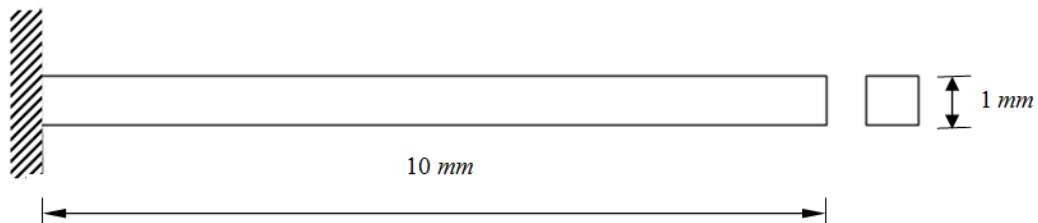


FREE VIBRATION ANALYSIS OF A CANTILEVER BEAM



PROCEDURE

1. Create Keypoints

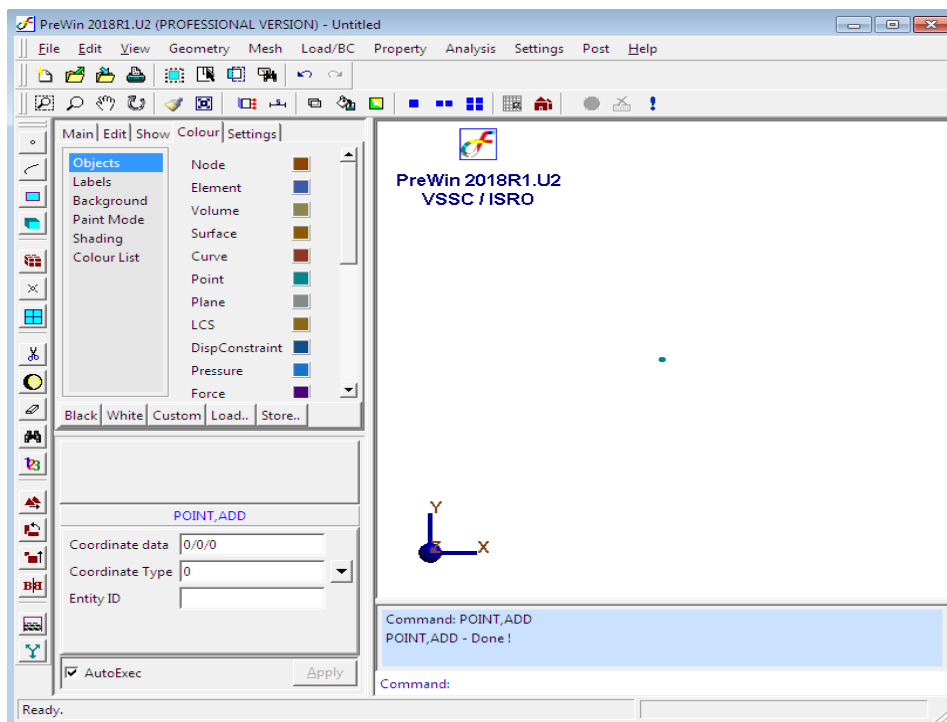
Command : POINT,ADD

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.



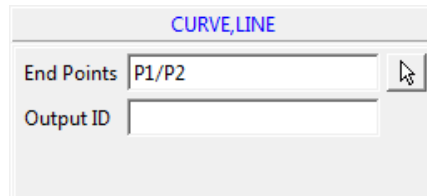
Similarly create a point at (10/0/0)

