USER MANUAL

PACKAGES TO INSTALL:

> RShiny

> Shiny Themes

Shiny is an R package that makes it easy to build interactive web applications (apps) straight from R.

If you still haven’t installed the Shiny package, open an R session, connect to the internet, and run

```
install.packages("shiny")
install.packages("shinythemes")
```

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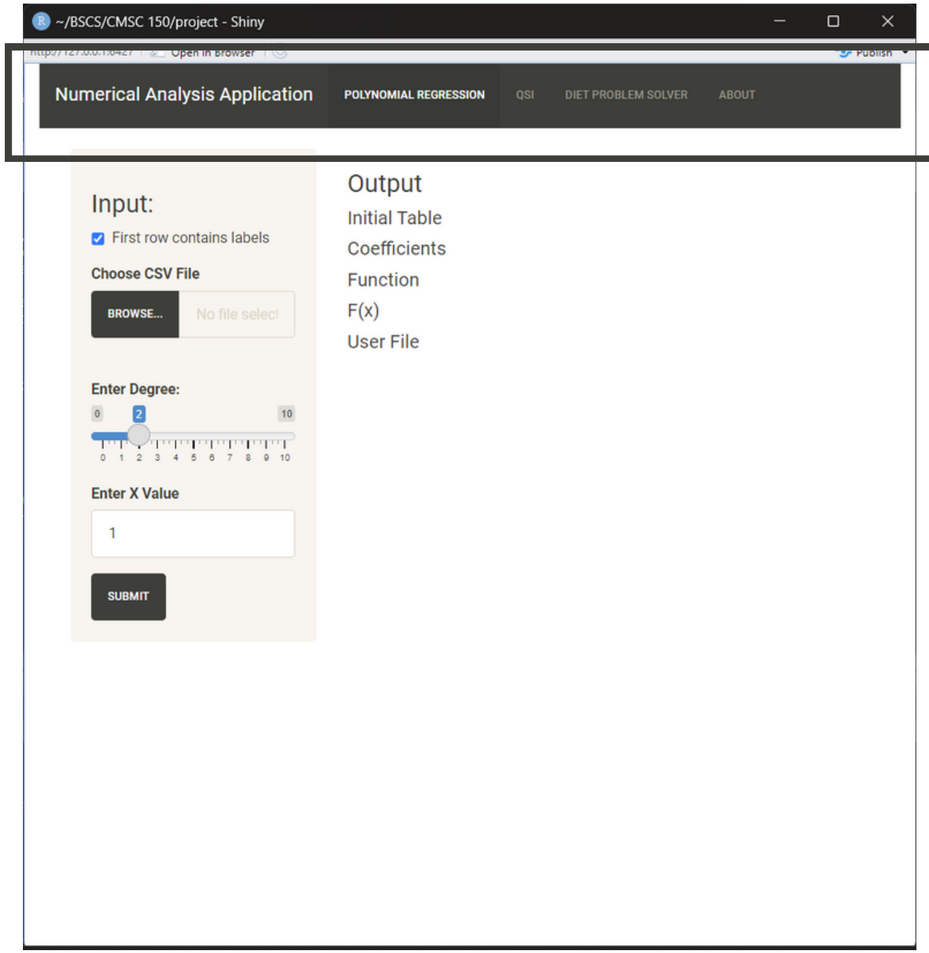
INITIAL PAGE



