User's Guide on how to use Aranton_Ex10.R

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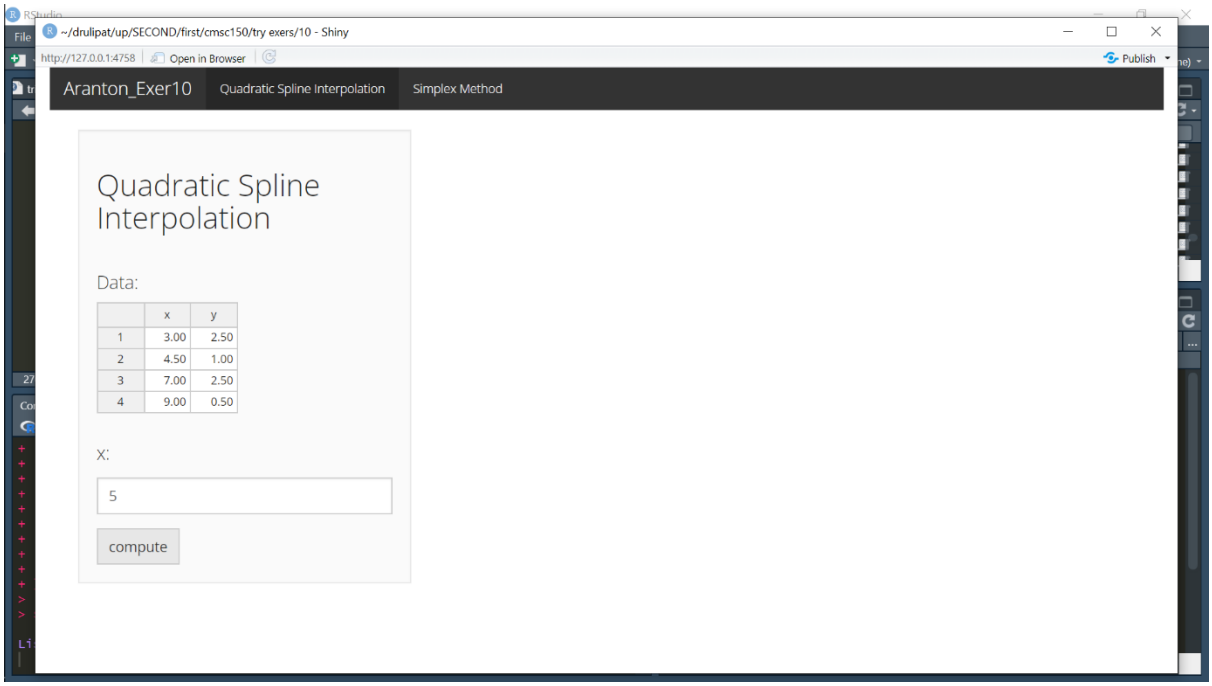
Some notes

1) Aside from shiny, the following libraries are needed to make the program functional:
    - shinythemes
    - rhandsontable
    - shinyalert
2) I don’t claim that the results from this program are 100% accurate, but it seems to be working fine using my test cases.
3) As I didn’t have much time making this, I’m not sure if there would be cases where the program will crash. If it crashes, then please re-launch the program and make sure that the inputs were correct.
4) Thank you!

