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User Manual

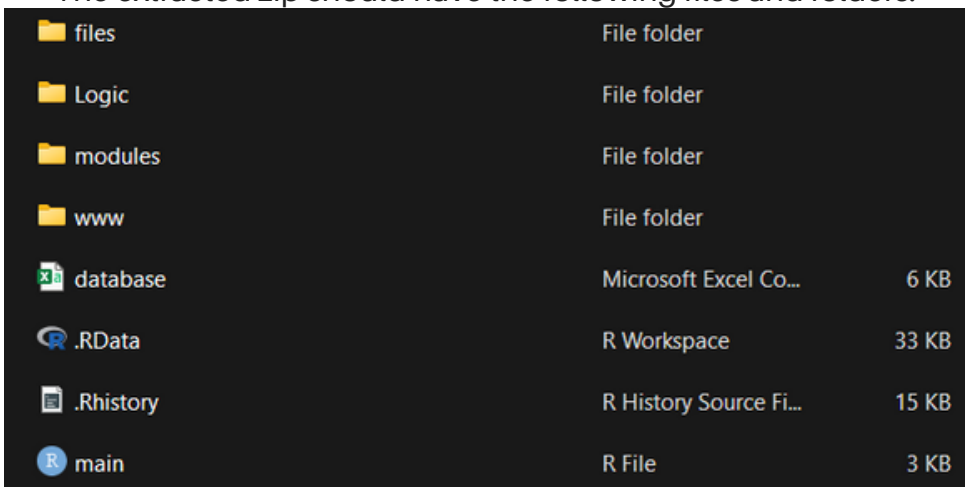
CMSC 150 PROJECT

2023 - 2024

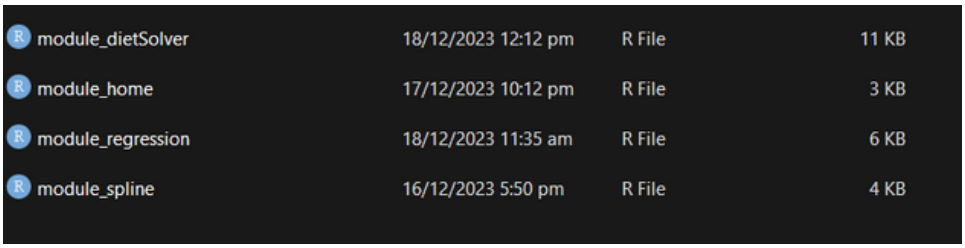
Created with R Shiny

Application Requirements

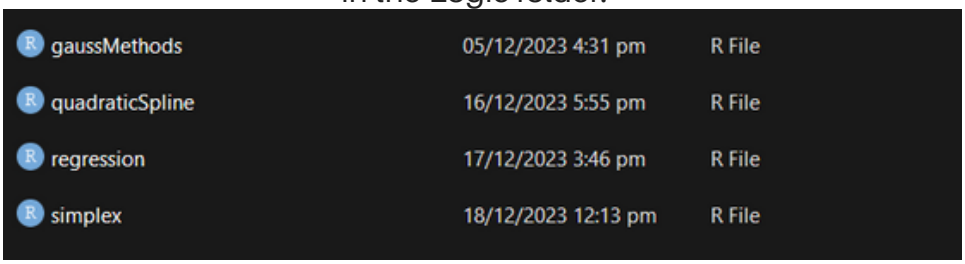
The extracted zip should have the following files and folders:



In the modules folder:



In the Logic folder:



Required R Libraries:

