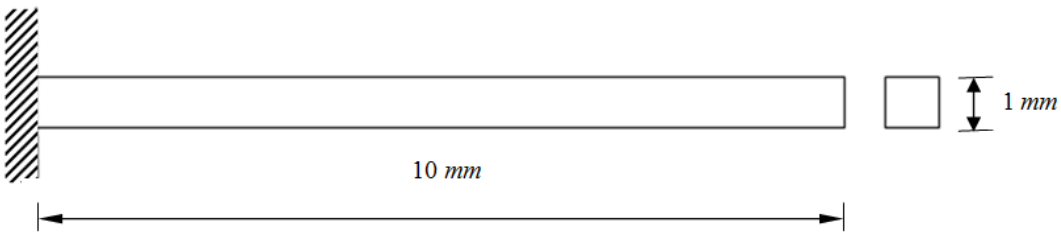
FREE VIBRATION ANALYSIS OF A CANTILEVER BEAM



PROCEDURE

1. Create Keypoints

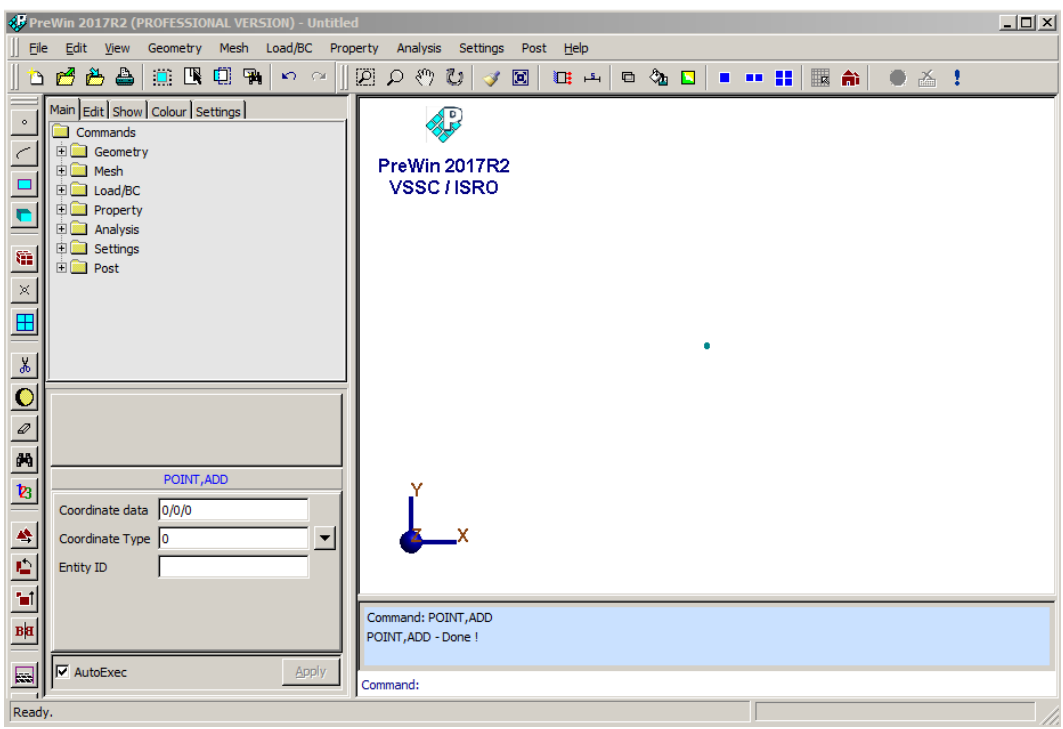
Command : POINT,ADD

Menu : Geometry → Keypoint → Create → By X/Y/Z

Parameters :

Coordinate data	0/0/0
Coordinate type	0
Entity ID	

At the end of the operation your screen should look like this.