NAVIGATION BAR

> Polynomial Regression

> Quadratic Spline Interpolation

> Diet Problem Solver

> About

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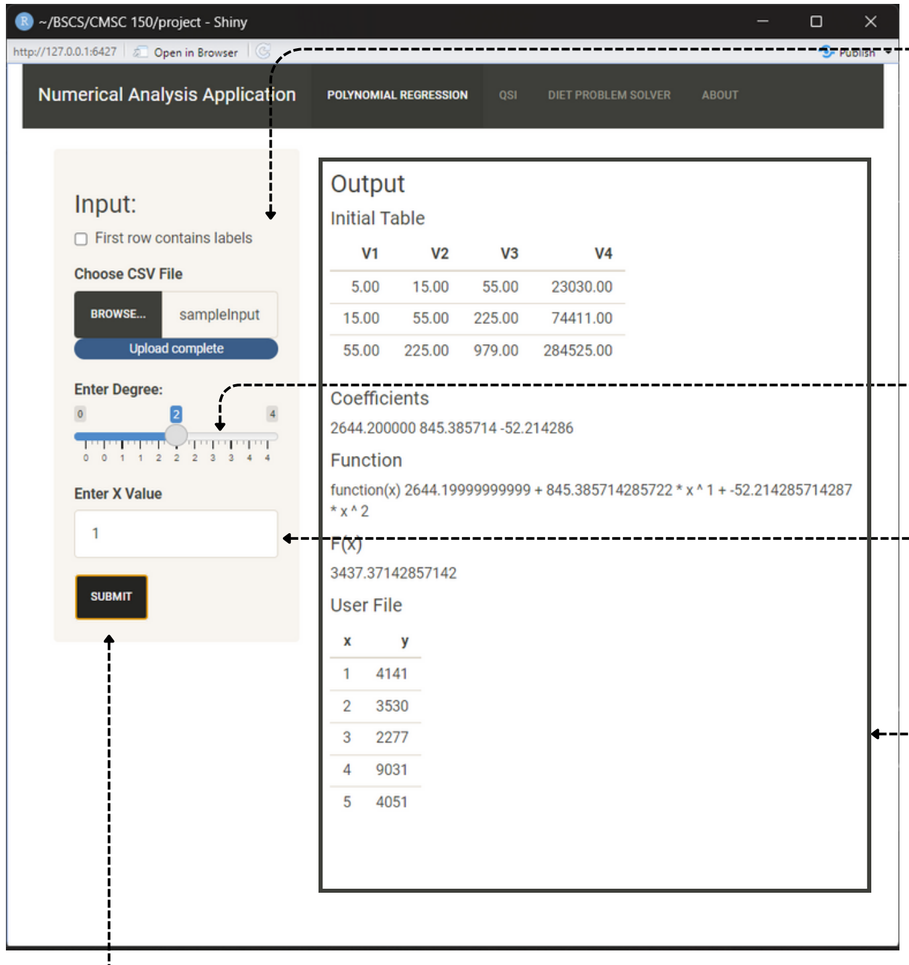
POLY. REGRESSION

CMSC 150



[1] UPLOAD A FILE

* tick check-box if first row of file are column names
* only files of type ".csv" is available

[2] SLIDE TO SELECT DEGREE

[3] INPUT X VALUE TO BE ESTIMATED

[4] SUBMIT

OUTPUT

> Initial table
> Coefficients
> Regression Function
> Function Estimate

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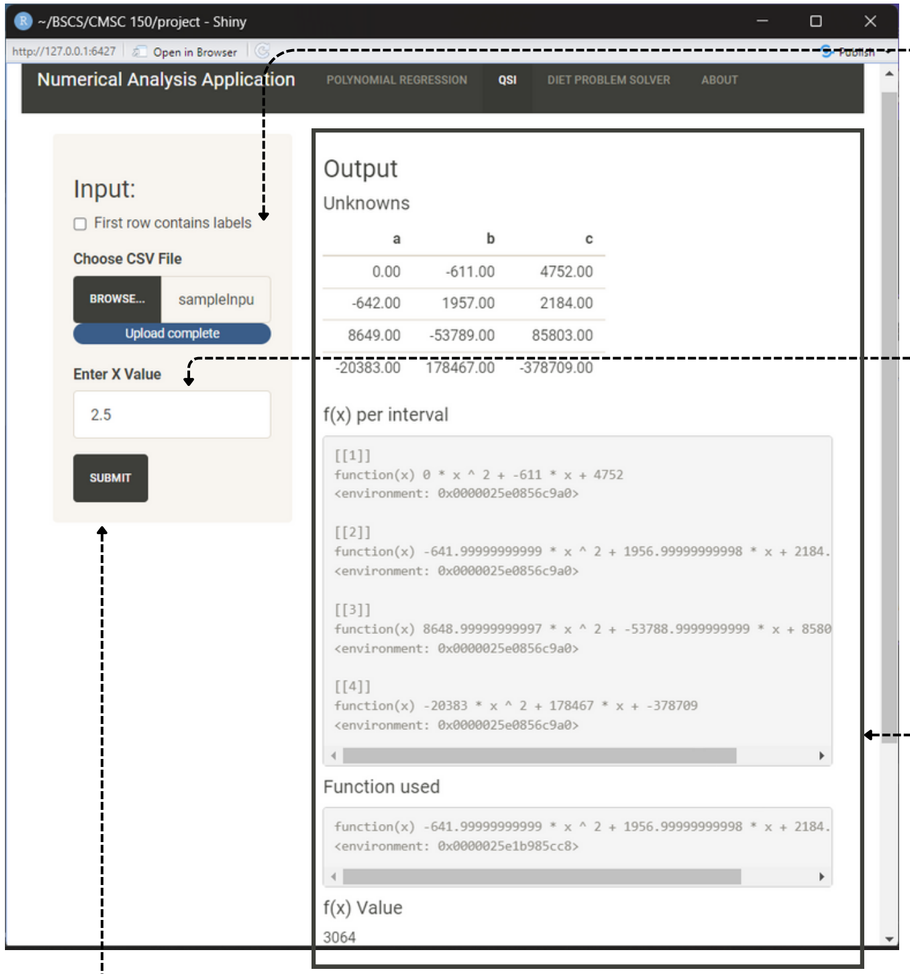
QSI



