Project Report and Presentations
Finite Element Analysis
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Report
The report may be about 4 to 10 pages long.
Provide literature survey on your problem.
Discuss various aspects of your problem to show your understanding.
Formulate one or more problems and solve.
Show your code modifications.
Discuss results.
Provide references.

Presentations
Each member in the group is expected to speak.
Apart from the group grade following individual characteristics will be assessed.
Preparation
Understanding
Presentation

Some hints are provided on the next page.
Some Suggested Hints

1. 1-D Bar with weight consideration
   (Read material property wt per unit vol <change NPR =2 to NPR = 3>, add contributing weight forces in element stiffness routine.

2. 2-D Truss with weight consideration
   (See comment above.)

3. 2-D Truss with buckling consideration
   (Check elements with compressive stress. Critical compressive force – Euler buckling load is \( \pi^2 EI/L^2 \) for pinned-pinned. L is element length. See buckling of shafts reference in *machine design, or structural mechanics*.

4. Beam with weight/bearing supports – Give weight per unit length for the beam and treat it like uniformly distributed load. See Frame2D theory for treatment of uniformly distributed load.

5. 2-D triangle with weight consideration
   (change NPR = 3 \(<E,\nu, \alpha>\) to NPR = 4 fourth property wt per unit vol. and see comment in 1, 2 above)

6. 2-D Bimetal Thermal Switch
   (See what is bimetal switch. One of your problems may be 6.26)

7. 3D- Truss
   (Implement section 4.3 material. One problem for consideration is 4.18. You may also check with Solidworks FEA.)

8. Bicycle Frame- use Frame2D

9. 2-D Heat Transfer
   (See pages 359-368 and program HEAT2D.)

10. 2-D Orthotropic Plate
    (Pages 216-220. Use D matrix modifications Eq. 6.81 into CST.)