Quadratic Spline Interpolation Solver

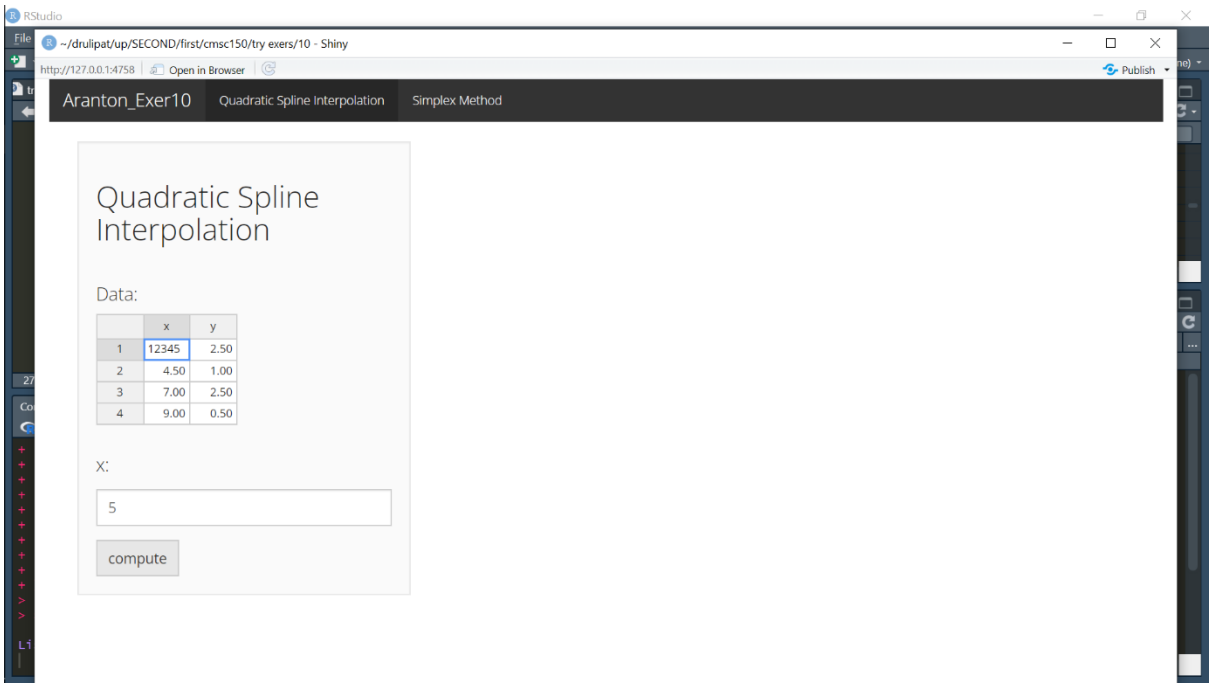
Intro

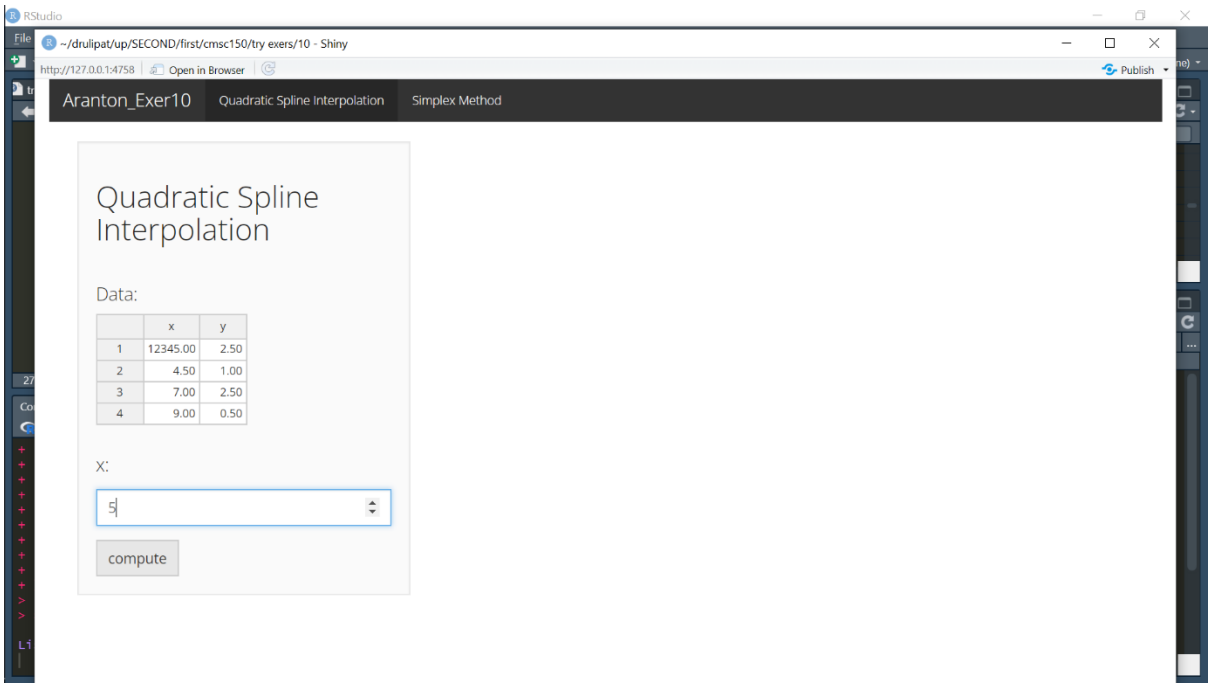
Upon running the application, the Quadratic Spline Interpolation Solver will show up. Note that a sample test case from the lecture is already preloaded.



Editing data values

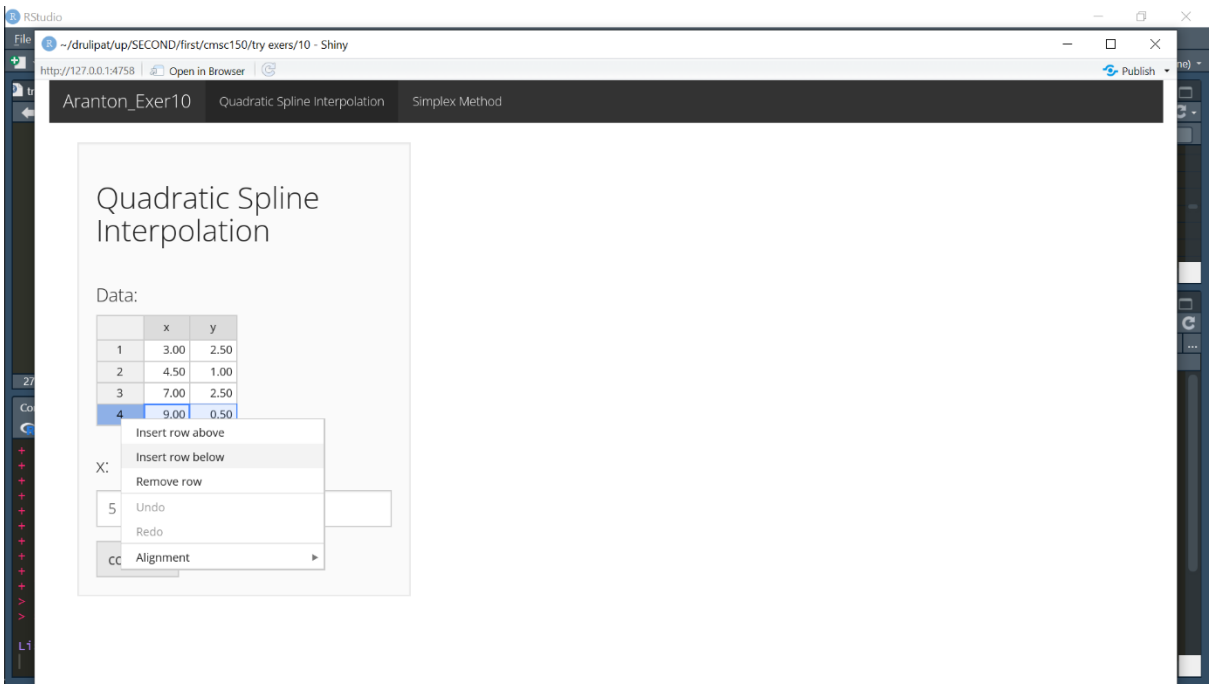
To edit the data of the table, just single left click or double left click the cell of the table. For the x to find, you can also just click to edit.