2. Create Curve

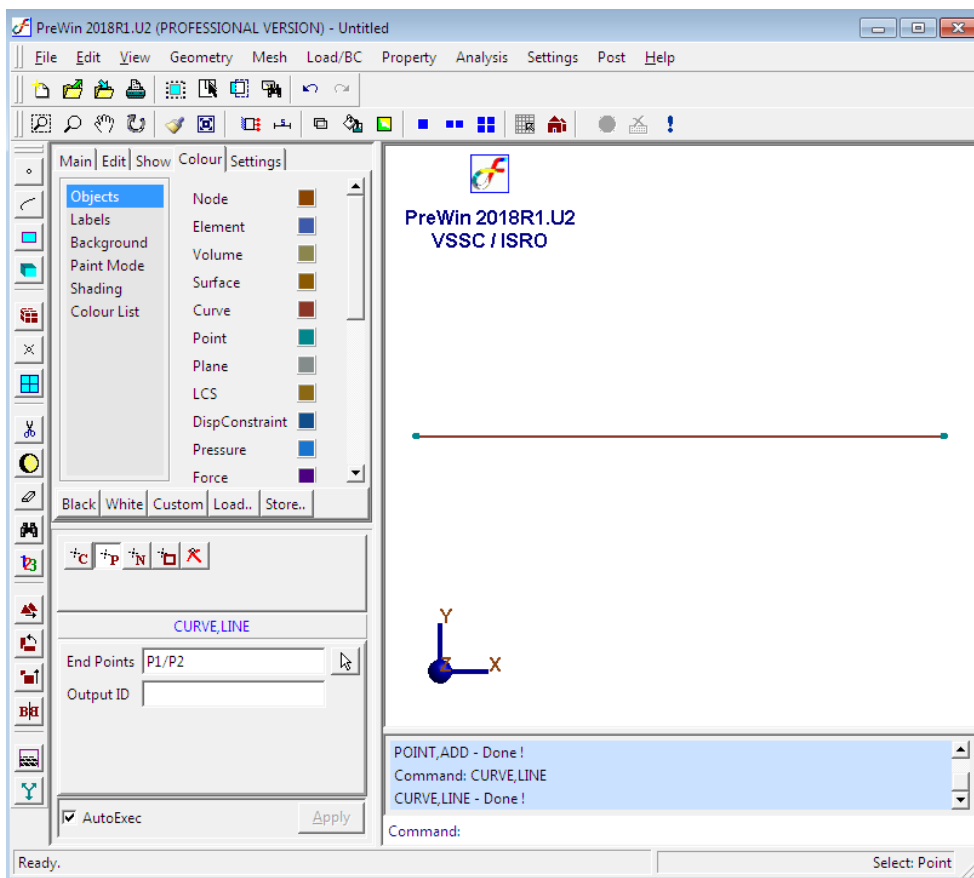
Command : CURVE,LINE

Menu : Geometry → Curve → Create → Line

Parameters :



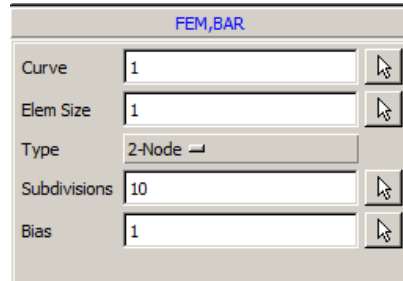
At the end of the operation your screen should look like this.



