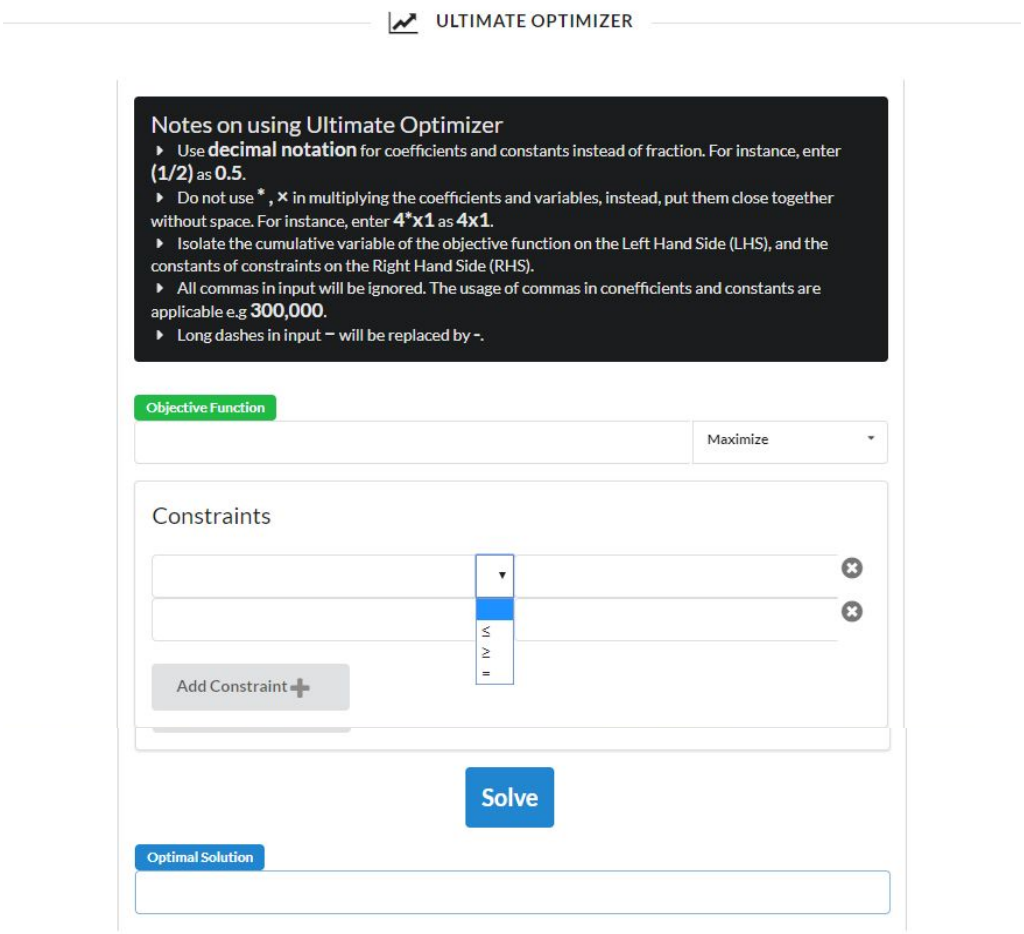


Ultimate Optimizer

For the Objective Function and Constraints, a few restrictions were declared at the top of the page.

Objective Function

In this project, the Objective Function requires that the cumulative variable for the maximization or minimization must be isolated on the Left Hand Side. Right after the input for Objective Function, the user could choose between minimization or maximization on the left side.

Constraints

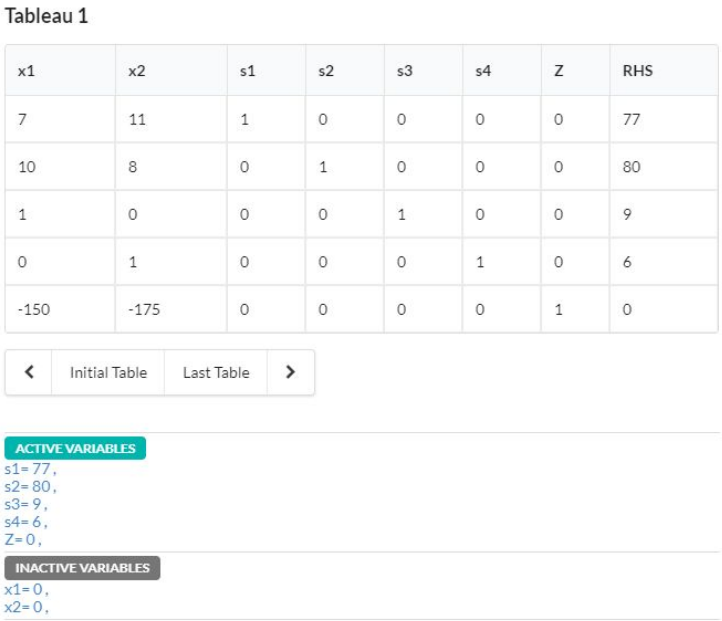
The constraints are divided into three parts: Left Hand Side(LHS), Inequality and Right Hand Side(RHS). Wherein it is said in the restriction that all the constants must be in the RHS. User could either produce at least one constraint and add more as the user needs. A constraint could also be deleted. The inequality of a constraint is restricted to only *less than or equal*, *greater than or equal* and *equal*.

