Calories Tracker

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Problem Statement

Introducing the Calories Tracking Tool: A Solution for Healthier Lifestyles

- As obesity rates in America continue to rise over the past two decades, there's a pressing need for an effective and affordable solution.
- Our project revolves around creating a user-friendly calories tracking app/tool to help people manage their weight and adopt healthier dietary habits.
- The main objective is to provide a cost-effective alternative to existing subscription-based apps, aiming to curb the escalating expenses associated with obesity-related illnesses.

Attribute Catalog

	Domain-Name	DB-Name	Domain(Example)	TYPE	Atomic?	Repeating_Group?	Group_ID	Table/Entity	PK?	FK?
Pname	Name	Pname	Jianfu Jiang	varchar(32)	Y	Y	Person	Person	Yes	Yes
Pgender	Gender	Pgender	Male	varchar(32)	Y	Y	Person	Person	TBD	TBD
Pweight	Weight	Pweight	200	float	Y	Y	Person	Person	TBD	TBD
Pheight	Height	Pheight	185	float	Y	Y	Person	Person	TBD	TBD
Page	Age	Page	21	interger(32)	Y	Y	Person	Person	TBD	TBD
PActiveLevel	ActiveLevel	PActiveLevel	3	interger(2)	Y	Y	Person	Person	TBD	TBD
Fname	Food	Fname	Chichen Breast	varchar(32)	Y	Y	Food	Food	Yes	Yes
Fcalories	Calories	Fcalories	120	interger(32)	Y	Y	Food	Food	TBD	TBD
Fprotein	Protein	Fprotein	26	interger(32)	Y	Y	Food	Food	TBD	TBD
Fcarbs	Carbs	Fcarbs	0	interger(32)	Y	Y	Food	Food	TBD	TBD
Ffat	Fat	Ffat	2	interger(32)	Y	Y	Food	Food	TBD	TBD
Famount	Amount	Famount	2.5	float	Y	N	Intake	Intake	TBD	TBD
Date	Date	Date	7/19/2023	date	Y	N	Intake	Intake	TBD	TBD

Raw Data

Pname	Pgender	Page	PActiveLevel	Pweight	Pheight	Fname	Fcalories	Fprotein	Fcarbs	Ffat	Date	Famount
Emily Johnson	Female	25	3	150	165	Salmon	206	22	0	13	2023-08-06	1
Emily Johnson	Female	25	3	150	165	Broccoli	55	3	11	1	2023-08-06	1
Michael Brown	Male	28	5	185	175	Banana	105	1	27	0	2023-08-06	1
Michael Brown	Male	28	5	185	175	Eggs	72	6	0	5	2023-08-06	2
John Smith	Male	30	4	170	180	Cheddar Cheese	113	7	0	9	2023-08-06	1
John Smith	Male	30	4	170	180	Carrots	41	1	10	0	2023-08-06	2
Emily Johnson	Female	25	3	150	165	Greek Yogurt	100	10	4	0	2023-08-06	1
Emily Johnson	Female	25	3	150	165	Almonds	160	6	6	14	2023-08-06	1
Robert Wilson	Male	35	4	200	190	Blueberries	84	1	21	0	2023-08-06	1
Robert Wilson	Male	35	4	200	190	Sweet Potato	112	2	26	0	2023-08-06	1
Jennifer Miller	Female	29	3	140	170	Lentils	230	18	40	1	2023-08-06	1
Jennifer Miller	Female	29	3	140	170	Black Beans	227	15	40	1	2023-08-06	1
William Martinez	Male	27	4	175	185	Quinoa	222	4	39	3	2023-08-06	2
William Martinez	Male	27	4	175	185	Cottage Cheese	206	14	6	14	2023-08-06	1
Robert Wilson	Male	35	4	200	190	Pineapple	50	1	13	0	2023-08-06	1
Robert Wilson	Male	35	4	200	190	Peanut Butter	190	8	7	16	2023-08-06	2
Michael Brown	Male	28	5	185	175	Milk	86	3	5	5	2023-08-06	2
John Smith	Male	30	4	170	180	Avocado	234	3	9	21	2023-08-06	1
John Smith	Male	30	4	170	180	Green Beans	31	2	7	0	2023-08-06	2
Robert Wilson	Male	35	4	200	190	Watermelon	30	1	8	0	2023-08-06	2
William Martinez	Male	27	4	175	185	Pasta	131	5	25	1	2023-08-06	1
Robert Wilson	Male	35	4	200	190	Greek Yogurt	100	10	4	0	2023-08-06	1

```
mysql> CREATE TABLE raw_data (
    ->     Pname VARCHAR(32),
    ->     Pgender VARCHAR(32),
    ->     Page INT,
    ->     PActiveLevel INT,
    ->     Pweight FLOAT,
    ->     Pheight FLOAT,
    ->     Fname VARCHAR(32),
    ->     Fcalories INT,
    ->     Fprotein INT,
    ->     Fcarbs INT,
    ->     Ffat INT,
    ->     Date DATETIME,
    ->     Famount FLOAT
    -> );
```