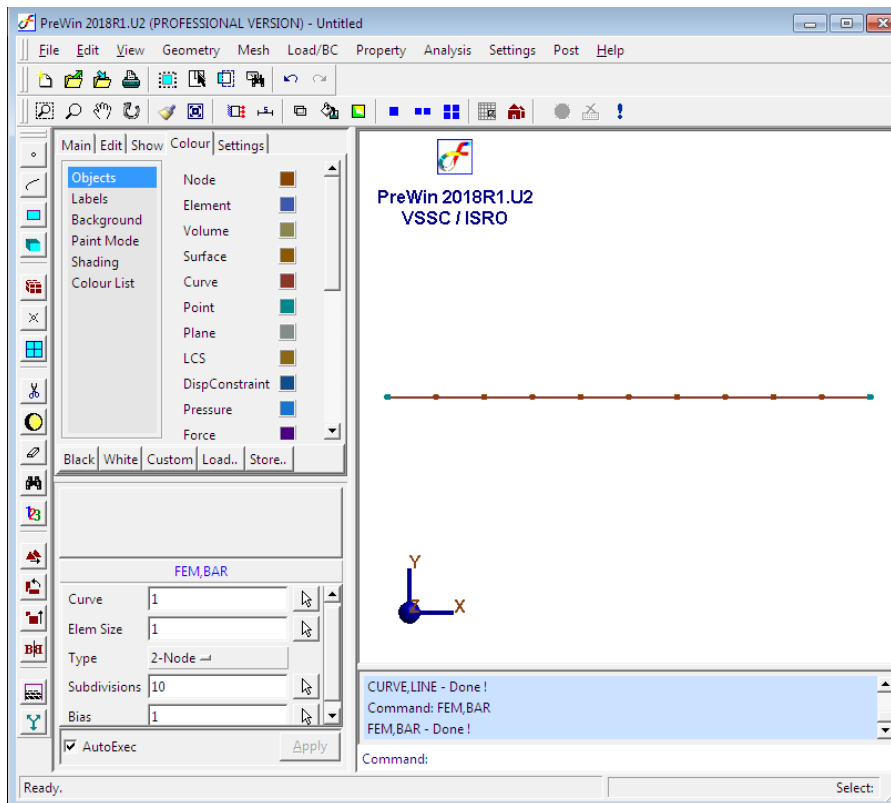
3. Generate mesh

Command : FEM,BAR

Menu : Mesh → FE Mesh → Bar
 Parameters :



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

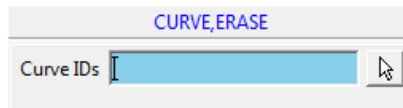


4. Erase curve

Command : CURVE,ERASE

Menu : Geometry → Curve → Miscellaneous → Erase

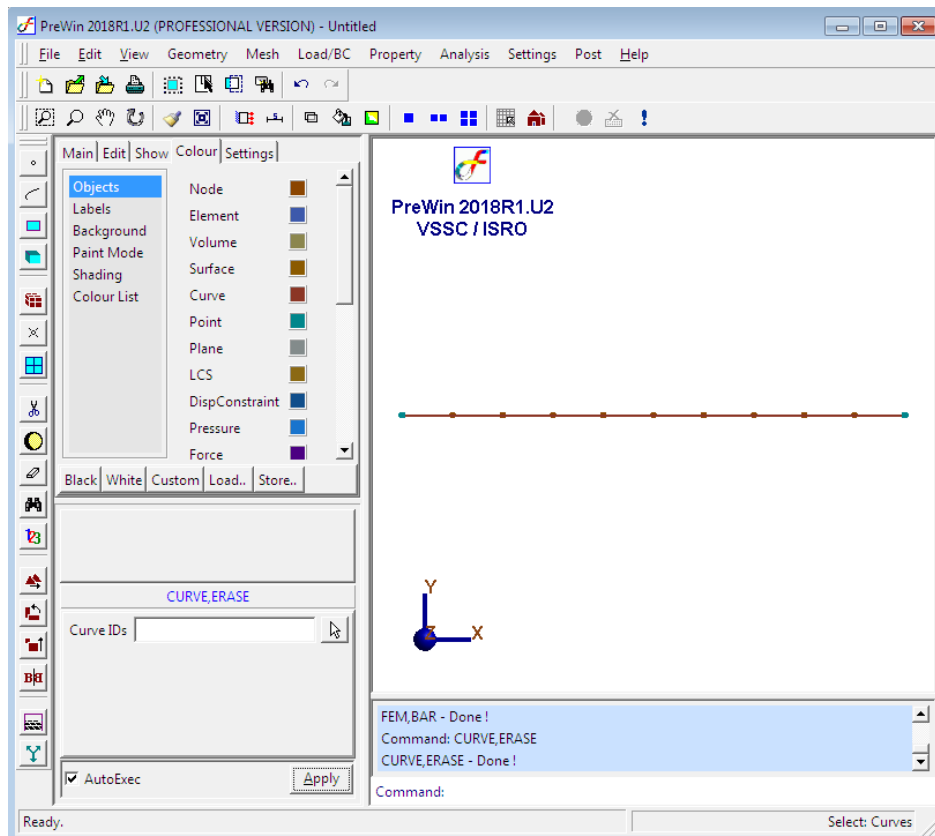
Parameters :



A dialog box titled "CURVE,ERASE" with a text input field labeled "Curve IDs" and a mouse pointer icon to its right.

