PREPARATION OF DATA

Food and	Calories	Total Fat	Sodium	Potassium	Total Carb	Dietary Fil	Sugars	Protein	Vitamin A	Vitamin C	Calcium	Saturated	Chole-ster	Food Type
		(g)	(g)	(g)	(g)	(g)	(g)	(g)	(%DV)	(%DV)	(%DV)	(mg)Ê	(mg)Ê	
Asparagus	20	0	0	230	4	2	2	2	10	15	2			Vegetables, Serving Size (gram weight/Êounce weight)
Bell Peppe	25	0	40	220	6	2	4	1	4	190	2			Vegetables, Serving Size (gram weight/Êounce weight)
Broccoli, 1	45	0.5	80	460	8	3	2	4	6	220	6			Vegetables, Serving Size (gram weight/Êounce weight)
Carrot, 1 c	30	0	60	250	7	2	5	1	110	10	2			Vegetables, Serving Size (gram weight/Êounce weight)
Cauliflowe	25	0	30	270	5	2	2	2	0	100	2			Vegetables, Serving Size (gram weight/Êounce weight)
Celery, 2 r	15	0	115	260	4	2	2	0	10	15	4			Vegetables, Serving Size (gram weight/Êounce weight)
Cucumber	10	0	0	140	2	1	1	1	4	10	2			Vegetables, Serving Size (gram weight/Êounce weight)
Green (Sn	20	0	0	200	5	3	2	1	4	10	4			Vegetables, Serving Size (gram weight/Êounce weight)
GreenÊCa	25	0	20	190	5	2	3	1	0	70	4			Vegetables, Serving Size (gram weight/Êounce weight)
Green Oni	10	0	10	70	2	1	1	0	2	8	2			Vegetables, Serving Size (gram weight/Êounce weight)

Figure 1: Initial dataset

The data was pre-processed for SQL query execution by adding and eliminating columns and rows. The following are the steps for data preparation:

1) The second row containing attribute units has been eliminated, and the units have been added to the attribution column together. Total Fat, for example, was renamed Total Fat_g.

2) The Food and Serving columns have been divided into two columns, Food and Serving Size_g, where the Food column contains only the name of the food and the Serving Size_g column presents only the serving size of the food in grams.

3) The Food Type column is altered so that it only contains vegetables, fruits, and seafood. The values of the seafood serving size in the Food Type column are then transferred to the Serving Size_g column.

4) Missing value rows have been replaced with NULL.

Food	Serving Size_g	Calories	Total Fat_g	Sodium_g	Potassium_g	Total Carbo	Dietary Fiber	Sugars_g	Protein_g	Vitamin A_DV	Vitamin (	Calcium_DV	Saturated Fa	Chole-sterol	FoodType
Asparagus	93	20	0	0	230	4	2	2	2	10	15	2	NULL	NULL	Vegetables
Bell Pepper	148	25	0	40	220	6	2	4	1	4	190	2	NULL	NULL	Vegetables
Broccoli	148	45	0.5	80	460	8	3	2	4	6	220	6	NULL	NULL	Vegetables
Carrot	78	30	0	60	250	7	2	5	1	110	10	2	NULL	NULL	Vegetables
Cauliflower	99	25	0	30	270	5	2	2	2	0	100	2	NULL	NULL	Vegetables
Celery	110	15	0	115	260	4	2	2	0	10	15	4	NULL	NULL	Vegetables
Cucumber	99	10	0	0	140	2	1	1	1	4	10	2	NULL	NULL	Vegetables
Green (Snap) Beans	83	20	0	0	200	5	3	2	1	4	10	4	NULL	NULL	Vegetables
GreenÊCabbage	84	25	0	20	190	5	2	3	1	0	70	4	NULL	NULL	Vegetables
Green Onion	25	10	0	10	70	2	1	1	0	2	8	2	NULL	NULL	Vegetables

Figure 2: Prepared data

PREPARED FILE

https://drive.google.com/file/d/1LE32cHHoUhWZ2Zv6SmMS2gy7_-biEUn_/view?usp=sharing

CREATING DATABASE AND TABLE

```
#create database
CREATE DATABASE NutritionalFact;

USE NutritionalFact;

#create table
CREATE TABLE Nutrition (
    Food VARCHAR(255),
    Serving_Size_g INT,
    Calories INT,
    TotalFat_g DECIMAL(10,2),
    Sodium_g INT,
    Potassium_g INT,
    TotalCarbohydrate_g INT,
    DietaryFiber_g INT NULL,
    Sugars_g INT NULL,
    Protein_g INT,
    VitaminA_DV INT,
    VitaminC_DV INT,
    Calcium_DV INT,
    SaturatedFat_mg INT NULL,
    Cholesterol_mg INT NULL,
    Food_Type VARCHAR(255)
);
```