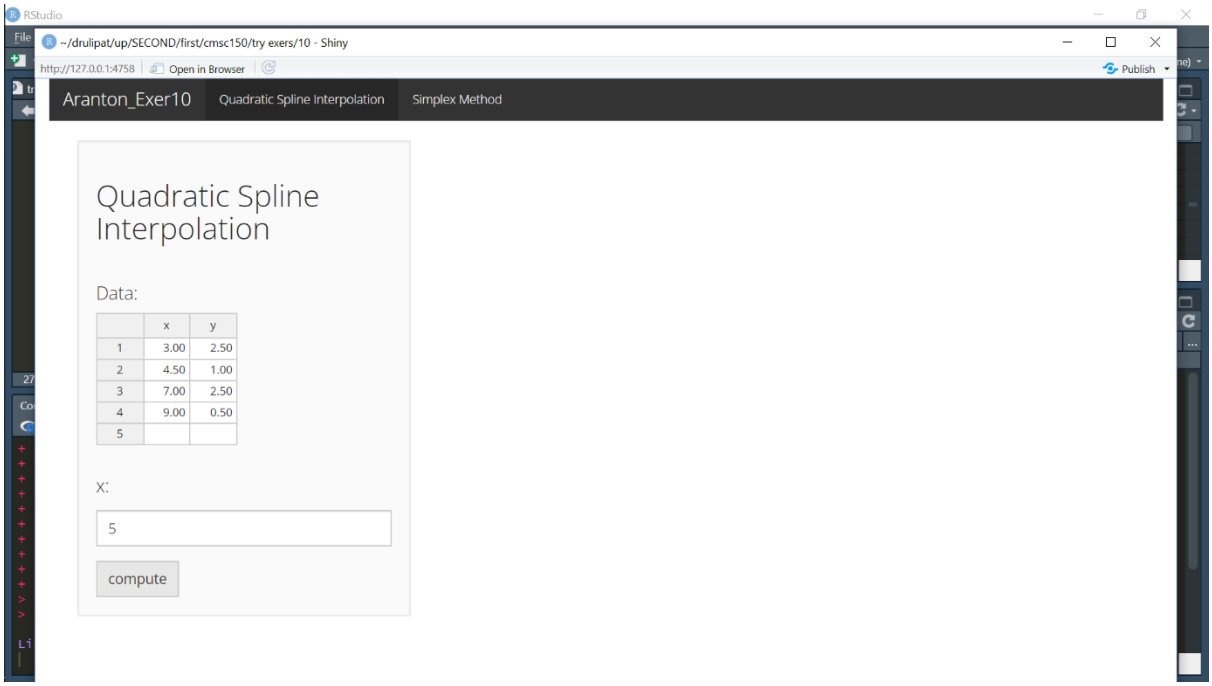




Adding/Deleting rows

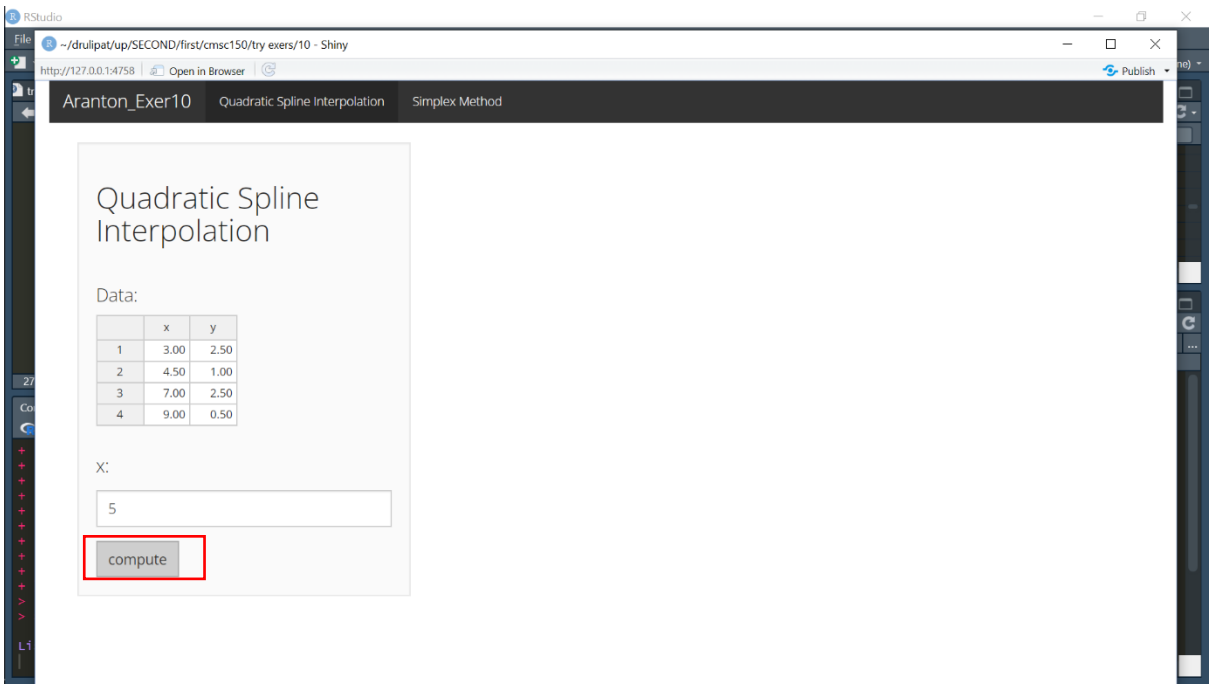
To add or delete a row, just right click a row and select the operation that you want to do. Note that you cannot add nor delete columns.