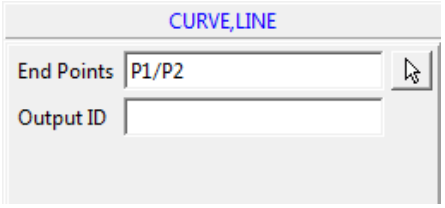
Similarly create a point at (10/0/0)

2. **Create Curve**

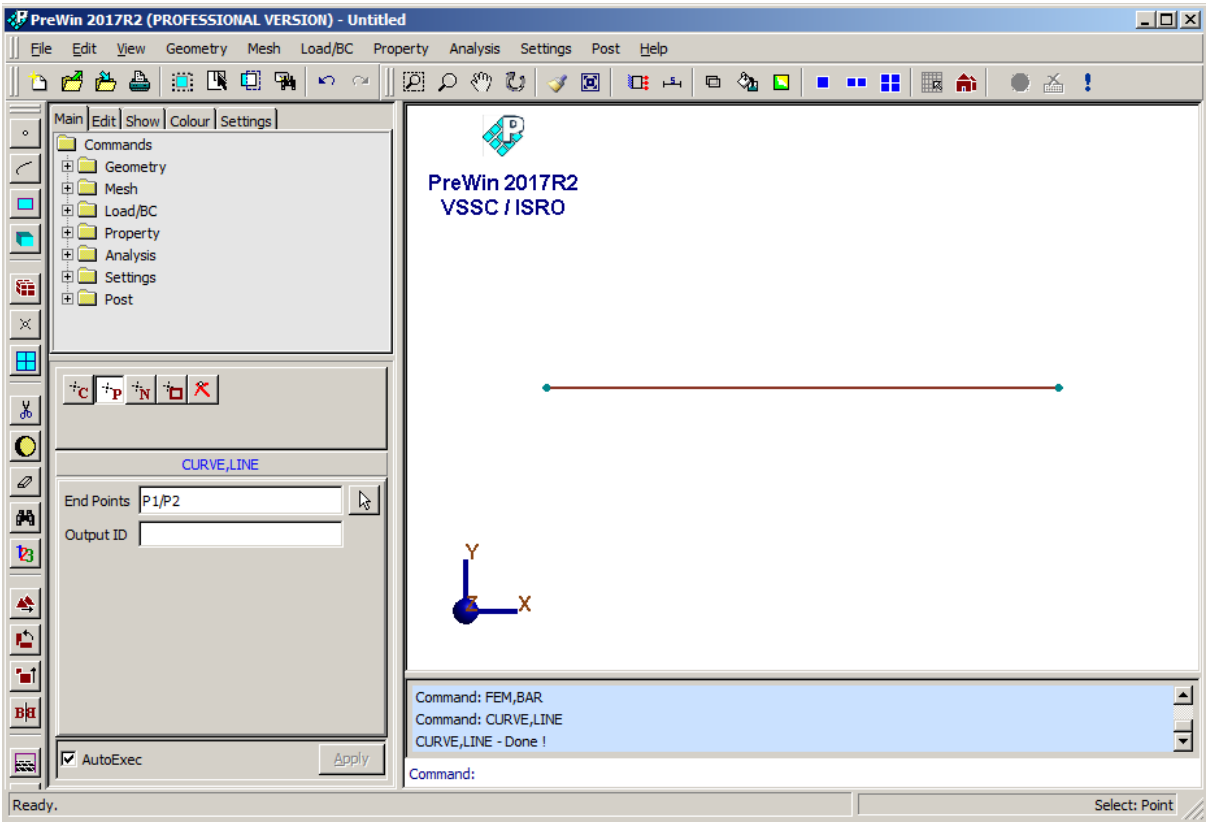
   Command : CURVE,LINE

   Menu : Geometry → Curve → Create → Line

   Parameters :



At the end of the operation your screen should look like this.