**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

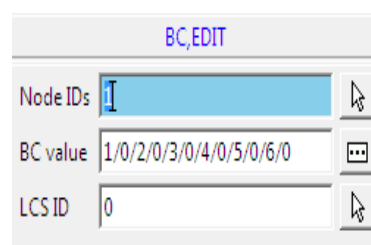


5. Apply Boundary Condition

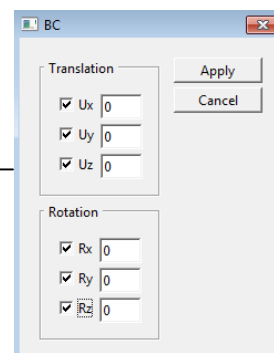
Command : BC,ADD

Menu : Load/BC → Displacement BC → Add

Parameters :

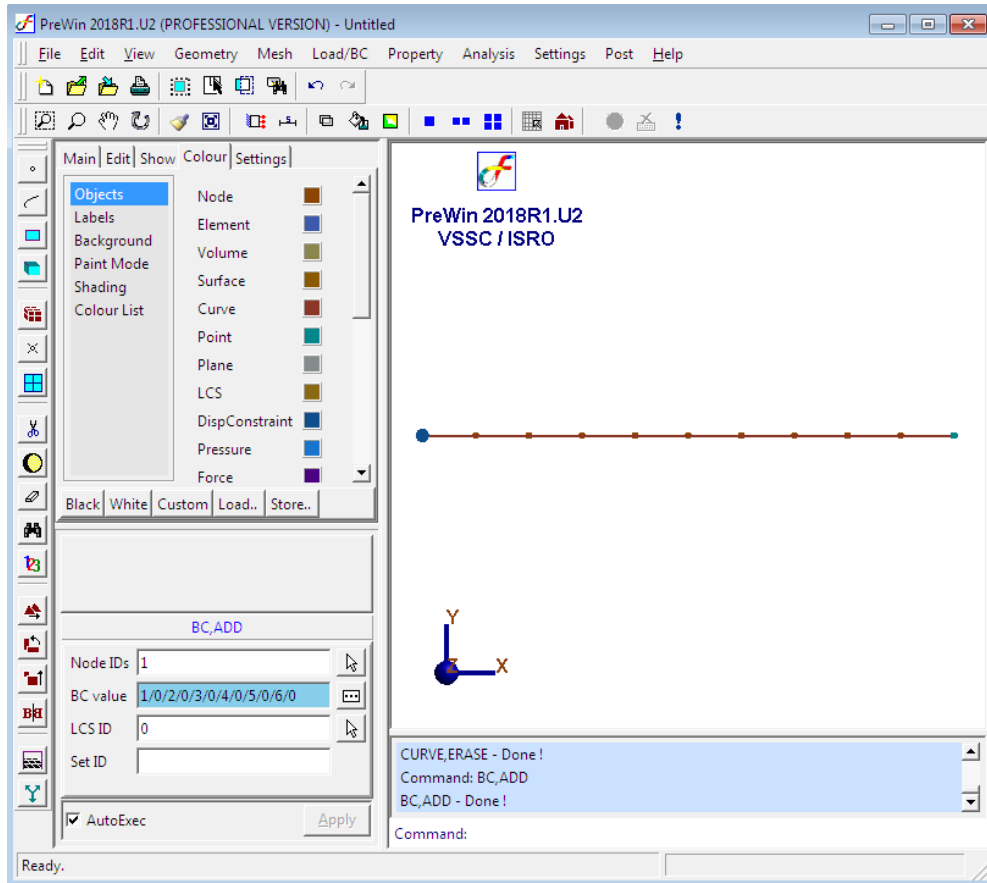


A dialog box titled "BC,EDIT" with three input fields: "Node IDs" (containing "1"), "BC value" (containing "1/0/2/0/3/0/4/0/5/0/6/0"), and "LCS ID" (containing "0").



A dialog box titled "BC" with "Translation" and "Rotation" sections. The "Translation" section has checkboxes for Ux, Uy, and Uz, each with a value of 0. The "Rotation" section has checkboxes for Rx, Ry, and Rz, each with a value of 0. There are "Apply" and "Cancel" buttons.

