Programming Assignment Part I

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1 Deliverable

1. Part 1: pivotWithEtaFactors.m answering the following questions:
2. $\pi^T * B = c_B^T$ when $B = L * U * E1 * ... * En$
3. $B * \tilde{b} = b$
4. $B * \tilde{A_j} = -A_j$
5. Find the new eta matrix to append to the basis factors. Build it using a sparse identity matrix with the leaving column replaced by $-\tilde{A_j}$.

2 Implementation

I began with making sure I understood the revised simplex algorithm, read Vanderbei's description, but computing.dcu.ie/ lkillen/teach/CA427rsm.pdf ended up being the most helpful description of it. I re-watched the videos regarding revised simplex to make sure I understood the notation in the formulas above.

Then, I replaced every instance of a computation using Ab or Ab' with the eta file.

The last thing I did was to add the basis update: I add an eta-factor to the file which is a sparse identity matrix except for $\tilde{A_j}$, inserted in the column for the enteringIndex. According to testMyPivot, this works as expected.