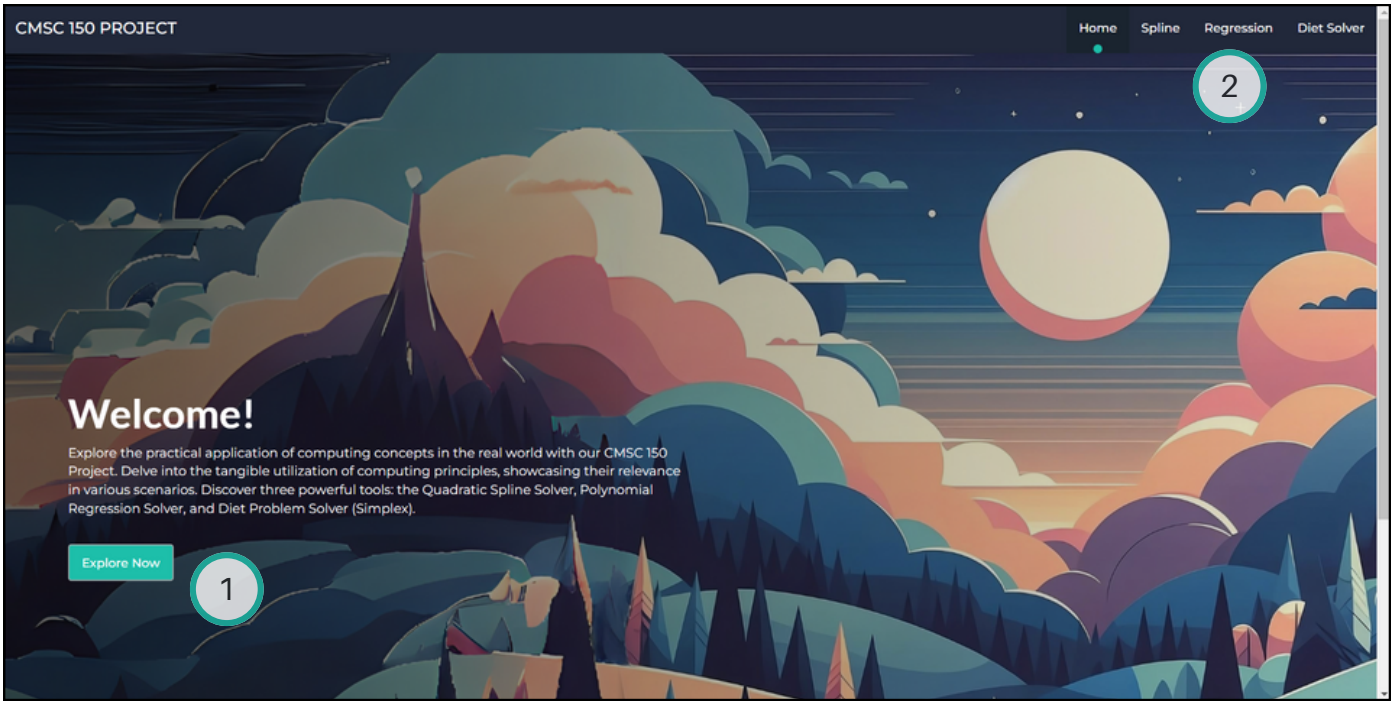
```
library(shiny)
library(shinyjs)
library(shinyWidgets)
library(DT)
library("magrittr")
library("dplyr")
```

If at least these ⁎*required files* are present, the program will run.