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

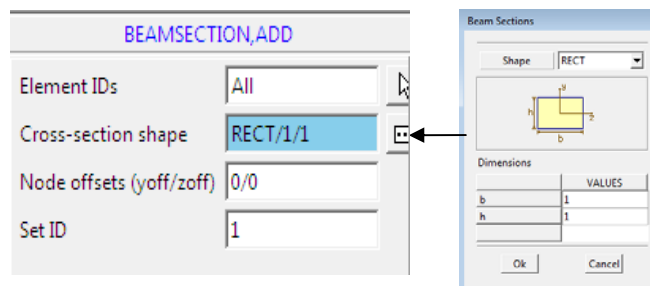


6. Apply Beam Property

Command : BEAMSECTION,ADD

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

Parameters :

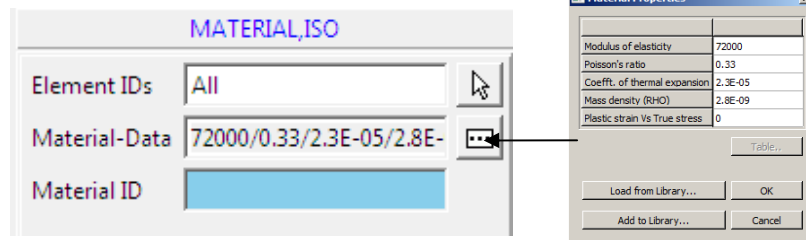


7. Apply Material Property

Command : MATERIAL,ISO

Menu : Property → Material → Isotropic

Parameters :



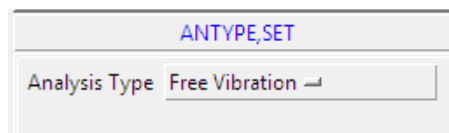
You can enter the material data from 'Load from Library' option or you can manually type in the required data.

8. Set Analysis Type

Command : ANTYPE,SET

Menu : Analysis → Analysis Type

Parameters :

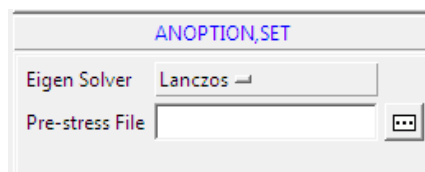


9. Set analysis Option

Command : ANOPTION,SET

Menu : Analysis → Analysis Option

Parameters :