[1] UPLOAD A FILE

* tick check-box if first row of file are column names
* only files of type “.csv” is available

[2] INPUT X VALUE TO BE ESTIMATED

* input values that are within the range of x values

[3] SUBMIT

OUTPUT

> Table of Unknown Values
> Functions representing each interval
> Function appropriate for the x value to be estimated
> Function Estimate

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DIET PROB. SOLVER

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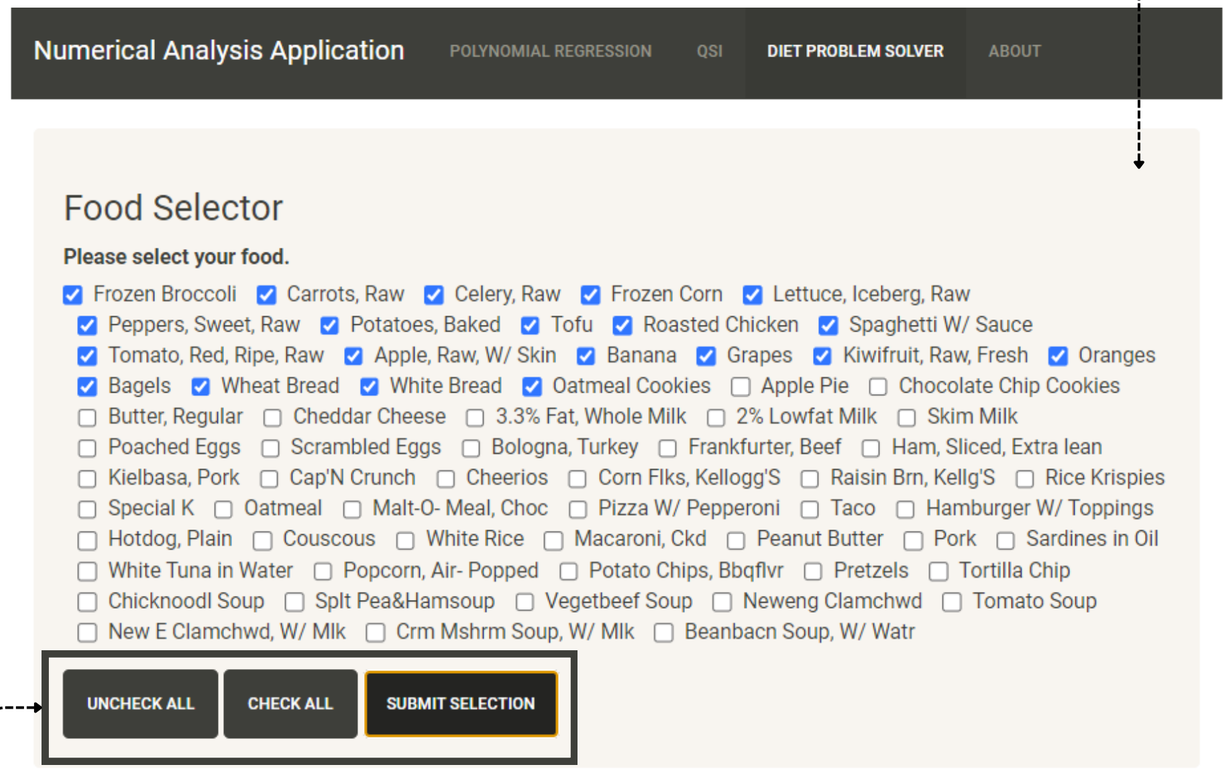
[1] SELECT ALL WANTED FOOD



