Project 1 ME EN 51/6184

You work for a consulting firm and have been assigned to work for Metal Co, which manufactures 6 metal products. You are to help them develop an optimized work schedule for the plant over the next week. Each day, the company can process up to 500 tons of steel. The company buys raw steel and melts it down to create products. It currently purchases raw steel for $2,000 a ton.

The excel sheet has a list of the created products along with how much each item sells per ton. It also has the cost per ton to produce the product. This price does not include the raw material costs. The excel sheet also has the anticipated demand for each day.

The factory is open all days of the week. The factory produces the product on the day and ships out all of the products by the time the day ends. This leads to a lot of product leaving between 6 pm and 10 pm, but the product leaves on the day it is produced.

Any ton left in inventory for a day cost $20.

An item on backorder is charged 2% of its selling price every day. This is due to an expected loss of consumer confidence and future demand.

Please determine the optimal inventory policy. For a point of reference, every week, the company typically has a profit of 2 million.

There is no starting inventory and you do not need to have an ending inventory and can have no backlog at the end.

If you are good at reading excel, please read in the data on your own. It took me about 30 minutes to read the data, but I had to look at various other files that I had. For others, I have included a read the data python file that should read all of the data for you. At this end of this file, I put some code to write out to cells in an excel file. I used that to make an answer that I could more easily read and check.

I will not be doing this on other projects, so please take the time to understand it.

As is standard policy for your consulting firm, you need to prepare a one paragraph executive summary, which should is intended for the CEO or CFO and is designed to convince them that your solution is better than the status quo. Additionally, you must prepare a technical summary (your model should be included in the appendix), which is intended for an Systems Engineer at either your company or the client. The technical report should validate your methodologies. These reports need to be well written and formatted.

Grading 20% Executive Summary, 25% Technical Report, 55% to the correctness of your solution.