Figure 3: Query to craete database and table

IMPORTING DATA

```
28    #observe the table
29 •  SELECT * FROM nutrition;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Food	Serving_Size_g	Calories	TotalFat_g	Sodium_g	Potassium_g	TotalCarbohydrate_g	DietaryFiber_g	
Asparagus	93	20	0.00	0	230	4	2	2
Bell Pepper	148	25	0.00	40	220	6	2	4
Broccoli	148	45	0.50	80	460	8	3	2
Carrot	78	30	0.00	60	250	7	2	5
Cauliflower	99	25	0.00	30	270	5	2	2
Celery	110	15	0.00	115	260	4	2	2
Cucumber	99	10	0.00	0	140	2	1	1
Green (Snap) Beans	83	20	0.00	0	200	5	3	2
GreenÊCabbage	84	25	0.00	20	190	5	2	3
Green Onion	25	10	0.00	10	70	2	1	1
Iceberg Lettuce	89	10	0.00	10	125	2	1	2
Leaf Lettuce	85	15	0.00	35	170	2	1	1
Mushrooms	84	20	0.00	15	300	3	1	0

The data have been uploaded to the ‘nutrition’ table created using Import Table Wizard and check if the table is correct.

Figure 4: Observe the imported data

PERFORMING QUERIES

a) List all food name, type(vegetable/fruit/seafood), calories for food with calories more than 100.

```
33    #a) List all food name, type(vegetabl
34 •  SELECT Food, Food_Type, Calories
35    FROM nutrition
36    WHERE Calories > 100;
```

Result Grid | Filter Rows: | Export:

Food	Food_Type	Calories
Potato	Vegetables	110
Apple	Fruits	130
Banana	Fruits	110
Catfish	Seafood	130
Clams	Seafood	110
Halibut	Seafood	120
Ocean Perch	Seafood	110
Rainbow Trout	Seafood	140
Rockfish	Seafood	110
Salmon Atlantic/Coho/Sockeye /Chinook	Seafood	200
Salmon Chum/Pink	Seafood	130
Scallops	Seafood	140
Swordfish	Seafood	120
Tilapia	Seafood	110

b) List all vegetables name and vitamin C in serving. Sort the output of query in descending order according to the vitamin C.

```
39 •  SELECT Food AS Vegetable_Name , VitaminC_DV AS Vitamin_C
40    FROM nutrition
41    WHERE Food_Type = 'Vegetables'
42    ORDER BY VitaminC_DV DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Vegetable_Name	Vitamin_C
Broccoli	220
Bell Pepper	190
Cauliflower	100
GreenÊCabbage	70
Potato	45
Tomato	40
Radishes	30
SummerÊSquash	30
Sweet Potato	30
Onion	20
Asparagus	15
Celery	15
Carrot	10
Cucumber	10

c) List all vegetables, fruits and seafood have calories greater than 100/per serving.

```
44    #c) List all vegetables, fruits and seafood have calories greater than 100
45 •  SELECT Food, Food_Type, Calories
46    FROM nutrition
47    WHERE Calories > 100 AND Food_Type IN ('Vegetables', 'Fruits', 'Seafood');
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Food	Food_Type	Calories
Potato	Vegetables	110
Apple	Fruits	130
Banana	Fruits	110
Catfish	Seafood	130
Clams	Seafood	110
Halibut	Seafood	120
Ocean Perch	Seafood	110
Rainbow Trout	Seafood	140
Rockfish	Seafood	110
Salmon Atlantic/Coho/Sockeye /Chinook	Seafood	200
Salmon Chum/Pink	Seafood	130
Scallops	Seafood	140
Swordfish	Seafood	120
Tilapia	Seafood	110

d) List fruits and vegetables that have name contain a as second character and followed by any characters at any length.

```
50 •  SELECT Food, Food_Type
51    FROM nutrition
52    WHERE (Food_Type = 'Fruits' OR Food_Type = 'Vegetables')
53    AND Food LIKE '_a%';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Food	Food_Type
Carrot	Vegetables
Cauliflower	Vegetables
Radishes	Vegetables
Banana	Fruits
Cantaloupe	Fruits
Tangerine	Fruits
Watermelon	Fruits

e) List the seafood name for seafood name start with R.

```
56 •  SELECT Food, Food_Type
57    FROM nutrition
58    WHERE Food_Type = 'Seafood'
59    AND Food LIKE 'R%';
```

Result Grid | Filter Rows:

Food	Food_Type
Rainbow Trout	Seafood
Rockfish	Seafood

f) List all vegetables and fruits that contain fat.

```
62 •  SELECT Food, Food_Type, TotalFat_g
63    FROM nutrition
64    WHERE Food_Type IN ('Vegetables', 'Fruits')
65    AND TotalFat_g >0;
```