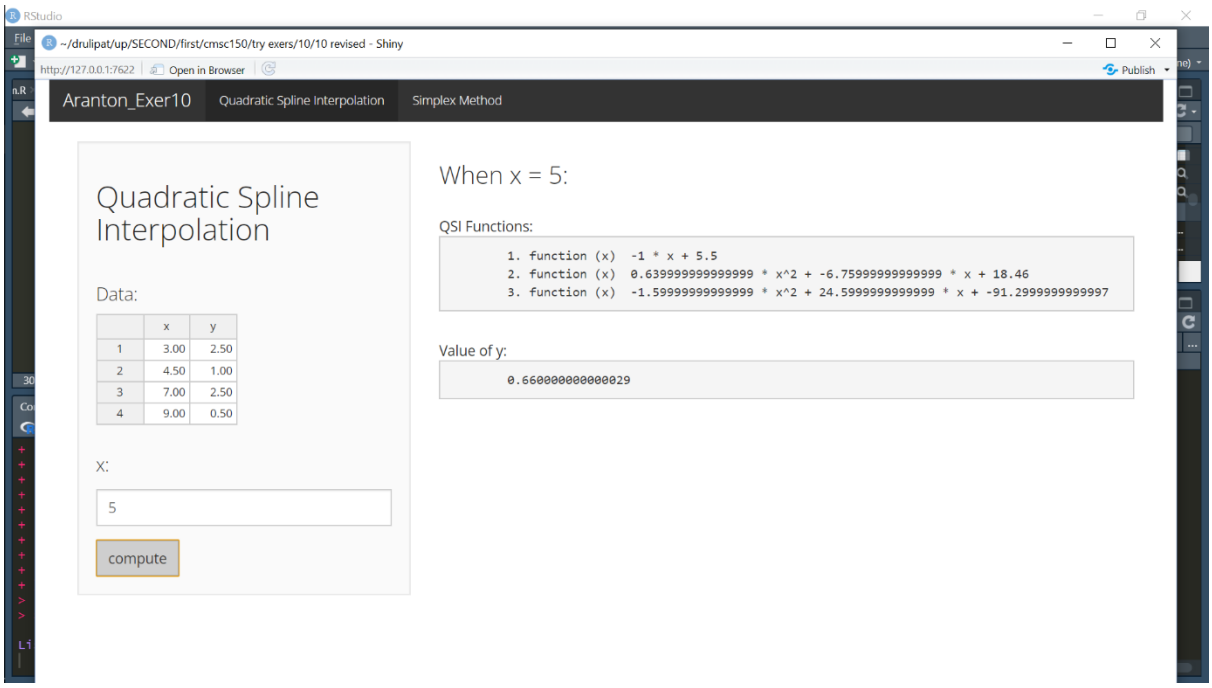




Solving

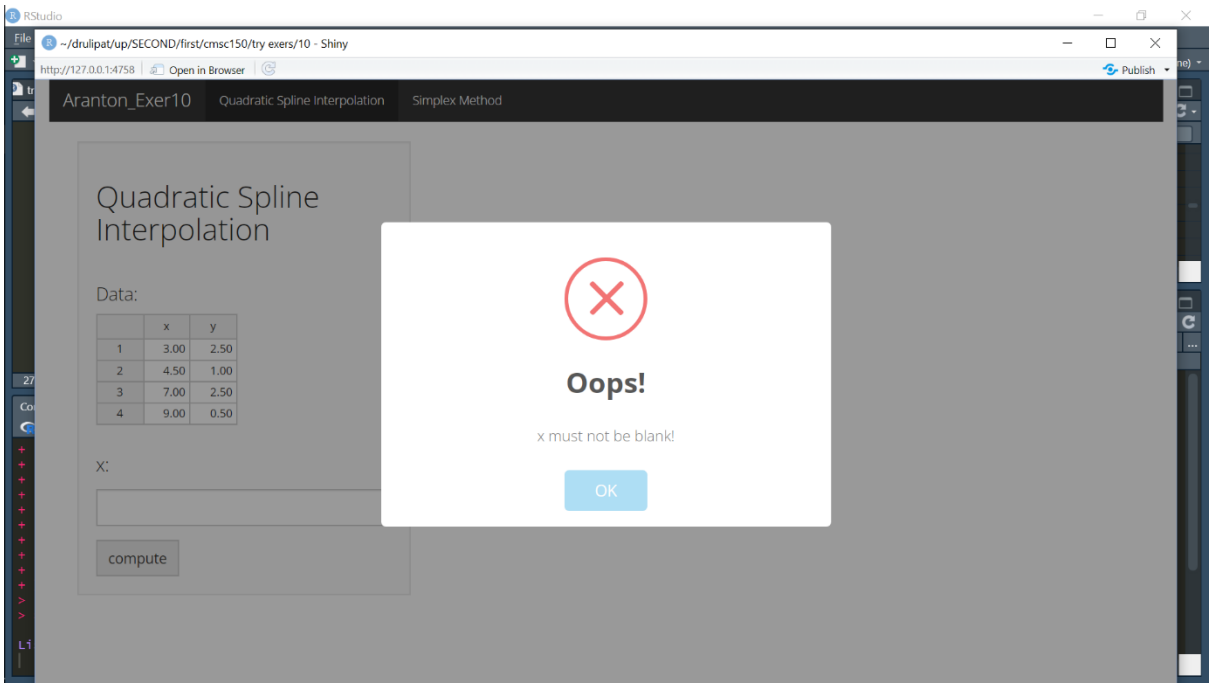
To solve, just click the “compute” button.