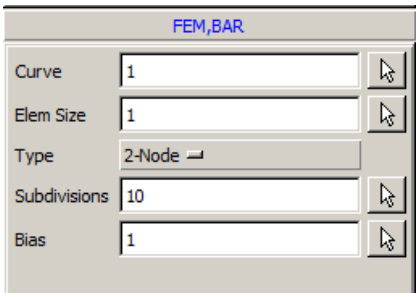


3. **Generate mesh**

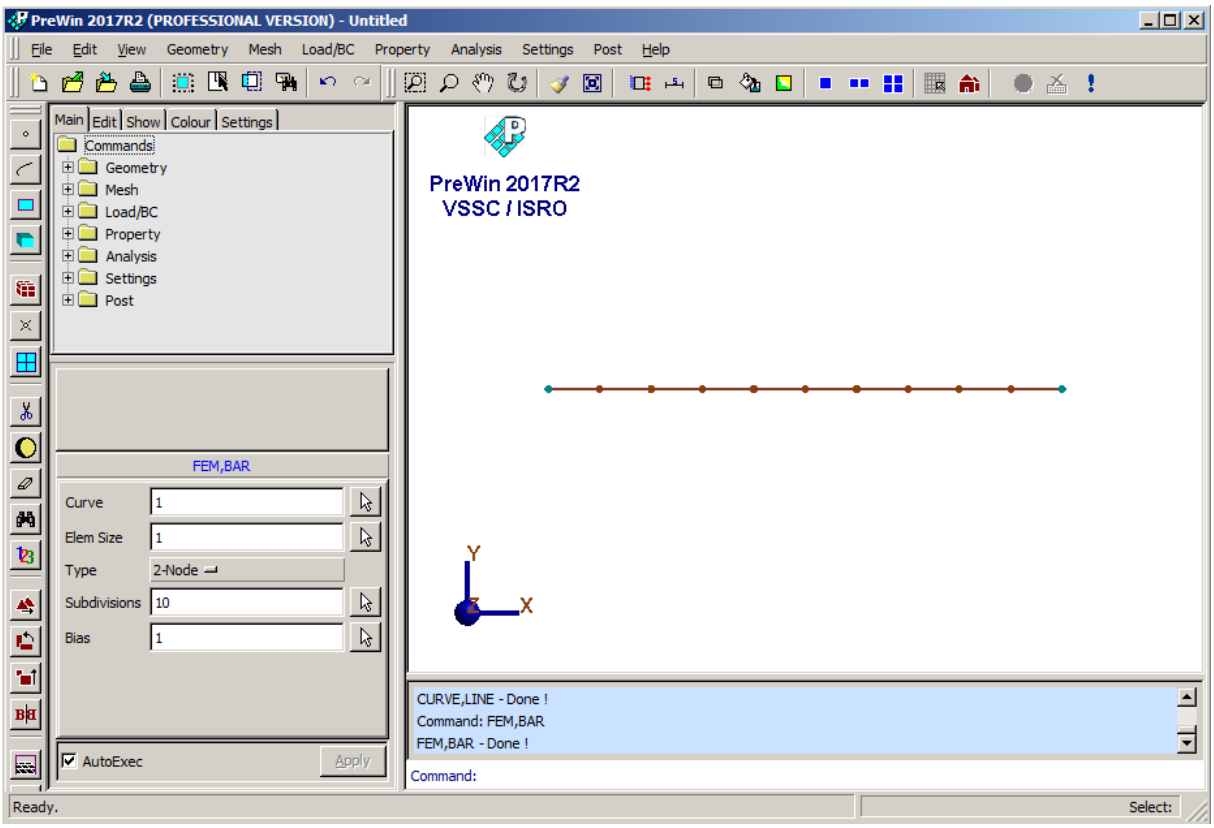
   Command : FEM,BAR

Menu : Mesh → FE Mesh → Bar

Parameters :