[2] ACTION BUTTONS

* Tick all boxes or Reset
* Submit

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Final Solution

The cost of this optimal diet is $ 2.71 per day.

Food	Servings	Cost
Frozen Broccoli	1.50	0.24
Potatoes, Baked	0.37	0.02
Tofu	1.63	0.50
Roasted Chicken	0.44	0.37
Wheat Bread	1.56	0.08
White Bread	10.00	0.60
Oatmeal Cookies	10.00	0.90

OPTIMAL SOLUTION

Basic Solution Per Iteration

```
$BasicSolution
$BasicSolution[[1]]
    S1 S2   S3    S4    S5   S6 S7      S8     S9  S10  S11  S12 S13  S14  S15  S16 S17 S18          S
 -73.8  0 -0.8 -68.2 -13.6 -8.5 -8 -5867.4 -160.2 -159 -2.3 73.8   0 0.06 68.2 13.6 8.5   8 4.524594e-
 Serving_9 Serving_10 Serving_11 Serving_12 Serving_13 Serving_14 Serving_15 Serving_16 Serving_17 Ser
         0          0          0          0          0          0          0          0          0
 Lettuce, Iceberg, Raw Peppers, Sweet, Raw Potatoes, Baked      Tofu Roasted Chicken Spaghetti W/ Sauc
           0.01970138           0.5278838            0.06 0.3095539       0.8396498          0.766176
 Bagels Wheat Bread White Bread Oatmeal Cookies          Z
   0.16        0.05        0.06      0.08998688 0.02262297

$BasicSolution[[2]]
    S1 S2   S3    S4    S5   S6 S7      S8     S9  S10  S11          S12 S13  S14  S15  S16 S17 S18
 -73.8  0 -0.8 -68.2 -13.6 -8.5 -8 -5867.4 -160.2 -159 -2.3 0.0003498542   0 0.06 68.2 13.6 8.5   8 3.
 Serving_8 Serving_9 Serving_10 Serving_11 Serving_12 Serving_13 Serving_14 Serving_15 Serving_16 Serv
         0         0          0          0          0          0          0          0          0
 Lettuce, Iceberg, Raw Peppers, Sweet, Raw Potatoes, Baked      Tofu Roasted Chicken Spaghetti W/ Sauc
           0.01882713           0.5211374            0.06 0.2787496       0.7426417          0.642496
    Bagels Wheat Bread White Bread Oatmeal Cookies          Z
 0.1327114  0.02725948  0.03725948      0.06165024 0.7196517

$BasicSolution[[3]]
    S1 S2   S3    S4    S5   S6 S7      S8     S9  S10  S11          S12 S13  S14  S15  S16 S17 S18
 -73.8  0 -0.8 -68.2 -13.6 -8.5 -8 -5867.4 -160.2 -159 -2.3 0.0002485718   0 0.06 68.2 13.6 8.5   8 3.
 Serving_7 Serving_8 Serving_9 Serving_10 Serving_11 Serving_12 Serving_13 Serving_14 Serving_15 Servi
```

OUTPUT

> Final Solution [Optimal Cost & Solution and Cost Breakdown]
> Basic Solution per Iteration

