Subject: Solid Mechanics Simulation
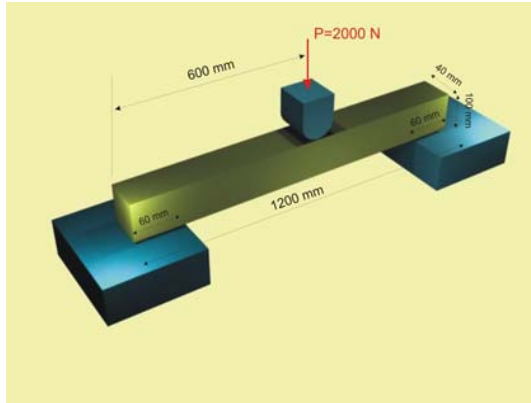

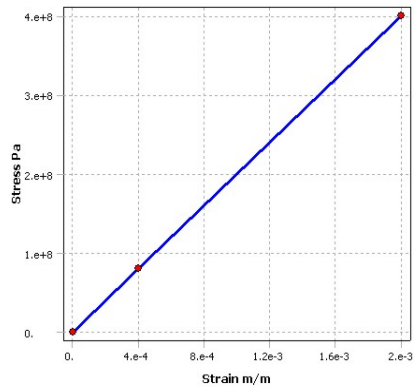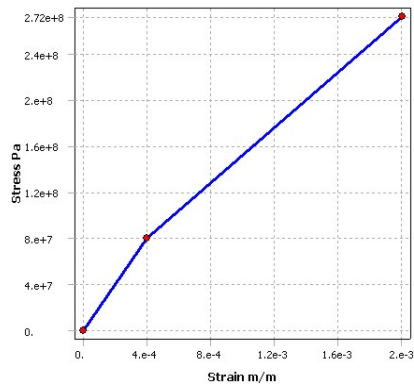Fig. 1

Assignment: The beam with dimensions 1200x40x100 mm is fixed and loaded as is shown in firg.1. The beam material is homogeneous bilinear hardening with yield strength 80 MPa and Poisson's ratio $v=0.27$ (fig. 2).
Determine the stress and strain state in varies tangent modulus.

Submit:
1. Geometrical model, including the mesh and the boundary conditions.
2. The stress (von Mises) state for *Material 2*.
3. The strain state for *Material 3*.
4. Compare the flexure of the beam after reloading for the materials in fig. 2.
5. Animate the deformation process for *Material 4*.

Answer the next questions:
1. What is the mechanical behaviour peculiarity of the material and where it is treated in the solution?
2. What element type was used?
3. What element options were used?
4. What real constants were used?
5. How many nodes and elements were created?
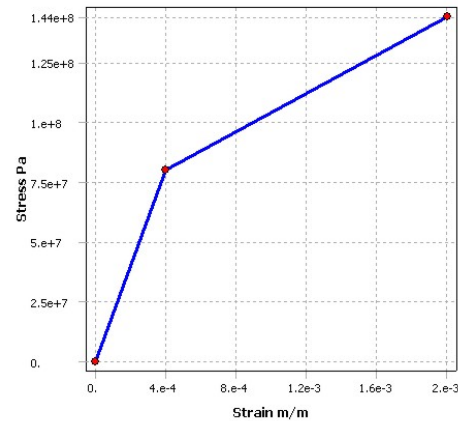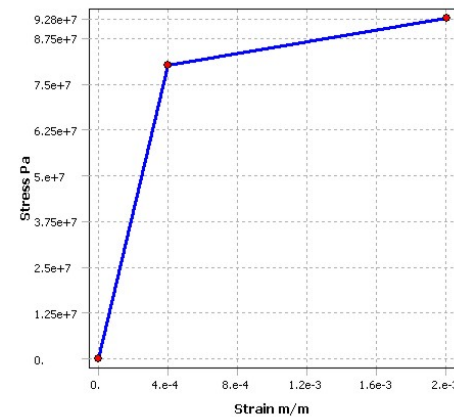6. What is the % error for your solution?

Fig.2*a*   Material 1

Fig.2*b*   Material 2

Fig. 2*c*   Material 3

Fig. 2*d*   Material 4