Personalized Meal Plan Generator – Design of a Database System

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INTRODUCTION

Pizza, ice cream, burger — all treats you might not expect to find on your average healthy eater's food log. However, for one eagerly anticipated day during the week or month, these no-no's become the indulgences of choice for many of even the strictest dieters. "Cheat days," or planned days of nutritional splurges, have become increasingly popular as a way for health-conscious individuals to enjoy their favourite foods without the guilt. The treats are seen as a way to keep spirits high and help dieters maintain adherence during the week.

Cheat days are often thought of as being strictly a mind-booster. Days and weeks of eating nothing but grilled chicken and vegetables can wear down even the most dedicated of individuals. Most diets fail from being too extreme. By depriving your body of carbohydrates and fat for an extended period of time, you will experience intense cravings. If you give in and binge, you can feel guilty afterwards. It's a vicious cycle. The solution? A weekly cheat meal that's planned. Once a week, eat a meal of whatever you're craving. Pizza, ice cream, and cheeseburgers are all fair game. The reasoning behind this strategy is more than to give you a break from eating clean. A weekly splurge can help you stay on a healthy eating plan for the long term and boost your metabolism, among other benefits.

The 90/10 rule means that 90% of the time you should eat according to your specific goal-based nutrition plan, and 10% of time you can indulge in something that is not on the diet. If you consume cheat meals this way, you won't derail your fat loss or fitness goals. Of course, there are even more tips and tricks. The post-workout period is your best time to cheat. During the post-workout window, the cheat meal stands a greater chance of being utilized by your muscles instead of being stored as fat.

To help the individuals to keep a check on the calories consumed by them in their cheat day, this Personalized Meal Plan Generator is used. People in general consists of various age groups and they are grouped into certain age ranges depending on their total daily calorie intake. The individual are also grouped according to their lifestyles as Sedentary, Moderately Active and Active, Depending on the lifestyle of the individuals, the total calorie intake varies accordingly.

The individual can also choose the meal of the day like breakfast, lunch or dinner and the restaurants they want to have their meal in for the day. The individual can choose their meal from the top fast foods like McDonalds, Burger King, KFC, Subway, Chic-Fil-A, Wendy's, Jack in the Box, Domino's Pizza, etc. Under the lifestyle conditions of the individual main course, sides and drinks are suggested considering the calorie limit of the individual per meal. Depending on various user preferences, the best meal plan is suggested.

It is essential for the people to know their calorie requirement to maintain a balanced diet. This project helps the user to plan their meal effectively according to preferences and ensures that the choices are under the daily calorie limit. This eases out the task for the users instead of searching in wide spread data available on the internet.

USER REQUIRMENTS

To help the individuals to keep a check on the calories consumed by them on their cheat day, this Personalized Meal Plan Generator is used. People in general have different lifestyles, and are spread among various age groups and gender. It is essential for the people to know their calorie requirement to maintain a balanced diet. In this project, we create an application for the public where they get to choose their fast foods from the restaurants and stay informed about the nutrition values associated with it.

This project helps the user to plan their meal effectively accordingly to preferences and ensures that the choices are within the total meal calorie limit. This eases out the task for the users instead of searching in wide spread data available on the internet. People of various age groups and different lifestyles are the main users of this project.

The basic functions of this project are:
- Inquiry the fast foods available from various restaurants for different meals of the day. And also helps the user to compare the various combos available to them.
- Providing the best meal plan according to the user preferences.

The main function of this meal plan generator is to provide a customized meal for the user depending on factors like gender. Male generally has higher calorie requirement than female. Then the user is classified depending on the age group. We grouped the age in groups of 5 years as they have significant calorie difference with the previous and the next age. The next factor considered is the lifestyle of the user. Whether the lifestyle of the user is sedentary, moderated active and active., the calorie intake for a meal and the total calorie requirement of the user varies. So, a customized meal plan to suit the calorie limit of the user is generated to quantify the needs of the user.