Result Grid | Filter Rows: | Export: | Wrap Cell C

Food	Food_Type	TotalFat_g
Broccoli	Vegetables	0.50
Sweet Corn	Vegetables	2.50
Avocado California	Fruits	4.50
Kiwifruit	Fruits	1.00
Nectarine	Fruits	0.50
Peach	Fruits	0.50

g) List all vegetables that not contain sodium.

```
58 •  SELECT Food, Food_Type,Sodium_g
59    FROM nutrition
70    WHERE Food_Type = 'Vegetables'
71    AND Sodium_g =0;
```

esult Grid | Filter Rows: | Export:

Food	Food_Type	Sodium_g
Asparagus	Vegetables	0
Cucumber	Vegetables	0
Green (Snap) Beans	Vegetables	0
Potato	Vegetables	0
SummerÊSquash	Vegetables	0
Sweet Corn	Vegetables	0

h) List vegetables that contain both vitamin A and C.

```
74 •  SELECT Food, Food_Type, VitaminA_DV,VitaminC_DV
75    FROM nutrition
76    WHERE Food_Type = 'Vegetables'
77    AND VitaminA_DV AND VitaminC_DV >0 ;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Food	Food_Type	VitaminA_DV	VitaminC_DV
Asparagus	Vegetables	10	15
Bell Pepper	Vegetables	4	190
Broccoli	Vegetables	6	220
Carrot	Vegetables	110	10
Celery	Vegetables	10	15
Cucumber	Vegetables	4	10
Green (Snap) Beans	Vegetables	4	10
Green Onion	Vegetables	2	8
Iceberg Lettuce	Vegetables	6	6
Leaf Lettuce	Vegetables	130	6
SummerÊSquash	Vegetables	6	30
Sweet Corn	Vegetables	2	10
Sweet Potato	Vegetables	120	30
Tomato	Vegetables	20	40

i) List all fruits that have sugar less than 10 and sort in ascending order.

```
80 •  SELECT Food, Sugars_g
81    FROM nutrition
82    WHERE Food_Type = 'Fruits' AND Sugars_g <10
83    ORDER BY Sugars_g ASC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Conte

Food	Sugars_g
Avocado California	0
Lime	0
Lemon	2
Strawberries	8
Tangerine	9

j) List all seafood name, serving size, total fat and add the percentage of fat.

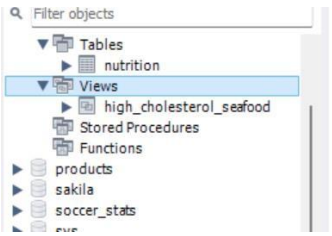
```
85    #j) List all seafood name, serving size, total fat and add the percentage of fat
86 •  SELECT Food, Serving_Size_g, TotalFat_g, ROUND((TotalFat_g / Serving_Size_g) * 100, 2)
87    AS Fat_Percentage
88    FROM nutrition
89    WHERE Food_Type = 'Seafood';
```

esult Grid | Filter Rows: | Export: | Wrap Cell Content:

Food	Serving_Size_g	TotalFat_g	Fat_Percentage
Blue Crab	84	1.00	1.19
Catfish	84	6.00	7.14
Clams	84	1.50	1.79
Cod	84	1.00	1.19
Flounder/Sole	84	1.50	1.79
Haddock	84	1.00	1.19
Halibut	84	2.00	2.38
Lobster	84	0.50	0.60
Ocean Perch	84	2.00	2.38
Orange Roughy	84	1.00	1.19
Oysters	84	4.00	4.76
Pollock	84	1.00	1.19
Rainbow Trout	84	6.00	7.14

k) Create view called high_cholesterol seafood that store all the seafood name and cholesterol component with cholesterol 50 and more

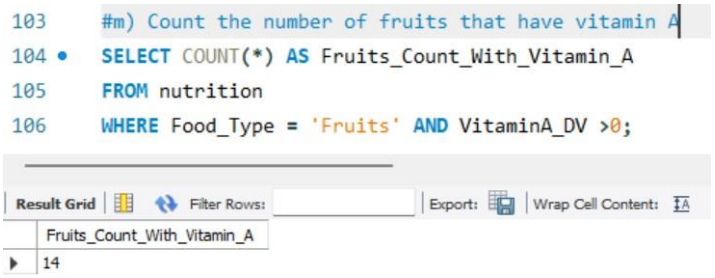
.




```
89    WHERE Food_Type = 'Seafood';
90
91    #k) Create view called high_cholesterol seafood that
92 •  CREATE VIEW high_cholesterol_seafood AS
93    SELECT Food AS Seafood_Name, Cholesterol_mg
94    FROM nutrition
95    WHERE Food = 'Seafood' AND Cholesterol_mg >= 50;
```

l) Create view called sodium_vegetable that store all vegetable contain sodium.

m) Count the number of fruits that have vitamin A.



n) Count the number of fruits that have calcium.