Run the main.R

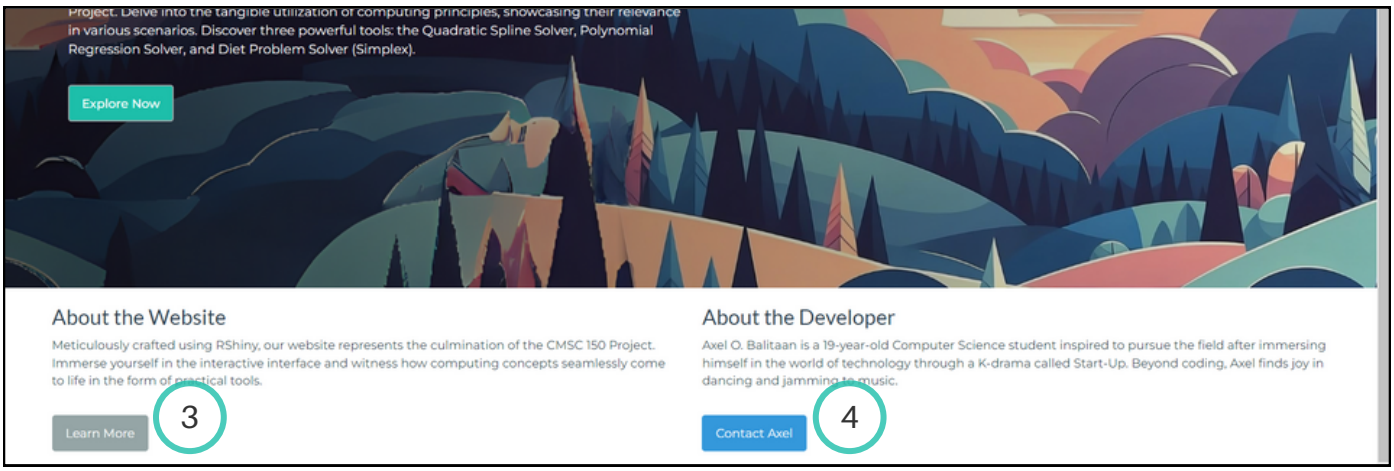
⁎*Note: The files and libraries shown here are the essential ones for the basic program to work. There may be other additional files present in the zip.*

Landing Page



1 **EXPLORE NOW** - find your ideal diet with the diet solver. This feature uses the simplex method to calculate the best mix of foods that satisfy your health and budget needs.

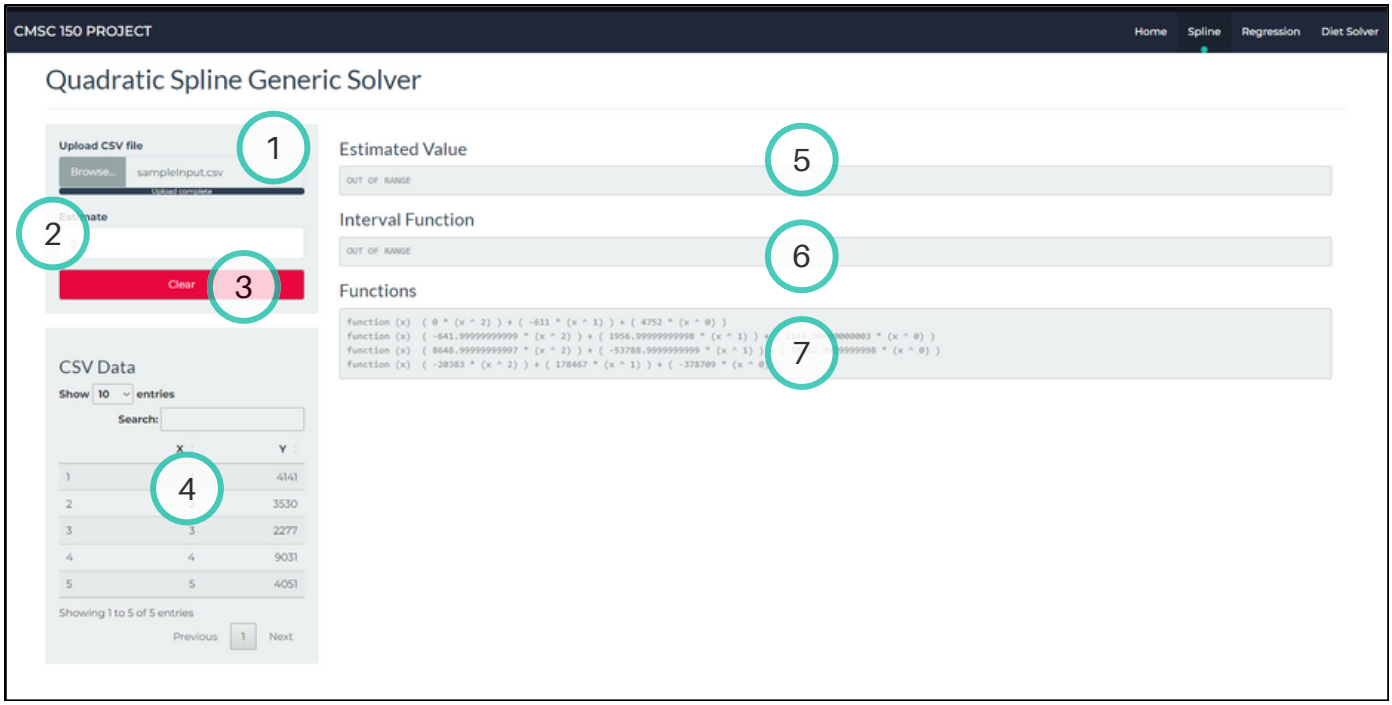
2 **NAVIGATION BAR** - easily navigate through the app with the navigation bar. This feature allows you to access all the app's functions and features with a single click.



