Comments on Assign. 3 Buck Schreyer.
ME 562 Spring 2015

My overall impression is that everyone did a comprehensive job with a quality that I would rate as ranging from Good to Excellent. I am subtracting points from full credit as an indication of where I think you can improve. On your HW I may subtract points and list only the following topic number to indicate where you could improve and become equal to the best of your classmates.
Remember: The key focus is on understanding the material — I believe everyone meets this criterion.
What I am focusing on below are items where each of you (and me) can add to demonstrate to others, and to explain in the best possible way, that you have done a quality job. These are just my thoughts — other items may also be valuable.

1. Summary

Provide a short description (1-3 pages) of what you have done overall.

2. Description of your Program.

All of you have written an extensive program. Provide a written summary describing the structure of your program. You can state the nature of the main program, each subroutine, how you formatted your input and your output. Examples of important information is how you specified your paths (through strain increments, say), how you handled stress-prescribed paths, multiple segments, and termination criteria.

3. Verification

At the end of each leg, you have values of strain. Do hand calculations to determine the corresponding values of stress. Show that the results of your program are the same as these hand calculations.

4. Specific Plots

Some thought has to be given as to which plots are most meaningful for any given path. Examples are:

4.1 Uniaxial Strain.

Only one-nonzero normal strain component, say e_{11}. Plot of $\sigma_{11}, \sigma_{22}, \sigma_{33}$ vs. e_{11} most meaningful, with verification of the final values of $\sigma_{11}, \sigma_{22} + \sigma_{33}$.

4.2 Plane Strain.

Any path involving components e_{11}, e_{12}, e_{22} is appropriate. Say you choose $e_{11} + e_{22}$ as nonzero components. A plot of e_{11} vs. e_{22} defines the path. Again verify final values of stress.

4.3 Cycle of Strain Component e_{11}

Perhaps the simplest are plots of e_{11} vs. step (or time) as well as $\sigma_{11}, \sigma_{22} + \sigma_{33}$ vs step showing specifically that you have met the cut-off values for $\sigma^+ \neq -\sigma^-$.

4.4 Uniaxial Stress. (σ_{11} - say)

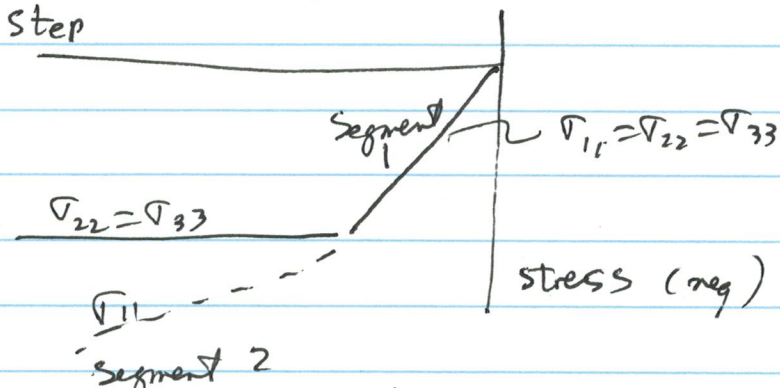
The object here is to show that you have incorporated an override correctly to obtain zero $\sigma_{22} + \sigma_{33}$ vs. e_{11} and that σ_{11} vs e_{11}, e_{22} vs e_{11} & e_{33} vs e_{11} are correct.

4.5 Hydrostatic stress.

Here you have to show your override is correct to yield $\sigma_{11} = \sigma_{22} = \sigma_{33}$ and that e_{11}, e_{22}, e_{33} (not equal) vs. σ_{11} are correct.

4.6 Triaxial Compression.

Perhaps stress vs. step is the most convenient:



Similarly for strain: But other plots are also useful.

4.7 Triaxial Extension

Again Stress vs. Step.