1NF

- Remove Non-Atomic Field
- Remove Any Repeating Groups
- Assign PK to each table

Person					
Pname(PK)	Pgender	Pweight	Pheight	Page	PActiveLevel
Jianfu Jiang	Male	200	185	21	3

Food				
Fname(PK)	Fcalories	Fprotein	Fcarbs	Ffat
Chichen Breast	120	26	0	2

DailyIntake				
IntakeID(PK)	Date	Pname	Fname	Amount
1	7/19/2023	Jianfu Jiang	Chichen Breast	1

2NF

- The absence of partial dependencies confirms that the data structure is already in Second Normal Form.

3NF

- Remove Transitive dependency

Person			
Pname(PK)	Pgender	Page	PActiveLevel
Jianfu Jiang	Male	21	3

PhysicalAttributes		
Pname(PK)	Pweight	Pheight
Jianfu Jiang	200	185

DailyIntake				
IntakeID(PK)	Date	Pname	Fname	Amount
1	7/19/2023	Jianfu Jiang	Chichen Breast	1

Food				
Fname(PK)	Fcalories	Fprotein	Fcarbs	Ffat
Chichen Breast	120	26	0	2

Normalized Schema

```
mysql> CREATE TABLE Person AS
    -> SELECT DISTINCT
    ->     Pname,
    ->     Pgender,
    ->     Page,
    ->     PActiveLevel
    -> FROM raw_data;
```

```
mysql> CREATE TABLE PhysicalAttributes AS
    -> SELECT DISTINCT
    ->     Pname,
    ->     Pweight,
    ->     Pheight
    -> FROM raw_data;
```

```
mysql> CREATE TABLE Food AS
    -> SELECT DISTINCT
    ->     Fname,
    ->     Fcalories,
    ->     Fprotein,
    ->     Fcarbs,
    ->     Ffat
    -> FROM raw_data;
```

```
mysql> CREATE TABLE DailyIntake (
    ->     IntakeID INT AUTO_INCREMENT PRIMARY KEY,
    ->     Date DATE,
    ->     Pname VARCHAR(32),
    ->     Fname VARCHAR(32),
    ->     Amount INT
    -> );
```

```
mysql> INSERT INTO DailyIntake (Date, Pname, Fname, Amount)
    -> SELECT
    ->     Date,
    ->     Pname,
    ->     Fname,
    ->     Amount
    -> FROM raw_data;
```

Normalized Tables

Pname	Pgender	Page	PActiveLevel
Emily Johnson	Female	25	3
Michael Brown	Male	28	5
John Smith	Male	30	4
Robert Wilson	Male	35	4
Jennifer Miller	Female	29	3
William Martinez	Male	27	4

Pname	Pweight	Pheight
Emily Johnson	150	165
Michael Brown	185	175
John Smith	170	180
Robert Wilson	200	190
Jennifer Miller	140	170
William Martinez	175	185