3 **LEARN MORE** - takes you to our comprehensive guide and user manual, where you can find detailed information and instructions on the app and its features.

4 **CONTACT DEVELOPER** - we value your input and want to make the app better for you. This feature shows you the developer's contact information and how to reach us.

Quadratic Spline Interpolation Generic Solver



1. **FILE INPUT** - upload a CSV file with data points for the Quadratic Spline Interpolation (QSI). The file should have two columns: x and y. See the ****sample input**** below for more information.

2. **ESTIMATE** - enter a value of x that you want to estimate the value of y for.

3. **CLEAR** - reset the page and clear all the inputs and outputs.

4. **CSV DATA** - view the data points from the uploaded CSV file in a table format.

5. **ESTIMATED VALUE** - displays the estimated value of y for the given value of x, based on the QSI.

6. **INTERVAL FUNCTION** - see the function that was used to estimate the value of y for the given value of x.

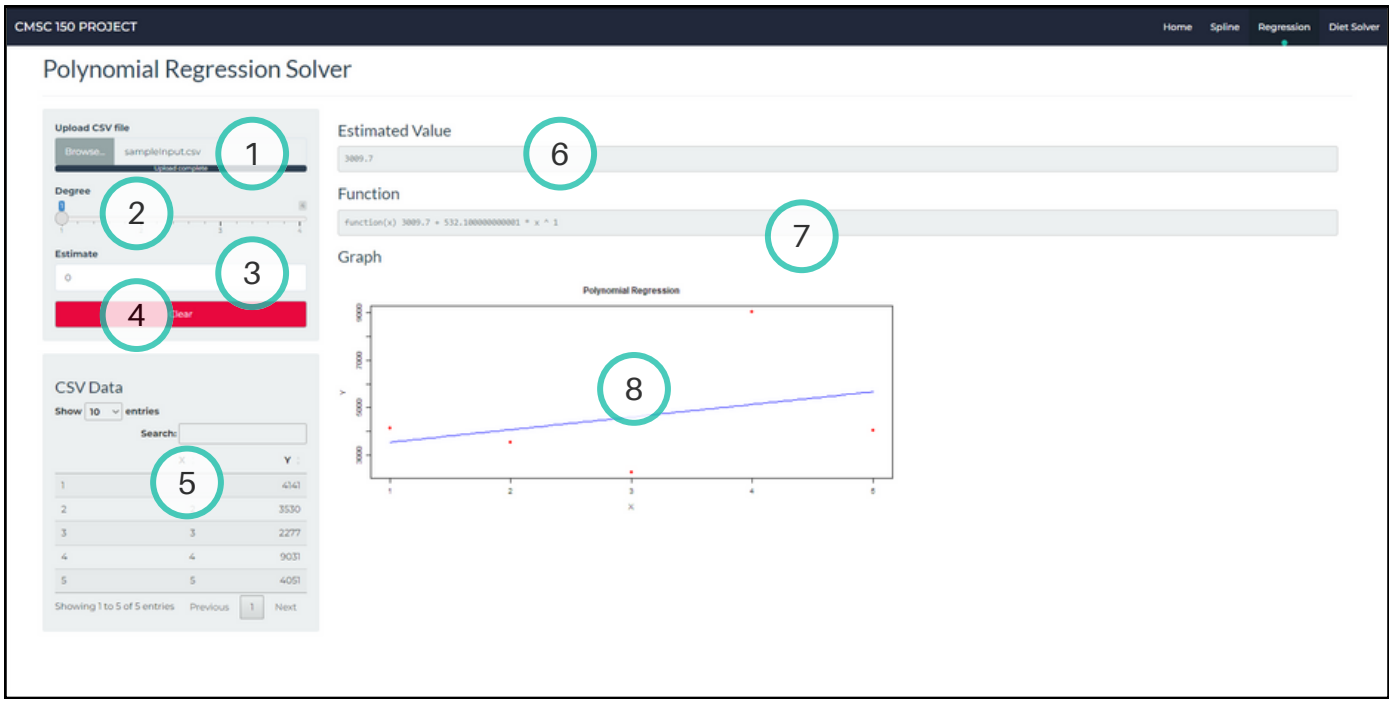
7. **FUNCTIONS** - shows all the functions that were generated for the QSI. Each function corresponds to an interval between two consecutive data points.