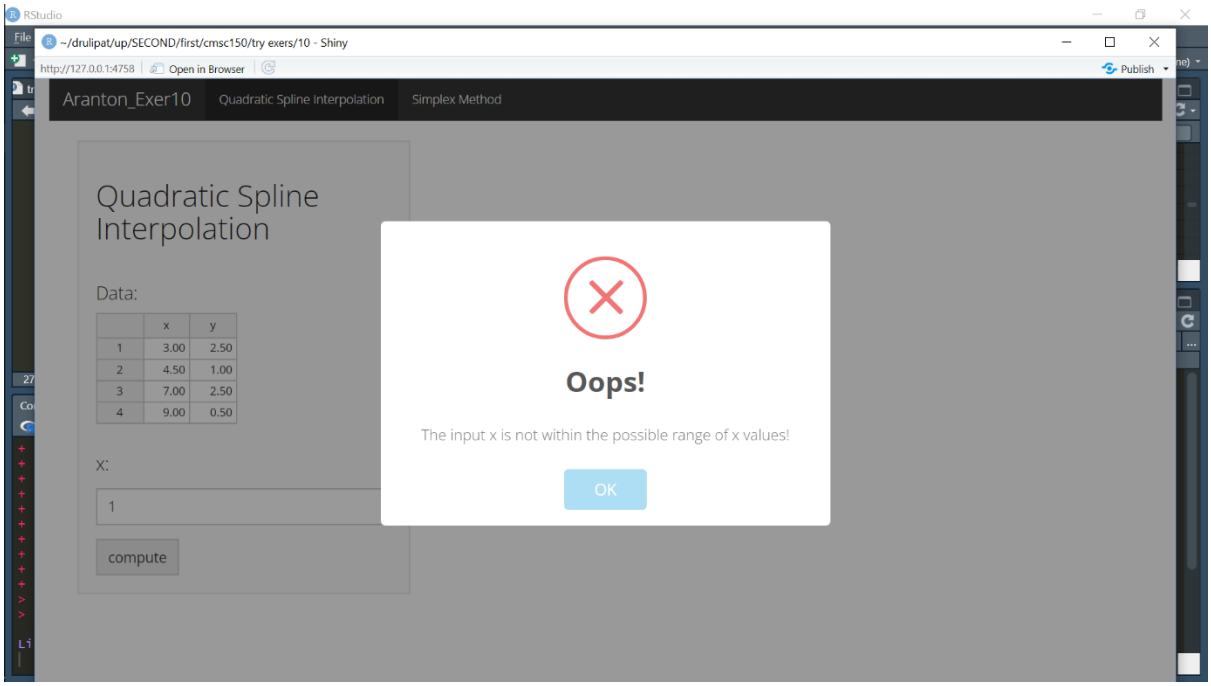


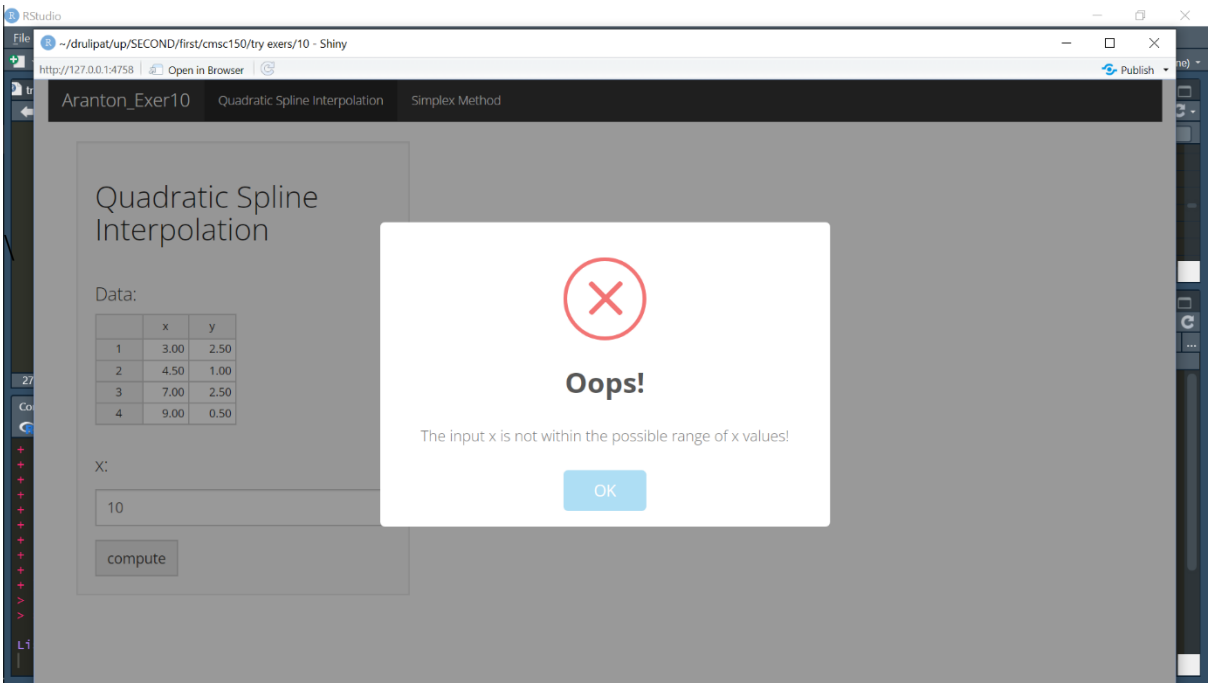


Error alerts

An alert will pop up whenever the x input is empty or is out of bounds.



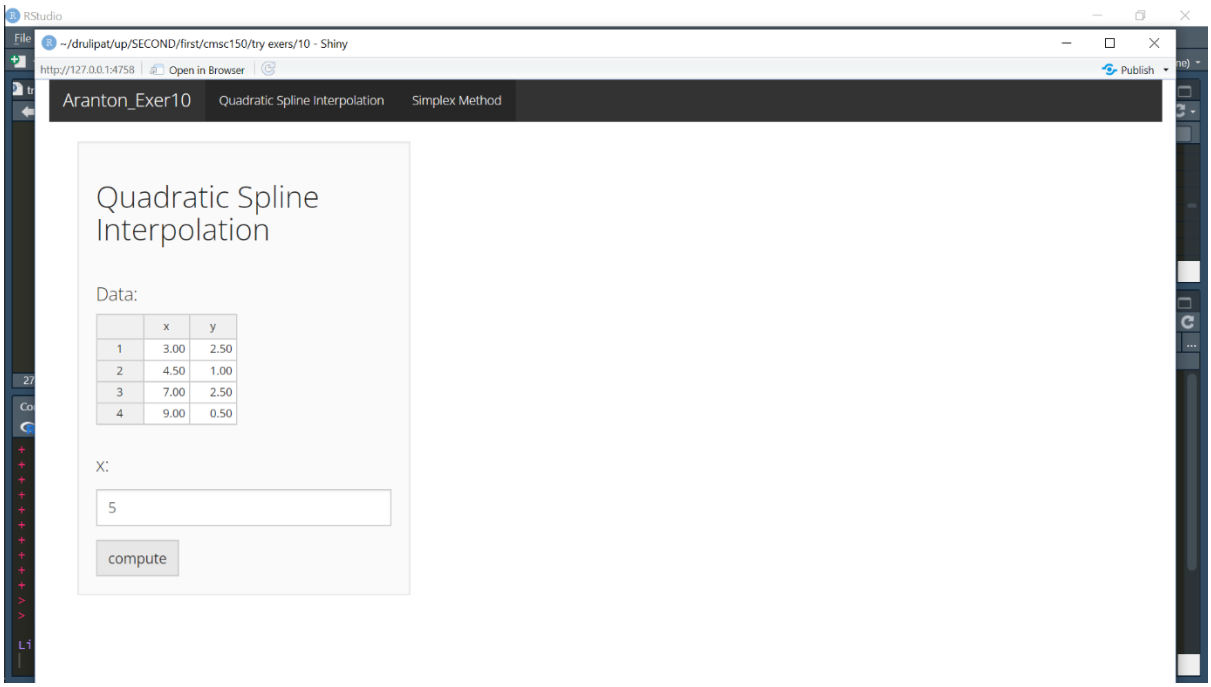

RStudio
~/drulipat/up/SECOND/first/cmsc150/try exers/10 · Shiny
http://127.0.0.1:4758
Open in Browser
Publish
Aranton_Exer10
Quadratic Spline Interpolation
Simplex Method
Quadratic Spline Interpolation
Data:
x
y
1 3.00 2.50
2 4.50 1.00
3 7.00 2.50
4 9.00 0.50
X:
1
compute
Oops!
The input x is not within the possible range of x values!
OK