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DIET PROB. SOLVER

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Tableau

```
$InitialTableau
           S1    S2   S3     S4    S5   S6   S7       S8     S9    S10  S11    S12   S13  S14
food_1   -73.8   0.0 -0.8  -68.2 -13.6 -8.5 -8.0  -5867.4 -160.2 -159.0 -2.3   73.8   0.0  0.8
food_2   -23.7   0.0 -0.1  -19.2  -5.6 -1.6 -0.6 -15471.0   -5.1  -14.9 -0.3   23.7   0.0  0.1
food_3    -6.4   0.0 -0.1  -34.8  -1.5 -0.7 -0.3    -53.6   -2.8  -16.0 -0.2    6.4   0.0  0.1
food_4   -72.2   0.0 -0.6   -2.5 -17.1 -2.0 -2.5   -106.6   -5.2   -3.3 -0.3   72.2   0.0  0.6
food_5    -2.6   0.0  0.0   -1.8  -0.4 -0.3 -0.2    -66.0   -0.8   -3.8 -0.1    2.6   0.0  0.0
food_6   -20.0   0.0 -0.1   -1.5  -4.8 -1.3 -0.7   -467.7  -66.1   -6.7 -0.3   20.0   0.0  0.1
food_7  -171.5   0.0 -0.2  -15.2 -39.9 -3.2 -3.7      0.0  -15.6  -22.7 -4.3  171.5   0.0  0.2
food_8   -88.2   0.0 -5.5   -8.1  -2.2 -1.4 -9.4    -98.6   -0.1 -121.8 -6.2   88.2   0.0  5.5
food_9  -277.4 -129.9 -10.8 -125.6   0.0  0.0 -42.2   -77.4    0.0  -21.9 -1.8  277.4 129.9 10.8
food_10 -358.2   0.0 -12.3 -1237.1 -58.3 -11.6 -8.2 -3055.2  -27.9  -80.2 -2.3  358.2   0.0 12.3
food_11  -25.8   0.0 -0.4   -11.1  -5.7 -1.4 -1.0   -766.3  -23.5   -6.2 -0.6   25.8   0.0  0.4
food_12  -81.4   0.0 -0.5     0.0 -21.0 -3.7 -0.3    -73.1   -7.9   -9.7 -0.2   81.4   0.0  0.5
food_13 -104.9   0.0 -0.5   -1.1 -26.7 -2.7 -1.2    -92.3  -10.4   -6.8 -0.4  104.9   0.0  0.5
food_14  -15.1   0.0 -0.1   -0.5  -4.1 -0.2 -0.2    -24.0   -1.0   -3.4 -0.1   15.1   0.0  0.1
food_15  -46.4   0.0 -0.3   -3.8 -11.3 -2.6 -0.8   -133.0  -74.5  -19.8 -0.3   46.4   0.0  0.3
food_16  -61.6   0.0 -0.2     0.0 -15.4 -3.1 -1.2   -268.6  -69.7  -52.4 -0.1   61.6   0.0  0.2
food_17  -78.0   0.0 -0.5  -151.4 -15.1 -0.6 -3.0      0.0    0.0  -21.0 -1.0   78.0   0.0  0.5
food_18  -65.0   0.0 -1.0  -134.5 -12.4 -1.3 -2.2      0.0    0.0  -10.8 -0.7   65.0   0.0  1.0
food_19  -65.0   0.0 -1.0  -132.5 -11.8 -1.1 -2.3      0.0    0.0  -26.2 -0.8   65.0   0.0  1.0
food_20  -81.0   0.0 -3.3   -68.9 -12.4 -0.6 -1.1     -2.9   -0.1   -6.7 -0.5   81.0   0.0  3.3
Soln    2250.0 300.0 65.0  2400.0 300.0 100.0 100.0  50000.0 20000.0 1600.0 30.0 -2000.0   0.0  0.0
       Serving_5 Serving_6 Serving_7 Serving_8 Serving_9 Serving_10 Serving_11 Serving_12 Serving_13
food_1         0         0         0         0         0          0          0          0          0
food_2         0         0         0         0         0          0          0          0          0
food_3         0         0         0         0         0          0          0          0          0
food_4         0         0         0         0         0          0          0          0          0
food_5        -1         0         0         0         0          0          0          0          0
food_6         0        -1         0         0         0          0          0          0          0
```

OUTPUT

> Tableau [Initial & Tableau for each Iteration]

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Numerical Analysis Application | POLYNOMIAL REGRESSION | QSI | DIET PROBLEM SOLVER | ABOUT

About

Made by Mapute, A.M.

Final Project for CMSC 150