

USER MANUAL

Diet Solver

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Section: B2L

Setting up the app

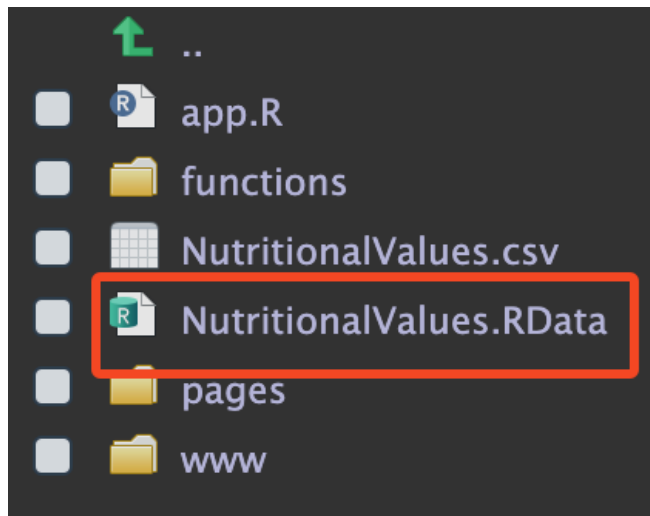
Before we start running the app, it is important to **change the working directory** inside the app.R file.

```
# IMPORTANT!!!  
setwd("/Users/markusrecaplaza/Documents/CMSC/150/project/finalproject")
```

You need to change this with your personal path to the location of this folder.

After successfully setting up the directory, we now need to load the **NutritionalValues.RData**. You will only need to do this once during your session in the RStudio.

You can double-click the **NutritionalValues.RData** in the files pane on your RStudio.



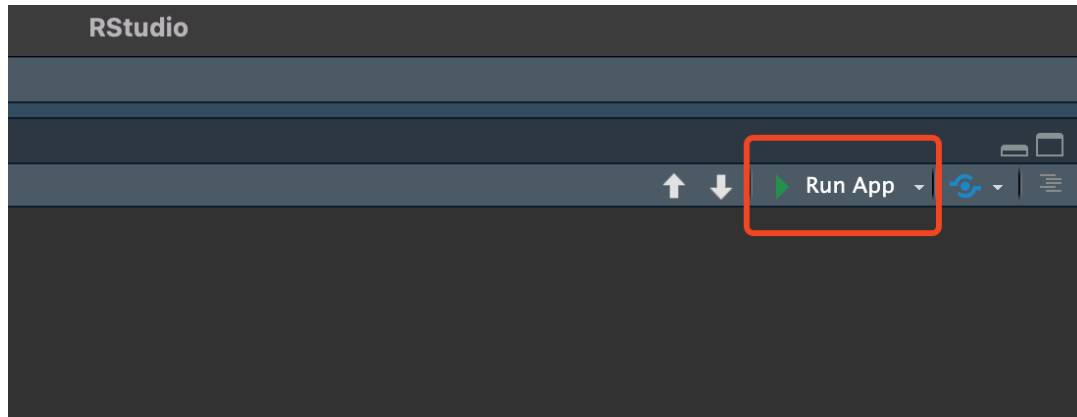
Or, if you're feeling nerdy, you may type in this command in the terminal:

```
Unset  
load("NutritionalValues.RData")
```

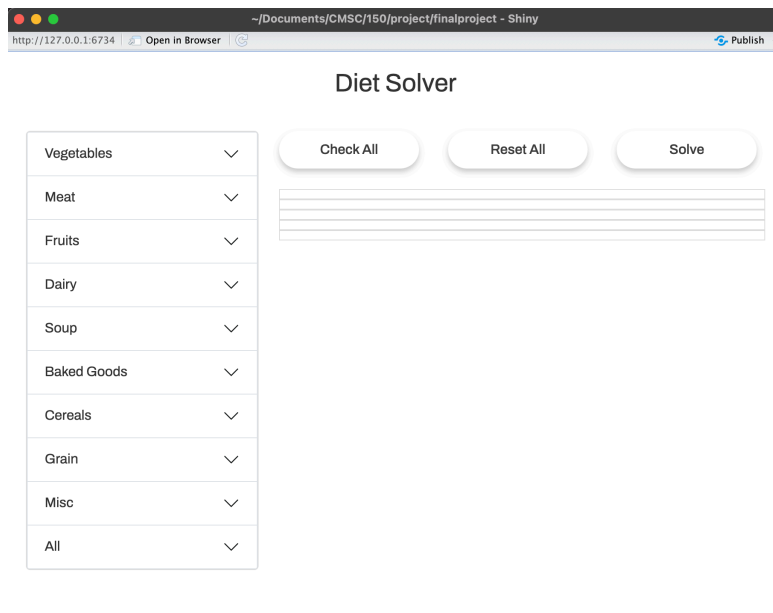
Once you're done, you have now successfully completed the setup stage!