At the end of the above operation your screen should like this

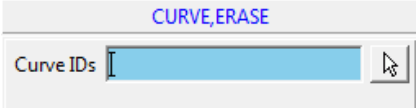


4. Erase curve

Command : CURVE,ERASE

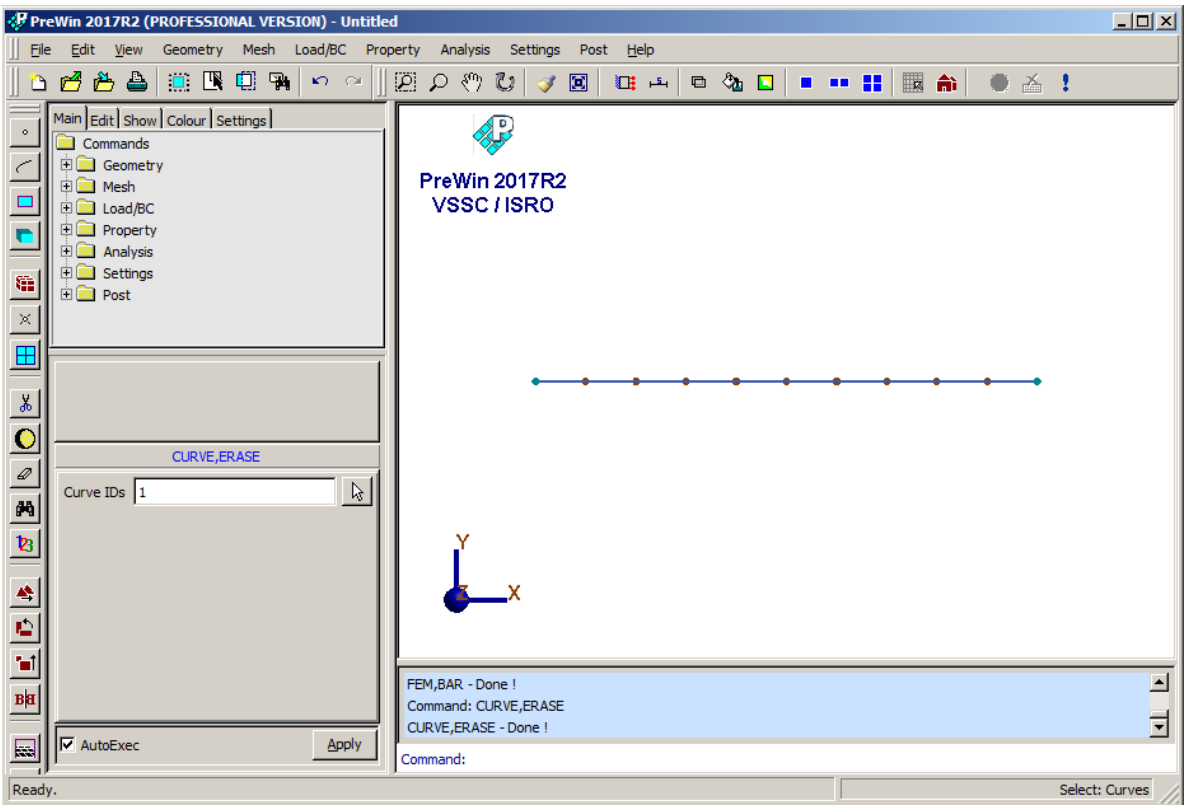
Menu : Geometry → Curve → Miscellaneous → Erase

Parameters :