As certain people prefer only vegan food, options is given to the user to choose vegan or non-vegetarian. There is also the time of the meal whether it is breakfast, lunch, or dinner which is chosen by the user. The user can also specify the ratio of calorie weightage main dish, sides and beverages should be allocated. The user also has a wide variety of restaurants offering various cuisines from which the user can choose. The list of restaurants available are McDonalds, Burger King, KFC, Subway, Chic-Fil-A, Wendy's, Jack in the Box, Carl's Jr, Popeye's, Del Taco, and Domino's Pizza. The user can choose their preferred restaurant from the wide choices provided and their favorite food can be chosen among the variety of menu provided by each restaurant.

The main dishes that are included in the list are hamburger, chicken nuggets, pan pizza, chicken breast strips, chicken salad sandwich, bacon, eggs and cheese biscuit, chicken burrito, etc. The various sides included in the list are french fries, popcorn chicken, onion rings, egg muffin, cheesy breadsticks, etc. The various beverages included in the menu list are 7up, coke, pepsi, diet coke, fanta, gatorade, minute maid light, sprite, lemonade, etc. From the list of items mentioned in the menu, the user enters the preferences and the personalized menu is created.

DATABASE DESIGN
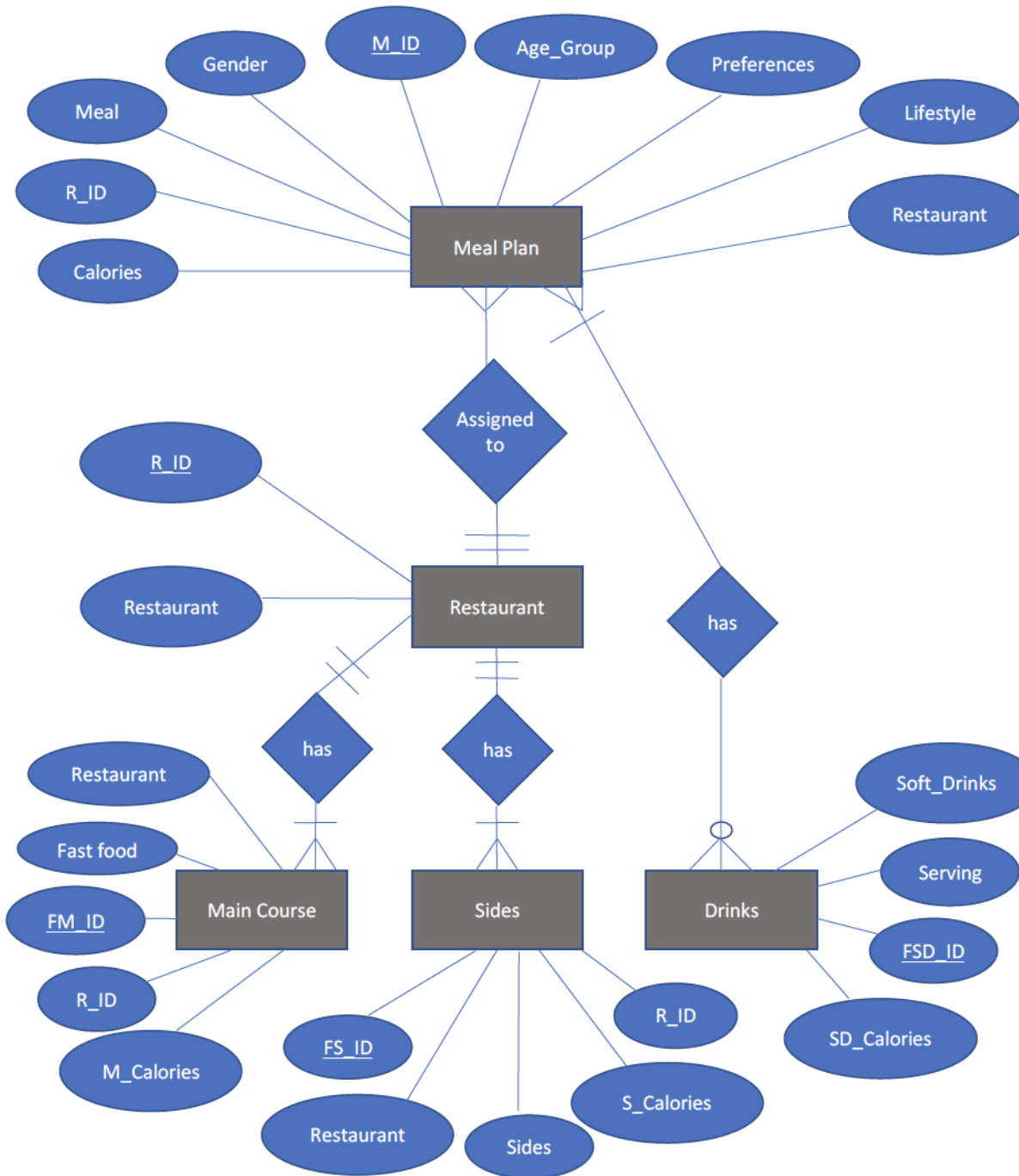
DATABASE SETUP

With respect to the ER diagram, The Relational Diagram has five tables namely Meal Plan, Restaurant, Main Course, Sides and Soft Drinks. Amongst these, the Meal Plan table is linked to the Restaurant table, R_ID being the primary key of the latter also serves as the foreign key of the former. The Main Course and Sides are quite obviously related to the Restaurant table. But the Soft drinks are directly related to meal plan not through the restaurant table because the calories count of the soft drinks are independent of any restaurant.

The attributes or the columns of the rows are clearly mentioned in the ER diagram. We considered about eleven well known restaurants around the world and the data of the calorie limit of the food serving in each restaurant was collected from the internet resources.

The other input details obtained from the user are Gender, Age Group, Lifestyle, Preferences, Meal and Restaurant Preference.

Gender is quite obviously Male or Female. When it comes to the age group we have classified into six distinct age groups and the age groups was classified in such a way that there is significant change in calorie limit for each specified group.

The Lifestyle preference is broadly classified into three major categories namely, Moderately Active Lifestyle, Sedentary Lifestyle and Active Lifestyle because almost everyone in this world will fall into anyone of these categories.