1	4141
2	3530
3	2277
4	9031
5	4051

Sample CSV

*** File uploads for Quadratic Spline Interpolation (QSI) and Polynomial Regression are in CSV format. The file should have two columns: x and y, where x is the first column and y is the second column. The order of the data points does not matter, as the app will sort them automatically.*

Polynomial Regression Generic Solver



1 **FILE INPUT** - upload a CSV file with your data points for the Polynomial Regression. The file should have two columns: x and y. For an example of a valid file, see the *sample input* on page 2.

2 **DEGREE** - Choose the degree of the polynomial regression from the input scroller. The degree can range from 1 (linear) to n - 1, where n is the number of data points.

3 **ESTIMATE** - **i**nput a value of x that you want to estimate the corresponding value of y for.

4 **CLEAR** - reset the page and clear all the inputs and outputs.

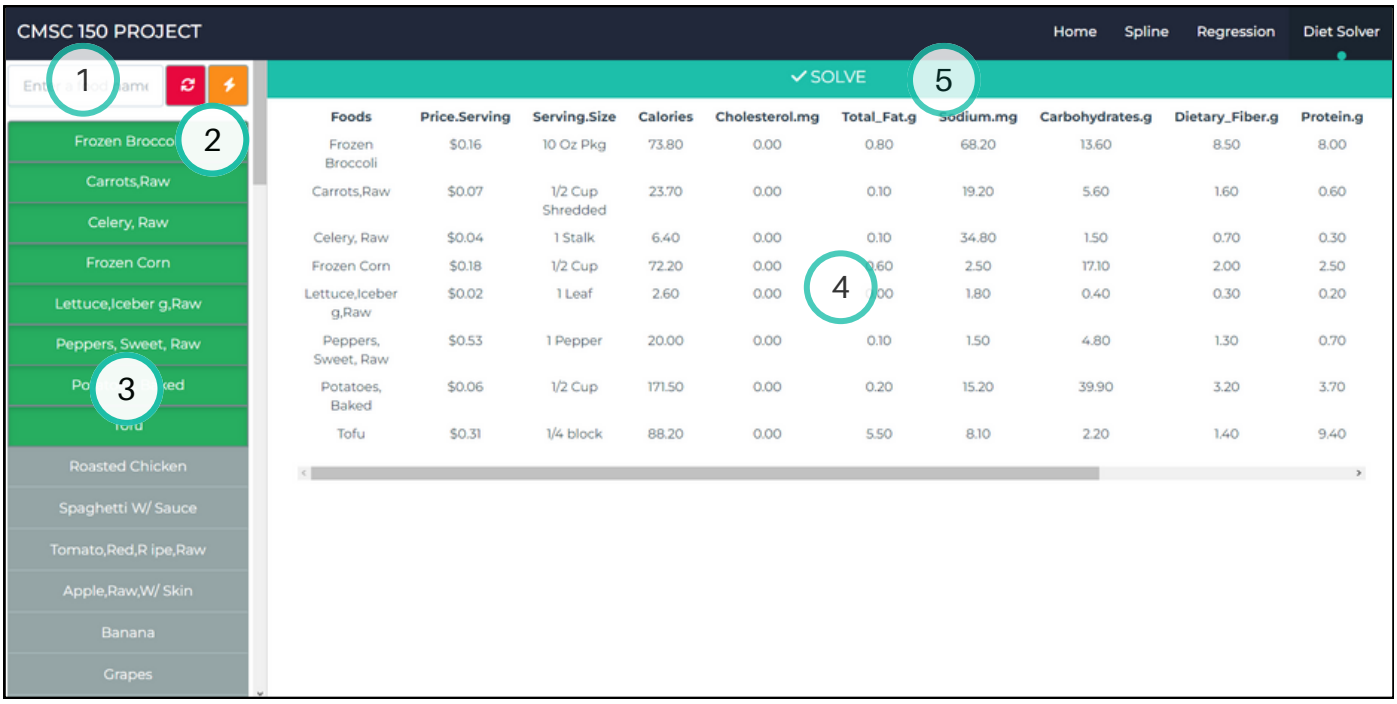
5 **CSV DATA** - see the data points from the uploaded CSV file in a table format.