Fname	Fcalories	Fprotein	Fcarbs	Ffat
Salmon	206	22	0	13
Broccoli	55	3	11	1
Banana	105	1	27	0
Eggs	72	6	0	5
Cheddar Cheese	113	7	0	9
Carrots	41	1	10	0
Greek Yogurt	100	10	4	0
Almonds	160	6	6	14
Blueberries	84	1	21	0
Sweet Potato	112	2	26	0
Lentils	230	18	40	1
Black Beans	227	15	40	1
Quinoa	222	4	39	3
Cottage Cheese	206	14	6	14
Pineapple	50	1	13	0
Peanut Butter	190	8	7	16
Milk	86	3	5	5
Avocado	234	3	9	21
Green Beans	31	2	7	0
Watermelon	30	1	8	0
Pasta	131	5	25	1
Apple	95	0	25	0
Oatmeal	150	5	27	3
Turkey	135	30	0	1
Bell Pepper	30	1	6	0
Pear	102	1	27	0
Peanuts	161	7	4	14
Strawberries	29	1	7	0
Yogurt	150	5	17	8
Mango	60	1	15	0
Cashews	155	5	9	12
Grapes	69	1	18	0
Walnuts	183	4	4	18
Pecans	691	9	14	71
Chicken Breast	120	26	0	2
Celery	6	0	1	0
Grapefruit	52	1	13	0
Pistachios	562	21	28	45
Cantaloupe	34	1	8	0
Brazil Nuts	656	14	2	66
Kiwi	61	1	15	1
Hazelnuts	628	15	17	61

IntakeID	Date	Pname	Fname	Amount
1	2023-08-06	Emily Johnson	Salmon	1
2	2023-08-06	Emily Johnson	Broccoli	1
3	2023-08-06	Michael Brown	Banana	1
4	2023-08-06	Michael Brown	Eggs	2
5	2023-08-06	John Smith	Cheddar Cheese	1
6	2023-08-06	John Smith	Carrots	2
7	2023-08-06	Emily Johnson	Greek Yogurt	1
8	2023-08-06	Emily Johnson	Almonds	1
9	2023-08-06	Robert Wilson	Blueberries	1
10	2023-08-06	Robert Wilson	Sweet Potato	1
11	2023-08-06	Jennifer Miller	Lentils	1
12	2023-08-06	Jennifer Miller	Black Beans	1
13	2023-08-06	William Martinez	Quinoa	2
14	2023-08-06	William Martinez	Cottage Cheese	1
15	2023-08-06	Robert Wilson	Pineapple	1
16	2023-08-06	Robert Wilson	Peanut Butter	2
17	2023-08-06	Michael Brown	Milk	2
18	2023-08-06	John Smith	Avocado	1
19	2023-08-06	John Smith	Green Beans	2
20	2023-08-06	Robert Wilson	Watermelon	2
21	2023-08-06	William Martinez	Pasta	1
22	2023-08-06	Robert Wilson	Greek Yogurt	1
23	2023-08-06	Robert Wilson	Almonds	1
24	2023-08-06	Jennifer Miller	Apple	1
25	2023-08-06	Jennifer Miller	Oatmeal	2
26	2023-08-06	William Martinez	Turkey	1
27	2023-08-06	William Martinez	Bell Pepper	1
28	2023-08-06	Michael Brown	Pear	2
29	2023-08-06	Michael Brown	Peanuts	1
30	2023-08-06	John Smith	Strawberries	1
31	2023-08-06	John Smith	Yogurt	2
32	2023-08-06	Emily Johnson	Mango	1
33	2023-08-06	Emily Johnson	Cashews	1
34	2023-08-06	Robert Wilson	Grapes	2
35	2023-08-06	Robert Wilson	Walnuts	1
36	2023-08-06	Jennifer Miller	Pineapple	1
37	2023-08-06	Jennifer Miller	Pecans	1
38	2023-08-06	William Martinez	Chicken Breast	2
39	2023-08-06	William Martinez	Celery	1
40	2023-08-06	Michael Brown	Grapefruit	1
41	2023-08-06	Michael Brown	Pistachios	2
42	2023-08-06	John Smith	Watermelon	1
43	2023-08-06	John Smith	Broccoli	1
44	2023-08-06	Emily Johnson	Cantaloupe	2
45	2023-08-06	Emily Johnson	Brazil Nuts	1
46	2023-08-06	Robert Wilson	Kiwi	1
47	2023-08-06	Robert Wilson	Hazelnuts	2