Running the app

We can now run the app by pressing **cmd + shift + enter** or **ctrl + shift + enter**. You may also click the Run App button on the top right portion of the RStudio screen.



After running the app, you should have this window pop-up:



You may now start using the **diet solver**! To find a certain food, you may **click the accordion panel** on the left side of the window and **click the checkboxes of the food** that you want to add. If you want to look at **all the selection of the foods**, there is an **All option** on the lowermost part of the accordion.

Once you have chosen the food that you want to include in your diet, you can now click the **Solve button**.

~/Documents/CMSC/150/project/finalproject - Shiny

http://127.0.0.1:6734 | Open in Browser | Publish

Diet Solver

Vegetables ^

- ☒ Frozen Broccoli
- ☐ Carrots, Raw
- ☒ Celery, Raw
- ☒ Frozen Corn
- ☒ Lettuce, Iceberg, Raw
- ☐ Potatoes, Baked
- ☐ Tofu

Meat v

Fruits v

Dairy v

Soup v

Baked Goods ^

Check All Reset All **Solve**

The Optimized Menu:

The cost of this optimal diet is **\$3.01** per day.

The Solution and Cost Breakdown by Food:

| Food | Serving_Size | Cost |
|-----------------|--------------|------|
| Frozen Broccoli | 8.19 | 1.31 |
| Frozen Corn | 3.42 | 0.62 |
| Butter,Regular | 10.00 | 0.50 |
| Cheddar Cheese | 0.08 | 0.02 |
| Bagels | 0.40 | 0.06 |
| Wheat Bread | 10.00 | 0.50 |

Initial Tableau

| | S_1 | S_2 | S_3 | S_4 | S_5 | S_6 | S_7 |
|--|-------|--------|------|-------|------|-------|-------|
| | 73.80 | -73.80 | 0.00 | -0.00 | 0.80 | -0.80 | 68.20 |
| | 6.40 | -6.40 | 0.00 | -0.00 | 0.10 | -0.10 | 34.80 |
| | 72.20 | -72.20 | 0.00 | -0.00 | 0.60 | -0.60 | 2.50 |
| | 2.60 | -2.60 | 0.00 | -0.00 | 0.00 | -0.00 | 1.80 |

As you can see, the solver has now calculated the **best optimized menu** among the foods that you have selected. It returns the **total cost** of the optimal diet, the **serving size** for each food, and the **cost of each food** given its serving size.

Scrolling down, you can also see the **Initial Tableau**, **Final Tableau**, and the **Tableau and Basic Solution for each iteration** of the Simplex method.

If you want to **check all the checkboxes**, you can simply press the Check All button. Do not worry as it will not duplicate any foods that you have selected already.

If you want to **reset the solver** or you want to **uncheck the foods** you have selected, you can press the **Reset All button** which will clear the state of the solver as if it is the first time you have opened it.

Certain cases

If you are worried that this happens to you:

Diet Solver

Vegetables ^

☒ Frozen Broccoli

☒ Carrots, Raw

☒ Celery, Raw

☐ Frozen Corn

☐ Lettuce, Iceberg, Raw

☐ Potatoes, Baked

☐ Tofu

Check All

Reset All

Solve

The problem is infeasible. There is no valid pivot row.

Initial Tableau

| | S_1 | S_2 | S_3 | S_4 | S_5 | S_6 | S_7 | S_8 |
|--|----------|---------|-------|--------|-------|-------|-------|---------|
| | 73.80 | -73.80 | 0.00 | -0.00 | 0.80 | -0.80 | 68.20 | -68.20 |
| | 23.70 | -23.70 | 0.00 | -0.00 | 0.10 | -0.10 | 19.20 | -19.20 |
| | 6.40 | -6.40 | 0.00 | -0.00 | 0.10 | -0.10 | 34.80 | -34.80 |
| | -1900.00 | 2250.00 | -0.00 | 300.00 | -0.00 | 65.00 | -0.00 | 2400.00 |
| | | | | | | | | |
| | | | | | | | | |

Do not worry because this just means that the foods you have selected are **not enough** to calculate the optimal diet. You just simply need to **add more foods** until the solver finds a feasible solution.