Linear Optimization (Spring 2023): Homework 8

- The total points (given in parentheses) add up to 150. You will be graded for 145 points (with the possibility of getting up to 5 points as extra credit).
- BT-ILO stands for the text (Bertsimas and Tsitsiklis: Introduction to Linear Optimization).
- **You must email your submission as a PDF file to kbala@wsu.edu**. You are welcome to write answers by hand, and scan the writings **into a PDF file**.
- You could **use Matlab** to carry out the computations for the simplex method (revised or full tableau versions). You should **include output from your Matlab session in your PDF submission**.
- **Your file name should identify you in the following manner. If you are Beatrice McGuillicutty, you should name your submission BeatriceMcGuillicutty_Hw8.pdf. If you want to add more bits to the title, e.g., Math464, you could name it BeatriceMcGuillicutty_Math464_Hw8.pdf, for instance. But you should start the file name with BeatriceMcGuillicutty; and NOT "Beatrice McGuillicutty" or "Bett_McGuillicutty" or ...**
- **Begin the SUBJECT of your email submission with the same `FirstnameLastname`, e.g., "BeatriceMcGuillicutty Hw8 submission".**
- **This homework is due by 4:59 PM on Tuesday, March 28**.

1. (30) Solve the LP given in Example 3.5 of BT-ILO page 101 using the revised simplex method. You should use $B(1) = 4, B(2) = 5, B(3) = 6$ as your starting feasible basis. Show all the calculations.

2. (30) Solve the problem 1.15 part (b)-(i) in BT-ILO page 37 using the revised simplex method. This is the problem with the overtime option of up to 50 hrs. Once in standard form, choose the most obvious basic feasible solution as your starting bfs, with basis matrix $B = I$, the identity matrix.

3. (35) BT-ILO Problem 3.12 from page 131.

4. (35) BT-ILO Problem 3.21 **(a)** from page 134. Use the decision variables x_i = # times process i used for $i = 1, 2, 3$, as given in the Homework 2 Solutions. Then use the tableau implementation of the simplex method.

5. (20) BT-ILO Problem 3.18 (a), (b) from page 133.