Matlab Truss project

1) Draw a custom truss with 7 elements for analysis (can be symmetrical with more elements or asymmetrical with 7 elements). This is the part of the Design section of your report.

2) Assume your own truss span (L) and truss height (h). Clearly label these dimensions in your truss drawing. assume your units of measure and weight. Be consistent with the units of measure.

3) Load your truss at all panel points with your body weight. Make sure these units are in the same system of weights and measures as the truss design. Label the truss drawing with all the loads using arrows for force representation.

4) Calculate the reactions at each end of the truss (show you work). Label the truss drawing with the reactions using a correctly directed arrow format.

5) Include a summary of all assumptions and other information as you deem necessary in the Design section.

6) Calculate the individual cosine vector components of each member for each panel point (note: use radians measure for the cosine evaluation). Be careful with the signs on the cosine data.

7) Explicitly type the A matrix data (direction cosine matrix) and b vector data (known loads and reactions) in you report. This is part of he Mathematical Analysis section of the report.

8) Type the general vector equation you are solving and type the inverted form of the equation for x. The x (unknown member forces) will be the vector to be solved by Matlab.

9) Write the Matlab script and including the Design data from above. Include the script in the Solution Technique section of your report.

10) Calculate the x unknowns (member forces) using the Matlab script.

11) Enter the x member forces and their units as a row table per member. This is part of the Results section of your report.

12) Create a new truss diagram with the member forces labeled with a capital C or T after the the result along each member (dispense with the numerical sign from the Matlab results). Note: T is tension (+ in Matlab result) and C is compression (- in Matlab result).

2) Presentation: Use straight line drawing for the truss diagrams (use a straight edge).

Type all equations and data. Type all matrix(A) and vector arrays (x, b). Note: include all elements of the arrays even if they are zero. Format your presentation to align columns without 'jaggedness'.

Remember to type your name on the left at the top.

Due: Two weeks from today.