10. Save the project model

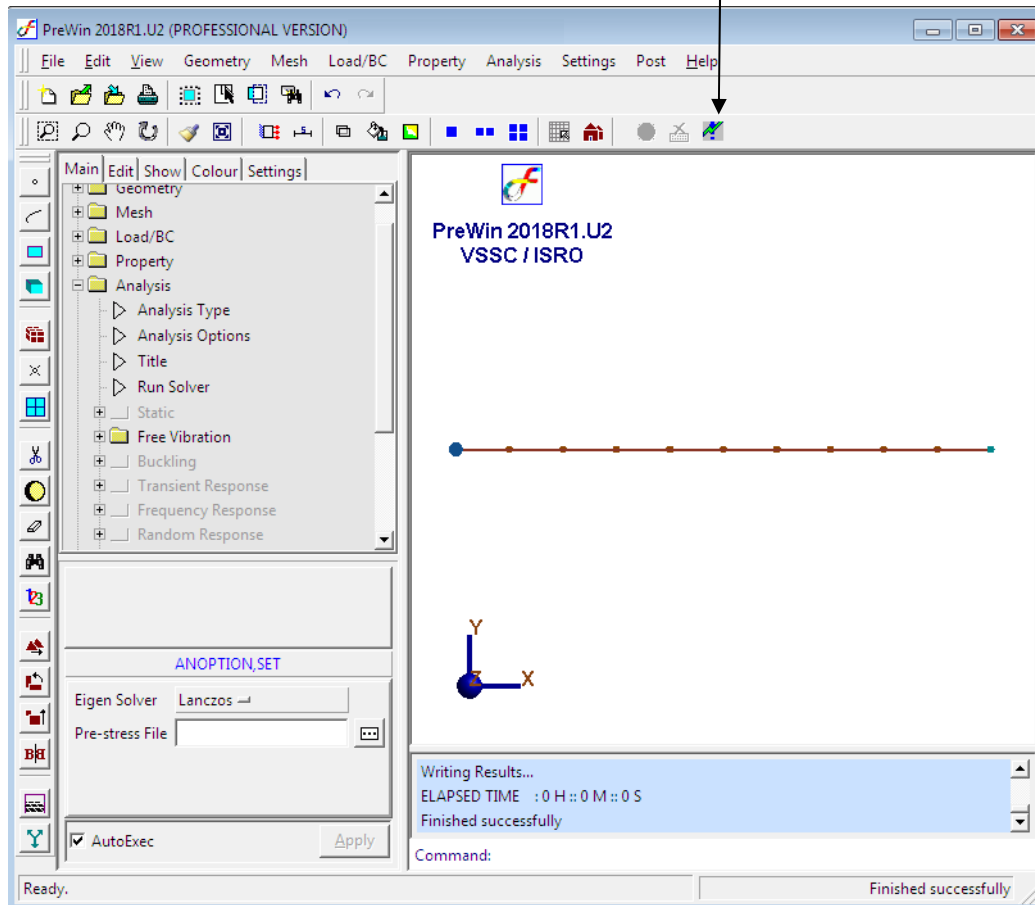
Menu : File → Save

Save the file to desired directory

11. Submit the job in to FEAST

Menu: Analysis → Run Solver

Click Here



12. Post Processing

i. View Results

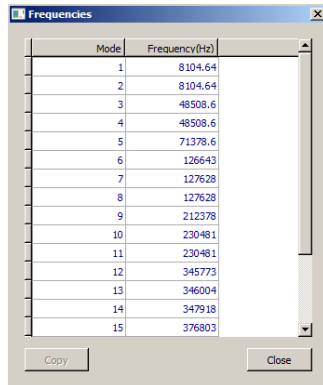
Command : POST,VIEWRESULTS

Menu : Post → View Results

Parameters :



The following table will be displayed



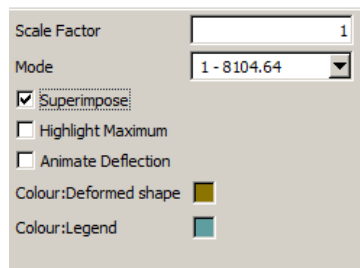
Mode	Frequency(Hz)
1	8104.64
2	8104.64
3	48508.6
4	48508.6
5	71378.6
6	126643
7	127628
8	127628
9	212378
10	230481
11	230481
12	345773
13	346004
14	347918
15	376803

ii. Deformed Shape

Command : POST,DISPDEFORM

Menu : Post → Deformed Shape

Parameters :