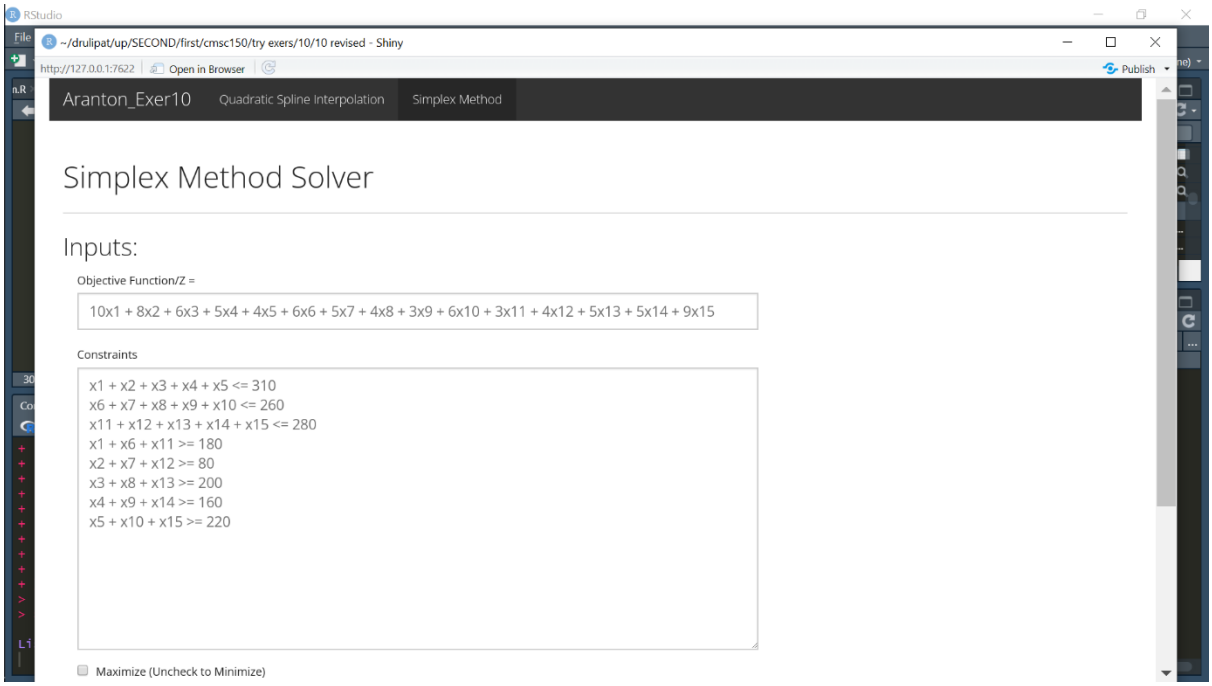

RStudio
~/drulipat/up/SECOND/first/cmsc150/try exers/10 · Shiny
http://127.0.0.1:4758
Open in Browser
Publish
Aranton_Exer10
Quadratic Spline Interpolation
Simplex Method
Quadratic Spline Interpolation
Data:
x
y
1 3.00 2.50
2 4.50 1.00
3 7.00 2.50
4 9.00 0.50
X:
10
compute
Oops!
The input x is not within the possible range of x values!
OK

Simplex Method Solver

Intro

To go to the simplex method, click the “Simplex Method” on the TabPane. Note that the exer 09 problem is already preloaded.

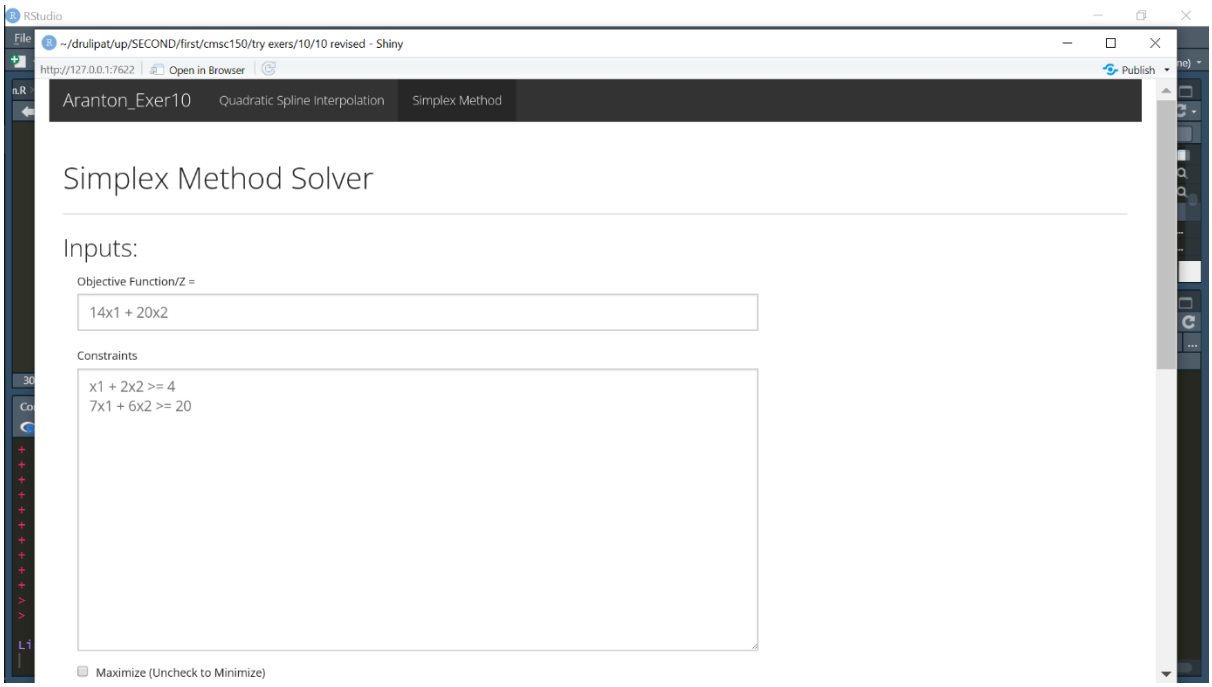




Editing the values/inputs

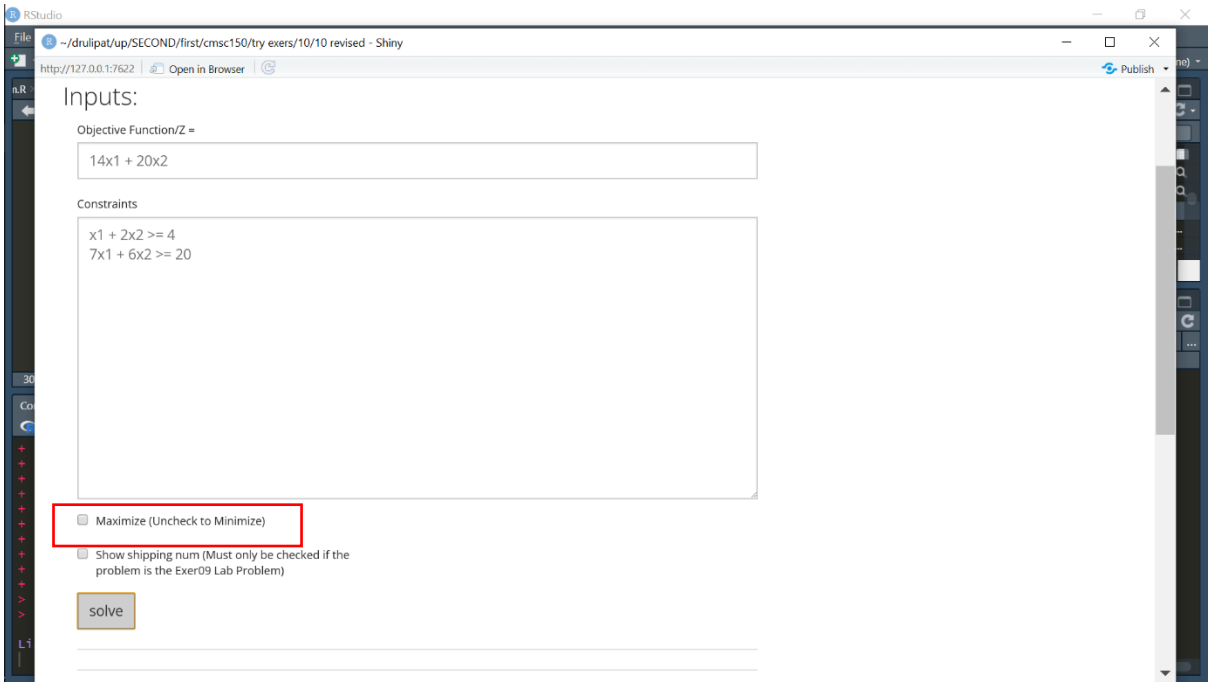
To edit the values/inputs, just click the box of the values that you want to edit. Note that you need to **strictly follow the format** of the preloaded values.