6 **ESTIMATED VALUE** - displays the estimated value of y for the given value of x, based on the polynomial regression.

7 **FUNCTION** - shows the polynomial function that was generated from the data points.

8 **GRAPH** - see the graph of the polynomial function and the data points.

Diet Problem Solver



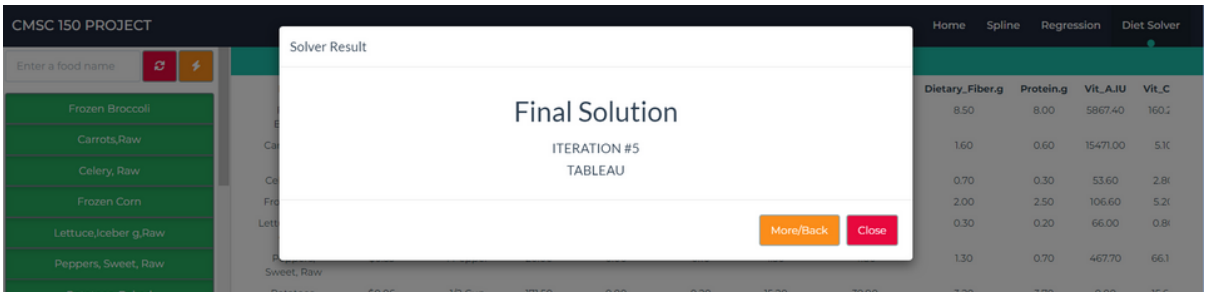
1 **SEARCH** - search for food items by name

2 **ACCESSIBILITY BUTTONS** - use the yellow button to select all the food items in the database or the red button to deselect all the selected items.

3 **ITEMS TAB** - Browse the food items in the database by name. The selected items are marked with a green color. You can select or deselect an item by clicking it.

4 **TABLE** - See the selected food items and their nutritional information, such as calories, cholesterol, fat, carbohydrates, etc.

5 **SOLVE** - Use this feature to find the optimal diet that meets your nutritional and budgetary goals. This solves solutions through simplex method.



RESULTS MODAL

(click More/Back to see per iteration tableu and basic solutions)