Scale Factor: 1


Mode: 1 - 8104.64

Superimpose

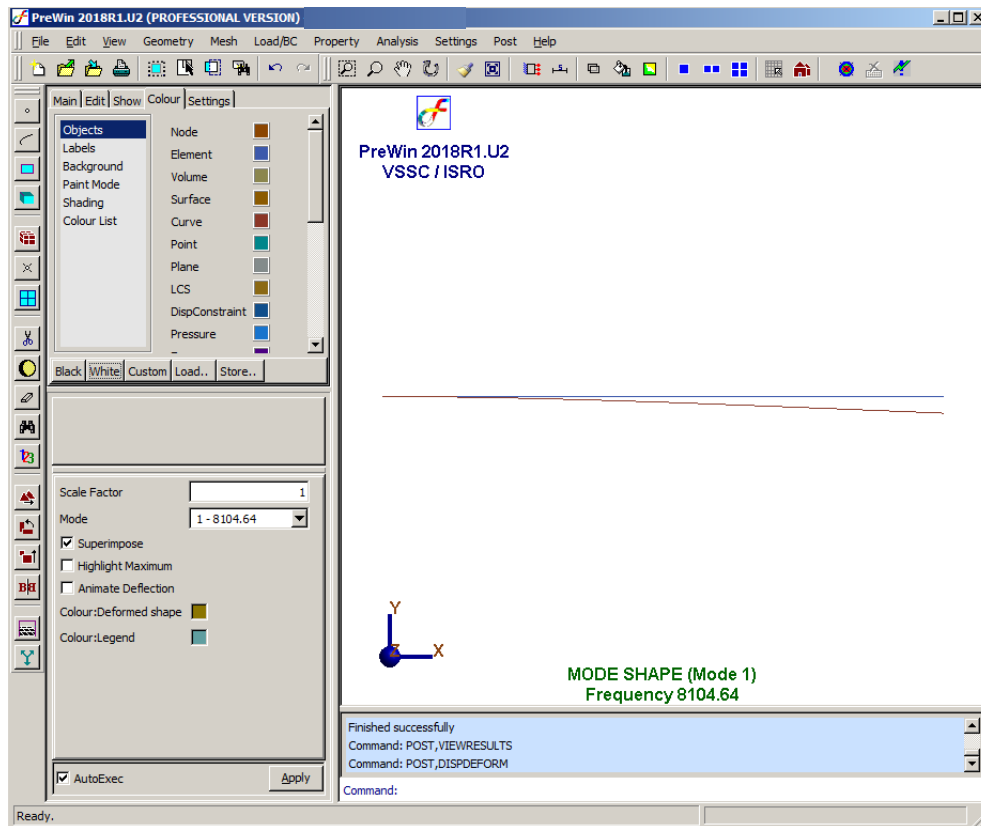
Highlight Maximum

Animate Deflection

Colour: Deformed shape: 

Colour: Legend: 

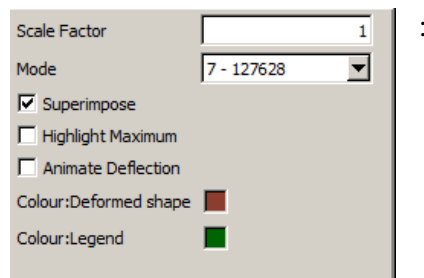
It will display the deformed shape as follows



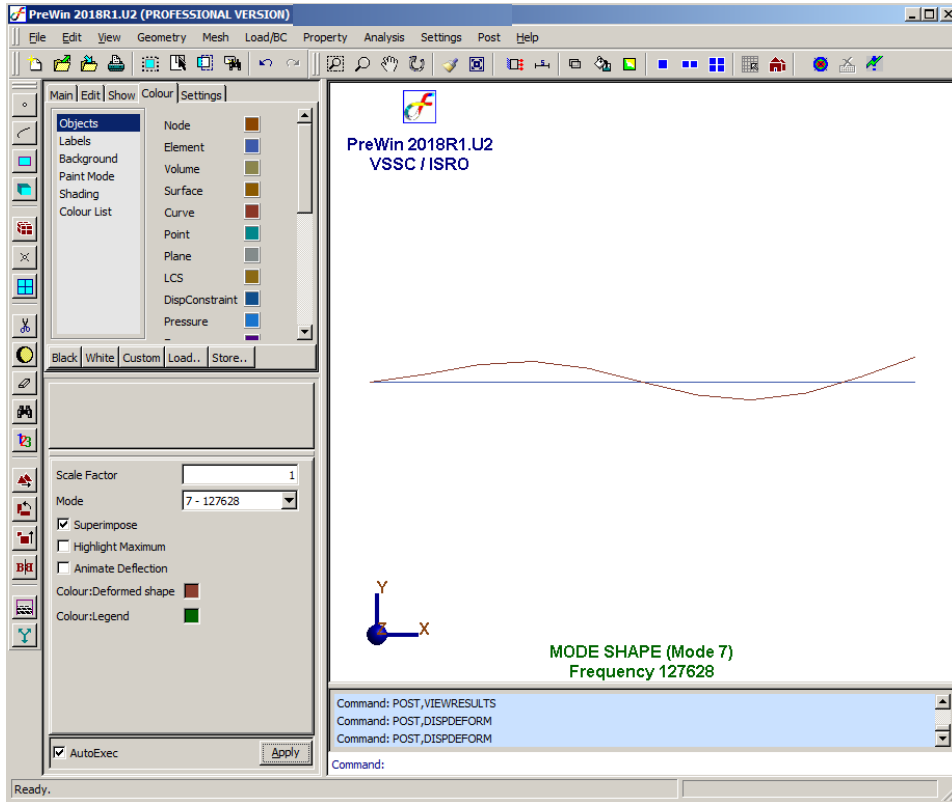
iii. Command : POST,DISPDEFORM

Menu : Post → Deformed Shape

Parameters



It will display the deformed shape as follows



iv. Output file can be seen in *.OUT