**Enter the curve ID in the box or pick the curve using mouse pointer.

At the end of the above operation your screen should like this

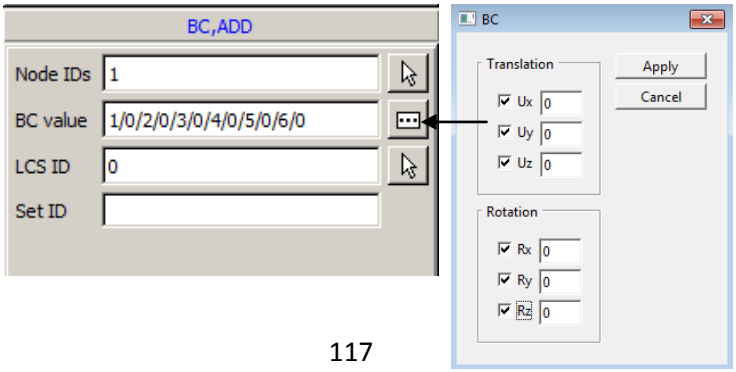


5. Apply Boundary Condition

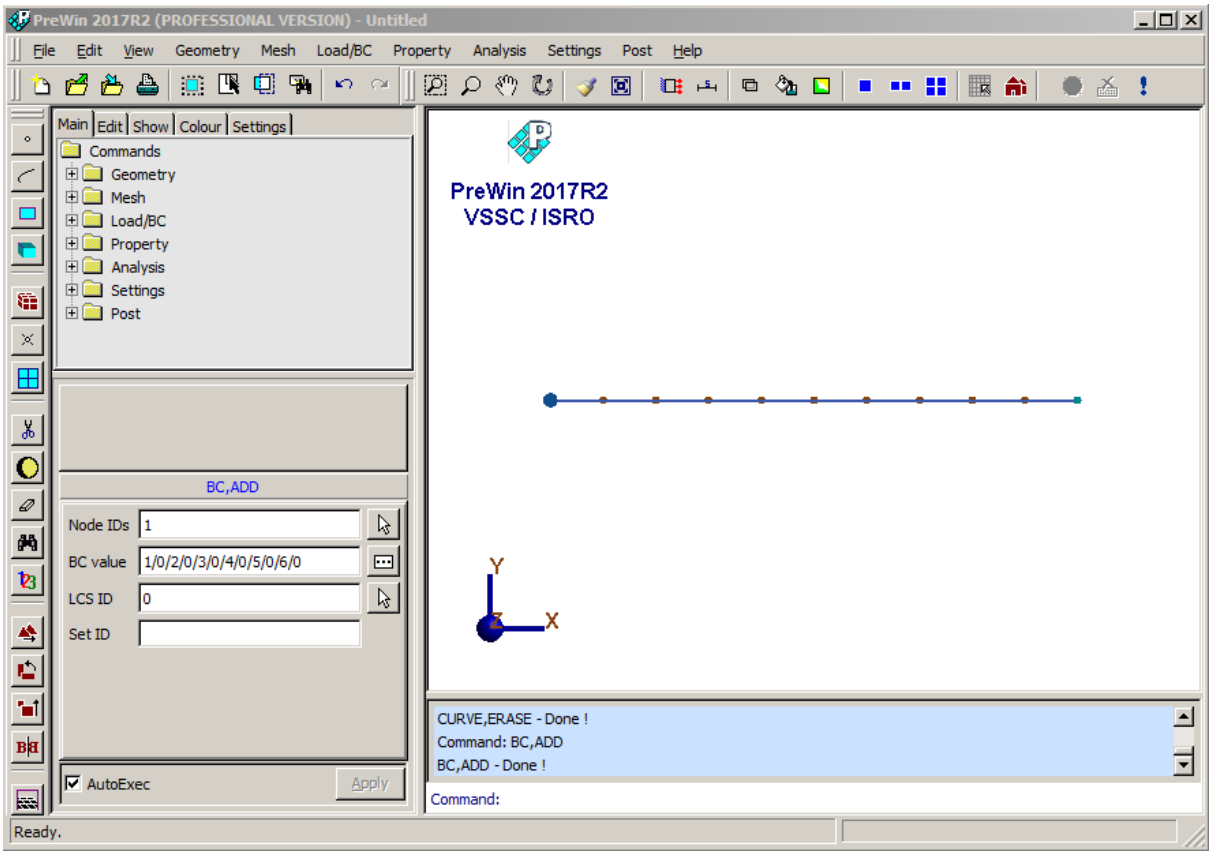
Command : BC,ADD

Menu : Load/BC → Displacement BC → Add

Parameters :



At the end of the above operation your screen will look like this.

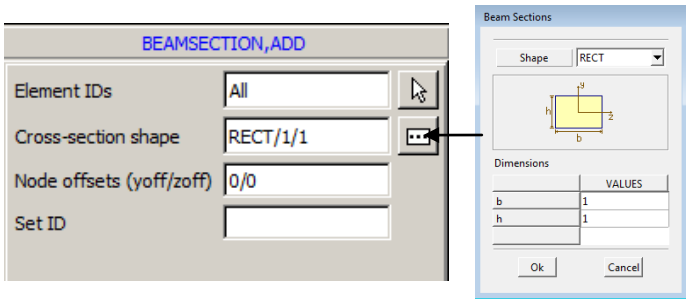


6. Apply Beam Property

Command : BEAMSECTION,ADD

Menu : Property → Physical → Beam Properties → Standard Section → Add

Parameters :

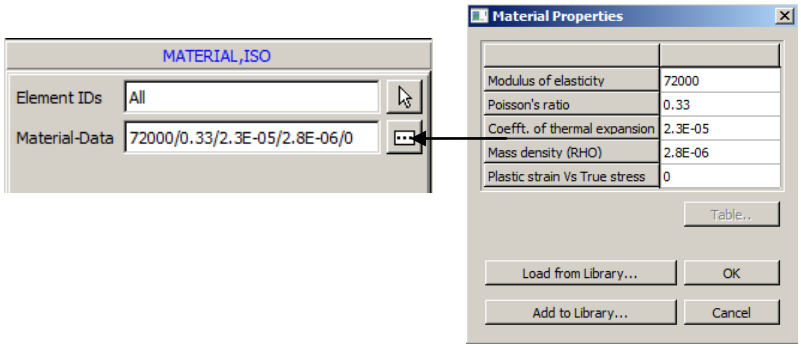


7. Apply Material Property

Command : MATERIAL,ISO

Menu : Property → Material → Isotropic → Add

Parameters :



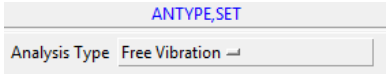
You can enter the material data from 'Load from Library' option or you can manually type in the required data.