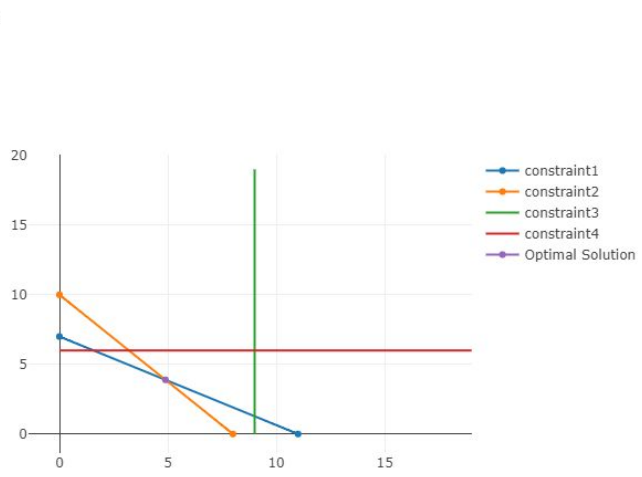
Optimal Solution Solver

For the most important part, the optimal solution will be produced right after pressing the “Solve” button. It will not be generated if there are syntax error or forgotten/ blanked input in the constraints.

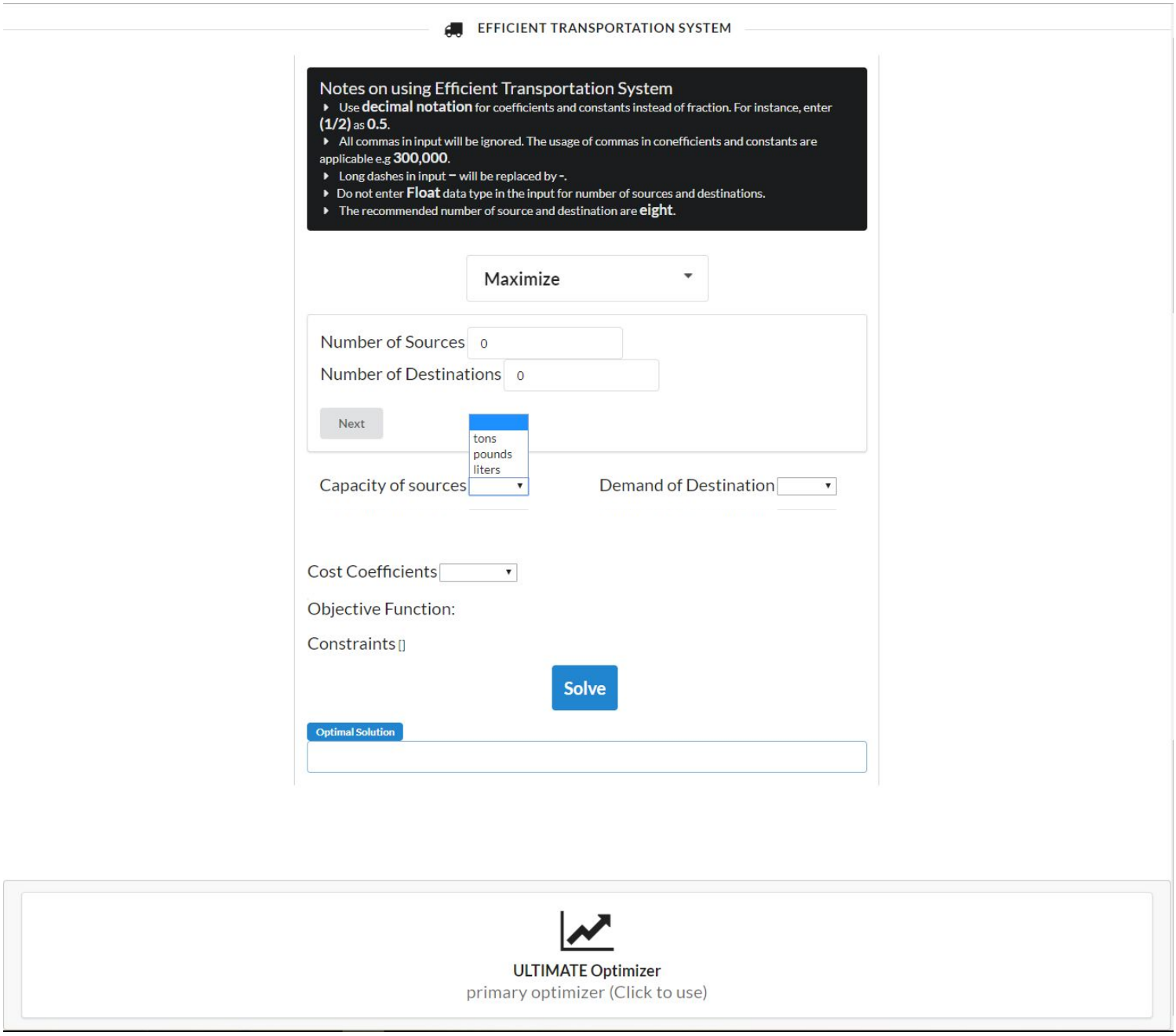
Special Feature: Efficient Transportation System

