COSC 480/MATH 482
Big M Cheat Sheet
Fall 2012

The simplex method, coupled with "Big M", can handle a number of different linear programming problems. Here we list modifications that need to be made for anything that could show up:

1. Maximize the objective function - no change needed!
2. Minimize the objective function - negate both sides of the Z function.
3. Constraints with $\geq$ - subtract a surplus variable to the constraint, add an artificial variable and subtract M* that variable from Z. If we're currently minimizing, add to Z instead.
4. Constraints with $\leq$ - add a slack variable to the constraint.
5. Constraints with $=$ - add an artificial variable to the constraint, and subtract M* that variable from Z. If we're currently minimizing, add to Z instead.
6. Negative right hand sides - negate both sides and flip the inequality (from $\leq$ to $\geq$, for instance)
7. Dealing with "Big M" variables in Z - solve for the variable and substitute

In general, this is the order you want to modify your problem:

1. Fix negative right hand sides.
2. Deal with $\leq, \geq$, and =constraints.
3. Change minimize to maximize.