- The variable must always be in the form of “x”.
- The coefficient followed by x then followed by the variable number (ex. 7x1). If the coefficient is one(1), you have to choice to write the number “1” or just proceed with x then the variable number(ex. 1x3 and x3 is both accepted).
- The terms must be separated by a plus sign(+) and if it’s the constraints, then the “<=” or “>=” symbol must be used before the constant and;
- Finally write the constant value(if it is a constraint).
- Spacing must also be the same as in the preloaded values. An example of another set of inputs is as follows:



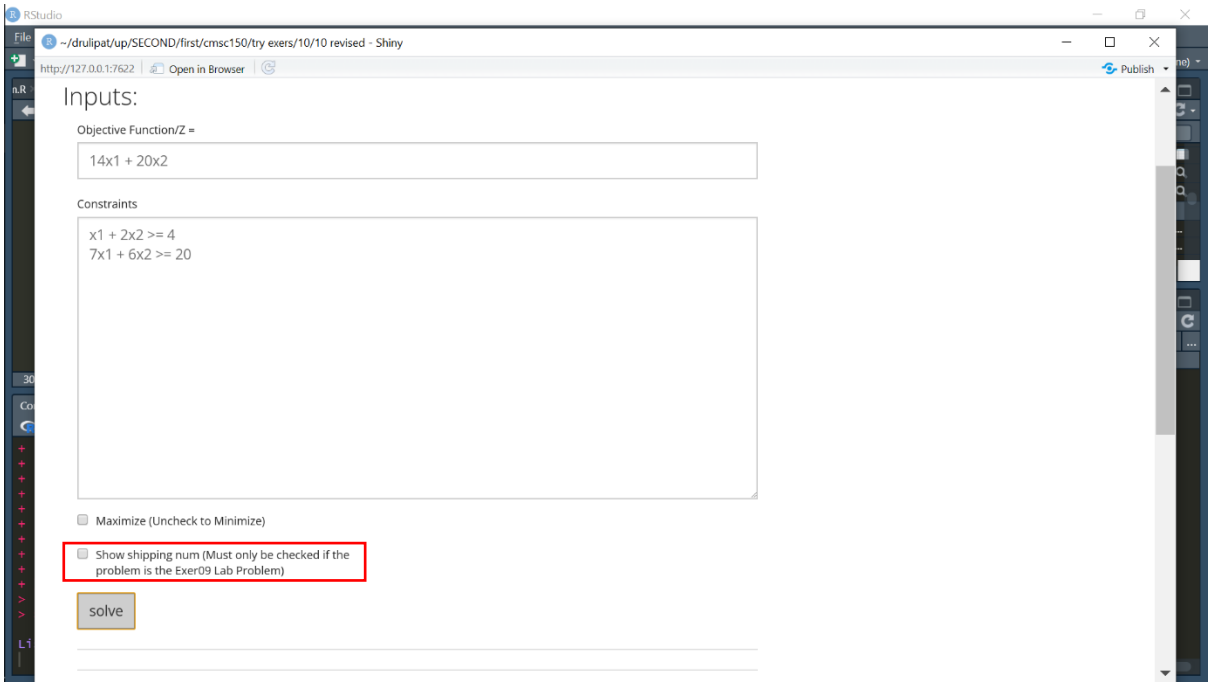
Choosing between Maximization and Minimization

Keep the first checkbox unchecked if you want to perform minimization. Otherwise, check it for maximization.



