Lab 10

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Note: Unless specifically asked to submit a solution, just work on the exercises and keep track of your progress in your journal.

1. Go watch the first 1.5 hours of https://www.youtube.com/watch?v=K2xjCsXnfYI
2. Take a look at "step-amr" mentioned in the video (it is also in the class repo). Add text output to show the number of locally owned cells and locally owned dofs on each processor. Report the output when running with a) 3 ranks and b) 2 nodes on Palmetto (and as many ranks as are available).
3. Make yourself familiar with step-40 (I added a copy of step-40 to the class github repository). The step-40 documentation is at https://www.dealii.org/current/doxygen/deal.II/step_40.html. Go read it.
4. Create pictures of the solution (run with 3 ranks) where the mesh, the cell distribution between processes, and the solution (using elevate) is visualized. Pick a refinement cycle that looks good (maybe 3 or 4).
5. Make sure you understand the role of `system_matrix.compress(...)` in the assembly routine.