Research Project

For the research project I chose the following problem from a past paper:

Clifton Artworks also produces ornate tables and chairs which are displayed in its showroom. In any given week the number of tables produced is x and the number of chairs is y. Limited space in the showroom means that the sum total of tables and chairs must not exceed 10, i.e. $x + y \leq 10$. On the other hand, cashflow requiries $2x + y \geq 4$. The company makes £60 profit per table and £40 profit per chair. Using the Simplex Method (not graphical techniques), find a solution which maximises profit and state the profit achieved per week.

Initializing the input file in the following way:

Please input the objective function into the line below (no spaces):
0z=60x1+40x2
Please indicate if the above function is a maximum or minimum (please write maximum or minimum below):
maximum
Please indicate how many constraints are present in the line below:
2
Please indicate the number of x variables in the constraints:
2
Please input the constraints into the line below (no spaces):
x1+x2<= 10
2x1+x2>= 4

The LPP solver program is equipt to solve the problem without much adjustment to software. It uses a variation of the big M method, with M set to a relatively low value of 100, but this can be increased or decreased in the code easily.

The results produced are the following:
Solution is unique
x1 is equal to: 10.0
s2 is equal to: 16.0
The rest of the variables are equal to: 0
Solution (z) is equal to: 600.0

These results are correct when compared to the answers of the past paper.