Accessing Information

- Profile details of John Smith.

```
mysql> SELECT person.*, physicalattributes.Pweight, physicalattributes.Pheight
    -> FROM person
    -> INNER JOIN physicalattributes ON person.Pname = physicalattributes.Pname
    -> WHERE person.Pname = 'John Smith';
+------------+---------+------+--------------+---------+---------+
| Pname      | Pgender | Page | PActiveLevel | Pweight | Pheight |
+------------+---------+------+--------------+---------+---------+
| John Smith | Male    |   30 |            4 |     170 |     180 |
+------------+---------+------+--------------+---------+---------+
```

Accessing Information

- Examine the food consumed by John Smith on August 6th.

```
mysql> SELECT dailyIntake.*, food.*
    -> FROM dailyIntake
    -> INNER JOIN food ON dailyIntake.Fname = food.Fname
    -> WHERE dailyIntake.Pname = 'John Smith' AND dailyIntake.Date = '2023-08-06';
+----------+------------+------------+----------------+--------+----------------+-----------+----------+--------+------+
| IntakeID | Date       | Pname      | Fname          | Amount | Fname          | Fcalories | Fprotein | Fcarbs | Ffat |
+----------+------------+------------+----------------+--------+----------------+-----------+----------+--------+------+
|       43 | 2023-08-06 | John Smith | Broccoli       |      1 | Broccoli       |        55 |        3 |     11 |    1 |
|        5 | 2023-08-06 | John Smith | Cheddar Cheese |      1 | Cheddar Cheese |       113 |        7 |      0 |    9 |
|        6 | 2023-08-06 | John Smith | Carrots        |      2 | Carrots        |        41 |        1 |     10 |    0 |
|       18 | 2023-08-06 | John Smith | Avocado        |      1 | Avocado        |       234 |        3 |      9 |   21 |
|       19 | 2023-08-06 | John Smith | Green Beans    |      2 | Green Beans    |        31 |        2 |      7 |    0 |
|       42 | 2023-08-06 | John Smith | Watermelon     |      1 | Watermelon     |        30 |        1 |      8 |    0 |
|       30 | 2023-08-06 | John Smith | Strawberries   |      1 | Strawberries   |        29 |        1 |      7 |    0 |
|       31 | 2023-08-06 | John Smith | Yogurt         |      2 | Yogurt         |       150 |        5 |     17 |    8 |
+----------+------------+------------+----------------+--------+----------------+-----------+----------+--------+------+
```

Accessing Information

- Analyze the overall nutritional intake and calorie consumption of John Smith on August 6th.

```
mysql> SELECT
    ->     SUM(food.Fcalories * dailyIntake.Amount) AS TotalCalories,
    ->     SUM(food.Fprotein * dailyIntake.Amount) AS TotalProtein,
    ->     SUM(food.Fcarbs * dailyIntake.Amount) AS TotalCarbs,
    ->     SUM(food.Ffat * dailyIntake.Amount) AS TotalFat
    -> FROM
    ->     dailyIntake
    -> INNER JOIN
    ->     food ON dailyIntake.Fname = food.Fname
    -> WHERE
    ->     dailyIntake.Pname = 'John Smith' AND dailyIntake.Date = '2023-08-06';
+---------------+-------------+------------+----------+
| TotalCalories | TotalProtein | TotalCarbs | TotalFat |
+---------------+-------------+------------+----------+
|           905 |           31 |        103 |       47 |
+---------------+-------------+------------+----------+
```

Thank you