LABORATORY ASSIGNMENT

Using the ABAQUS software, perform a numerical analysis of a plane stress problem as shown in the figure, within the elastic–plastic range. Determine the location of maximum von Mises equivalent stresses (HMH) and the load value at which first yielding occurs. Solve the physically nonlinear problem.

Track the development of plastic deformations based on the von Mises yield criterion (HMH flow theory).

In the report, include:

- plots of equivalent (von Mises) stresses and displacements (for the static case),
- a map of equivalent plastic strain for the first and last time steps,
- graphs of selected strain–stress (ε–σ) components for:
    - a point in the plastic zone and
    - a point in the elastic zone.

At the end, please include a sketch of the assumed geometry, with boundary conditions, load, and reference points clearly marked and referred to in the table below.

Input Data:

- **Young's modulus** E= ..... N/m^2
- **Poisson's ratio** ν= .....
- **Yield stress** σ_y= ..... N/m^2
- **Linear hardening modulus** H= ..... N/m^2
- **Edge load intensity** q= ..... N/m

RESULTS

Problem	Quantity and Location	Value
STATIC	**Load value at the onset of first yielding**	
	Maximum applied load	
	Maximum displacement at point	
	Maximum equivalent strain at point	
	Maximum equivalent (von Mises) stress at point	