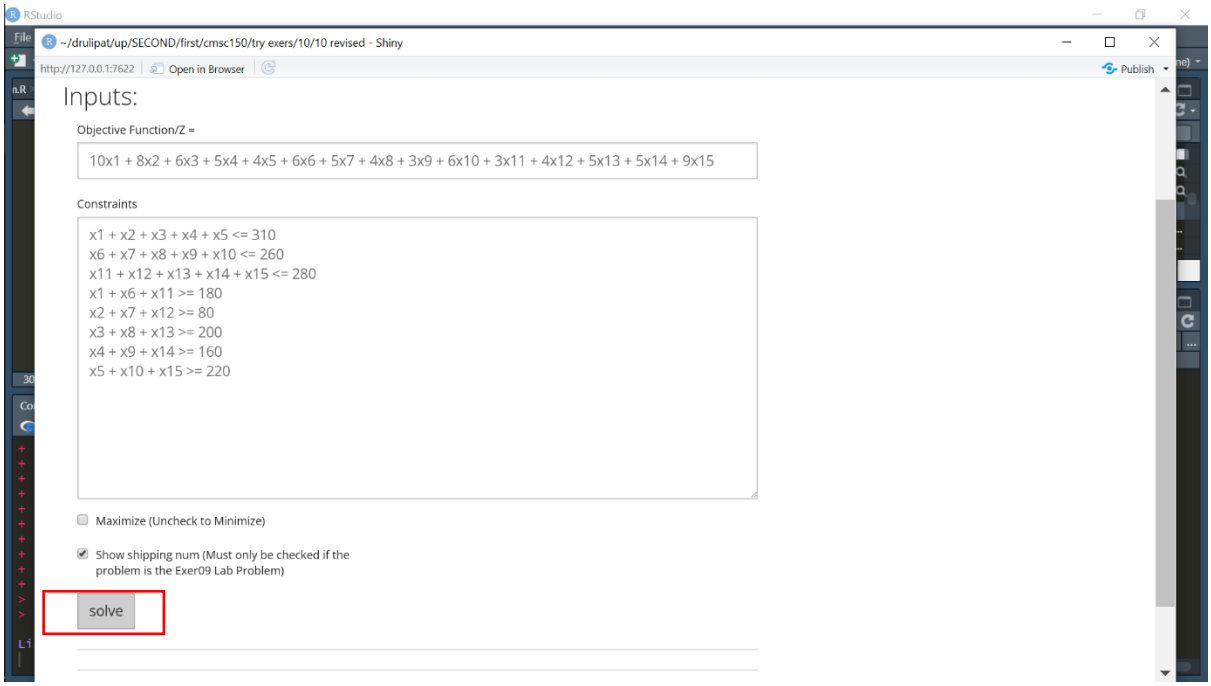
Show the shipping numbers

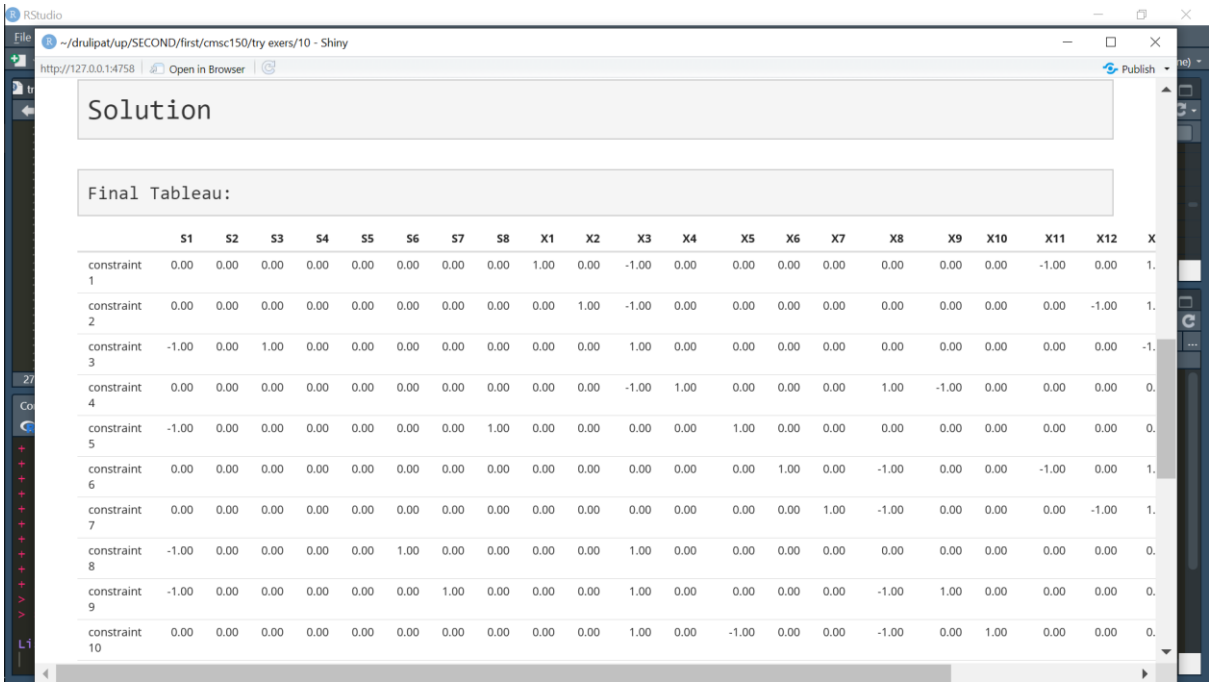
To show the number of items shipped from a plant to a warehouse, keep the second checkbox checked. Note that this is only for the exer9 problem and its other testcases. Checking it for problems aside from the mentioned will be useless.



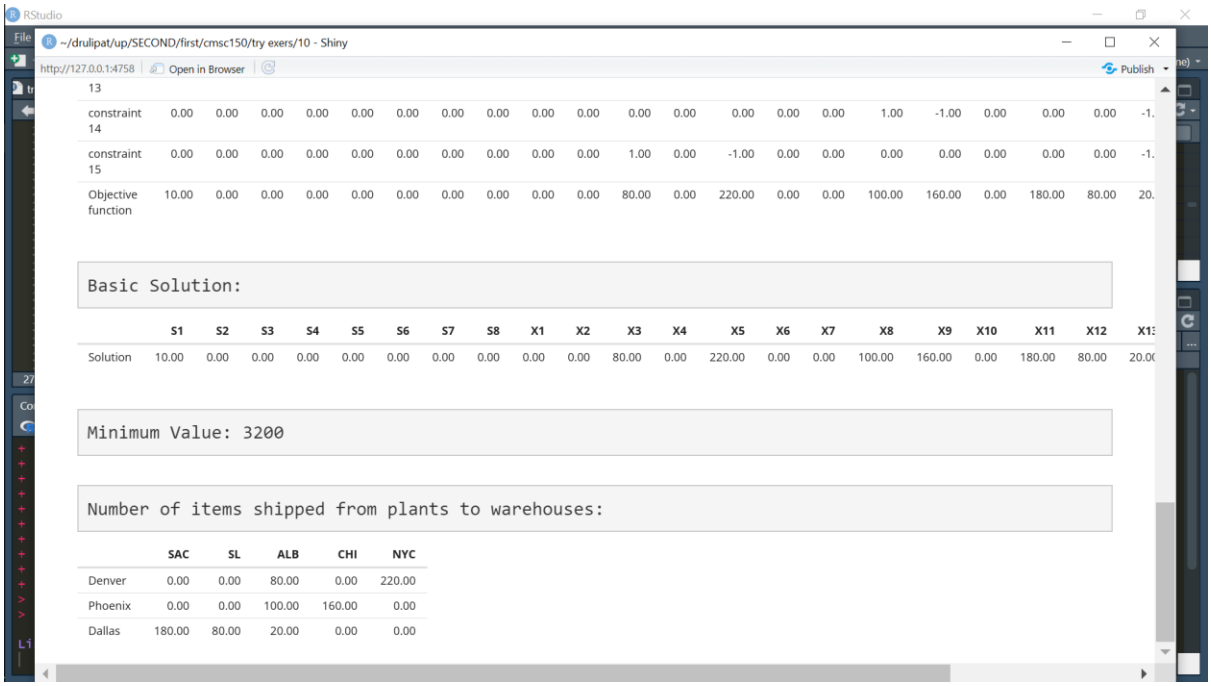
Solving

Click the “solve” button to solve the problem.





	S1	S2	S3	S4	S5	S6	S7	S8	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X
constraint 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	-1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.00	0.00	1.
constraint 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	-1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.00	1.
constraint 3	-1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.
constraint 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.00	1.00	0.00	0.00	0.00	1.00	-1.00	0.00	0.00	0.00	0.
constraint 5	-1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
constraint 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	-1.00	0.00	0.00	-1.00	0.00	1.
constraint 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	-1.00	0.00	0.00	0.00	-1.00	1.
constraint 8	-1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
constraint 9	-1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	-1.00	1.00	0.00	0.00	0.00	0.
constraint 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	-1.00	0.00	0.00	-1.00	0.00	1.00	0.00	0.00	0.



13																				
constraint 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	-1.00	0.00	0.00	0.00	-1.
constraint 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	-1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.
Objective function	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	220.00	0.00	0.00	100.00	160.00	0.00	180.00	80.00	20.

Basic Solution:

	S1	S2	S3	S4	S5	S6	S7	S8	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13
Solution	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	220.00	0.00	0.00	100.00	160.00	0.00	180.00	80.00	20.0

Minimum Value: 3200

Number of items shipped from plants to warehouses:

	SAC	SL	ALB	CHI	NYC
Denver	0.00	0.00	80.00	0.00	220.00
Phoenix	0.00	0.00	100.00	160.00	0.00
Dallas	180.00	80.00	20.00	0.00	0.00