscle), they can arrange their eating schedule based the database.

For people who wants to gain weight, their calorie consumption must be less than their calorie intake. The total calorie intake in a day comes from carbohydrate, protein and fat. Every kind of food has these nutrient substance (e.g. 100g raw pork has 20.3g protein, 6.2g fat and 1.5g carbohydrate). In order to build muscle, not only the calorie needs to be cared but also the specific amount of each nutrient substance needs to be tracked. For example, for people who wants to build muscle, he or she must take 2.0-2.5g protein for each kg of body weight. People can record their food eaten for each day, find nutrient fact for food they took and find out whether they complete today’s nutrition target, also they can track their body weight. I believe DBMS can properly organize the information desired by people who needs to record their diet. With the well-organized information, we can modify the food schedule; we can know whether the current food schedule can support weight gaining or not.

There is an example of how some one could use this database. A man named Bob. One day Bob get up at 6 AM and weight himself. The body weight and body fat are recorded. And then he eats 100g oatmeal and 150g whole egg. The weight for each kind of food is recorded; with this information, the quantity of nutrient substance for the first meal is calculated and recorded. For the rest 5 meals that day, the same information will be recorded. At night, before he goes to bed, he checked his weight and body fat record (he could check it anytime). He finds that the weight is increased as well as the body fat. Bob want to gain muscle but he doesn’t want more body fat. So, he decides to take less fat next day. Then he checks today’s diet, find which food offers the largest amount of fat per grams and decide to take less nuts tomorrow.

The database will store foods nutrient facts, diet records, nutrient target, nutrient redundancy or insufficient amount, body weight and body fat. This database is designed for personal using. I’m interested in this topic because I have tracing my diet for couple of months by using Microsoft excel. After learning the DBMS, I would like to explore a more efficient way to analysis my records.

USE CASES AND FIELDS:

*Food nutrient facts record use case*

1. The user explores the internet to find a food’s nutrient facts
2. The user connects the database and insert a line of record.
3. The database will record the nutrient facts when the first time the user input it

(It’s like building a food dictionary, so the information will be recorded; users don’t have to google it every time when they eat it.)

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| --- | --- | --- |
| Field | What it Stores | Why it’s needed |
| FoodName | This field stores food name | The user can use this information to find the nutrient information quickly |
| Carbohydrate | This field stores carbohydrate in grams per grams of raw food | These are main information.  The information can be used to calculated total nutrient substance taken. The users can check the records. |
| Protein | This field stores protein in grams per grams of raw food |
| Fat | This field stores Fat in grams per grams of raw food |
| Calorie | This field stores calorie for every 100g of raw food. |

*Food eaten tracking use case*

1. User prepares food, and weight each food
2. The database records food name, weight of food
3. The database calculates amount of nutrition and records the result

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| --- | --- | --- |
| Field | What it stores | Why it’s needed |
| FoodName | This is the food name. I’m think about that users can get the nutrient fact by just type the name; as far as I understand database can connect this table with the nutrient facts table. | To show what the food is. |
| Weight | The actual weight of the food eaten by user. | This is the source for calculating the nutrition. |
| ProteinEaten | The actual nutrition taken by user. The nutrition calculated by food nutrient facts and weight. | These are the real information we needed, we would like to know how much nutrition (like protein, fat or carbohydrate) taken by user by eating certain amount of food. |
| FatEaten |
| carbohydrateEaten |
| calorieEaten |

*Nutrition plan and body condition use case*

1. The user enter height, body weight, body fat (information can be obtained from specific tool) and date
2. The standard daily nutrition needed is calculated as target(the standard value change with body weight)
3. The total nutrition taken in one day is calculated
4. the difference between target daily nutrition and total nutrition eaten is calculated (nutrition eaten minus target, if the result is negative then it means the task is not completed)

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| --- | --- | --- |
| Field | What it Stores | Why it’s Needed |
| Date | The date that accompanied with all records | We need a time line accompanied with daily nutrition consumed. |
| BodyWeight | Today’s body weight. | The user can use this information to judge his diet by compareing to a week or a month’s change. |
| BodyFat | Today’s body fat. |
| ProteinTarget | The amount of protein needed to be eaten. This value calculated by weight times required protein per unit of weight. | This value offer user a goal to achieve. If the user wants to gain weight, he or she better take enough protein. |
| ProteinEatenTotal | This is the protein actually eaten by user in a day. | This information is used by user to compare with the target. |
| CarbohydrateTarget | The amount of Carbohydrate needed to be eaten. This value calculated by weight times required Carbohydrate per unit of weight. | This value offer user a goal to achieve. If the user wants to gain weight, he or she better take enough Carbohydrate. |
| CarbohydrateEatenTotal | This is the Carbohydrate actually eaten by user in a day. | This information is used by user to compare with the target. |
| FatTarget | The amount of Fat needed to be eaten. This value calculated by weight times required Fat per unit of weight. | This value offer user a goal to achieve. High quality Fat is required for daily diet. |
| FatEatenTotal | This is the Fat actually eaten by user in a day. | This information is used by user to compare with the target. |
| calorieTarget | The amount of calorie needed. | This value offer user a goal to achieve. |
| calorieconsumptionTotal | Calorie consumed by basic metabolism and work out. | This information is used by user to compare with the target. |

For this itration, I tried to focus on the database part and ignore anything not directly relates to database. But the functions from discussion upper above can be achieved with side devices involved. I know some companies are making web of things, they connect many devices and form a network and control by a terminal. They can use phone to control air conditioner, television, air cleaner and many other things. With this imagination, the project can be optimized:

1. the user downloads the app
2. the user uses a device to weight his body and body fat, and records will be sent to App by the device
3. while the user is cooking, he or she weight the food, search food on app, input information into app (*Food nutrient facts record use case & Food eaten tracking use case)*
4. The user keep recording
5. Th user can retrieve the records by date anytime (*Nutrition plan and body condition use case)*

SUMMARY AND REFLECTION:

My database is for recording daily diet. Compare nutrition goal and nutrition consumption for users who wants to build muscle. In general, the database records the daily diet, sum the amount of daily nutrition up, records user’s health condition to offer information to user to modify his or her exercise and eating schedule. The database should support a user accessing, and searching information.