8. Set Analysis Type

Command : ANTYPE,SET

Menu : Analysis → Analysis Type

Parameters :

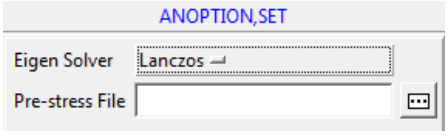


9. Set analysis Option

Command : ANOPTION,SET

Menu : Analysis → Analysis Option

Parameters :

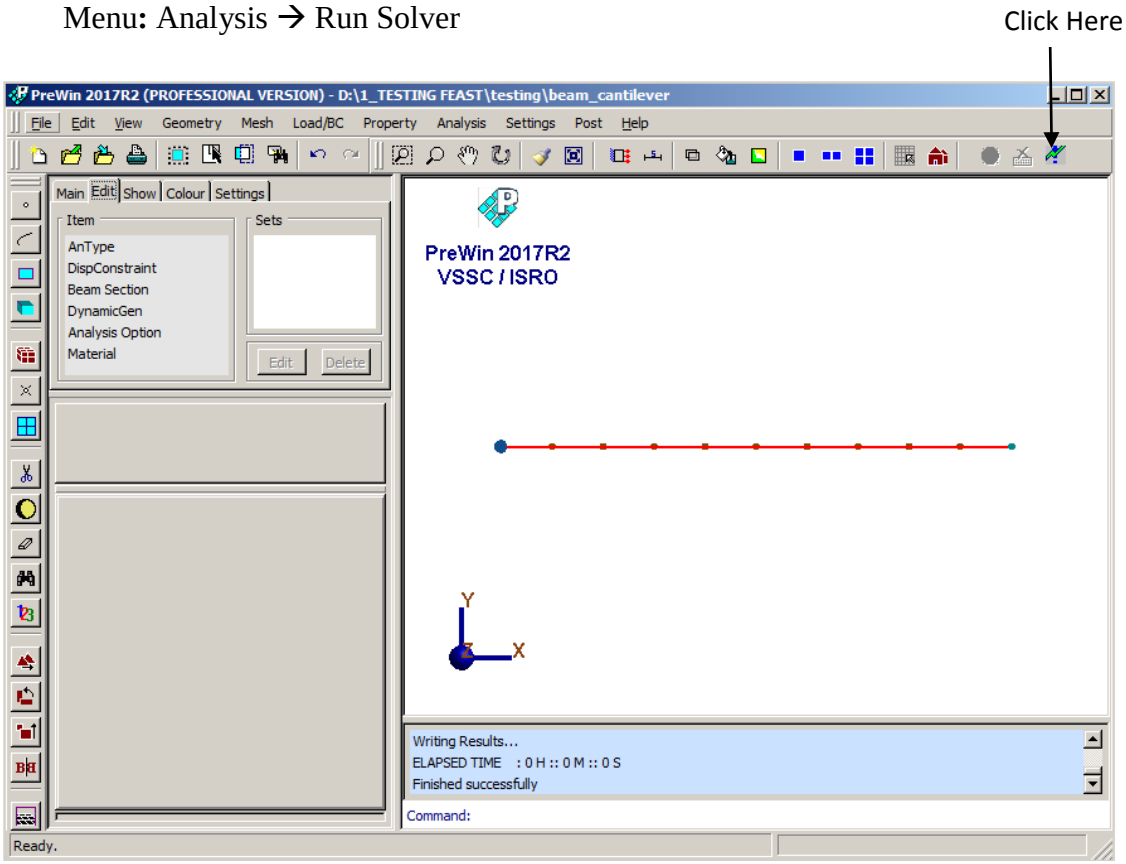


10. Save the project model

Menu : File → Save
Save the file to desired directory

11. Submit the job in to FEAST

Menu**:** Analysis → Run Solver



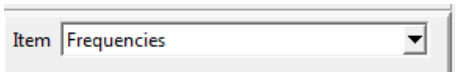
12. Post Processing

i. View Results

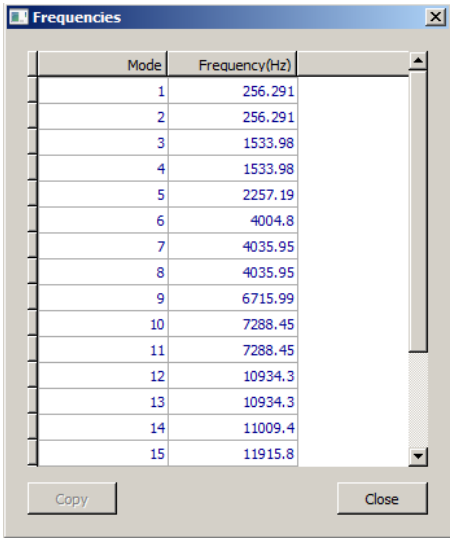
Command : POST,VIEWRESULTS

Menu : Post → View Results

Parameters :