At the bottom of the page, the button for the Efficient Transport System is placed. When the user pressed the button, the input part will change.





This is the sample output along with the Optimal Solution. The Tableau are viewed by pressing between next or previous. Shortcut button for the initial and final tableau are also provided. In every iteration, the active and inactive variables are enumerated below along with their values. For the graph, it only accepts problems with two variables.

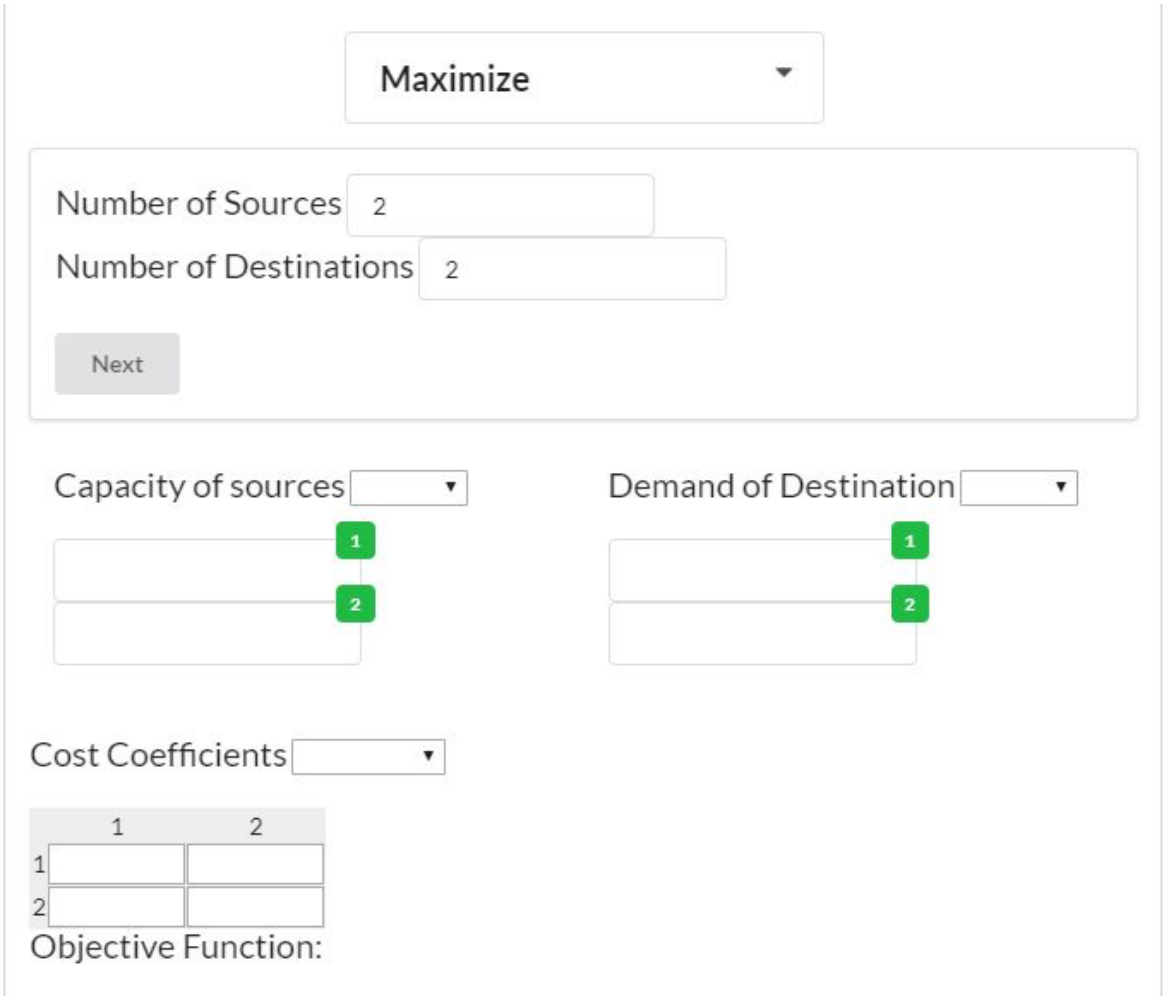


Efficient Transportation System

In contrast to the Ultimate Optimizer, the Efficient Transportation System derives the constraints and objective function by using the input on the source, destination and cost.

At the top of the page, similar restrictions and additional restrictions were declared. The user could still choose between maximization and minimization.

Right after the input on Source and Destination, the “Next” button should be pressed to produce input on the costs.

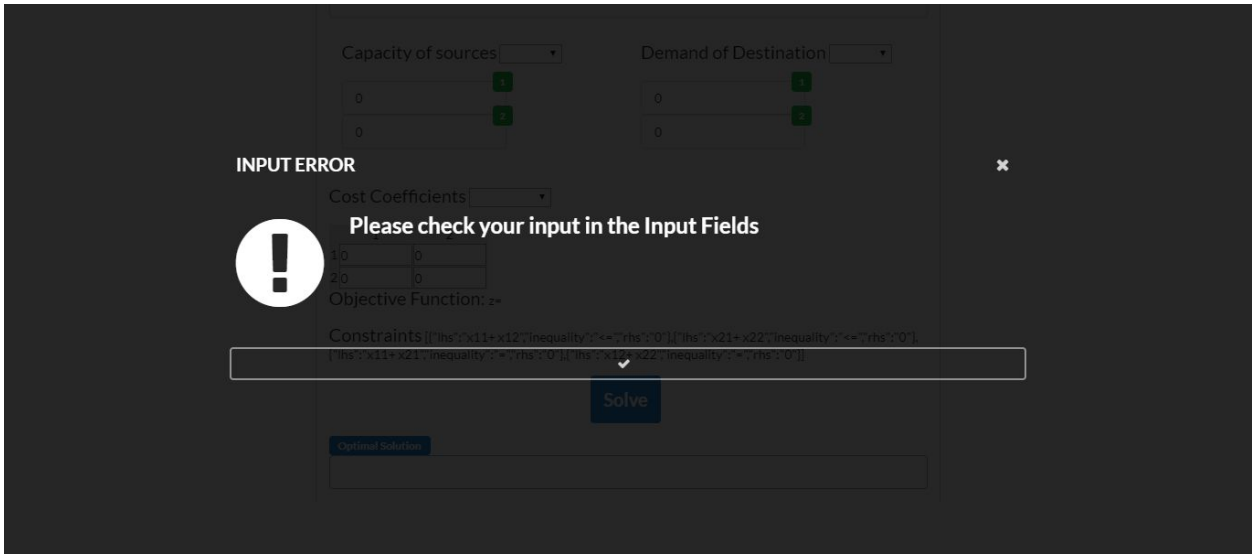


This is the outcome of pressing next button.

Right after filling up all the required inputs, the objective function and constraints will now be derived. The result for solving will be similar to the output of the Ultimate Optimizer.

Special Feature on Parsing:

- On the inputs, it could add the constants of the variables with similar terms as well as the constants given that they are on the similar side of the equation.
    - (e.g) x1+x1 will become 2x1
    - (e.g) 10+11 will become 21
- “+” followed by “-” will not affect the input, but double, triple and so on negation are not supported in this project.
- If other characters are encountered other than what is being used in the project, an error on input will always pop up:



Empty input are also considered as error.

Special Feature on Duality:

- It will only find the duality if and only if the user wants to find the minimum and all of the inequality of the constraints are **greater than or equal**.
- If the duality is not applicable, the negation of the RHS of the objective function is applied instead.

MAXIMUM ITERATION:

- The maximum iteration for problems that iterate infinitely is 999.