The Meal preferences were quite evidently Vegetarian or Non-Vegetarian and the meal timing was Breakfast, Lunch and Dinner.

Apart from collecting the resources from the internet regarding the calorie value, we generated distinct meal plan table with combinations of the user input and every unique Meal ID will have its own calories value.

GRAPHICAL USER INTERFACE & APPLICATION DESIGN

This is our Title Form which holds the title of our Project "Personalized Meal Plan Generator". On pressing the start button, the user will be directed to the next form which is shown below.

CUSTOMIZE YOUR MEAL PLAN

Gender
Age
Lifestyle
Preferences
Meal
Restaurant

Check My Calorie Limit

Start Your Meal Plan

This is our "Customize Your Meal Plan" form, where the user enters the details like Gender, Age, Preference, Lifestyle, Meal and Restaurant. The Calorie value is displayed in the Calorie box corresponding to the combination of the input given by the user. Then the user should click the "Start Your Meal Plan" button, which will direct the user to the next form, which is shown below.

Back

Main Course

Main Course and Sides

Add a Drink

Clear   Home   Exit

This is our "Choose our Combo" userform which helps in further customizing their meal plan. Here there are three options available for the user to choose from. When the "Main Dish" button is clicked, the list of main dishes satisfying calorie output from the previous form is displayed in the adjacent list box. Similarly, when the user clicks "Main and Side Dish" button, a list of Main dish combined with side dish satisfying calorie output from the previous form is displayed in the adjacent list box. In addition to this, the user can also add a drink to his/her meal by simply clicking "Add a Drink" button. A list of drinks is displayed in the adjacent list box. The user can click the "Back" button to enter the details again for another user. Also, there is a "Home" button, which when clicked will start from the first.

CONCLUSION

We were able to develop an application using VBA that will allow people to have junk foods from their favorite restaurant within specified limits, and therefore minimizing the health hazards. Although, with respect to the health point of view, consuming junk is always dangerous, but consuming it within prescribed limits is always rather better than having it without any upper bound. And we were successful in developing the application for the same, wherein we were able to suggest the best meal plan for every user based on their given input.

REFERENCES

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