The following table will be displayed



Frequencies

Mode	Frequency(Hz)
1	256.291
2	256.291
3	1533.98
4	1533.98
5	2257.19
6	4004.8
7	4035.95
8	4035.95
9	6715.99
10	7288.45
11	7288.45
12	10934.3
13	10934.3
14	11009.4
15	11915.8

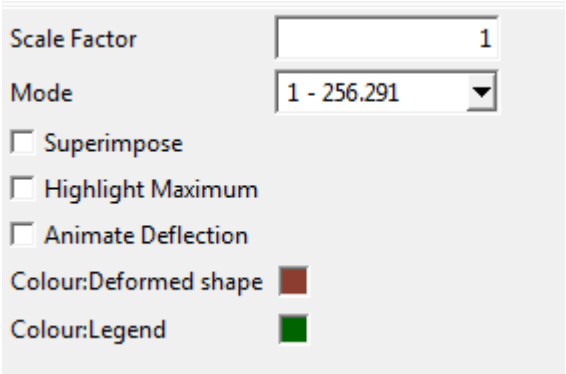
Copy Close

ii. Deformed Shape

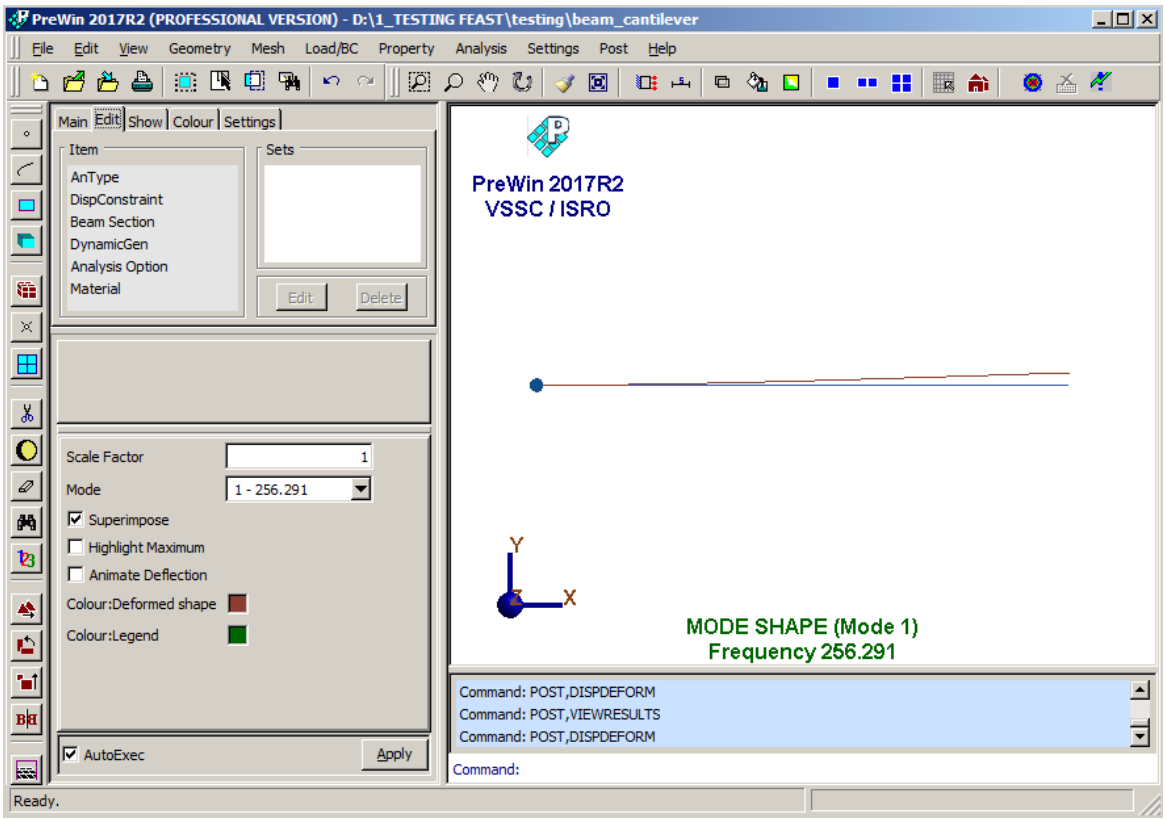
Command : POST,DISPDEFORM

Menu : Post → Deformed Shape

Parameters :



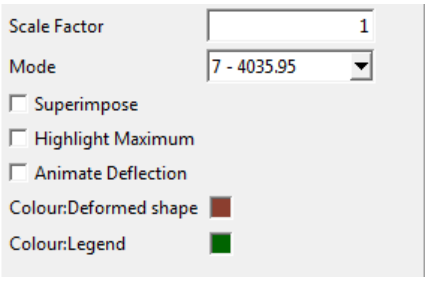
It will display the deformed shape as follows



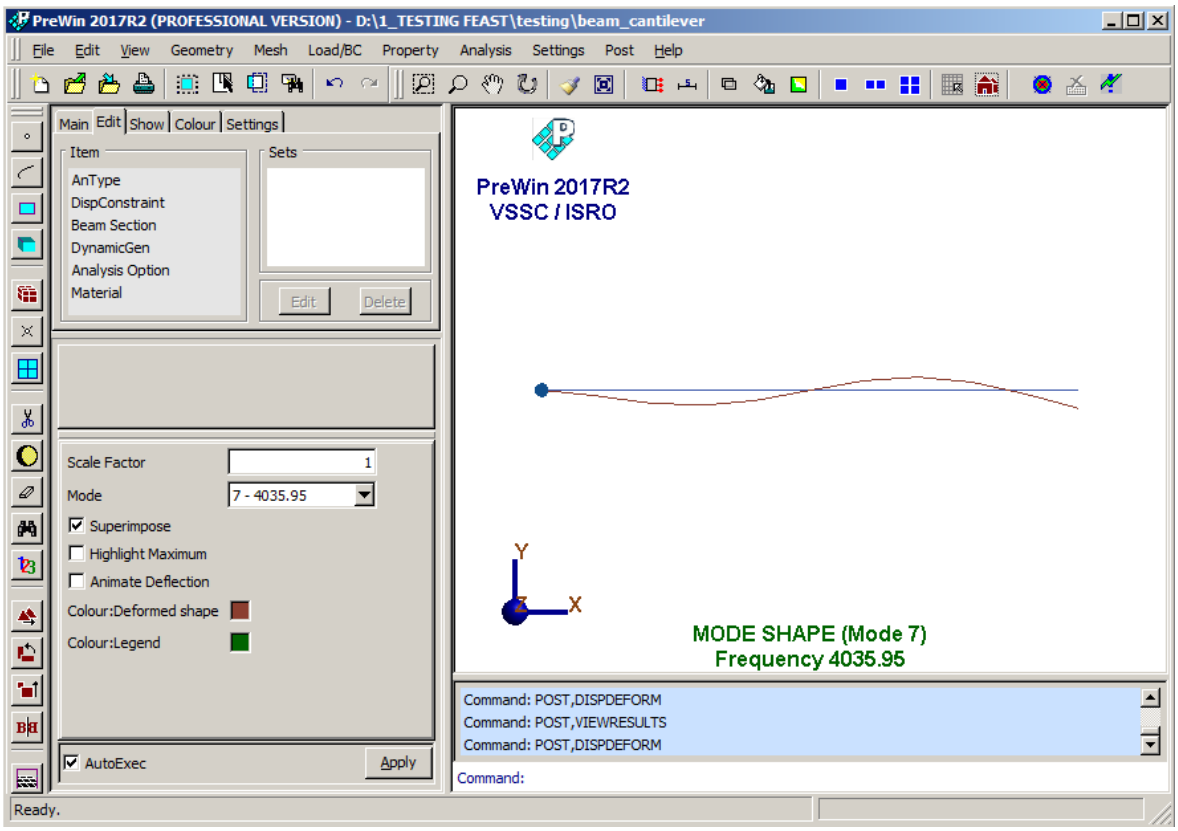
Command : POST,DISPDEFORM

Menu : Post → Deformed Shape

Parameters :



It will display the deformed shape as follows



Output file can be seen in *.OUT